



**CONTRACT DOCUMENTS
AND
SPECIFICATIONS**

FOR

**West Hickman WWTP
Nitrification Building Heating System
Replacement Project**

Bid Number 43-2017

PREPARED BY:

**Lexington – Fayette Urban County Government
Division of Water Quality**

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NITRIFICATION BUILDING HEATING SYSTEM REPLACEMENT PROJECT

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PART I

ADVERTISEMENT FOR BIDS

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ADVERTISEMENT FOR BIDS

1. INVITATION

Sealed proposals for the following work will be received by the Lexington-Fayette Urban County Government (LFUCG) until 2:00 p.m., local time, **March 28, 2017**, for furnishing all labor and/or materials and performing all work as set forth by this advertisement, conditions (general and special), specifications, and/or the drawings prepared by and for Lexington-Fayette Urban County Government, Division of Water Quality. Immediately following the scheduled closing time for reception of bids, all proposals which have been submitted in accordance with the above will be publicly opened and read aloud.

2. DESCRIPTION OF WORK

The project includes providing all construction/installation supervision, labor, materials, tools, test equipment necessary for work described in the plans and specifications for **West Hickman WWTP Nitrification Building Heating System Replacement Project**. The major work includes demolition and replacement of the existing H.B. Smith model B2500L-W-6, 600 MBH gross output boiler along with 13 Trane model S propeller unit heaters, 1 Trane model CCDB03ANOC climate changer, and 6 wall convectors. The boiler provides hot water to all these heating units. There is also an additive alternate to investigate the cost of demolition and replacement of all hot water piping throughout the building. The Bidder will also be responsible for furnishing all new process and safety controls and piping components necessary to ensure compliance with all applicable codes and to ensure operability of the hot water system. The Taco circulation pumps are 3 years old and will be reused for this job.

3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS

Plans, Specifications, and Contract Documents may be obtained from IonWave.

Specifications, Plans, and Bid Documents may be examined at the following places:

LFUCG
Division of Central Purchasing
200 East Main Street, Third Floor, Rm 338
Lexington, Kentucky 40507
(859) 258-3320

LFUCG
Division of Water Quality
125 Lisle Industrial Avenue
Lexington, Kentucky 40511
(859) 425-2400

4. **METHOD OF RECEIVING BIDS**

Bids will be received from Prime Contracting firms on a **Lump Sum/Line Item Unit Price Basis**, for total Project Area. The Bidder must include a price for all bid items to be considered. Bids shall be submitted in the manner and subject to the conditions as set forth and described in the Instruction to Bidders and Special Conditions.

Sealed bids shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and the Project Name. Bids are to remain sealed until official Bid closure time.

Mailed bids/proposals should be sent to the Director, Division of Central Purchasing, 200 East Main Street, Lexington, KY 40507.

5. **METHOD OF AWARD**

The Contract, if awarded, will be to the lowest, qualified responsible bidder for the total project whose qualifications indicate the award will be in the best interest of the OWNER and whose bid/proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish the responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

6. **BID WITHDRAWAL**

No bidder may withdraw his bid for a period of sixty (60) calendar days after the closing date for receipt of bids. Errors and omissions will not be cause for withdrawal of bid without forfeit of bid bond. Bids may be withdrawn in person prior to the closing date of receipt of bids.

7. **BID SECURITY**

If the bid is \$50,000 or greater, bid shall be accompanied by a certified /cashier's check or bid bond payable to the Lexington-Fayette Urban County Government in an amount not less than Five Percent (5%) of the base bid. Bid bond shall be executed by a Surety Company authorized to do business in the Commonwealth of Kentucky and countersigned by a licensed Kentucky Resident Agent, representing the Surety Company. Bid Bonds are not required for bids under \$50,000. A certified check or cashier's check is also acceptable forms of bid security.

8. **SUBMISSION OF BIDS**

CONTRACTORS shall submit their bids to the Lexington-Fayette Urban County Government, Division of Purchasing, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. Bids shall be submitted in a sealed envelope not later than 2:00 p.m. local time, March 28, 2017. Sealed proposals shall be clearly marked on the outside of the container as follows: Company Name and Address, Bid Invitation Number, and Project Name to be opened at 2:00 p.m. local time March 28, 2017. Bids are to remain sealed until official Bid closure time. Bids received after the scheduled closing time for receipt of bids will not be considered and will be returned unopened.

9. RIGHT TO REJECT

The Lexington-Fayette Urban County Government reserves the right to reject any and all bids and to waive all informalities and/or technicalities where the best interest of the Lexington-Fayette Urban County Government may be served.

10. NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN AND CURRENT WORKFORCE

The successful bidder must submit with their bid the following items to the Lexington-Fayette Urban County Government:

1. Affirmative Action Plan for his/her firm.
2. Current Workforce Analysis Form.

Failure to submit these items as required herein may result in disqualification of the Bidder from the award of the contract.

All submissions should be directed to:

Lexington-Fayette Urban County Government
Division of Purchasing
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507

11. NOTICE CONCERNING MWD BE GOAL

Notice of requirement for Affirmative Action to ensure Equal Employment Opportunities and Disadvantaged Business Enterprises (DBE) Contract participation. Disadvantaged Business Enterprises (DBE) consists of Minority-Owned Business Enterprises (MBE), Veteran-Owned Small Businesses (VSOB), and Woman-Owned Business Enterprises (WBE).

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this Contract be subcontracted to Disadvantaged Business Enterprises, which is made up of MBEs and WBEs. The Lexington Fayette

Urban County Government also has set a goal that not less than three percent (3%) of the total value of this Contract be subcontracted to Veteran-owned Small Businesses. The goal for the utilization of Disadvantaged Business Enterprises as well as Veteran-Owned Small Businesses as subcontractors is a recommended goal. Contractor(s) who fail to meet such goal will be expected to provide written explanations to the Director of the Division of Purchasing of efforts they have made to accomplish the recommended goal, and the extent to which they are successful in accomplishing the recommended goal will be a consideration in the procurement process. Depending on the funding source, other DBE goals may apply.

For assistance in locating Disadvantaged Business Enterprises Subcontractors contact:

Sherita Miller, Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507
859-258-3323
smiller@lexingtonky.gov

12. PRE-BID MEETING

A non-mandatory pre-bid meeting will be held at 10:00 AM local time on March 20, 2017 at West Hickman WWTP, 645 West Hickman Plant Road, Nicholasville, KY.

END OF SECTION

PART II
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PART II
INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Lexington-Fayette Urban County Government (herein called the OWNER) invites bids from firms on the project described in the Advertisement for Bids. The OWNER will receive bids at the Division of Purchasing, at the time and in the manner set forth in the Advertisement for Bids, and the Bids will then be publicly opened and read aloud. The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual time and date of the bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid Security prior to that date.

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

2. PREPARATION OF BID

Each bid must be submitted on the prescribed Form of Proposal. All blank spaces for the bid prices must be filled in, either in ink or typewritten, for both unit prices and extensions. Totals for each bid item must be added to show the total amount of the bid. Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, their address, the name of the project, the invitation number and time and date for which the bid is submitted. Bids must be addressed to the Director of Purchasing, Lexington-Fayette Urban County Government, Third Floor, 200 East Main Street, Lexington, Kentucky 40507. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified above.

3. SUBCONTRACTS

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER. All proposed subcontractors must be identified on the Form of Proposal. Prior to the award of Contract, the OWNER or the OWNER'S representative will advise the CONTRACTOR of the acceptance and approval thereof or of any action necessary to be taken. Should any Subcontractor be rejected by the OWNER, the CONTRACTOR shall present a new name and/or firm to the OWNER at no change in the Contract Price.

4. QUALIFICATION OF BIDDER

The OWNER may make such investigations as the OWNER deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein. Conditional bids will not be accepted.

In evaluating Bids, OWNER shall consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, as requested. OWNER may consider maintenance requirements, performance data, and disruption or damage to private property. It is OWNER'S intent to accept alternatives, if requested by the bid forms, in the order in which they are listed in the Bid Form but OWNER may accept or decline them in any order or combination. The contract, if awarded, will be awarded to the lowest, qualified, responsible BIDDER based upon OWNER'S evaluation which indicates that the award will be in the best interest of OWNER and the general public.

In the event there is any question as to the bidder's qualifications and ability to complete the work, a final determination will be made in accordance with a fair evaluation by the Urban County Government of the above listed elements.

- A. If the OWNER requires filling out a detailed financial statement, the bidder may provide its current certified financial statement(s) for the required time interval.
- B. Corporate firms are required to be registered and in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.
- C. Good standing with Public Works Act - any CONTRACTOR and/or subcontractors in violation of any wage or work act provisions (KRS 337.510 to KRS 337.550) are prohibited by Statutory Act (KRS 337.990) from bidding on or working on any and all public works contracts, either in their name or in the name of any other company, firm or other entity in which he might be interested. No bid from a prime contractor in violation of the Act can be considered, nor will any subcontractor in violation of the Act be approved and/or accepted. The responsibility for the qualifications of the subcontractor is solely that of the prime contractor.
- D. Documents Required of CONTRACTOR - (1) A sworn statement signed by the President or owner of the Company regarding all current work in progress anywhere; (2) A document showing the percent of completion of each project and the total worth of each project; and (3) Documentation showing the percentage of the DBE employment levels on each project of the Bidder's current work force, and DBE participation levels for Subcontractors.

- E. Optional OWNER Requirements - The OWNER, at its discretion, may require the BIDDER/CONTRACTOR to provide: (1) a current detailed financial statement for a period including up to 3 prior years; (2) financial security or insurance in amounts and kinds acceptable to the OWNER to meet the financial responsibility requirements for the CONTRACTOR to indemnify the OWNER. (3) Additional information and/or DBE work force data, as well as DBE participation data.

Each bidder agrees to waive any claim it has or may have against the Owner, the Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

5. BID SECURITY

- A. Each bid must be accompanied by a bid bond prepared on a Form of Bid Bond and attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the OWNER, in the amount of 5% of the bid. Such bid bond will be returned to the unsuccessful bidder(s) only upon written request to the Director of Central Purchasing within seven (7) days of opening of bids. Bid bond shall be made payable to the Lexington-Fayette Urban County Government. Bid security is not required for projects under \$50,000.
- B. Bonds shall be placed with an agent licensed in Kentucky with surety authorized to do business within the state. When the premium is paid for such coverage, the full commission payable shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his bid.

7. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay **\$200.00** per day as liquidated damages, or the sum as specified in the Contract for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- A. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site(s) to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider Federal, State and Local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.
- B. Bidders should examine the requirements of section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures, underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.
- C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph 8; that without exception the Bid is premised upon furnishing and performing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to the Director of Central Purchasing, who in turn will have an Addendum issued for the Lexington-Fayette Urban County Government, and to be given consideration must be received prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications. Acknowledgement of the receipt of addenda must be included with all submitted bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

10. SECURITY FOR FAITHFUL PERFORMANCE

- A. Simultaneously with his delivery of the executed Contracts, the CONTRACTOR shall furnish a surety bond or bonds as security for the faithful performance of this Contract and for payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the OWNER and authorized to do business in the Commonwealth of Kentucky.
- B. All bonds required by this Contract and laws of this State shall be placed with agents licensed in the State of Kentucky. When the premium is paid for such coverage's, the full commission shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.
- C. **Contractor shall use standard Performance and Payment Bond forms such as documents provided with this contract book or AIA form A312-1984 (or later). Each document will be for 100% of the Contract Bid Amount.**

11. POWER OF ATTORNEY

Attorney-in-fact who signs bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

12. TAXES AND WORKMEN'S COMPENSATION

The CONTRACTOR and subcontractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law, such as old age pension, social security, or annuities measured by wages. Each shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the proposal. The CONTRACTOR will not otherwise be reimbursed or compensated for such tax payments. The CONTRACTOR is urged to ascertain at his own risk his actual tax liability in connection with the execution or performance of his Contract.

13. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the contract, the same as though herein written out in full.

14. EROSION AND SEDIMENT CONTROL AND PERMITS

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental

regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.17.

15. AFFIRMATIVE ACTION PLAN

The successful Bidder must submit with their bid, the following items to the Urban County Government:

1. Affirmative Action Plan of the firm
2. Current Work Force Analysis Form
3. Good Faith Effort Documentation
4. List of Disadvantaged Business Enterprise Subcontractors and the Dollar Value of each Subcontract

A Work Force Analysis Form shall be submitted for each Contract. Failure to submit these items as required herein may result in disqualification of the Bidder from award of the Contract.

All submissions should be directed to:

Director, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Third Floor
Lexington, KY 40507

16. CONTRACT TIME

The number of calendar days within which the Work is to be substantially completed and ready for final payment (the Contract Time) is set forth in the Form of Proposal and the Agreement.

17. SUBSTITUTE OR "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the ENGINEER and OWNER, application for such acceptance will not be considered by ENGINEER and OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the ENGINEER and OWNER is set forth in the General Conditions.

18. ALTERNATE BIDS

Bidders shall submit alternate bids/proposals only if and when such alternate bids/proposals have been specifically requested in an Invitation for Bids. If alternate bids/proposals are requested in an Invitation for Bids, the form of submission of such alternate bid and the conditions under which such alternate bids will be considered for award of a contract will be established in the Invitation.

Any Bidder who submits a bid incorporating an alternate proposal when alternate bids/proposals have not been requested in the Invitation for Bids shall have his/her bid rejected as non-responsive.

Any Bidder who submits a bid incorporating two (2) or more prices for an item or groups of items (unless such method of pricing is requested in the Invitation for Bids), or which imposes conditions for acceptance other than those established in the Invitation for Bids, shall have their bid rejected as non-responsive.

19. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days thereafter, CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds, Certificate of Insurance, and Power of Attorney. The OWNER will deliver one fully signed counterpart to CONTRACTOR at such time as it has been signed by the Mayor.

20. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDDBE) CONTRACTORS

A. Outreach for MWDDBE(s)

The Lexington-Fayette Urban County Government (LFUCG) maintains a database of MWDDBE contractors and organizations. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at <https://lexingtonky.ionwave.net>. The notices describe the project and indicate the deadline for submitting bids.

If you wish to be added to the LFUCG MWDDBE contractor database, please contact:

Sherita Miller, Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

B. Bid Bond Assistance for MWDBE(s)

For those MWDBE contractors who wish to bid on LFUCG project, bid bond assistance is available. This bid bond assistance is in the form of a "Letter of Certification" which is accepted by the LFUCG's Division of Purchasing, in lieu of a bid bond. The "Letter of Certification" must be included in the bid package when it is submitted to the Division of Purchasing. The "Letter of Certification" will reference the specific project for which the bid is being submitted, and the time and date on which the bid is due. Bid bond assistance must be requested from the Lexington-Fayette Urban County Government's Division of Central Purchasing.

C. Eligibility for Bid Bond Assistance for MWDBE(s)

In order to be eligible for any Bid bonding assistance, a MWDBE construction company must be owned or controlled at the level of 51% or more by a member or members of a minority group or females. Prior to receiving assistance, a statement providing evidence of ownership and control of the company by a member or members of a minority group or females must be signed by the Owner or corporate officer and by an attorney or accountant submitted to:

Sherita Miller, Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

D. MWDBE and Veteran Subcontractors

The LFUCG will, upon request, assist prime contractors in the procurement of eligible DBE subcontractors in an effort to achieve 10% minimum MWDBE and 3% minimum veteran goal.

For a list of eligible subcontractors, please contact:

Sherita Miller, Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

21. LFUCG NON-APPROPRIATION CLAUSE

Contractor acknowledges that the LFUCG is a governmental entity, and the contract validity is based upon the availability of public funding under the authority of its statutory mandate.

In the event that public funds are unavailable and not appropriated for the performance of the LFUCG's obligations under this contract, then this contract shall automatically expire without penalty to the LFUCG thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds. It is expressly agreed that the LFUCG shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this contract, but only as an emergency fiscal measure during a substantial fiscal crisis, which affects generally its governmental operations.

In the event of a change in the LFUCG's statutory authority, mandate and mandated functions, by state and federal legislative or regulatory action, which adversely affects the LFUCG's authority to continue its obligations under this contract, then this contract shall automatically terminate without penalty to the LFUCG upon written notice to Contractor of such limitation or change in the LFUCG's legal authority.

END OF SECTION

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PART III

Invitation to Bid No. 43-2017

**West Hickman WWTP
Nitrification Building Heating System Replacement Project**

1. FORM OF PROPOSAL

Place: Lexington, Kentucky

Date: 3/27/17

The following Form of Proposal shall be followed exactly in submitting a proposal for this Work.

This Proposal Submitted by C3 Mechanical, LLC
210 B. Hahn Dr. Frankfort, KY 40601
(Name and Address of Bidding Contractor)

(Hereinafter called "Bidder"), organized and existing under the laws of the State of Kentucky, doing business as C3 Mechanical, LLC
a partnership "a corporation," "a partnership", or an "individual" as applicable.

To: Lexington-Fayette Urban County Government
(Hereinafter called "OWNER")
Office of the Director of Purchasing
200 East Main Street, 3rd Floor
Lexington, KY 40507

Gentlemen:

The Bidder, in compliance with your Invitation for Bids for West Hickman WWTP Nitrification Building Heating System Replacement having examined the Plans and Specifications with related documents, having examined the site for proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the lump sum and/or unit prices stated hereinafter. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this proposal is a part. The OWNER will issue work orders for work to be performed under this Contract.

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within the time provided in the Purchase Order or Work Orders issued by the OWNER. BIDDER further agrees to pay liquidated damages, the sum of \$200.00 for each consecutive calendar day thereafter.

The Bidder hereby acknowledges receipt of the following addenda:

Addendum No. 1 Date 3-22-17
Addendum No. Date
Addendum No. Date
Addendum No. Date
Addendum No. Date
Addendum No. Date
Addendum No. Date

Insert above the number and the date of any Addendum issued and received. If none has been issued and received, the word "NONE" should be inserted.

2. LEGAL STATUS OF BIDDER

Bidder C3 Mechanical, LLC

Date 3/27/17

* 1. A corporation duly organized and doing business under the laws of the State of X, for whom X, bearing the official title of X, whose signature is affixed to this Bid/Proposal, is duly authorized to execute contracts.

* 2. A Partnership, all of the members of which, with addresses are: (Designate general partners as such)

Christopher Blevins

7943 Wades Mill Rd. Mt. Sterling, KY 40391

Larry Chad Hill

1108 Devane Ln. Frankfort, KY 40601

* 3. An individual, whose signature is affixed to this Bid/Proposal (please print name)

X

*(The Bidder shall fill out the appropriate form and strike out the other two.)

3. **BIDDERS AFFIDAVIT**

Comes the Affiant, Jim Coomes, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is Jim Coomes and he/she is the individual submitting the bid or is the authorized representative of C3 Mechanical, LLC, the entity submitting the bid (hereinafter referred to as "Bidder").
 2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.
 3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.
 4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.
 5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.
 6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as the "Ethics Act."
 7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.
- Further, Affiant sayeth naught.

Jim Coomes
(Affiant)

STATE OF Kentucky
COUNTY OF Franklin

The foregoing instrument was subscribed, sworn to and acknowledged before me by Jim Coomes on this the 27 day of March, 2017.

My Commission expires: 8/22/20

Charissa B. Coomes
NOTARY PUBLIC, STATE AT LARGE

4. BID SCHEDULE – SCHEDULE OF VALUES

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum and/or unit prices, if applicable, which shall include the furnishing of all labor, materials, supplies, equipment and/or vehicle usage, services, all items of cost, overhead, taxes (federal, state, local), and profit for the Contractor and any Subcontractor involved, within the time set forth herein. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of bid.

Form of proposal must include unit bid prices written in words, unit price written in numbers and total amount bid (unit price x quantity) per line item OR bid may be considered non-responsive. In case of price discrepancy, unit bid price written in words will prevail followed by unit price written in numbers then total amount bid per line item.

If a discrepancy between the unit price and the item total exists, the unit price prevails except:

If the unit price is illegible, omitted, or the same as the item total, item total prevails and the unit price is the quotient of the item total and the quantity.

If the unit price and the item total are illegible or are omitted, the bid may be determined nonresponsive. If a lump sum total price is illegible or is omitted, the bid may be determined nonresponsive.

For a lump sum based bid, the item total is the bid amount the Division uses for bid comparison.

For a unit price based bid, the sum of the item totals is the bid amount the Division uses for bid comparison.

The LFUCG's decision on the bid amount is final.

The contract, if awarded, will be on the basis of materials and equipment specified in the specifications without consideration of possible substitute or "or equal" items

The estimated quantities of items of unit price work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract price. Determination of the actual quantities and classification of unit price work performed by the Contractor will be made by the Engineer in accordance with the General Conditions.

Item No.	Description w/Unit Bid Price Written in Words	Unit	Total Bid Amount
1.	Demolition/Installation of boiler, 13 unit heaters, 6 wall convectors, and 1 climate changer along with all new process and safety controls and piping components necessary to ensure compliance with all applicable codes and to ensure operability of the hot water system as specified within the contract documents. <i>One Hundred Eighty thousand Two Hundred ^{Fifty} Dollars</i> _____ Cents	LS	<i>\$ 180,250.00</i>

Item No.	Description w/Unit Bid Price Written in Words	Unit	Total Bid Amount
2.	Additive Alternative – Demolition/Installation of entire hot water piping throughout the Nitrification Building as specified within the contract documents. <u>Eighty Five thousand seven hundred twenty five</u> Dollars <u>no</u> Cents	LS	\$ <u>85,725.00</u>

TOTAL OF ALL BID PRICES FOR West Hickman WWTP Nitrification Building Heating System Replacement (Items 1 through 2) in words and figures. In case of discrepancy, the amount shown in words will govern.

Two hundred Sixty five thousand Nine hundred Seventy five
dollars & zero cents. (\$ 265,975.00).

Submitted by:

C3 Mechanical, LLC
Firm

210 B. Hahn Dr.
Address

Frankfort, KY 40601
City, State & Zip

**Bid must be signed:
(original signature)**

Jim Coomes Gen. Manager
Signature of Authorized Company Representative - Title

Jim Coomes
Representative/s Name (Typed or Printed)

502-352-2303 502-352-2304
Area Code Phone - Extension Fax #

jim.c3mech@gmail.com
E-Mail Address

OFFICIAL ADDRESS:

210 B. Hahn Dr.

Frankfort, KY

40601

(Seal if Bid is by Corporation)

By signing this form you agree to ALL terms, conditions, and associated forms in this bid package

5. STATEMENT OF BIDDER'S QUALIFICATIONS

The following statement of the Bidder's qualifications is required to be filled in, executed, and submitted with the Proposal:

- 1. Name of Bidder: C3 Mechanical, LLC
- 2. Permanent Place of Business: 210 B. Hahn Dr. Frankfort, KY 40601
- 3. When Organized: Feb. 1, 2016
- 4. Where Incorporated: N/A

5. Construction Plant and Equipment Available for this Project:

- Boiler
- unit heaters
- Climate. changer
- wall convectors
- controls
- pipng & misc.

(Attach Separate Sheet If Necessary)

6. Financial Condition:

If specifically requested by the OWNER, the apparent low Bidder is required to submit its latest three (3) years audited financial statements to the OWNER'S Division of Central Purchasing within seven (7) calendar days following the bid opening.

7. In the event the Contract is awarded to the undersigned, surety bonds will be furnished by:

Travelers (Surety)

Signed: Mark Howard (Representative of Surety)

8. The following is a list of similar projects performed by the Bidder: (Attach separate sheet if necessary).

<u>NAME</u>	<u>LOCATION</u>	<u>CONTRACT SUM</u>
WWTP Town Branch	Lexington, KY	37,605.00
YMCA	Lexington, KY	service work
Fayette Crossing	Lexington, KY	service work

9. The Bidder has now under contract and bonded the following projects:

<u>NAME</u>	<u>LOCATION</u>	<u>CONTRACT SUM</u>
Columbia Housing Authority	Jarnestown, KY	176,314.00

10. List Key Bidder Personnel who will work on this Project.

<u>NAME</u>	<u>POSITION DESCRIPTION</u>	<u>NO. OF YEARS WITH BIDDER</u>
Dan Shelton	Lead Service Technician	1, 35+ years experience
Jim Coomes	General Manager	1, 30+ years experience
Charessa Coomes,	Office Manager	1 year

11. DBE Participation on current bonded projects under contract:

<u>SUBCONTRACTORS</u> <u>(LIST)</u>	<u>PROJECT</u> <u>(SPECIFIC TYPE)</u>	<u>DBE</u>	<u>% of WORK</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(USE ADDITIONAL SHEETS IF NECESSARY)

12. We acknowledge that, if we are the apparent low Bidder, we may be required to submit to the OWNER within 7 calendar days following the Bid Opening, a sworn statement regarding all current work on hand and under contract, and a statement on the OWNER'S form of the experience of our officers, office management and field management personnel. Additionally, if requested by the OWNER, we will within 7 days following the request submit audited financial statements and loss history for insurance claims for the 3 most recent years (or a lesser period stipulated by the OWNER).

6. LIST OF PROPOSED SUBCONTRACTORS

The following list of proposed subcontractors is required by the OWNER to be executed, completed and submitted with the BIDDER'S FORM OF PROPOSAL. All subcontractors are subject to approval of the Lexington-Fayette Urban County Government. Failure to submit this list completely filled out may be cause for rejection of bid.

<u>BRANCH OF WORK - LIST EACH MAJOR ITEM</u> Such as: Grading, bituminous paving, concrete, seeding and protection, construction staking, etc.	<u>SUBCONTRACTOR</u>	<u>DBE</u> <u>Yes/No</u>	<u>% of Work</u>
1. _____	Name: _____	_____	_____
	Address: _____		
2. _____	Name: _____	_____	_____
	Address: _____		
3. _____	Name: _____	_____	_____
	Address: _____		
4. _____	Name: _____	_____	_____
	Address: _____		
5. _____	Name: _____	_____	_____
	Address: _____		
6. _____	Name: _____	_____	_____
	Address: _____		
7. _____	Name: _____	_____	_____
	Address: _____		

(Attach additional sheet(s) if necessary.)

7. LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT MWDBE PARTICIPATION GOALS, FORMS, AND GOOD FAITH EFFORTS

A. GENERAL

- 1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) and Veteran-Owned Small Business (VOSB) Enterprises as subcontractors or suppliers in their bids.
- 2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.
- 3) The LFUCG has also established a 3% of total procurement costs as a Goal for participation of Veteran-Owned Small Businesses.
- 4) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation, the same goal (3%) veteran participation and other requirements as outlined in this section.**

B. PROCEDURES

- 1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned subcontractors or Veteran-Owned and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)
- 2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)
- 3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:
 - a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)
- 4) The LFUCG will make every effort to notify interested MWDBE and veteran subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

- 1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned and operated by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.

- 2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned and operated by one or more Non-Minority Females.
- 3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned and operated by a person(s) that are economically and socially disadvantaged.
- 4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned and operated by a veteran and/or a service disabled veteran.
- 5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

- 1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**
- 2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.
- 3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.
- 4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

- 1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.
- 2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:

- a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.
- b. Included documentation of advertising in the above publications with the bidders good faith efforts package
- c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event
- d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities
- e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.
- f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG Economic Engine and showed evidence of contacting the companies on the list(s).
- g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.
- h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.
- i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.
- j. Provided the interested MWBDE firm and/or Veteran-Owned businesses with adequate and timely information about the plans, specifications, and requirements of the contract.
- k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce
- l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough

investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.



MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented resolution 167-91—Disadvantaged Business Enterprise (DBE) 10% Goal Plan in July of 1991. The resolution states in part (a full copy is available in Central Purchasing):

“A Resolution supporting adoption of the administrative plan for a ten percent (10%) Minimum goal for disadvantaged business enterprise participation in Lexington-Fayette Urban County Government construction and professional services contracts; Providing that as part of their bids on LFUCG construction contracts, general Contractors shall make a good faith effort to award at least ten percent (10%) of All subcontracts to disadvantaged business enterprises; providing that divisions of LFUCG shall make a good faith effort to award at least ten percent of their Professional services and other contracts to disadvantaged business enterprises...”

A Disadvantaged Business Enterprise is defined as a business that has been certified as being at least 51% owned, operated and managed by a U.S. Citizen of the following groups:

- African-American
- Hispanic-American
- Asian/Pacific Islander
- Native American/Native Alaskan
- Non-Minority Female
- Economically and Socially Disadvantaged

In addition, to that end the city council also adopted and implemented resolution 167-91—Veteran-owned Businesses, 3% Goal Plan in July of 2015. The resolution states in part (a full copy is available in Central Purchasing):

“A resolution adopting a three percent (3%) minimum goal for certified veteran-owned small businesses and service disabled veteran-owned businesses for certain of those Lexington-Fayette Urban County contracts related to construction for

professional services, and authorizing the Division of Purchasing to adopt and implement guidelines and/or policies consistent with the provisions and intent of this resolution by no later than July 1, 2015.”

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (<https://lexingtonky.ionwave.net>)

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Susan Marston	smarston@tsmsdc.com	502-365-9762
Small Business Development Council	Shirie Hawkins UK SBDC	smack@uky.edu	859-257-7666
Community Ventures Corporation	Phyllis Alcorn	palcorn@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Melvin Bynes	Melvin.bynes2@ky.gov	502-564-3601
KYTC Pre-Qualification	Shella Eagle	Shella.Eagle@ky.gov	502-782-4815
Ohio River Valley Women’s Business Council (WBENC)	Sheila Mixon	smixon@orvwbc.org	513-487-6537
Kentucky MWBE Certification Program	Yvette Smith, Kentucky Finance Cabinet	Yvette.Smith@ky.gov	502-564-8099
National Women Business Owner’s Council (NWBOC)	Janet Harris-Lange	janet@nwbo.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-5971
LaVoz de Kentucky	Andres Cruz	lavozdeky@yahoo.com	859-621-2106
The Key News Journal	Patrice Muhammad	paatricem@keynewsjournal.com	859-373-9428



LFUCG MWDBE PARTICIPATION FORM
 Bid/RFP/Quote Reference # _____

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. Failure to submit a completed form may cause rejection of the bid.

MWDBE Company, Name, Address, Phone, Email	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.			
2.			
3.			
4.			

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company

Company Representative

Date

Title



MWDBE QUOTE SUMMARY FORM

Bid/RFP/Quote Reference # _____

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project.

Company Name	Contact Person
Address/Phone/Email	Bid Package / Bid Date

MWDBE Company Address	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars \$\$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Company

Company Representative

Date

Title

LFUCG STATEMENT OF GOOD FAITH EFFORTS

Bid/RFP/Quote # _____

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

_____ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

_____ Included documentation of advertising in the above publications with the bidders good faith efforts package

_____ Attended LFUCG Central Purchasing Economic Inclusion Outreach event

_____ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

_____ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

_____ requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG Economic Engine and showed evidence of contacting the companies on the list(s).

_____ Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

_____ Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

_____ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

_____ Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

_____ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work

items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

_____ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

_____ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

_____ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

_____ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

_____ Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

_____ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

C3 Mechanical
Company
3/27/17
Date

Jim Coomes
Company Representative
General Manager
Title

8. **AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION, NON-CONFLICT OF INTEREST**

I hereby swear (or affirm) under the penalty for false swearing:

1. That I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);
2. That the attached bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding or planned common course of action, with any other contractor, vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition;
3. That the contents of the bid or bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished, with the bid or bids, and will not be communicated to any such person, prior to the official opening of the bid or bids;
4. That the Bidder is legally entitled to enter into the contracts with the Lexington-Fayette Urban County Government, and is not in violation of any prohibited conflict of interest;
5. (Applicable to corporation only) That as a foreign corporation, we are registered with the Secretary of State, Commonwealth of Kentucky, and authorized to do business in the State KY or, that as a domestic corporation, we are in good standing with the Secretary of State, Commonwealth of Kentucky . Check the statement applicable.
6. This offer is for 60 calendar days from the date this bid is opened. In submitting the above, it is expressly agreed that, upon proper acceptance by the Lexington-Fayette Urban County Government of any or all items bid above, a contract shall thereby be created with respect to the items accepted.
7. That I have fully informed myself regarding the accuracy of the statements made in this statement.
8. That I certify that Subcontractors have not and will not be awarded to any firm(s) that have been debarred from noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

9. STATEMENT OF EXPERIENCE

NAME OF INDIVIDUAL: Jim Coomes

POSITION/TITLE: General Manager

STATEMENT OF EXPERIENCE: 30+ years of experience in HVAC. Includes installation, service & management of present company

NAME OF INDIVIDUAL: Dan Shelton

POSITION/TITLE: Head Service Technician

STATEMENT OF EXPERIENCE: 35+ years servicing & installing HVAC, boilers, chillers, etc.

NAME OF INDIVIDUAL: Charessa Coomes

POSITION/TITLE: Office Manager

STATEMENT OF EXPERIENCE: 1 year administering payroll, paying bills, checking over progress of projects, relaying information to managers & technicians, etc.

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

* Include all officers, office management's, Affirmative Action officials, and field management personnel. (Attach separate sheets if necessary.)

10. EQUAL OPPORTUNITY AGREEMENT

The Law

- * Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
- * Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and subcontractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
- * Section 503 of the Rehabilitation Act of 1973 States:
The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.
- * Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal Contracts.
- * Section 206 (A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:
The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors, and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractor may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped, and aged persons.

Jim Gomez

Signature

CS Mechanical

Name of Business

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

The Kentucky equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any count, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) *The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) *The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) *The contract will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) *The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities – Information required

- (1) *For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.*
- (2) *Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment*

practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor – Hiring of minority contractor or subcontractor

- (1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*
- (2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 – 45.640.*
- (3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions quoted above to be included as special conditions in each contract. In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

11. **EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY**

It is the policy of C3 Mechanical, LLC

to assure that all applicants for employment and all employees are treated on a fair and equitable basis without regard to their race, religion, sex, color, handicap, natural origin or age.

Such action shall include employment, promotion, demotion, recruitment or recruitment advertising, layoff or termination, rates of pay and other forms of compensation, and selection for training, whether apprenticeship and/or on-the-job-training.

Furthermore, this company agrees to make special recruitment efforts to hire the protected class whenever feasible. This company also agrees to adhere to all applicable federal, state, and local laws relating to Equal Employment Opportunity for all individuals.

12. **WORKFORCE ANALYSIS FORM**

Name of Organization: C3 Mechanical

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino)		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino)		Asian (Not Hispanic or Latino)		American Indian or Alaskan Native (not Hispanic or Latino)		Two or more races (Not Hispanic or Latino)		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators	2	2															2
Professionals																	
Superintendents																	
Supervisors																	
Foremen	2	2															2
Technicians																	
Protective Service																	
Para-Professionals																	
Office/Clerical	1		1														1
Skilled Craft	6	6															6
Service/Maintenance																	
Total:																	

Prepared by: Charissa Coomes Office Manager
(Name and Title)

Date: 3.27.17
Revised 2015-Dec-15

13. EVIDENCE OF INSURABILITY

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT CONSTRUCTION PROJECT
(Use separate form for each Agency or Brokerage agreeing to provide coverage)

Names Insured: C3 Mechanical, LLC Employee ID 23043
 Address: 210 B. Hahn Dr. Frankfort, KY 40601 Phone: 502-452-2303
 Project to be insured: West Hickman WWTP Nitritification Building Heating System Replacement Project

In lieu of obtaining certificates of insurance at this time, the undersigned agrees to provide the above Named Insured with the minimum coverage listed below. These are outlined in the Insurance and Risk Management of Part V (Special Conditions), including all requirements, and conditions:

Section Items	Coverage	Minimum Limits and Policy Requirements	Limits Provided To Insured	Name of Insurer	A.M. Best's Code	Rating
SC-3, Section 2, Part 4.1 - see provisions	CGL	\$1,000,000 per occ And \$2,000,000 aggregate	\$ 1,000,000	Ohio Casualty Group	NA	NA
SC-3, Section 2, Part 4.1 - see provisions	AUTO	\$2,000,000/per occ.	\$ 2,000,000	Ohio Casualty Group	NA	NA
SC-3, Section 2, Part 4.1 - see provisions	WC	Statutory w/endorsement as noted	\$ 500,000	Ohio Casualty Group	NA	NA

Section 2 includes required provisions, statements regarding insurance requirements, and the undersigned agrees to abide by all provisions for the coverage's checked above unless stated otherwise when submitting.

Old Colony Ins. Service Inc.
 Agency or Brokerage
1900 Cambridge Dr.
 Street Address
Lexington KY 40533
 City State Zip
859-255-3355
 Telephone Number

Jim Coomes
 Name of Authorized Representative
General Manager
 Title
Jim Coomes
 Authorized Signature
3/27/17
 Date

NOTE: Authorized signatures may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of authorized representative of insurer.

IMPORTANT: Contract may not be awarded if a completed and signed copy of this form for all coverage's listed above is not provided with the bid.

14. DEBARRED FIRMS

PROJECT NAME: West Hickman WWTP Nitrification Building Heating System Replacement Project
BID NUMBER: 43-2017

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KY

All prime Contractors shall certify that Subcontractors have not and will not be awarded to any firms that has been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

All bidders shall complete the attached certification in duplicate and submit both copies to the Owner with the bid proposal. The Owner (grantee) shall transmit one copy to the Lexington-Fayette Urban County Government, Division of Community Development, within fourteen (14) days after bid opening.

The undersigned hereby certifies that the firm of C3 Mechanical, LLC has not and will not award a subcontract, in connection with any contract award to it as the result of this bid, to any firm that has been debarred for noncompliance with the Federal labor Standards, Title VI of the civil Rights Act of 1964, Executive Order 11246 as amended or any Federal Law.

C3 Mechanical, LLC
Name of Firm Submitting Bid

Jim Lombs
Signature of Authorized Official

General Manager
Title

3/27/17
Date

15. DEBARMENT CERTIFICATION

All contractors/subcontractors shall complete the following certification and submit it with the bid proposal.

The contractor/subcontractor certifies in accordance with Executive Order 12549 (Debarment and Suspension 2/18/86) that to the best of its knowledge and belief, that it and its principals:

- 1) Are not presently debarred, suspended, proposed for debarment, declared negligible, or voluntarily excluded from covered transactions or contract by any Federal department or agency for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 as amended, Executive Order 11246 as amended or any other Federal law;
 - a) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - b) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(a) of this certification; and
 - c) Have not within a three year period preceding this bid has one or more public (Federal, State or local) transactions or contracts terminated for cause or default.
- 2) Where the contractor is unable to certify to any of the statements in this certification, such prospective contractors shall attach an explanation to this certification form.

Firm Name: CB Mechanical, LLC

Project: West Hickman WWTP Nitrification Building
Heating System Replacement Project

Printed Name and Title of Authorized Representative: Jim Coomes General Manager

Signature: Jim Coomes

Date: 3/27/17

END OF SECTION

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GENERAL CONDITIONS
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PART IV

GENERAL CONDITIONS

1. DEFINITIONS

Wherever used in these General Conditions or the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

1.1 Addenda

Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bid Documents or the Contract Documents.

1.2 Agreement

The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3 Application for Payment

The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

1.4 Bid

The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.5 Bidder

An individual, partnership, or corporation, who submit a Bid for a prime contract with the OWNER, for the Work described in the proposed Contract Documents.

1.6 Bonds

Bid, performance and payment bonds and other instruments of security.

1.7 Calendar Day

A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

1.8 Change Order

A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

1.9 Contract Documents

The Advertisement for Bidders, Information for Bidders, Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Special Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements.

1.10 Contract Unit Price

The monies payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement. Unit Prices are to be firm for the term of this Contract.

1.11 Contract Time

The number of consecutive calendar days between the date of issuance of the Notice to Proceed and the contract completion date.

1.12 CONTRACTOR

The person, firm or corporation with whom OWNER has entered into the Agreement.

1.13 Defective

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER).

1.14 Drawings

The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

1.15 Effective Date of the Agreement

The date indicated in the Agreement on which it becomes effective.

1.16 ENGINEER

The Lexington-Fayette Urban County Government Division of Water Quality or its authorized representative.

1.17 Field Order

A documented order issued by ENGINEER which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Time.

1.18 Giving Notice

Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

1.19 Laws and Regulations

Laws, rules, regulations, ordinances, codes and/or orders.

1.20 Notice of Award

The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.21 Notice to Proceed

A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

1.22 OWNER

The Lexington-Fayette Urban County Government.

1.23 Partial Utilization

Placing a portion of the Work in service for the purpose for which it is intended (or related purpose) before reaching Completion for all the Work.

1.24 Project

The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.25 Inspector

The authorized representative of the ENGINEER who is assigned to the site or any part thereof.

1.26 Shop Drawings

All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

1.27 Specifications

Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

1.28 Standard Specifications

The "Standard Specifications for Road and Bridge Construction", Transportation Cabinet, Department of Highways, Commonwealth of Kentucky, current edition. MUTCD shall refer to the "Manual of Uniform Traffic Control Devices.

1.29 Subcontractor

An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.30 Special Conditions

The part of the Contract Documents which amends or supplements these General Conditions.

1.31 Supplier

A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.32 Underground Facilities

All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.33 Unit Price Work

Not applicable

1.34 Work

The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.35 Time Period

When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds

When the CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER, such Bonds, Insurance Certificate, and Power of Attorney as CONTRACTOR may be required to furnish.

2.2 Copies of Documents

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.4 Starting the Project

CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.5 Before Starting Construction

Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6 Submittal of Schedules

Within ten days after the effective date of the Agreement (unless otherwise specified) CONTRACTOR shall submit to ENGINEER for review:

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into costs per labor and materials by specification

section to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission. Schedule of values shall be submitted on AIA G702/703 forms, or approved equal.

2.7 Preconstruction Conference

Before CONTRACTOR starts the Work at the proposed site, a conference attended by CONTRACTOR, ENGINEER, EEO-Affirmative Action Officer, and other appropriate parties will be held to discuss the following issues: (1) The scheduling of the Work to be completed; (2) The procedures for handling shop drawings and other submittals; (3) The processing of applications for payment; (4) The establishment of an understanding among the involved parties in regard to the proposed project; and (5) The establishment of procedures for effectively implementing the LFUCG's 10% minimum DBE goals.

2.8 Finalizing Schedules

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

3. CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE

3.1 General

The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be

interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 8.4.

3.3 Conflicts

If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Instruction to Bidders
6. General Conditions
7. Specifications and Drawings

Figure dimension on drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings.

3.4 Amending and Supplementing Contract Documents

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by means of a Change Order or a Field Order. Contract Price and Contract Time may only be changed by a Change Order.

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11. ENGINEER shall determine if the claim is legitimate or not. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions

4.2.1 Explorations and Reports

Reference is made to the Special Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures

Reference is made to the Special Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph

4.3 which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions

If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing and WORK in connection therewith (except in an emergency) notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4 ENGINEER'S Review

ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise CONTRACTOR of ENGINEER'S findings and conclusions.

4.2.5 Possible Document Change

If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments

In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference.

4.3 Physical Conditions-Underground Facilities

4.3.1 Shown or Indicated

The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the

owners of such underground facilities or by others. Unless it is otherwise expressly provided in the Special Conditions:

4.3.1.1 OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.2.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data; for locating all underground facilities shown or indicated in the Contract Documents; for coordination of the Work with the owners of such underground facilities during construction; and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the underground facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such underground facility. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any underground facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of.

4.4 Reference Points

OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by a Registered Land Surveyor.

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the ENGINEER and the general public. CONTRACTOR shall keep at the Project Site during the progress of the Work a competent project manager/superintendent and all necessary assistants, all of whom shall be satisfactory to OWNER. OWNER reserves the right to reject CONTRACTOR'S construction superintendent and project management personnel if they are unsatisfactory to OWNER and upon such rejection CONTRACTOR shall designate and provide competent successors. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

5.2 Superintendence

CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

5.3 Labor

CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. OWNER reserves the right to require CONTRACTOR to remove from the Project any of it's personnel, or subcontractor's personnel for violating LFUCG Policies, Rules or Regulations. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to ENGINEER.

5.4 Start-Up and Completion of Work

Unless otherwise specified, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone,

water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

5.5 Materials and Equipment

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER 'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

5.5.1 Not Clearly Specified or Indicated

In all instances where materials specified are obtainable in different sizes, weights, trade grades, qualities or finishes, etc., whose weights, trade grades, qualities or finishes, etc., are not clearly specified or indicated on the Drawings, the CONTRACTOR shall notify the ENGINEER of all such instances at least five (5) days in advance of receiving the proposals. The ENGINEER will then determine which size, weight, trade grade, quality, finish, etc., is required.

5.5.2 Coordination of Work

The CONTRACTOR shall see that for his own Work and for the work of each subcontractor, proper templates and patterns necessary for the coordination of the various parts of the Work are prepared. The CONTRACTOR shall furnish or require the Subcontractor to furnish such duplicates as will enable the Subcontractors to fit together and execute fully their respective portions of the Work.

5.6 Adjusting Progress Schedule

CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.8) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Contract Documents applicable thereto.

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a

particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/ENGINEER if sufficient information is submitted by CONTRACTOR to allow OWNER/ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/ENGINEER will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/ENGINEER from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/ENGINEER in evaluating the proposed substitute. OWNER/ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER/ENGINEER, if CONTRACTOR submits sufficient information to allow OWNER/ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by OWNER/ENGINEER will be similar to that provided in paragraph 5.7.1 as applied by OWNER/ENGINEER.

5.7.3 OWNER/ENGINEER 'S Approval

OWNER/ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/ENGINEER will record time required by OWNER/ENGINEER and OWNER/ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/ENGINEER and OWNER/ENGINEER's consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to ENGINEER

CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 5.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

5.8.2 Objection After Due Investigation

If the Contract Documents require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof, OWNER'S or ENGINEER'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

5.8.3 Contractor Responsible for Acts of Subcontractors

The CONTRACTOR shall perform on the site, and with its own organization, work equivalent to at least fifty (50) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the Urban County project manager determines that the reduction would be to the advantage of the Urban County Government.

The CONTRACTOR shall, at the time he submits his proposal for the Contract, notify the OWNER in writing of the names of Subcontractors proposed for the Work. He shall not employ any Subcontractor without the prior written approval of the OWNER.

CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

5.8.5 Agreement Between Contractor and Subcontractors

All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER.

5.8.6 Statements and Comments by CONTRACTOR

Neither the CONTRACTOR, his employees, nor his subcontractors shall at any time make any statement or comment as to the project scope, nature, intention, design, or construction method to any third party or parties without the explicit written consent of the OWNER.

Any third party requesting such information shall be referred to the OWNER or his representative.

Should there be any change from the original intent of the project as a result of any statement or comment by the contractor, his employees or subcontractors, contractor shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

5.10 Permits

Unless otherwise provided in the Special conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR'S compliance with any Laws and Regulations.

5.11.2 Specifications and Drawings at Variance

If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws, or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.12 Taxes

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.13 Use of Premises

5.13.1 Project Site

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the staging areas or work site areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such

land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR'S performance of the Work.

5.13.2 Clean UP

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

5.13.1 Loading of Structures

CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

5.14 **Record Drawings**

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

5.15 **Shop Drawings and Samples**

5.15.1 Shop Drawing Submittals

After checking and verifying all field measurements and after complying

with applicable procedures specified, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), or for other appropriate action if so indicated in the Special Conditions, five copies (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

5.15.2 Sample Submittals

CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

5.15.5 ENGINEER'S Approval

ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER'S review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to

safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

5.15.6 Responsibility for Errors and Omissions

ENGINEER'S review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to each such variation at the time of submission as required by paragraph 5.15.4 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 5.15.3.

5.15.7 Cost of Related Work

Where a Shop or sample is required by the Specifications, any related Work performed prior to ENGINEER'S review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

5.16 Continuing the Work

CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolutions of any disputes or disagreements, except as permitted by paragraph 14.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

Any fines or penalties resulting from the failure to comply with the terms of the federal, state or local permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

5.17.2 Stormwater Pollution Prevention

A. The CONTRACTOR shall exercise due care to prevent or minimize any damage to any stream or wetland from pollution by debris, sediment or other material. The operation of equipment and/or materials in a jurisdictional wetland is expressly prohibited. Water that has been used for washing or processing, or that contains oils, sediments or other pollutants shall not be discharged from the job site. Such waters shall be collected and properly disposed of by the CONTRACTOR in accordance with applicable local, state and federal law.

B. The CONTRACTOR is solely responsible for securing all required state and local permits associated with stormwater discharges from the project including, but not necessarily limited to the KY Notice of Intent to Disturb (NOI) for Coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR100000 and the LFUCG, Land Disturbance Permit. Permit application preparation and all required documentation are the responsibility of the CONTRACTOR. The CONTRACTOR is solely responsible for maintaining compliance with the stormwater pollution prevention plan or erosion and sediment control plan and ensuring the following:

- a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;
- b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
- c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

C. The CONTRACTOR shall provide the necessary equipment and personnel to perform any and all emergency measures that may be required to contain any spillage or leakage and to remove materials, soils or liquids that become contaminated. The collected spill material shall be properly disposed at the CONTRACTOR's expense.

D. Upon completion of the work and with the concurrence of the OWNER, the CONTRACTOR must file a Notice of Termination (NOT) of Coverage Under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity with the appropriate local and state authorities.

E. Any fines or penalties resulting from the failure to comply with the terms of the state or local stormwater permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

6. OTHER WORK

6.1 Related Work at Site

OWNER may perform other work related to the Project at the site by OWNER'S own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if such performance will involve additional expense to CONTRACTOR or requires additional time, a Change Order to the Contract will be negotiated.

6.2 Other Contractors or Utility Owners

CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

6.3 Delays Caused by Others

If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR'S Work except for latent or non-apparent defects and deficiencies in the other work.

6.4 Coordination

If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Special Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Special Conditions.

7. OWNER'S RESPONSIBILITIES

7.1 Communications

OWNER shall issue all communications to CONTRACTOR through ENGINEER.

7.2 Data and Payments

OWNER shall furnish the data required of OWNER under the Contract Documents promptly after they are due.

7.3 Lands, Easements, and Surveys

OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

7.4 Change Orders

OWNER is obligated to execute Change Orders as indicated in paragraph 9.4.

7.5 Inspections, Tests and Approvals

OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.3.

7.6 Stop or Suspend Work

In connection with OWNER'S right to stop Work or suspend Work, see paragraph 12.4 and 14.1 Paragraph 14.2 deals with OWNER'S rights to terminate services of CONTRACTOR under certain circumstances.

8. ENGINEER'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative

ENGINEER will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER'S representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

8.2 Visits to Site

ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract

Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

8.3 Project Representation

ENGINEER will provide an Inspector to assist ENGINEER in observing the performance of the Work. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Special Conditions.

8.4 Clarifications and Interpretations

ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

8.5 Authorized Variations in Work

ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.

8.6 Rejecting Defective Work

ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 12.3, whether or not the Work is fabricated, installed or completed.

8.7 Shop Drawings

In connection with ENGINEER'S responsibility for Shop Drawings and samples, see paragraphs 5.15.1 through 5.16 inclusive.

8.8 Change Orders

In connection with ENGINEER'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

8.9 Payments

In connection with ENGINEER'S responsibilities with respect to Applications for Payment, etc., see Article 13.

8.10 Determinations for Unit Prices

ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

ENGINEER will review with CONTRACTOR ENGINEER'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

8.11 Decision on Disputes

ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 10 and 11 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

8.12 Limitations on ENGINEER 's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither ENGINEER'S authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives or like "effect" or "import" are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

8.12.3 CONTRACTOR'S Means, Methods, Etc.

ENGINEER will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR'S failure to perform or furnish the Work in accordance with the Contract Documents.

8.12.4 Acts of Omissions of CONTRACTOR

ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9. CHANGES IN THE WORK

9.1 OWNER May Order Change

Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order. Upon receipt of such notice, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

9.2 Claims

Claims for an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Change Order will be settled as provided for in Article 10 or Article 11.

9.3 Work Not in Contract Documents

CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraph 3.4, except in the case of an emergency and except in the case of uncovering Work as provided in paragraph 12.3.4.

9.4 Change Orders

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

9.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 9.1, are required because of acceptance of defective Work under paragraph 12.7 or corrective defective Work under paragraph 12.8, or are agreed to by the parties;

9.4.2 changes in the Contract Price or Contract Time which are agreed to by the parties; and

9.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 8.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and REGULATIONS, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 5.16.

9.5 Notice of Change

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

10.3.1 Unit Prices

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 10.9.1. through 10.9.3, inclusive).

10.3.2 Lump Sum

By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 10.6.2.1).

10.3.3 Cost Plus Fee

On the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraphs 10.6 and 10.7).

10.4 **Cost of the Work**

The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items; and shall not include any of the costs itemized in paragraph 10.5:

10.4.1 Payroll Costs

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs

Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

10.4.3 Subcontractor Costs

Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR'S Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Special Consultant Costs

Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

10.4.5 Supplemental Costs

10.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

10.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal shall be in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

10.4.5.4 Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

10.4.5.5 Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

10.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid a fee proportionate to that stated in paragraph 10.6.2 for services.

10.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

10.4.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER.

10.5 Not to Be Included in Cost of the Work

The term Cost of the Work shall not include any of the following:

10.5.1 Costs of Officers and Executives

Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of

the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

10.5.2 Principal Office

Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

10.5.3 Capital Expense

Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

10.5.4 Bonds and Insurance

Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.9 above).

10.5.5 Costs Due to Negligence

Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

10.5.6 Other Costs

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 Contractor's Fee

The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

10.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

10.6.2 a fee based on the following percentages of the various portions of the Cost of the Work:

10.6.2.1 for costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR'S fee shall be fifteen percent;

10.6.2.2 for costs incurred under paragraph 10.4.3, the CONTRACTOR'S fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

10.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;

10.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

10.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.1 through 10.6.2.4, inclusive.

10.7 Itemized Cost Breakdown

Whenever the cost of any Work is to be determined pursuant to paragraph 10.4 or 10.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

10.8 Cash Allowances

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

10.8.1 Materials and Equipment

The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

10.8.2 Other Costs

CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

10.8.3 Change Order

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work

10.9.1 General

Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 8.10.

10.9.2 Overhead and Profit

Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

10.9.3 Claim for Increase in Unit Price

Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order

The Contract Time may only be changed by a Change Order. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 8.11. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 11.1.

11.2 Justification for Time Extensions

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefore as provided in paragraph 11.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 6, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

11.3 Time Limits

All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 11 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

12. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee

CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 12.

12.2 Access to Work

ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities

The ENGINEER may require such inspection and testing during the course of the Work as he/she deems necessary to ascertain and assure the integrity and acceptable quality of the materials incorporated and the work performed. Inspection presence may be either full-time or intermittent, and neither the presence nor absence at any time of the ENGINEER or the INSPECTOR shall relieve the CONTRACTOR of sole responsibility for the acceptability and integrity of the Work or any part thereof.

The costs of sampling, testing, and inspection on-site to ascertain acceptability of the Work and materials will be borne by the OWNER except as otherwise provided. The OWNER will select a testing laboratory to perform such sampling and testing. Sampling and/or testing required by the CONTRACTOR or necessitated by failure of Work or materials to meet the above acceptability test shall be at the expense of the CONTRACTOR.

Inspection services may be performed by the employees of the OWNER or by others selected or designated by the OWNER or the ENGINEER.

Sampling and/or testing required for manufacturing quality and/or process control, for certification that raw mineral materials or manufactured products are the quality specified in the contract, or to assure the acceptability for incorporation into the Work shall be borne by the CONTRACTOR or the material supplier.

Cost for inspection, sampling, testing, and approvals required by the laws or regulations of any public body having competent jurisdiction shall be borne by the CONTRACTOR or the material supplier.

Sampling and testing will be in accord with pertinent codes and regulations and with appropriate standards of the American Society of Testing Materials or other specified standards.

12.3.3 On-Site Construction Test and Other Testing

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

12.3.4 Covered Work

If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

12.3.5 CONTRACTOR'S Obligation

Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the Work in accordance with the Contract Documents.

12.4 **OWNER May Stop the Work**

If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER 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 to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

12.5 **Correction or Removal of Defective Work**

If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with non-defective Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.6 **One Year Correction Period**

If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and

other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

12.8 OWNER May Correct Defective Work

If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 12.5, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

The schedule of values established as provided in paragraph 2.8 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Application for Progress Payment

At least ten days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which will be satisfactory to OWNER. OWNER shall, within thirty (30) calendar days of presentation to him of an approved Application for Payment, pay CONTRACTOR the amount approved by ENGINEER. Monthly progress payments shall be ninety (90) percent of the sum obtained by applying the respective bid unit prices to the approved estimated quantities of work completed by the Contractor during the preceding month. The remaining ten (10) percent will be held by the Owner, as retainage. At such time as the ENGINEER deems appropriate - based on the quality of work performed, progress of cleanup, and other pertinent factors - the rate of retainage, or the total amount retained, may be reduced; although, any reduction in retainage, below the ten (10) percent level, is made solely at the ENGINEER's discretion. All remaining retainage held will be included in the final payment to the Contractor.

13.3 CONTRACTOR'S Warranty of Title

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

ENGINEER will, after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

13.4.2 ENGINEER'S Recommendation

ENGINEER may refuse to recommend the whole or any part of any payment, if, in ENGINEER'S opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER'S opinion to protect OWNER from loss because:

13.4.2.1 the Work is defective, or completed Work has been damaged requiring correction or replacement;

13.4.2.2 the Contract Price has been reduced by Written Amendment or Change Order;

13.4.2.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 12.8; or

13.4.2.4 of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1 through 14.2.9 inclusive.

13.5 Partial Utilization

OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and has been completed. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is complete and request that a Certificate of Completion be issued for that part of the Work.

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

13.7 Final Application for Payment

After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 5.14) and other documents - all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 13.10), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, 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; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

13.8 Final Payment and Acceptance

13.8.1 ENGINEER'S Approval

If, on the basis of ENGINEER'S observation of the Work during construction and final inspection, and ENGINEER'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, after receipt of the final Application for Payment, indicate in writing ENGINEER'S recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to the provisions of paragraph 13.10. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is

less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, 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 ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

13.10.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

13.10.2 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May Suspend Work

OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 10 and 11.

14.2 OWNER May Terminate

The OWNER may terminate the Work upon the occurrence of any one or more of the following events:

14.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

14.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

14.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors;

14.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors;

14.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

14.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.8 as revised from time to time);

14.2.7 if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

14.2.8 if CONTRACTOR disregards the authority of ENGINEER, or

14.2.9 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from

the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

14.2.10 If safety violations are observed and brought to the Contractors attention and Contractor fails to take immediate corrective measures any repeat of similar safety violations, Owner will order an immediate termination of contract. Note: it is the Contractor's responsibility to know proper safety measures as they pertain to construction and OSHA.

14.2.11 This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.

14.2.12 This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.

14.3 CONTRACTOR'S Services Terminated

Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

14.4 Payment After Termination

Upon seven days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including,

but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage

Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 15.1 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

15.2 Non-Discrimination in Employment

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

15.2.1 That no person (as defined in KRS 344.010) shall bid on Lexington-Fayette Urban County Government construction projects, or bid to furnish materials or supplies to the Lexington-Fayette Urban County Government, if, within six months prior to the time of opening of bids, said person shall have been found, by declaratory judgment action in Fayette Circuit Court, to be presently engaging in an unlawful practice, as hereinafter defined. Such declaratory judgment action may be brought by an aggrieved individual or upon an allegation that an effort at conciliation pursuant to KRS 344.200 has been attempted and failed, by the Lexington-Fayette County Human Rights Commission.

15.2.2 That it is an unlawful practice for an employer:

15.2.2.1 to fail or refuse to hire, or to discharge any individual or otherwise to discriminate against an individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, age, or national origin; or

15.2.2.2 to limit, segregate or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee because of such individual's sex, race, color, religion, age, or national origin.

15.2.3 That it is an unlawful practice for an employer, labor organization, or joint-labor management committee controlling apprenticeship or other training or retraining, including on-the-job training programs to discriminate against an individual because of his race, color, religion, sex, age, or national origin in admission to, or employment in, any program established to provide apprenticeship or other training.

15.2.4 That a copy of this Ordinance shall be furnished all suppliers and made a part of all bid specifications.

15.2.5 This Ordinance shall take effect after it is signed, published and recorded, as required by law.

15.3 Temporary Street Closing or Blockage

The CONTRACTOR will notify the ENGINEER at least 72 hours prior to making any temporary street closing or blockage. This will permit orderly notification to all concerned public agencies. Specific details and restrictions on street closure or blockage are contained in the Special Conditions.

15.4 Percentage of Work Performed by prime CONTRACTOR

The CONTRACTOR shall perform on site, and with its own organization, Work equivalent to at least fifty (50%) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the ENGINEER determines that the reduction would be to the advantage of the OWNER.

15.5 Clean-up

Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment,

excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

15.6 General

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

For all LFUCG projects any trash, construction demolition debris, yard waste, dirt or debris of any kind that is removed from the project site must be disposed of in accordance with local, state, and federal regulations. The disposal site or facility must be approved in advance by the LFUCG and disposal documentation is required. The Contractor will be responsible for payment of any fines associated with improper disposal of material removed from the project site.

END OF SECTION

PART V
SPECIAL CONDITIONS
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2	RISK MANAGEMENT PROVISIONS – INSURANCE AND INDEMNIFICATION	SC-3
3	WAGE SCALE (if applicable)	SC-7

1. **BLASTING** – not applicable.

2. **RISK MANAGEMENT PROVISIONS**
INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Contractor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) In the event LFUCG is alleged to be liable based upon the above, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

(5) LFUCG is a political subdivision of the Commonwealth of Kentucky. Vendor acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the Vendor in any manner.

FINANCIAL RESPONSIBILITY

BIDDER/CONTRACTOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

<u>Coverage</u>	<u>Limits</u>
General Liability aggregate (Insurance Services Office Form CG 00 01)	\$1 million per occurrence, \$2 million or \$2 million combined single limit
Commercial Automobile Liability occurrence (Insurance Services Office Form CA 0001)	combined single, \$1 million per
Worker's Compensation	Statutory
Employer's Liability	\$500,000.00

The policies above shall contain the following conditions:

- a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.
- b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless it is deemed not to apply by LFUCG.

d. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

e. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG, and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

- a. Latest audited financial statement, including auditor's notes.
- b. Any records of any self-insured trust fund plan or policy and related accounting statements.
- c. Actuarial funding reports or retained losses.

- d. Risk Management Manual or a description of the self-insurance and risk management program.
- e. A claim loss run summary for the previous five (5) years.
- f. Self-Insured Associations will be considered.

Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

00357187

3. **WAGE SCALES** – not applicable.

END OF SECTION

PART VI
CONTRACT AGREEMENT

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6.	ACCEPTANCE AND FINAL PAYMENT.....	CA-3
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PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the **11th** day of **May**, 2017, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and **C3 Mechanical, LLC**, doing business as (a corporation) located in the City of **Frankfort**, County of **Franklin**, and State of **Kentucky**, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of **Two Hundred Sixty-Five Thousand Nine Hundred Seventy Five Dollars and Zero Cents (\$265,975.00)** quoted in the proposal by the CONTRACTOR, dated **March 27, 2017**, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by Lexington-Fayette Urban County Government Division of Water Quality for the West Hickman WWTP Nitrification Building Heating System Replacement Project.

2. TIME OF COMPLETION

The time period estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as one hundred twenty (120) calendar days to final completion. The time shall begin in accordance with the Notice to Proceed provided by OWNER.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined by the Engineer after consultation with the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, as estimated by the Engineer, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Engineer that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, and the ENGINEER so certifies, the OWNER shall upon certificate of the ENGINEER, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, and Plan Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):

SPECIFICATIONS

SECTION NO.	TITLE	PAGES
I	Advertisement for Bids	AB 1 thru 5
II	Information for Bidders	IB 1 thru 10
III	Form of Proposal	P 1 thru 35
IV	General Conditions	GC 1 thru 51
V	Special Conditions	SC 1 thru 7
VI	Contract Agreement	CA 1 thru 5
VII	Performance and Payment Bonds	PB 1 thru 7
VIII	Addenda	AD 1 thru 1
IX	Technical Specifications	TS 1 thru 4
 <i>Division 1 - General Requirements</i>		
01010	Summary Of Work	TS 1 thru 4
APPENDIX A	HVAC Drawings	A 1 thru 3
APPENDIX B	Boiler Cut Sheet	B 1 thru 4
APPENDIX C	Unit Heaters Cut Sheet	C 1 thru 4
APPENDIX D	Wall Convectors Cut Sheet	D 1 thru 28
APPENDIX E	Climate Changer Cut Sheet	E 1 thru 11

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

Lexington-Fayette Urban County Government.
Lexington, Kentucky

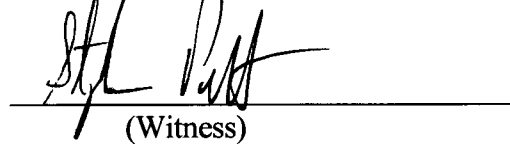
(Owner)

ATTEST:


Deputy
Clerk of the Urban County Council

BY:

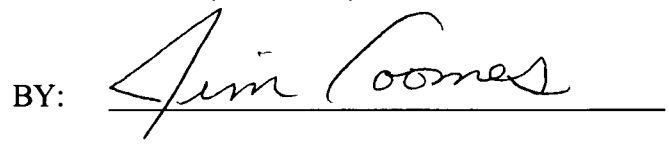

MAYOR

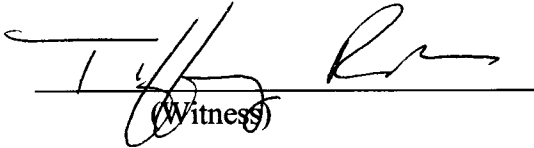

(Witness)

(Title)
C-3 - Mechanical
(Contractor)

(Seal)

(Secretary)*

BY: 


(Witness)

General Manager
(Title)

210-B-Hahn Dr Frankfort Ky
(Address and Zip Code) 40601

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.



CERTIFICATE OF LIABILITY INSURANCE

C3MEC-1

OP ID: DH

DATE (MM/DD/YYYY)
04/18/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Old Colony Ins. Service, Inc. P. O. Box 9000 1900 Cambridge Drive Lexington, KY 40533-9000 Mark Howard	CONTACT NAME: Mark Howard PHONE (A/C, No, Ext): 859-255-3355 FAX (A/C, No): 859-259-1614 E-MAIL ADDRESS: _____ _____														
INSURED C3 Mechanical, LLC 210 B Hahn Drive Frankfort, KY 40601	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">INSURER(S) AFFORDING COVERAGE</td> <td style="text-align: center;">NAIC #</td> </tr> <tr> <td>INSURER A : OHIO CASUALTY GROUP</td> <td style="text-align: center;">24074</td> </tr> <tr> <td>INSURER B :</td> <td></td> </tr> <tr> <td>INSURER C :</td> <td></td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : OHIO CASUALTY GROUP	24074	INSURER B :		INSURER C :		INSURER D :		INSURER E :		INSURER F :	
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INSURER D :															
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COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSTR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS														
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER: _____			BKS57130109	01/29/2017	01/29/2018	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>EACH OCCURRENCE</td><td style="text-align: right;">\$ 1,000,000</td></tr> <tr><td>DAMAGE TO RENTED PREMISES (Ea occurrence)</td><td style="text-align: right;">\$ 1,000,000</td></tr> <tr><td>MED EXP (Any one person)</td><td style="text-align: right;">\$ 15,000</td></tr> <tr><td>PERSONAL & ADV INJURY</td><td style="text-align: right;">\$ 1,000,000</td></tr> <tr><td>GENERAL AGGREGATE</td><td style="text-align: right;">\$ 2,000,000</td></tr> <tr><td>PRODUCTS - COMP/OP AGG</td><td style="text-align: right;">\$ 2,000,000</td></tr> <tr><td></td><td style="text-align: right;">\$</td></tr> </table>	EACH OCCURRENCE	\$ 1,000,000	DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 1,000,000	MED EXP (Any one person)	\$ 15,000	PERSONAL & ADV INJURY	\$ 1,000,000	GENERAL AGGREGATE	\$ 2,000,000	PRODUCTS - COMP/OP AGG	\$ 2,000,000		\$
EACH OCCURRENCE	\$ 1,000,000																				
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A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> NON-OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> AUTOS			BAS57130109	06/28/2016	06/28/2017	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>COMBINED SINGLE LIMIT (Ea accident)</td><td style="text-align: right;">\$ 1,000,000</td></tr> <tr><td>BODILY INJURY (Per person)</td><td style="text-align: right;">\$</td></tr> <tr><td>BODILY INJURY (Per accident)</td><td style="text-align: right;">\$</td></tr> <tr><td>PROPERTY DAMAGE (Per accident)</td><td style="text-align: right;">\$</td></tr> <tr><td></td><td style="text-align: right;">\$</td></tr> </table>	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000	BODILY INJURY (Per person)	\$	BODILY INJURY (Per accident)	\$	PROPERTY DAMAGE (Per accident)	\$		\$				
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AGGREGATE	\$ 1,000,000																				
	\$																				
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	XWS57130109	01/29/2017	01/29/2018	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td><input checked="" type="checkbox"/> PER STATUTE</td> <td><input type="checkbox"/> OTH-ER</td> <td></td> </tr> <tr><td>E.L. EACH ACCIDENT</td><td></td><td style="text-align: right;">\$ 500,000</td></tr> <tr><td>E.L. DISEASE - EA EMPLOYEE</td><td></td><td style="text-align: right;">\$ 500,000</td></tr> <tr><td>E.L. DISEASE - POLICY LIMIT</td><td></td><td style="text-align: right;">\$ 500,000</td></tr> </table>	<input checked="" type="checkbox"/> PER STATUTE	<input type="checkbox"/> OTH-ER		E.L. EACH ACCIDENT		\$ 500,000	E.L. DISEASE - EA EMPLOYEE		\$ 500,000	E.L. DISEASE - POLICY LIMIT		\$ 500,000		
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E.L. DISEASE - EA EMPLOYEE		\$ 500,000																			
E.L. DISEASE - POLICY LIMIT		\$ 500,000																			

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
We will endeavor to provide 30 days notice of cancellation.

CERTIFICATE HOLDER <p style="text-align: center;">LFUC000</p> <p style="text-align: center;">ADDITIONAL INSURED LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT 200 E. MAIN STREET LEXINGTON, KY 40507</p>	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Mark Howard
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PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND
2. PAYMENT BOND

PERFORMANCE BOND TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
Hartford, Connecticut 06183

Bond No.: 106198450

CONTRACTOR:

(Name, legal status and address)

C3 Mechanical 210 B Hahn Drive - Frankfort, KY

SURETY:

(Name, legal status and principal place of business)

Travelers Casualty & Surety Company of America Hartford, CT

OWNER:

(Name, legal status and address)

Lexington Fayette Urban County Government - 200 e. Main Street - Lexington, KY 40507

CONSTRUCTION CONTRACT

Date: May 12, 2017

Amount: \$ 265,975.

Description:

(Name and location)

West Hickman WWTP Nitrification Bldg Heating System Replacement / 645 W. Hickman Plant Rd., Nicholasville, Ky 40356

BOND

Date: May 12, 2017

(Not earlier than Construction Contract Date)

Amount: \$265,975.

Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL

Company: C3 Mechanical (Corporate Seal)

SURETY

Company: Travelers Casualty & Surety Company of America (Corporate Seal)

Signature:

Name and Title: Chad Hill

Signature:

Name and Title: Judy Thomas

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

Old Colony Insurance Services, Inc. 1900 Cambridge Drive Lexington, KY 40504

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after
1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the

Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:



(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: (Corporate Seal)

Company: (Corporate Seal)

Signature:

Signature:

Name and Title:

Name and Title:

Address:

Address:

**PAYMENT
BOND**

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
Hartford, Connecticut 06183

Bond No.: 106198450

CONTRACTOR:

(Name, legal status and address)

C3 Mechanical 210 B. Hahn Drive - Frankfort KY

SURETY:

(Name, legal status and principal place of business)

Travelers Casualty & Surety Company of America - Hartford, Conn

OWNER:

(Name, legal status and address)

Lexington Fayette Urban County Government - 200 E. Main Street - Lexington, KY 40507

CONSTRUCTION CONTRACT

Date: May 18, 2017

Amount: \$265,975.

Description:

(Name and location)

West Hickman WWTP Nitrification Bldg Heating System Replacement / 645 W. Hickman Plant Rd. Nicholasville, KY 40356

BOND

Date:

(Not earlier than Construction Contract Date)

May 18, 2017

Amount: \$265,975

Modifications to this Bond:



See Section 18

CONTRACTOR AS PRINCIPAL

Company: C3 Mechanical (Corporate Seal)

SURETY

Company: Travelers Casualty & Surety Company of America (Corporate Seal)

Signature:

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature:

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

Old Colony Insurance Services, Inc. 1900 Cambridge Drive - Lexington, KY 40502

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

§1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

Signature:

Name and Title:

Address:

SURETY

Company: *(Corporate Seal)*

Signature:

Name and Title:

Address:

POWER OF ATTORNEY



Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 228625

Certificate No. 007043685

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Judy L. Thomas, Deborah Hisle, Patricia A. Bruner, Susan H. Johnston, L. N. Strong, and Mark Howard

of the City of Lexington, State of Kentucky, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 16th day of November, 2016.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: Robert L. Raney, Senior Vice President

On this the 16th day of November, 2016, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal. My Commission expires the 30th day of June, 2021.



Marie C. Tetreault, Notary Public

PART VIII

ADDENDA

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

<u>Addendum Number</u>	<u>Title</u>	<u>Date</u>
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

PART IX

TECHNICAL SPECIFICATIONS

DIVISION 1 GENERAL REQUIREMENTS
01010 Summary of Work

must be followed by Contractor. Appendices B-E are catalog cut sheets of the replacement equipment and form part of the technical requirements of the equipment.

1.2 PERMITS & CODES

- A. The Contractor must be a licensed boiler contractor and shall have previous experience installing boiler heating systems in commercial buildings. It is the responsibility of the Contractor to provide documentation of license and previous similar work type experience within their respective bid submittals. Failure to provide requested documentation may result in rejection of bid submittal.
- B. The Contractor shall be responsible for obtaining all jurisdictional required permits.
- C. Contractor shall ensure all work activities are performed in compliance with applicable OSHA and/or LFUCG Safety Policies and/or guidelines.
- D. The Contractor shall be responsible for complying with all codes mandated at the local, state, or federal level. The Contractor shall also be responsible for complying with but not necessarily limited to the latest edition of all of the following codes and specifications:

All ICC publications
Kentucky Building Code
National Fuel Gas Code (NFPA 54)
Kentucky Plumbing Code
National Electrical Code (NFPA 70)
ASME Section IV
ASME Section VI
ASME CSD-1
ASME B31.9
NFPA 211
All equipment manufacturer recommendations/IO&M manuals

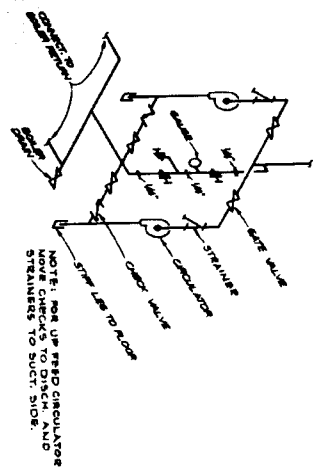
PART 2 – PRODUCTS

2.1 EQUIPMENT SPECIFICATIONS

- A. Replacement Boiler and Burner
 - 1. Boiler shall be Peerless knocked down water boiler model CC-05-WU
 - 2. Natural gas
 - 3. 40 psi RV
 - 4. 722 mbh input, 587 mbh output, 8” rear flue, with standard water trim
 - 5. Power Flame JR30A-10 burner, full modulation firing, 120/60/1 standard burner mounted control panel, for 5.7” min w.c. gas
 - 6. L4006A operating control & L4006E high limit (KY code) 550P probe LWCO w/manual reset

APPENDIX A

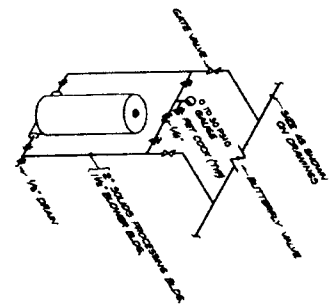
CIRCULATOR PIPING SCHEMATIC
NO SCALE



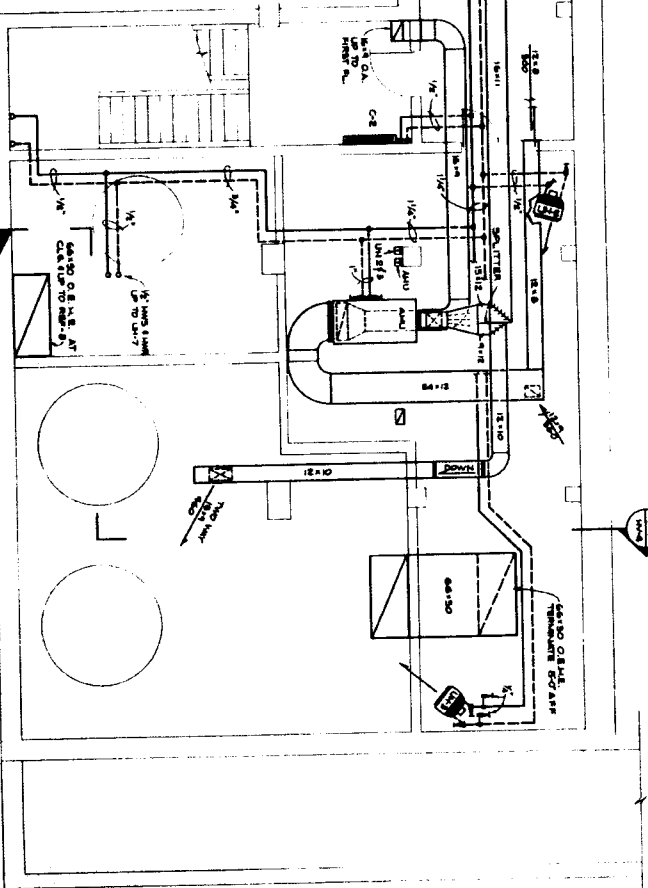
EXPANSION TANK SCHEMATIC
NO SCALE



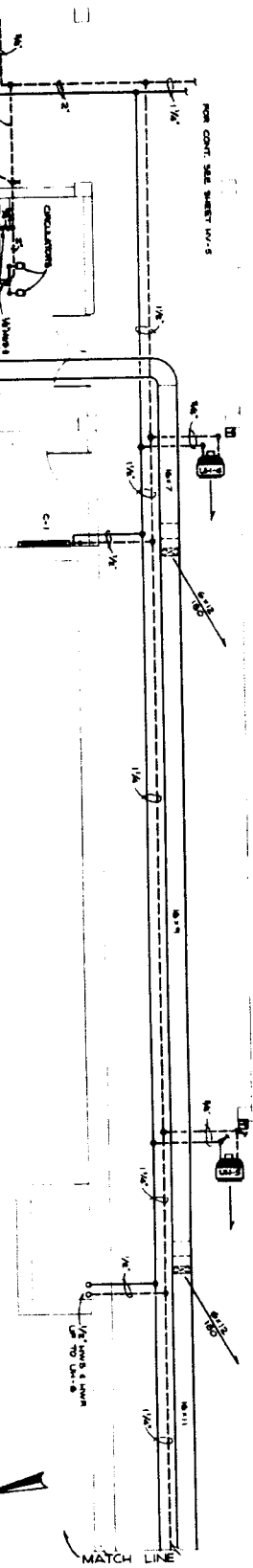
HEATING SYSTEM FILTER PIPING SCHEMATIC
NO SCALE



NITRIFICATION BLOWER BUILDING BASEMENT PLAN - WEST SIDE
SCALE: 1/8" = 1'-0"



NITRIFICATION BLOWER BUILDING BASEMENT PLAN - EAST SIDE
SCALE: 1/8" = 1'-0"



HV-3



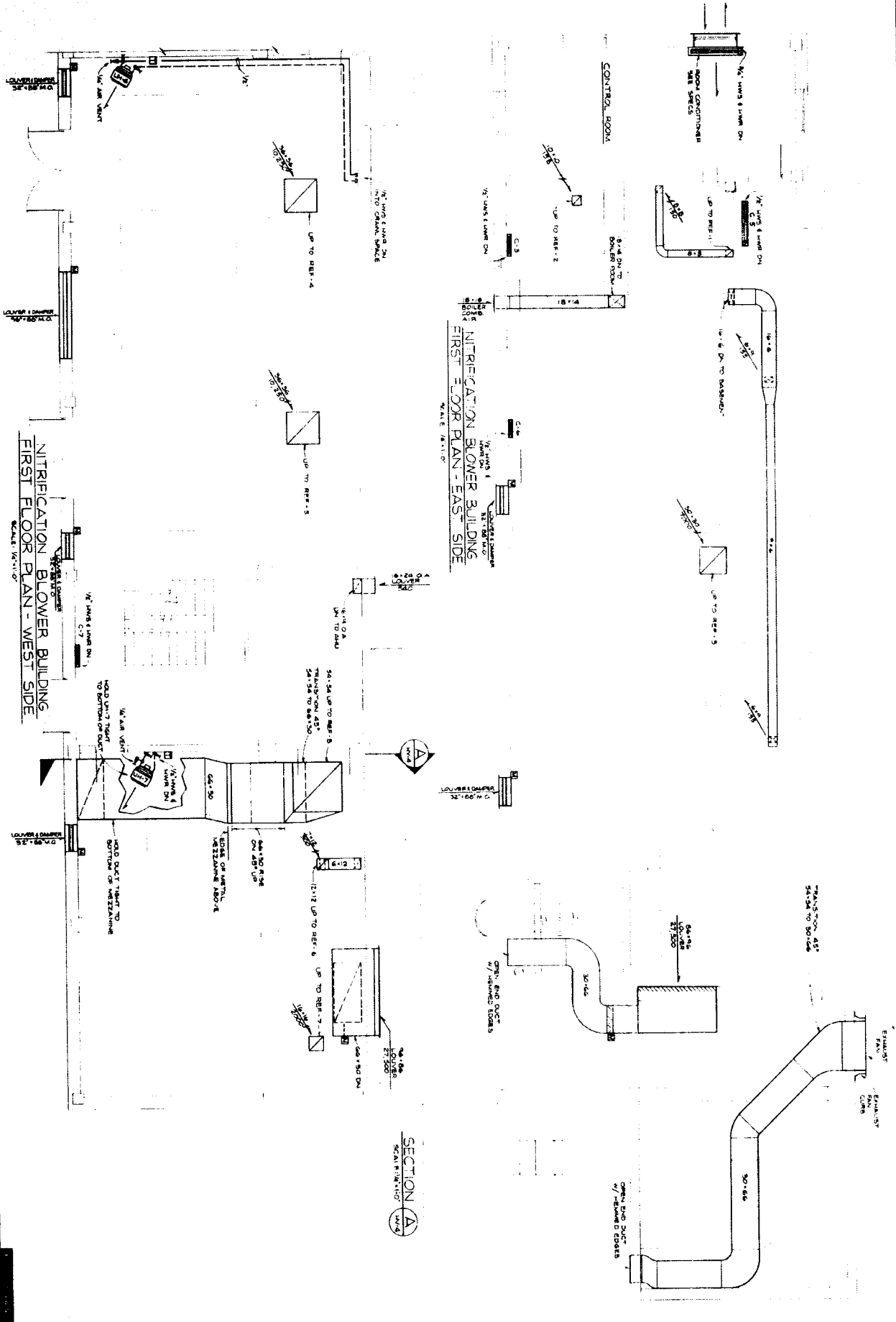
PROCTOR, DAVIS & RAY
CONSULTING ENGINEERS, INC.
LEXINGTON, KENTUCKY
REGISTERED PROFESSIONAL ENGINEERS
STATE OF KENTUCKY
NO. 1777

GENERAL AND MECHANICAL ENGINEERING
WEST OVERSEAS OFFICE U.S.V.P. REPRESENTATIVE
NITRIFICATION BLOWER BUILDING BASEMENT PLAN
DATE: 08/19/68



PROCTOR, DAVIS & RAY
Consulting Engineers, Inc.
Lexington, Kentucky

M&E
METCALF & EDDY, INC.
Boston, Massachusetts



NITRIFICATION BLOWER BUILDING
FIRST FLOOR PLAN - EAST SIDE
SCALE 1/8" = 1'-0"

NITRIFICATION BLOWER BUILDING
FIRST FLOOR PLAN - WEST SIDE
SCALE 1/8" = 1'-0"

SECTION A
SCALE 1/8" = 1'-0"

LEXINGTON-FAYETTE LOCAL GOVERNMENT
WEST HICKMAN CREEK IMPROVEMENTS
NITRIFICATION BLOWER BUILDING
FIRST FLOOR PLAN
HEATING AND VENTILATING

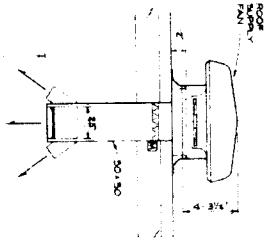
DATE: 10/10/07
DRAWN BY: J.M.S.
CHECKED BY: J.M.S.
DESIGNED AND
CONSTRUCTION
BY: J.M.S.
TITLE: NITRIFICATION BLOWER BUILDING FIRST FLOOR PLAN

PROCTOR DAVIS RAY
Consulting Engineers, Inc.
Lexington, Kentucky

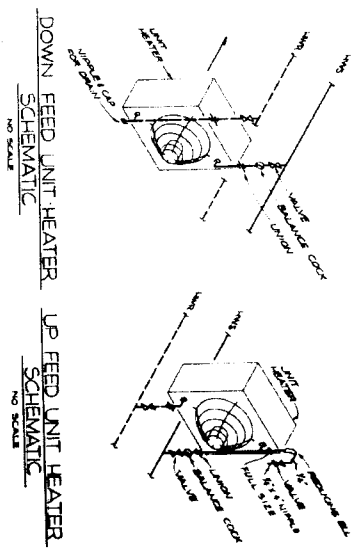
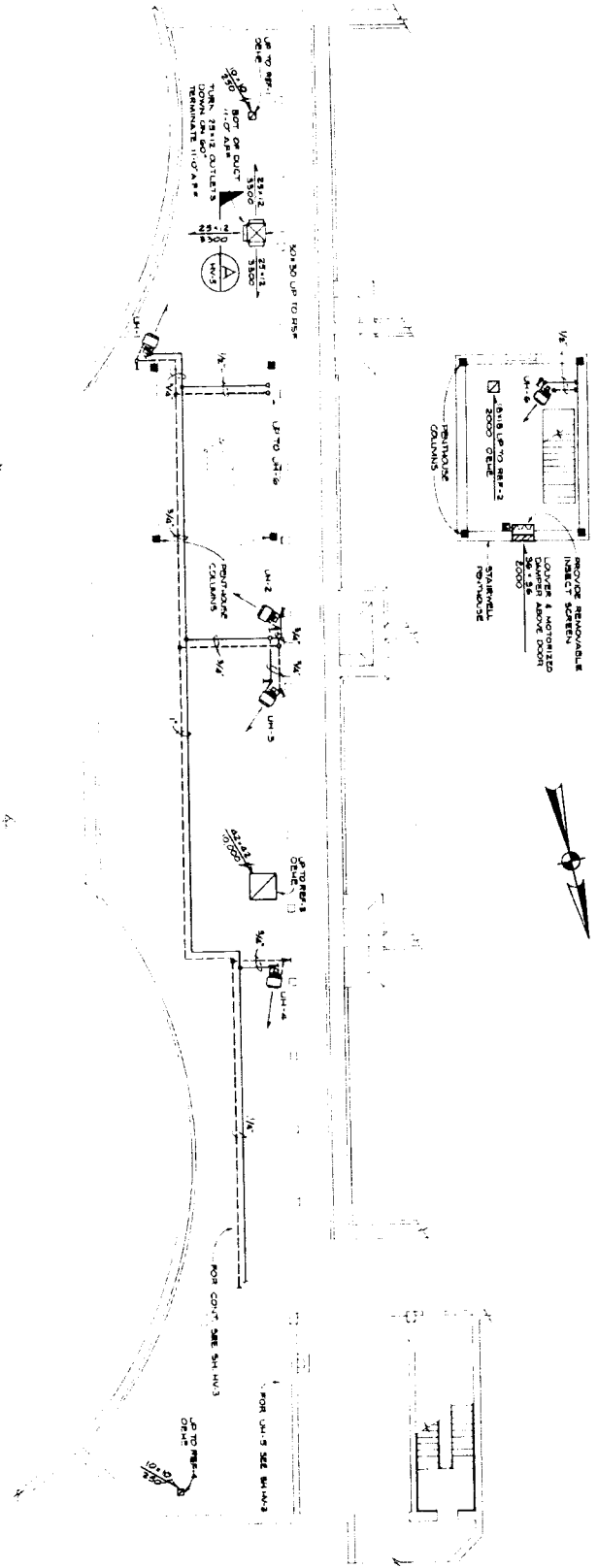
M&E
METCALF & EDDY, INC.
Boston, Massachusetts

HV-4

SECTION A
SCALE 1/8" = 1'-0"



NITRIFICATION GALLERY FLOOR PLAN
SCALE 1/8" = 1'-0"



REVISIONS

NO.	DATE	BY	DESCRIPTION
1			

SCALE 1/8" = 1'-0"

TITLE: NITRIFICATION GALLERY FLOOR PLAN & DETAILS

DATE: 10/1/59

BY: [Signature]

CHECKED BY: [Signature]

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

PROCTOR-DAVIS RAY CONSULTING ENGINEERS, INC.

1111 WEST MAIN STREET, LEXINGTON, KENTUCKY

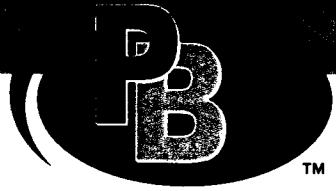
PROCTOR-DAVIS RAY CONSULTING ENGINEERS, INC.

1111 WEST MAIN STREET, LEXINGTON, KENTUCKY

PDR PROCTOR-DAVIS RAY Consulting Engineers, Inc. Lexington, Kentucky

M&E METCALF & EDDY, INC. Boston, Massachusetts

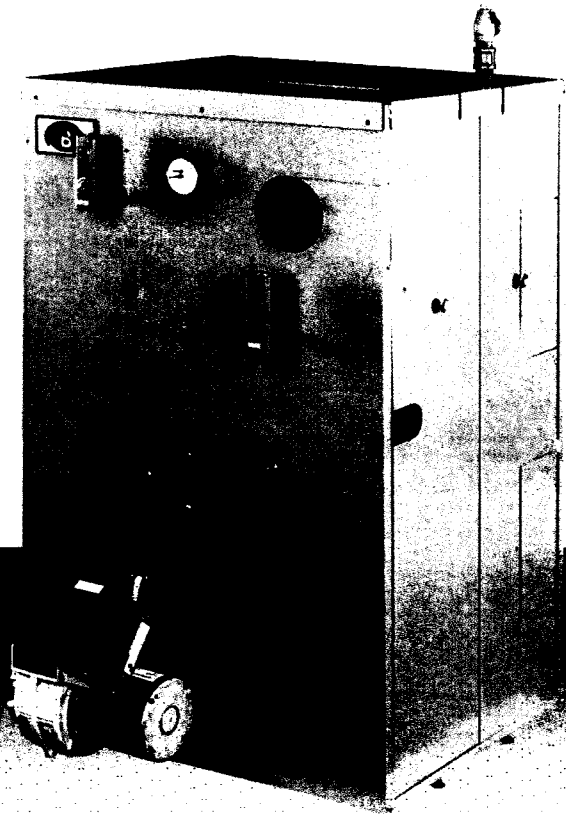
APPENDIX B



PeerlessBoilers.com

Series CC™

Commercial Boiler Available with Tankless Coils



Standard Equipment

- > High Efficiency Power Burners
- > Front and Rear Observation Port
- > Hi-Temp Port Seals
- > Insulated Enameled Steel Jacket
- > Cast Iron Flue Collector with Integral Damper
- > Manual Reset, Limit Control
- > Tankless Coils—For Domestic Hot Water

Series CC™ Boiler Features

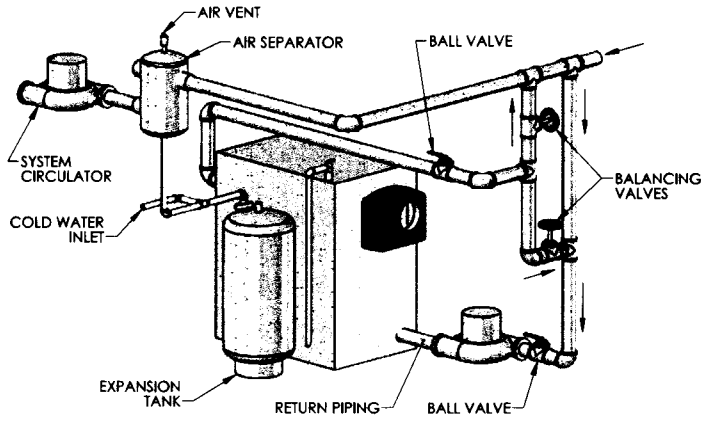
- Side-mounted Tankless 9 GPM Coils – for Quick and Easy Visual Inspection and Service
- Constructed of Rugged, Cast Iron, Wet-Base Sections, Tested for 80 psi
- Oil, Gas or Combination Gas/Oil-fired for Hot Water or Steam Systems
- 10 Sizes, 3–12 Sections—Ideal for Commercial Applications
- Forced Draft Firing for the Highest Possible Efficiencies

Optional Equipment

- Heater Cover Plates
- Assembled Sections
- Packaged
- Low Water Cut-off
- Feeder and Pump Controllers
- Inspection Taps and Brass Plugs (Up to Three per Section)
- Tankless Water Heaters
- 80 psi Pressure Relief Valve (Water Boilers)

All commercial cast iron boilers include a full one-year warranty. A limited, ten-year warranty is provided on the cast iron sections for all commercial hot water and steam boilers. Visit PeerlessBoilers.com for complete details.

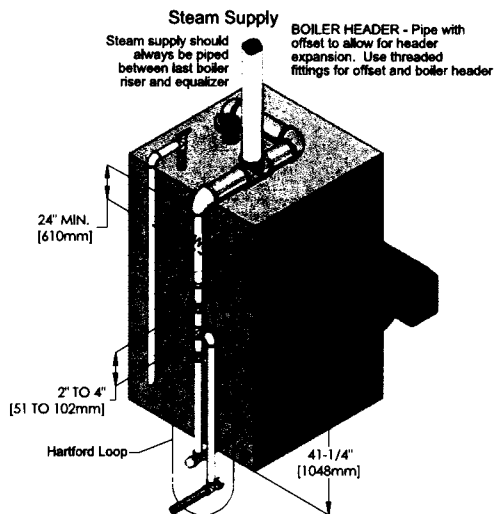
Piping



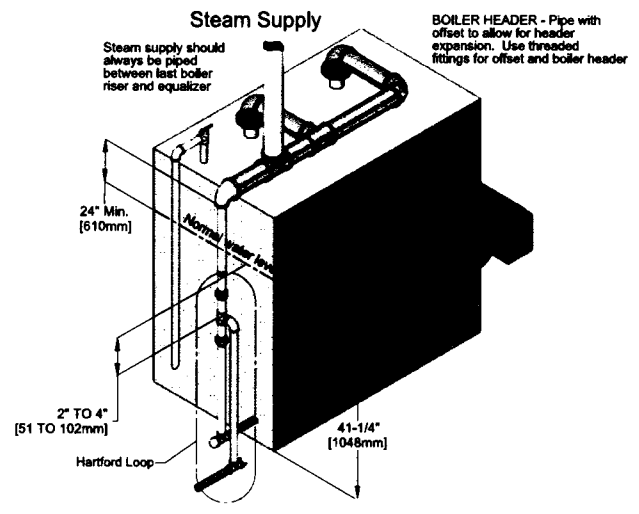
Boiler Piping (Water)

Boiler Model Number	Gross Output (MBH)	Flow Rate @20 F Rise (GPM)	Recommended	
			Supply Size (NPT)	Return Size (NPT)
CC-03	308	31	2"	2"
CC-04	421	42	2"	2"
CC-05	587	59	2 1/2"	2 1/2"
CC-06	762	76	3"	3"
CC-07	924	92	3"	3"
CC-08	1087	109	3"	3"
CC-09	1262	126	3"	3"
CC-10	1424	142	3"	3"
CC-11	1587	159	4"	3"
CC-12	1750	175	4"	3"

Piping



FOR BOILERS WITH ONE RISER



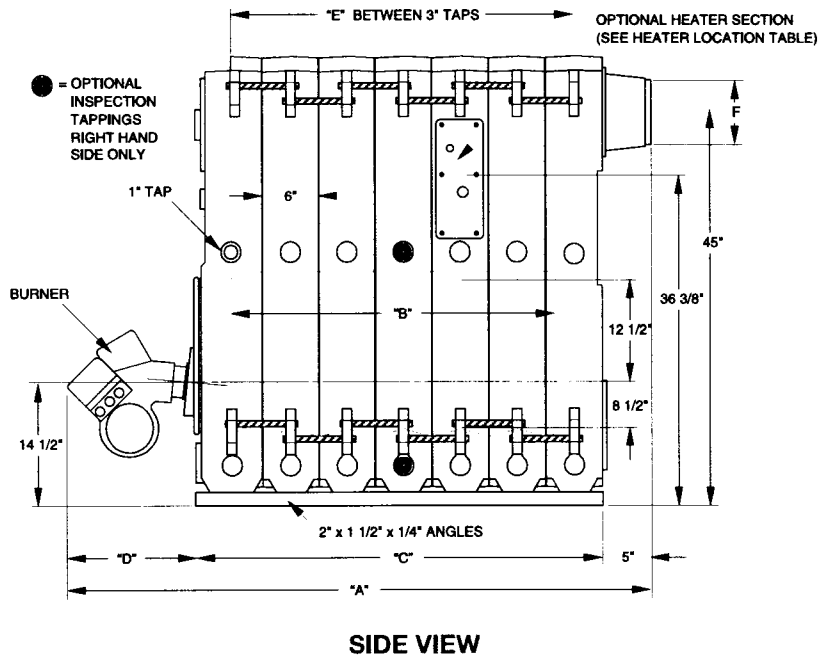
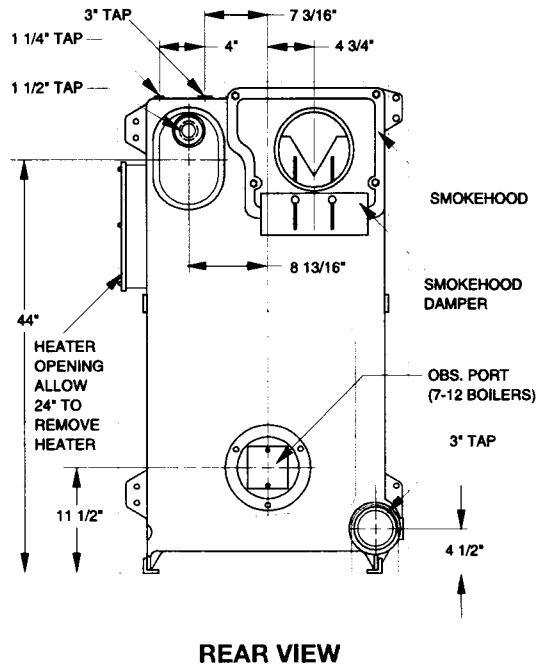
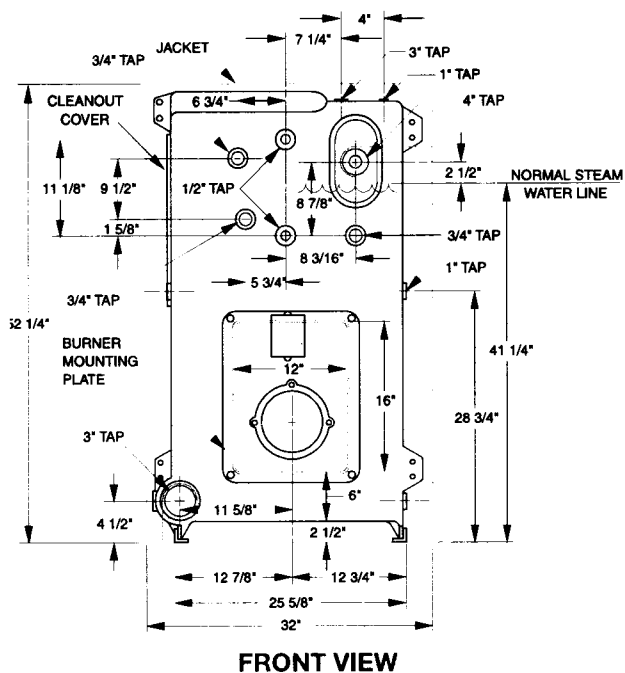
FOR BOILERS WITH TWO RISERS

Boiler Piping (Steam)

Boiler Model Number	Number of 3" NPT Risers	Header Size (NPT)	Equalizer Size (NPT)
CC-03 to CC-05	1	3"	1-1/2"
CC-06 to CC-10	2	4"	2"
CC-11 & CC-12	2	5"	2-1/2"

Burner Specifications

Boiler Model Number	Burners - Light Oil						Burners - Gas		Burners - Gas/Oil	
	Beckett		Carlin		Power Flame		Power Flame		Power Flame	
	Model No.	H.P.	Model No.	H.P.	Model No.	H.P.	Model No.	H.P.	Model No.	H.P.
CC-03	CF500	1/3	201CRD	1/4	-	-	JR15A	1/4	-	-
CC-04	CF500	1/3	301CRD	1/4	CR1-0	1/3	JR15A	1/4	CR1-GO	1/3
CC-05	CF800	1/3	301CRD	1/4	CR1-0	1/3	JR30A	1/3	CR1-GO	1/3
CC-06	CF1400	1/2	702CRD	1/2	CR1-0	1/2	JR30A	1/3	CR1-GO	1/2
CC-07	CF1400	1/2	702CRD	1/2	CR2-0	3/4	JR30A	1/3	CR2-GO	3/4
CC-08	N/A	N/A	702CRD	1/2	CR2-0	3/4	JR50A	1/3	CR2-GO	3/4
CC-09	CF2300	3/4	702CRD	1/2	CR2-0	3/4	JR50A	1/3	CR2-GO	3/4
CC-10	CF2300	3/4	801CRD	3/4	CR2-0	3/4	JR50A	1/2	CR2-GO	3/4
CC-11	CF2500	2	801CRD	3/4	CR2-0	1	CR2G	1	CR2-GO	1
CC-12	CF2500	2	801CRD	3/4	CR2-0	1-1/2	CR2G	1-1/2	CR2-GO	1-1/2



Boiler Dimensions

Boiler Model Number	Overall Length - "A" (inch)				Firebox Length "B" (inch)	Boiler Length "C" (inch)	Burner Length "D" (inch)				Riser Tapping Location "E" (inch) ¹	Diameter of Vent Connector "F" (inch)
	Carlin	Power Flame/J	Power Flame/C	Beckett Oil			Carlin	Power Flame/J	Power Flame/C	Beckett Oil		
CC-03	39	44	N/A	31	9	18	16	21	N/A	13	12	7
CC-04	45	50	59	37	15	24	16	21	30	13	18	7
CC-05	51	56	65	43	21	30	16	21	30	13	24	8
CC-06	61	62	71	49	27	36	20	21	30	13	30	8
CC-07	67	68	82	64	33	42	20	21	35	22	36	9
CC-08	73	74	88	N/A	39	48	20	21	35	23	42	10
CC-09	79	80	94	77	45	54	20	21	35	23	48	10
CC-10	87	86	100	83	51	60	22	21	35	23	54	10
CC-11	93	N/A	106	89	57	66	22	N/A	35	23	60	12 ²
CC-12	99	N/A	112	99	63	72	22	N/A	35	27	66	12 ²

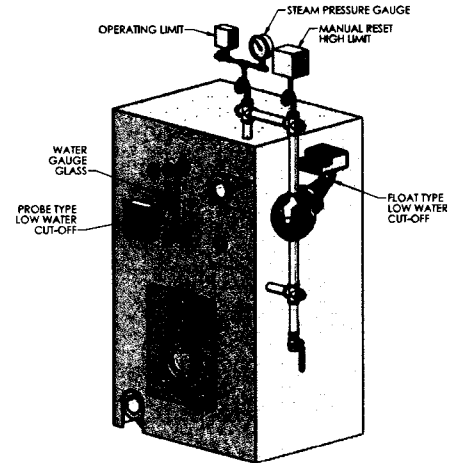
Notes: 1. Dimensions between risers are approximate.
 2. Models CC-11 and CC-12 use a 10" (254mm) to 12" (305mm) flue adapter.



Tankless Heater Location

3 SECT	F	H	B																	
4 SECT	F	P	H	B																
5 SECT	F	H	P	H	B															
6 SECT	F	P	H	P	H	B														
7 SECT	F	P	P	H	P	H	B													
8 SECT	F	P	P	P	H	P	H	B												
9 SECT	F	P	H	P	H	P	H	P	B											
10 SECT	F	P	P	H	P	H	P	H	P	B										
11 SECT	F	P	P	P	H	P	H	P	H	P	B									
12 SECT	F	P	P	P	P	H	P	H	P	H	P	B								

F = Front Section
 P = Plain Intermediate Section
 H = Heater Intermediate Section -
 Optional, must be ordered.
 B = Back Section

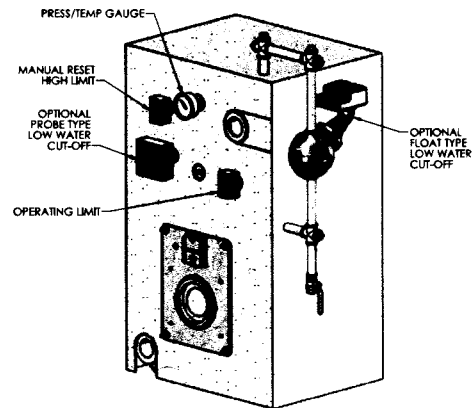


CONTROL LOCATIONS (Steam Boiler)

Side-Mounted Tankless Heater Capacities

Number Of Sections	I=B=R Gross Output (MBH)	Cont. Draw (GPM)		
		One Heater	Two Heater	Three Heater
3	308	8.5	N/A	N/A
4	421	8.5	N/A	N/A
5	587	9.0	10.6	N/A
6	762	9.0	12.9	N/A
7	924	9.0	15.3	N/A
8	1087	9.0	17.6	N/A
9	1262	9.0	18.0	19.9
10	1424	9.0	18.0	22.2
11	1587	9.0	18.0	24.6
12	1750	9.0	18.0	26.9

Note: Heater ratings based on 100° F. temperature rise, 200° F. boiler water, 9 GPM at 9.5 psi Ø P.
 For 180° boiler water ratings, consult factory.



CONTROL LOCATIONS (Water Boiler)

Boiler Ratings

Series CC™										Audi CERTIFIED		Water Content		Furnace Volume (Cu.Ft.)	Boiler Working Weight (lbs)	Heating Surface (sqft)
Boiler Model Number	Oil Input		Gas Input MBH	Gross Output MBH	NET			Oil Thermal Effy	Gas Thermal Effy	Boiler H.P.	Steam (Gallons)	Water (Gallons)				
	GPH	MBH			Steam sqft	MBH	Water MBH									
CC-03	2.6	364	375	308	963	231	268	84.6	82.1	9.2	33	38	2.12	1716	23.9	
CC-04	3.6	504	520	421	1316	316	366	84.1	81.5	12.5	41	49	3.50	2122	35.8	
CC-05	5.0	700	722	587	1825	441	510	83.9	81.3	17.5	49	59	4.88	2528	47.7	
CC-06	6.5	910	938	762	2382	572	663	83.7	81.2	22.8	56	70	6.27	2933	59.7	
CC-07	7.9	1106	1140	924	2888	694	803	83.5	81.1	27.6	64	80	7.65	3339	71.6	
CC-08	9.3	1302	1342	1087	3398	815	945	83.5	81.0	32.5	72	91	9.04	3745	83.5	
CC-09	10.8	1512	1559	1262	3947	947	1097	83.5	83.5	37.7	80	102	10.42	4150	95.4	
CC-10	12.2	1708	1761	1424	4506	1081	1238	83.4	83.4	42.5	88	112	11.81	4555	107.4	
CC-11	13.6	1904	1963	1587	5071	1217	1380	83.4	83.4	47.4	96	123	13.20	4960	119.3	
CC-12	15.0	2100	2165	1750	5635	1352	1522	83.4	83.4	52.3	104	133	14.58	5366	131.2	

Notes: 1. Net Ratings are based on an allowance of 1.15 for Water Boilers. Net Ratings for steam boilers are based on a pick-up factor of 1.333.
 2. Burner oil input based on Commercial Standard #2 fuel oil with a heating value of 140,000 BTU/Gal.
 3. Burner natural gas input based on natural gas with a heating value of 1,000 BTU/Cu. Ft. and a specific gravity of 0.60.



PeerlessBoilers.com

APPENDIX C

Horizontal Unit Heaters – Submittal

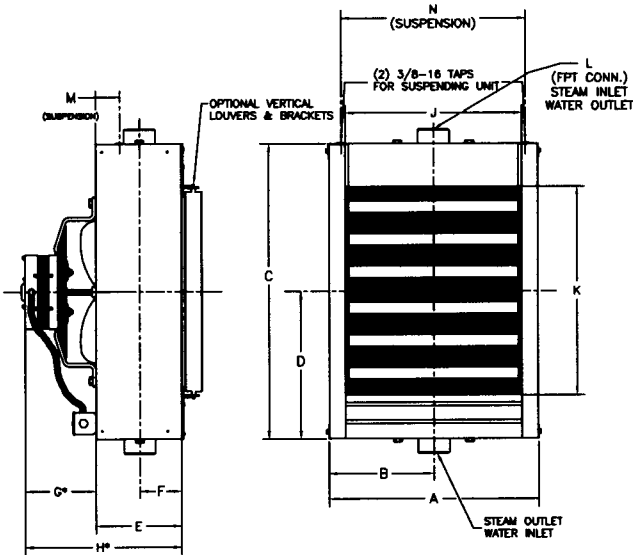
HSD-13

Dimensional Data



Steam and Hotwater Coil

MODELS HS-18 THRU 360 (HEADER TYPE)



D6333B

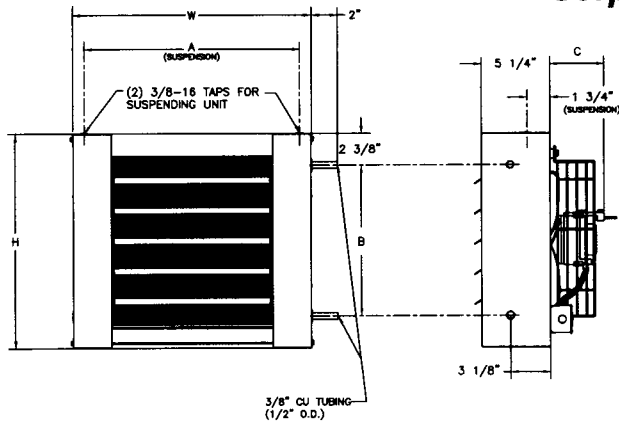
MODEL	A	B	C	D	E	F	G*	H*	J	K	L	M	N	Number of Louvers	Nominal Fan Diameter	Approx Ship Wt
HS-18	14 ^{5/8}	7 ^{5/16}	15	7 ^{1/2}	6 ^{1/8}	2 ^{15/16}	3 ^{1/4}	9 ^{3/8}	12 ^{1/4}	9 ^{1/2}	1 ^{1/4}	2 ^{1/4}	12 ^{7/8}	4	9"	26
HS-24	14 ^{5/8}	7 ^{5/16}	18	9	6 ^{1/8}	2 ^{15/16}	3 ^{1/4}	9 ^{3/8}	12 ^{1/4}	12 ^{1/2}	1 ^{1/4}	2 ^{1/4}	12 ^{7/8}	5	10"	30
HS-36	17 ^{1/8}	8 ^{9/16}	20 ^{1/2}	10 ^{1/4}	5 ^{7/8}	2 ^{15/16}	5 ^{1/16}	11 ^{7/16}	14 ^{3/4}	15	1 ^{1/4}	1 ^{3/4}	15 ^{5/8}	6	12"	41
HS-48	17 ^{1/8}	8 ^{9/16}	20 ^{1/2}	10 ^{1/4}	5 ^{7/8}	2 ^{15/16}	5 ^{1/16}	11 ^{7/16}	14 ^{3/4}	15	1 ^{1/4}	1 ^{3/4}	15 ^{5/8}	6	12"	41
HS-60	18 ^{5/8}	9 ^{3/16}	21 ^{3/4}	10 ^{7/8}	6	2 ^{15/16}	5 ^{1/16}	11 ^{7/16}	16	16 ^{1/4}	1 ^{1/4}	1 ^{3/4}	16 ^{5/8}	7	14"	44
HS-72	18 ^{5/8}	9 ^{3/16}	21 ^{3/4}	10 ^{7/8}	6	2 ^{15/16}	5 ^{1/16}	11 ^{7/16}	16	16 ^{1/4}	1 ^{1/4}	1 ^{3/4}	16 ^{5/8}	7	14"	44
HS-84	20 ^{7/8}	10 ^{9/16}	24 ^{1/4}	12 ^{1/8}	6 ^{1/8}	2 ^{15/16}	5 ^{1/16}	11 ^{13/16}	18 ^{1/2}	18 ^{3/4}	1 ^{1/4}	1 ^{3/4}	19 ^{1/8}	8	14"	47
HS-96	19 ^{5/8}	9 ^{13/16}	24	12	6 ^{5/16}	3 ^{1/16}	7 ^{1/2}	13 ^{3/16}	17 ^{1/4}	17 ^{1/2}	1 ^{1/2}	1 ^{3/4}	17 ^{7/8}	8	16"	49
HS-108	20 ^{7/8}	10 ^{7/16}	25 ^{1/4}	12 ^{5/8}	6 ^{5/16}	3 ^{1/16}	6 ^{11/16}	13	18 ^{1/2}	18 ^{3/4}	1 ^{1/2}	1 ^{3/4}	19 ^{1/8}	8	18"	59
HS-120	20 ^{7/8}	10 ^{7/16}	25 ^{1/4}	12 ^{5/8}	6 ^{5/16}	3 ^{1/16}	6 ^{11/16}	13	18 ^{1/2}	18 ^{3/4}	1 ^{1/2}	1 ^{3/4}	19 ^{1/8}	8	18"	59
HS-132	23 ^{3/8}	11 ^{11/16}	27 ^{3/4}	13 ^{3/8}	6 ^{5/16}	3 ^{1/16}	7 ^{5/8}	14	21	21 ^{1/4}	1 ^{1/2}	1 ^{3/4}	21 ^{5/8}	9	18"	74
HS-144	23 ^{3/8}	11 ^{11/16}	27 ^{3/4}	13 ^{3/8}	6 ^{5/16}	3 ^{1/16}	7 ^{5/8}	14	21	21 ^{1/4}	1 ^{1/2}	1 ^{3/4}	21 ^{5/8}	9	18"	74
HS-156	23 ^{3/8}	11 ^{11/16}	27 ^{3/4}	13 ^{3/8}	6 ^{5/16}	3 ^{1/16}	7 ^{7/16}	13 ^{3/4}	21	21 ^{1/4}	1 ^{1/2}	1 ^{3/4}	21 ^{5/8}	9	18"	74
HS-180	24 ^{3/8}	12 ^{5/16}	29	14 ^{1/2}	6 ^{3/8}	3 ^{1/16}	7 ^{7/16}	13 ^{3/4}	22 ^{1/4}	22 ^{1/2}	1 ^{1/2}	1 ^{3/4}	22 ^{7/8}	9	18"	90
HS-204	24 ^{3/8}	12 ^{5/16}	29	14 ^{1/2}	6 ^{3/8}	3 ^{1/16}	7 ^{7/16}	13 ^{3/4}	22 ^{1/4}	22 ^{1/2}	1 ^{1/2}	1 ^{3/4}	22 ^{7/8}	9	18"	90
HS-240	27 ^{1/8}	13 ^{9/16}	30 ^{1/4}	15 ^{1/8}	8 ^{1/8}	3 ^{1/16}	5 ^{7/8}	14	25 ^{1/2}	23 ^{3/4}	2	1 ^{3/4}	26 ^{1/8}	10	20"	143
HS-280	27 ^{1/8}	13 ^{9/16}	30 ^{1/4}	15 ^{1/8}	8 ^{1/8}	3 ^{1/16}	9 ^{3/8}	17 ^{3/4}	25 ^{1/2}	23 ^{3/4}	2	1 ^{3/4}	26 ^{1/8}	10	20"	154
HS-300	33 ^{3/8}	16 ^{11/16}	37 ^{3/4}	18 ^{7/8}	9	3 ^{1/16}	9 ^{3/8}	18 ^{5/8}	31	31 ^{1/4}	2	1 ^{3/4}	31 ^{5/8}	13	24"	203
HS-360	33 ^{3/8}	16 ^{11/16}	37 ^{3/4}	18 ^{7/8}	9	3 ^{1/16}	9 ^{3/8}	18 ^{5/8}	31	31 ^{1/4}	2	1 ^{3/4}	31 ^{5/8}	13	24"	203

* APPLIES TO STANDARD MOTOR WITH STANDARD FAN GUARD. WHEN OPTIONAL MOTORS OR OSHA FAN GUARDS ARE REQUESTED, DIMENSIONS WILL CHANGE ACCORDING TO THE SUBSTITUTIONS MADE.

- NOTES:
1. OSHA guard standard on models HS-18 thru HS-48 (dimensions shown in table).
 2. Standard motor and standard guard shown in both tables.
 3. Optional OSHA guards available for all units with standard single phase motors.
 4. All three phase and explosion proof motors are shelf mounted.

Serpentine Hotwater Coil

MODELS HS-108A THRU 136A



D6332C

Model/Unit Size	H	W	A	B	C	Number of Louvers	Nominal Fan Diameter	Approx Ship Wt
HS-108A	16	18	16 ^{7/32}	11 ^{1/4}	4 ^{1/4}	5	9	22
HS-118A	16	18	16 ^{7/32}	11 ^{1/4}	4 ^{1/4}	5	10	24
HS-125A	16	18	16 ^{7/32}	11 ^{1/4}	4 ^{1/4}	5	10	25
HS-136A*	18 ^{1/2}	20 ^{1/2}	18 ^{29/32}	13 ^{3/4}	5 ^{11/16}	6	12	31

* Dimension "C" is to back of motor, not motor conduit connector as shown.
NOTE: OSHA type fan guard standard on models HS-108A thru HS-136A.



PROJECT: _____
 LOCATION: _____
 ARCHITECT: _____
 ENGINEER: _____
 CONTRACTOR: _____
 PO NUMBER: _____
 DATE: _____



Steam and Hot Water Coil Specifications

GENERAL

Furnish and install where indicated or scheduled on plans horizontal steam/hot water unit heater. Unit shall be equipped as specified herein. All units shall be installed in a neat and workmanlike manner in accordance with this specification and the manufacturer's installation instructions.

CASING

Casings shall be 20-gauge die-formed steel. Casing substrates shall be prepared for finishing with a hot wash, iron phosphatizing, clear rinse, chromic acid rinse and oven drying. Paint finish shall be lead-free, chromate free, alkyd melamine resin base and applied with an electrostatic two-pass system. Finish shall be baked at 350°F.

COIL SIZES 18 - 360

Coil elements and headers shall be of heavy wall drawn seamless copper tubing. Element tubes shall be brazed into extruded header junctions. Pipe connection saddles shall be of cast bronze. Aluminum fins shall have drawn collars to assure permanent bond with expanded element tubes and exact spacing. All Element Assemblies are submersed tested at factory at 200 PSI, and are rated at 150 pounds of saturated steam pressure at 366°F, under maximum load conditions. We recommend operating pressure of 75 PSI at 320°F for long life.

MOTORS

Motors shall be totally enclosed fan cooled, resilient mounted with class "B" windings. All motors shall be designed for horizontal mounting. Motors under 1/3 HP are totally enclosed, frame mounted, 115/1/60 with thermal overload protection and permanently lubricated sleeve bearings with optional solid state speed controller available. 1/3 HP (115/1/60) motors are open frame construction, with thermal overload protection and ball bearings. 1/3 HP at (230 Volt) and all 1/2 HP motors are open frame construction, with thermal overload protection and ball bearings. 1/3 and 1/2 HP motors are available in single and three phase in open frame construction or explosion-proof housings, all the above are available as options.

EXPLOSION PROOF MOTORS

An enclosed motor whose enclosure is designed and constructed to withstand an explosion of a specified gas or vapor which may occur within the motor and to prevent the ignition of this gas or vapor surrounding the machine.

Horizontal unit heater motors comply with the National Electrical Code classification as follows:

- Class I, Group D; all sizes
- Class II, Group F; all sizes
- Class II, Group G; all sizes
- Division I & II Installations
- T-code (T3B)

Explosion proof equipment is not generally available for Class I, Group A and B and it is necessary to isolate motors from the hazardous area. All explosion proof motors are shelf mounted.

FANS

Fans shall be of aluminum blade, hub type designed and balanced to assure maximum air delivery, low motor horsepower requirements and quiet operation. Blades are spark proof.

FAN GUARDS

Fan guards shall be welded steel, zinc plated or painted.

Units mounted below 8 feet from floor must be equipped with an OSHA fan guard to meet ETL and OSHA requirements.

OSHA fan guard standard on sizes 18 thru 48.

AIR DEFLECTION LOUVERS

Units shall be equipped with horizontal, individually adjustable louvers. Vertical louvers for four-way air control shall be available as an optional extra.

Serpentine Coil Specifications

GENERAL

Furnish and install, where indicated or scheduled on plans, Sterling Model HSA horizontal hot water unit heaters. Unit shall be equipped as specified herein. All units shall be installed in a neat and workmanlike manner in accordance with this specification and the manufacturer's installation instructions.

CASING

Casings shall be 20-gauge die-formed steel. Casing substrates shall be prepared for finishing with a hot alkaline wash, hot & cold water rinses, iron phosphatizing, chromic acid rinse and oven drying. Paint finish shall be lead-free, chromate free, polyester melamine base and applied with a roller coat application. Finish shall be baked at 350°F.

COIL SIZES 108A - 136A

Coil is a serpentine design with seamless copper tubing. Aluminum fins shall have drawn collars to assure permanent bond with expanded tubes. Tubing connection shall be 3/8 in copper tubing, type "M" (.500 OD). Coils shall be factory tested at 200 PSI.

MOTORS

Motors shall be totally enclosed fan cooled, resilient mounted with class "B" windings. All motors shall be designed for horizontal mounting.

FANS

Fans shall be of aluminum blade type, designed and balanced to assure maximum air delivery, low motor horsepower requirements and quiet operation.

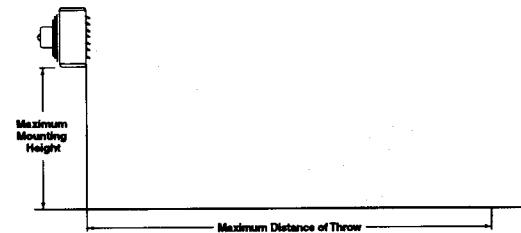
OSHA FAN GUARDS

OSHA fan guards shall be welded steel, zinc plated or painted. OSHA fan guard standard on sizes 108A thru 136A.

AIR DEFLECTION LOUVERS

Units shall be equipped with horizontal, individually adjustable louvers.

Mounting Heights and Throws



Model/Unit Size	Maximum Mounting Height	Approximate Maximum Throw	Model/Unit Size	Maximum Mounting Height	Approximate Maximum Throw
HS-108A	8'	20'	HS-108	11'	40'
HS-118A	8'	25'	HS-120	12'	40'
HS-125A	9'	29'	HS-132	13'	54'
HS-136A	9'	29'	HS-144	13'	55'
HS-18	8'	20'	HS-156	13'	55'
HS-24	8'	24'	HS-180	13'	53'
HS-36	9'	28'	HS-204	13'	55'
HS-48	9'	30'	HS-240	14'	57'
HS-60	10'	30'	HS-280	14'	57'
HS-72	10'	29'	HS-300	15'	58'
HS-84	10'	30'	HS-360	15'	60'
HS-96	11'	38'			

The following table is based on 60°F entering air and either 2 lbs steam or 200°F TD. The data is based on the higher speed CFM throughout and velocity. Care should be exercised in locating adjacent unit heaters and allowance should be made for obstructions in the air pattern and conflicting air currents from other air moving devices.

Horizontal Unit Heaters

Motor Characteristics

TOTALLY ENCLOSED MOTOR TYPE

Unit Sizes	AMP	MCA	HP	RPM
115/1/60				
18, 24, 108A, 118A	0.8	1	16W*	1550
136A	1.4	1.8	1/20*	1000
36, 125A	1.2	1.5	25W*	1550
48, 60, 72	1.4	1.8	1/20*	1000
84, 96, 108	2.2	2.8	1/12*	1000
120, 132, 144, 156, 180, 204, 240	4.5	5.6	1/3	1140
280, 300, 360	5.4	6.8	1/2	1100
230/1/60				
18, 24, 108A, 118A	0.4	0.5	16W	1550
136A	1.4	1.8	1/20†	1000
36, 125A	0.6	0.8	25W	1550
48, 60, 72	1.4	1.8	1/20†	1000
84, 96, 108	2.2	2.8	1/12†	1000
120, 132, 144, 156, 180, 204, 240	4.5	5.6	1/3†	1140
280, 300, 360	5.4	6.8	1/2†	1100
208-230/460/3/60				
48, 60, 72, 84, 96, 108, 120, 132, 144, 156, 180, 204, 240, 280, 300, 360	2.6-2.6/1.3	3.3-3.3/1.6	1/2**	1140

*Optional variable speed switch is available.

**These motors are without thermal overload protection.

Motors without thermal overload protection must be installed with optional manual starter or field provided overload protection.

NOTE 1: All motors are constant speed and operate at top speed as indicated in motor data. Unit sizes 18 through 108, including 108A, 118A, 125A and 136A can be run at reduced speed with addition of optional variable speed switch. This switch is factory-calibrated for low and high speed ratings, with intermediate speeds infinitely controllable. Models 120 through 360 operate at constant speed as indicated in motor data. All 1/4 HP motors are PSC.

NOTE 2: Motors under 1/3 HP are totally enclosed, frame mounted, 115/1/60 with thermal overload protection and permanently lubricated sleeve bearings with optional speed controller available. 1/3 HP (115/1/60) motors are open frame constant speed with thermal over-load protection and ball bearings. 1/3 HP (230 Volt) and 1/2 HP (230 Volt) motors are open frame constant speed with thermal overload protection and ball bearings.

EXPLOSION PROOF WITH THERMAL OVERLOAD MOTOR TYPE

Unit Sizes	AMP	MCA	HP	RPM
115/1/60				
48, 60, 72, 84, 96, 108, 120, 132	3.7	4.6	1/6	1140
144, 156, 180, 204	5.4	6.8	1/4	1140
240, 280, 300	7.4	9.3	1/3***	1140
360	9.6	12.0	1/2***	1140
230/1/60				
48, 60, 72, 84, 96, 108, 120, 132	3.7	4.6	1/6†	1140
144, 156, 180, 204	5.4	6.8	1/4†	1140
240, 280, 300	3.7	4.7	1/3***	1140
360	4.8	6.0	1/2***	1140
230/460/3/60				
144, 156, 180, 204, 240, 280, 300, 360	2.2/1.1	2.8/1.4	1/3	1140

***These motors are 115/230 volts.

†230/1/60 unit has 115/1/60 motor supplied with field installed stepdown transformer.

NOTE 3: 1/3 and 1/2 HP motors are available as 230 Volt single and 3 phase in open frame and explosion-proof housings, all available as options. 1/3 and 1/2 HP motors operate at single speed only.

NOTE 4: Stated AMP draw is full load amp (FLA). AMP draw varies by motor manufacturer ± .2 AMPS. Verify FLA per unit motor data plate.

CAUTION: Select appropriate AMP and MCA for the multiple voltage motors. For example, the AMP and MCA for Models 360 with a 460 volt Totally Enclosed motor is 1.3 and 1.6 respectively.

APPENDIX D

CONVECTOR

SW-A
Slope Top Cabinet
Wall Mounted

Submittal

Specification

SW-A Bottom Inlet

FRONT and LINER:

STYLE: Slope Outlet
OUTLET: Stamped Louvers
Pencil Proof

LENGTHS: 20" thru 64" in 4" Increments
MAT'L: Cabinet Front and Liner

- 18 Ga./20 Ga. CRS STD.
- 18 Ga./18 Ga. CRS (Opt'l)
- 16 Ga./20 Ga. CRS (Opt'l)
- 16 Ga./18 Ga. CRS (Opt'l)
- 16 Ga./16 Ga. CRS (Opt'l)
- 14 Ga./20 Ga. CRS (Opt'l)
- 14 Ga./18 Ga. CRS (Opt'l)
- 14 Ga./16 Ga. CRS (Opt'l)
- 14 Ga./14 Ga. CRS (Opt'l)

FINISH:

- Prime Finish Std.
- Baked Enamel (Opt'l)
- 18 Ga./20 Ga. SS (Opt'l)
- 18 Ga./18 Ga. SS (Opt'l)
- 16 Ga./20 Ga. SS (Opt'l)
- 16 Ga./18 Ga. SS (Opt'l)
- 16 Ga./16 Ga. SS (Opt'l)

ELEMENT:

COIL: Bronze Header 3/4" NPT
w/Copper Tube/Alum Fins
(Mechanically Expanded).

HEADER CONNECTIONS:

- Single Header Both Ends Std.
- Single Inlet 1 End / Dual Inlet
1 End (Opt'l)
- Dual Inlet Both Ends (Opt'l)

OPTIONAL ACCESSORIES:

DAMPER: Damper Blades Factory Installed
 Knob Damper (Opt'l)
 Tamper Resistant (Opt'l)

ACCESS DOORS:

- (Opt'l)

INSULATION:

- Back Only (Opt'l)
- Back, Sides, Top (Opt'l)

PIPING KNOCKOUT:

- (Opt'l)

4" END POCKETS:

- LH (Opt'l)
- RH (Opt'l)
- Both Ends (Opt'l)

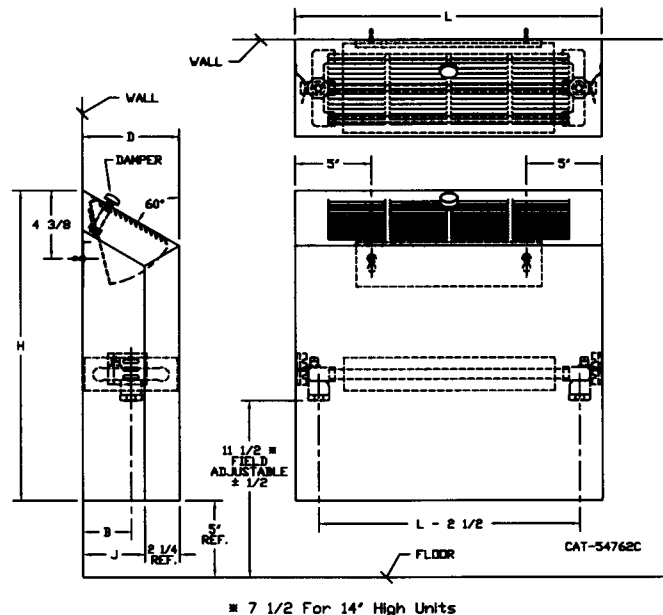
PERFORATED FRONT: Consult Factory

- 16 Ga. (Opt'l)
- 14 Ga. (Opt'l)

SW-A Bottom Inlet

TYPE SW-A

MODEL	D	L	H	B	J
4xx-14	4-1/4	20,24,28,	14	2-1/8	2
4xx-18		32,36,40,	18		
4xx-20		44,48,52,	20		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-14	6-1/4	20,24,28,	14	3-1/8	4
6xx-18		32,36,40,	18		
6xx-20		44,48,52,	20		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-14	8-1/4	20,24,28,	14	4-1/8	6
8xx-18		32,36,40,	18		
8xx-20		44,48,52,	20		
8xx-26		56,60,64,	26		
8xx-32			32		



NOTE: When adding end pockets liner and front length increase.



260 North Elm St.
Westfield, MA 01085
(413) 562-5423
Fax: (413) 572-3764
www.beacon-morris.com

PROJECT: _____ DATE: _____
LOCATION: _____
ARCHITECT: _____
ENGINEER: _____
CONTRACTOR: _____
PO NUMBER: _____



STEAM RATINGS IN BTU/H (215°F at 65°F E.A.T.)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT TYPE SW-A				
		14"	18"	20"	26"	32"
4	┌ 20	2930	3120	3220	3340	3500
	┌ 24	3700	3940	4060	4250	4420
	┌ 28	4490	4780	4900	5110	5300
	┌ 32	5260	5620	5760	6020	6290
	┌ 36	6050	6460	6620	6940	7250
	┌ 40	6790	7300	7490	7820	8110
	┌ 44	7580	8140	8350	8710	9070
	┌ 48	8350	8950	9190	9600	9980
	┌ 52	9140	9740	9940	10440	10850
	┌ 56	9890	10630	10820	11350	11830
	┌ 60	10700	11400	11620	12140	12820
	┌ 64	11420	12290	12530	13130	13920
6		14"	18"	20"	26"	32"
	┌ 20	4510	4940	5090	5350	5690
	┌ 24	5690	6260	6430	6940	7180
	┌ 28	6890	7560	7750	8330	8690
	┌ 32	8060	8880	9100	9820	10130
	┌ 36	9240	10150	10460	11230	11620
	┌ 40	10420	11450	11780	12650	13150
	┌ 44	11590	12770	13080	14140	14660
	┌ 48	12770	14060	14450	15530	16100
	┌ 52	14020	15290	15720	16900	17590
	┌ 56	15120	16610	17110	18380	19150
	┌ 60	16340	17880	18360	19730	20570
┌ 64	17470	19220	19750	21220	22080	
8		14"	18"	20"	26"	32"
	┌ 20	5760	6100	6290	6770	7030
	┌ 24	7270	7780	8020	8640	9000
	┌ 28	8880	9410	9650	10420	10820
	┌ 32	10370	11090	11350	12260	12790
	┌ 36	11950	12720	13080	14110	14690
	┌ 40	13460	14380	14780	15940	16580
	┌ 44	15020	16010	16460	17710	18430
	┌ 48	16580	17660	18100	19560	20380
	┌ 52	18190	19250	19750	21340	22220
	┌ 56	19630	20950	21480	23230	24220
	┌ 60	21290	22510	23110	24960	26040
┌ 64	22800	24220	24890	26830	28010	

Correction factors for BTU performance at different Average Water Temperatures, use correction factors from Table 3 of the Correction Factors page.

For other applicable correction factors see the Correction Factors page.

CONVECTOR BTU CORRECTION FACTORS

Table 3

CONVECTOR CORRECTION FACTORS Based on ASHRAE HVAC Systems and Equipment					
AVERAGE WATER TEMPERATURE	ENTERING AIR TEMPERATURES				
	▼				
	55°F	60°F	STD. 65°F	70°F	75°F
100°F	0.17	0.14	0.12	0.09	0.07
110°F	0.23	0.20	0.17	0.14	0.12
120°F	0.29	0.26	0.23	0.20	0.17
130°F	0.35	0.32	0.29	0.26	0.23
140°F	0.43	0.39	0.35	0.32	0.29
150°F	0.50	0.46	0.43	0.39	0.35
160°F	0.58	0.54	0.51	0.47	0.43
170°F	0.67	0.63	0.58	0.54	0.51
180°F	0.76	0.71	0.67	0.63	0.58
190°F	0.85	0.81	0.76	0.71	0.67
200°F	0.95	0.90	0.85	0.81	0.76
210°F	1.05	1.00	0.95	0.90	0.85
215°F (STD) ▶	1.10	1.05	1.00	0.95	0.90
220°F	1.15	1.10	1.05	1.00	0.95
230°F	1.26	1.20	1.15	1.10	1.05
240°F	1.37	1.32	1.26	1.21	1.15
250°F	1.47	1.43	1.37	1.32	1.27

Table 4

CORRECTION FACTORS FOR STEAM PRESSURES OTHER THAN 1 PSI GAUGE*						
FACTOR	PRESSURE PSI GAUGE					
	5	10	15	20	25	50
	1.12	1.25	1.36	1.46	1.56	1.93

*Apply factors shown above to the ratings shown on the 215°F ratings page.

Note: Max Recommended operating pressure 150 PSIG, (365.9°F).
For conversion from steam to hot water, use correction factors shown in table 3.

Table 5

DERATING PERCENTAGE REDUCTION TABLE								
Length	Free Standing, Non-Recessed Non-Standard Access Door Locations				Semi-Recessed or Recessed Non-Standard Access Door Locations			
	3 or 4	3 & 4	5 or 6	5 & 6	3 or 4	3 & 4	5 or 6	5 & 6
	20"	6%	12%	18%	35%	2.5%	5%	7.5%
24"	5	9	14	28	2	4	6	12
28"	4	8	11	23	1.8	3.2	5.2	9.8
32"	3	6	11	20	1.5	2.8	4.5	8.2
36"	3	6	8	17	1.2	2.5	3.8	7.5
40"	3	5	8	15	1	2.2	3	6.8
44"	2	5	7	14	1	2	3	6
48"	2	4	6	12	1	1.8	3	5.2
52"	2	4	5	11	.8	1.5	2.2	4.5
56"	2	4	5	11	.8	1.5	2.2	4.5
60"	2	3	5	10	.8	1.5	2.2	4.5
64"	2	3	5	9	.8	1.2	2.2	3.8

Note: Derating factors do not apply to units with end pockets.

Table 6

WATER FLOW IN G.P.M.	PRESSURE LOSS IN FEET OF WATER		
	4 INCH MODELS	6 INCH MODELS	8 INCH MODELS
.25	0.044	—	—
.50	0.160	0.070	0.046
1	0.597	0.270	0.167
2	2.220	1.047	0.616
3	—	2.260	1.367
4	—	3.793	2.380
5	—	—	3.673

Charted figures showing pressure drop through Convectors with forced hot water. Used for determining pressure head requirement. Based on 64" length units, but applicable to shorter units, as most loss is due to headers.

Table 7

DERATING FACTORS FOR INLET GRILLES			
TYPES: FSG-A, SRG-A, RFG-A, FWG-A, PWG-A, SFG-A			
HEIGHT	DEPTH		
	4	6	8
20"	3%	6%	9%
24"	2%	5%	7%
32"	1%	2%	3%

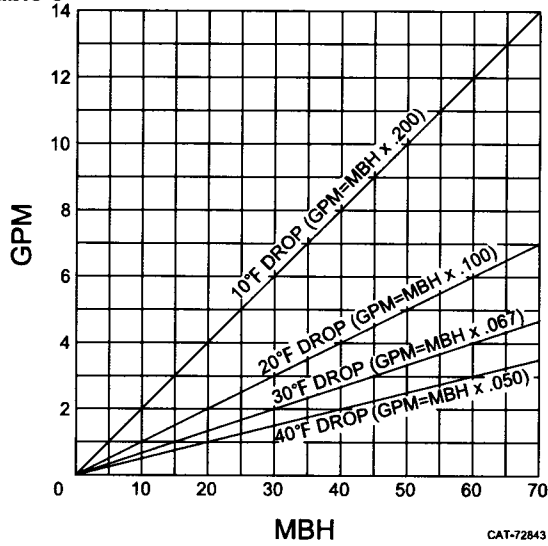
Due to the restriction to air flow, the percentages should be subtracted from the BTU output when inlet grilles are specified.

**ADDITIONAL CORRECTION FACTORS
ON NEXT PAGE**

CONVECTOR BTU CORRECTION FACTORS

GALLONS PER MINUTE OF HOTWATER REQUIRED

Table 8



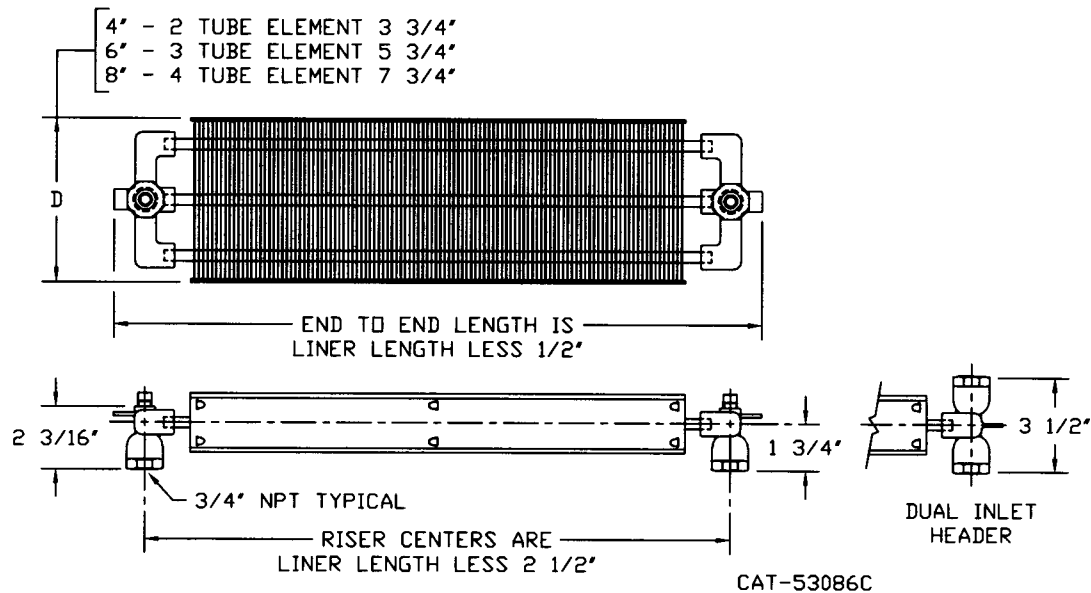
OUTPUT-FLOW RATE CORRECTIONS

Table 9

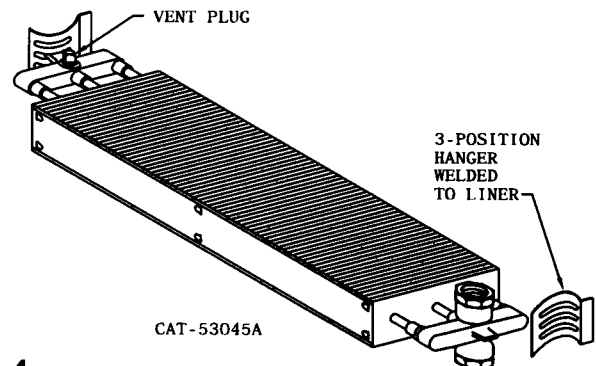
Convactor Depth	Tubes per Element	Min. Flow Rate (0.25 Ft./Sec.) GPM	MBH Based on T.D. & Min. Flow Rate			
			10TD	20TD	30TD	40TD
4"	2	.15	0.750	1,500	2,250	3,000
6"	3	.225	1.125	2,250	3,375	4,500
8"	4	.30	1.500	3,000	4,500	6,000

NOTE: Table 9 shows MBH which result at specific water temperature drops and minimum water flow rates which are required to maintain turbulent flow within element tubes.

CONVECTOR COIL



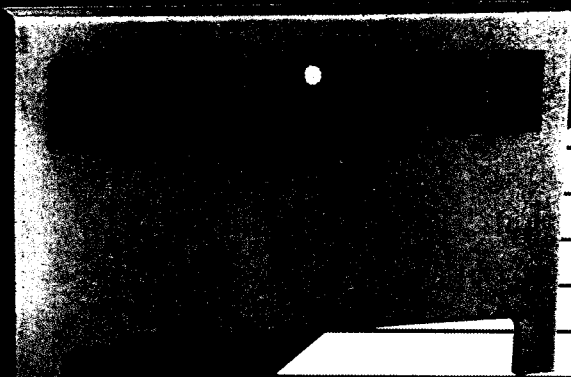
NOTE: When ordering convectors with end pockets always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size. Coil fins are 2 1/2" high by width shown above and are mechanically bonded to copper tube at 6 fins per inch.



CONVECTORS



Beacon/Morris®

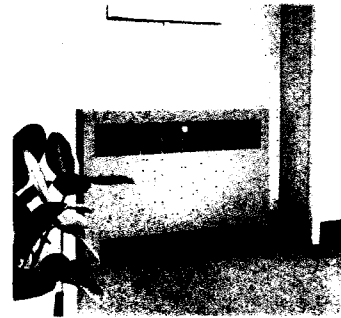




CONVECTOR RADIATION

Beacon/Morris Convectors are engineered for both forced hot water and two-pipe steam heating system installation with heating elements of lightweight non-ferrous construction. They are available in (7) basic types to meet a wide range of heating applications in institutional buildings, hospitals, hotels, office buildings, schools, apartments and other structures. A variety of cabinet enclosure styles permits the selection of an attractive and functional installation to blend with any building interior — modern or traditional.

Designed for maximum flexibility of installation arrangement, Beacon/Morris Convectors are available in free-standing, semi-recessed, wall hung and fully recessed models. Enclosures are formed from heavy-gauge steel, and finished in prime coat for complete protection against corrosion during shipment and providing a base for final finish to meet architectural requirements after installation.

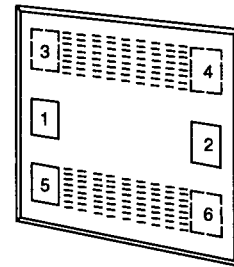


END POCKET

End Pockets — End pockets may be provided at each or either end of Beacon/Morris institutional convectors, to protect and conceal valves, traps and piping. A left-hand end pocket is illustrated. The liner is extended and a baffle welded to the back of the liner. The cabinet front is extended and grille is offset in length to line up with heating element. Length of end pocket is determined by using a standard element. Specify right or left hand. Available in 4" increments only. One end pocket only on 64" long units. No end pockets available on SRA or RFA 64" units.

Note: Fronts and liners increase in length but the coil length remains the same.

Access Doors — Access Doors (4 1/4" square) may be provided in the front panel of the convectors, for inspection or operation of valves, traps, or air vents. These doors are hinged on top. Concealed 1/4 turn locking device is provided with an Allen-head operator. Access doors are available in the standard locations illustrated. For units 24" or less in height, not all positions are available, consult factory. No access doors available in 14" high units. See table 5 on page 12 for derating factors.



ACCESS DOOR LOCATIONS

Heating Elements — Heating elements are available in 3 nominal depths — 4 inch with 2-tube element, 6 inch with 3-tube element, 8 inch with 4-tube element. Fins of .010" aluminum have integral collars to assure uniform spacing. Tubes are mechanically expanded into collars to permit maximum heat transfer. Both headers are cast brass with single - 3/4" NPT tappings. A dual top and bottom 3/4" tapped header is available. This option allows for supply and return piping to come from the top or bottom. Combined with the standard single header, piping direction is no longer a problem. Heating element assembly is protected by formed shield plates front and back running the entire length of element, and supported in enclosure by a welded bracket to eliminate strain on piping or element.

Tamper-Resistant Fasteners — Our Convector are provided with friction fit slip joiners. Hex Head Locks, to fasten fronts securely may be provided on special applications.

Concealed Fasteners — are available with Hex-head operator. Head of operator recessed 1/8" inside cabinet. Fastener engages keeper, spot welded to inside of liner.

Damper — The assembly consists of a triple lead screw and a heavy gauge damper blade, flanged top and bottom for additional rigidity, that covers the entire louvered area of the enclosure.

Damper assemblies are available with either a knob operator or a tamper resistant operator which is simply operated with a hex key. The later is particularly valuable in school or institutional work where only supervisory operation is desired.

Institutional convectors are specially constructed to satisfy the requirements of strength and safety demanded by institutional building application.

Heavy Gauge Steel — To withstand the abuse often received on this type of application, institutional convectors are available in heavy gauge steel upon specific request. (Front and back available in 18, 16 and 14 gauge)

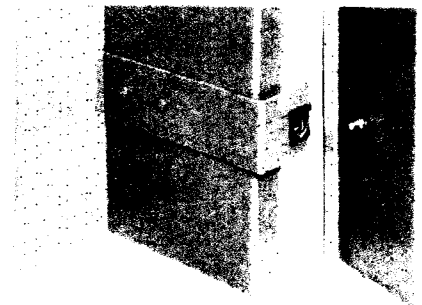
Perforated Outlet and/or Inlet — Consult factory for unit styles offered with 14-gauge perforated front panels.

Dual Inlet Header — Allows piping from either top or bottom.

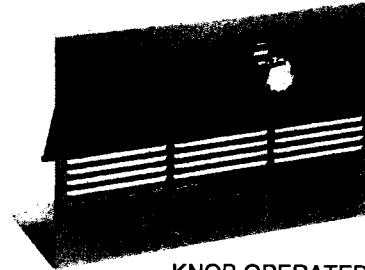
Non-Standard Sizes — Sizes other than standard can be provided for institutional buildings. Please consult factory with requirements.

Insulation — 1/2" thick fiber-glass insulation is available on convector backs, or sides and tops for special application. (Top does not apply to sloping models)

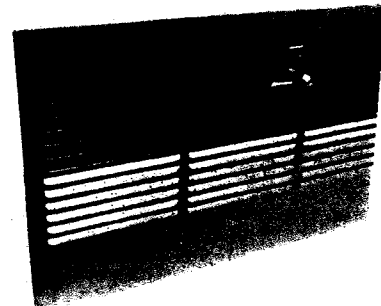
Special Finish — All our Convectors are thoroughly cleaned after fabrication and provided with a high quality baked enamel prime coat paint. As an option, cabinet may be finished in one of the standard Convector colors also in baked enamel.



STANDARD FASTENER FOR RECESSED UNITS



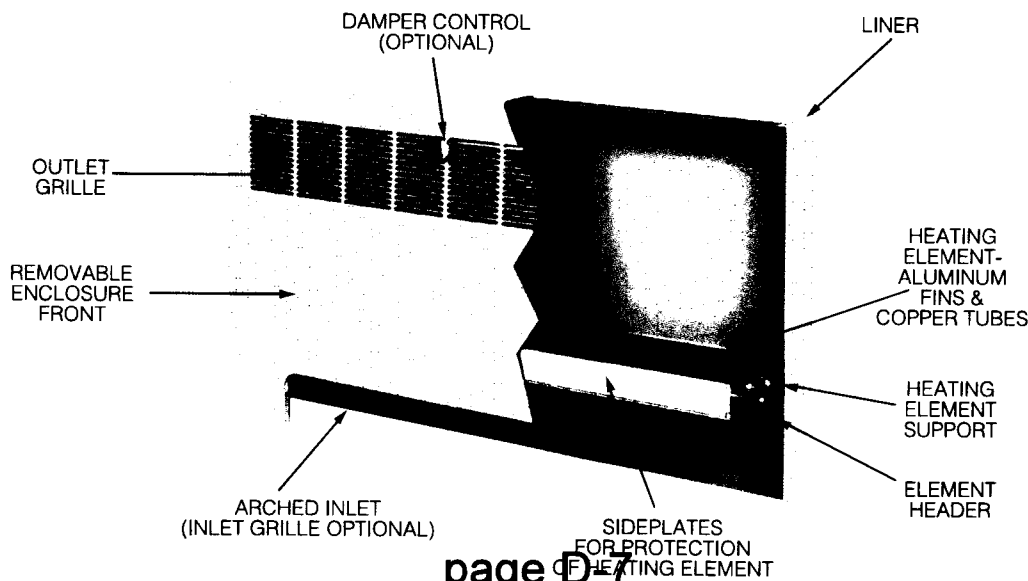
KNOB OPERATED DAMPER OPTION



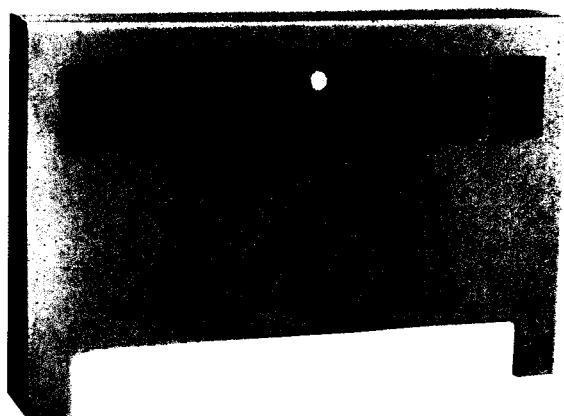
INSTITUTIONAL DAMPER OPERATOR

ENCLOSURES

Features of enclosure construction are shown below. Note that the element support provides a simple and inexpensive means of leveling the heating element or giving it an appropriate pitch for steam installation. Enclosures are formed steel with front of 18-gauge, back and sides of 20-gauge thickness. Enclosure fronts are separate and fastened by friction fit slip joiners at sides of the front piece. Back, top and sides are an integral welded structure in all models, except wall hung slope top model, which has top integral with front. Design details of individual units are shown on succeeding pages.

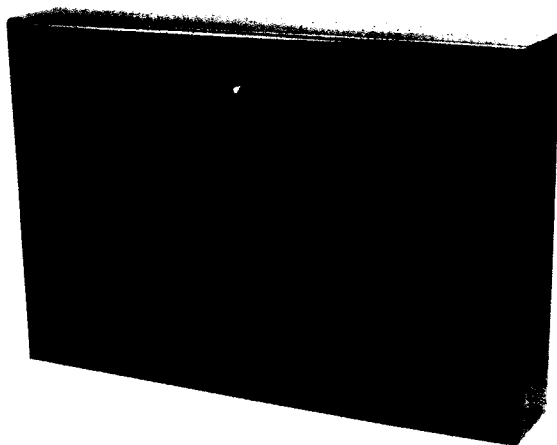


TYPES OF CONVECTORS



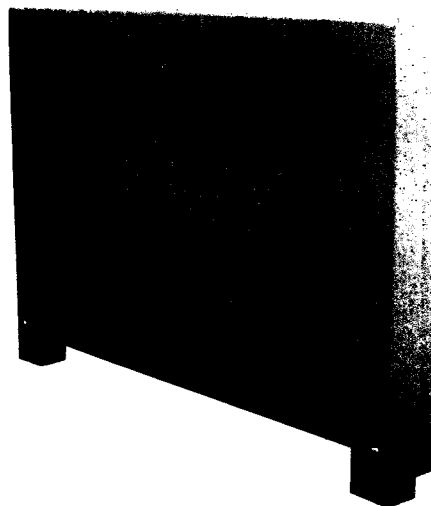
FS-A/FSG-A

Type FS-A: The type FS-A Free-Standing Cabinet Enclosure is designed to be used exposed and fitted flush against the wall. Readily installed without alteration of wall interior, The FS-A enclosure is frequently used for system modernization where it is desirable to avoid the expense of recessing the unit in the wall. Arched inlet shown is standard. Unit may be provided with integral inlet grille, (FSG-A). See page 14.



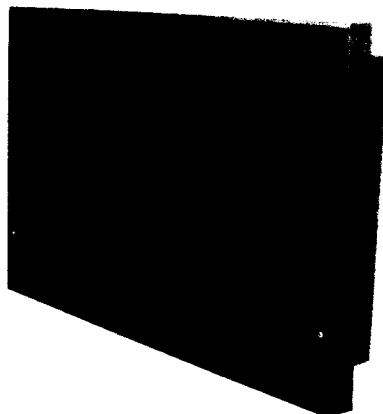
W-A

Type W-A: The W-A Convect is a completely exposed wall hung unit with flat top. Outlet grille is in the face of the enclosure. Enclosure front wraps around unit and fastens to sides of cabinet with clips. Air inlet is through open bottom of unit enclosure. See page 15.



SR-A/SRG-A

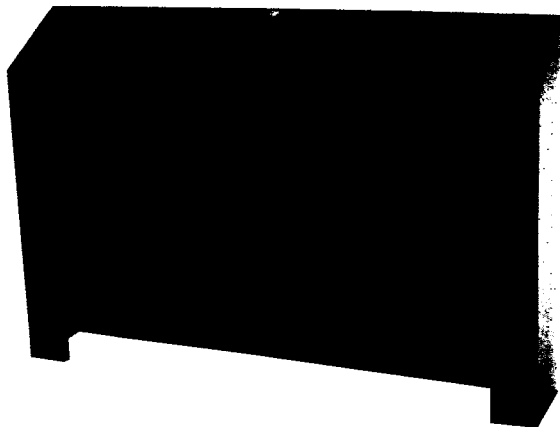
Type SR-A Semi-Recessed: Cabinet design is similar to FS-A model. Enclosure projects only 2 1/4" from wall. Complete unit includes enclosure, front panel with outlet grille and arched inlet opening, heating element. Front panel is easily removed for cleaning or access to heating element. Unit may be provided with integral inlet grille, (SRG-A). See page 16.



PW-A/PWG-A

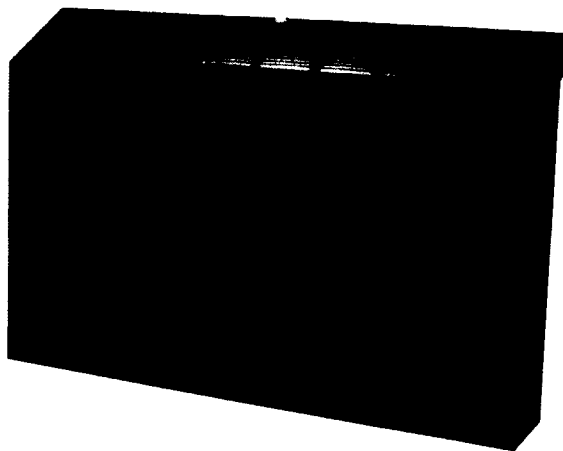
Type PW-A: This is a partially recessed unit with rounded flange front and venetian type air outlet grille, standard for wall mounting as illustrated. Cabinet extends only 2 1/4" from wall. Enclosure front fastens and screw to brackets on unit liner installed in wall recess. Air inlet is through open bottom of unit (PW-A). Unit may be provided with integral inlet grille, (PWG-A). See page 17.

TYPES OF CONVECTORS



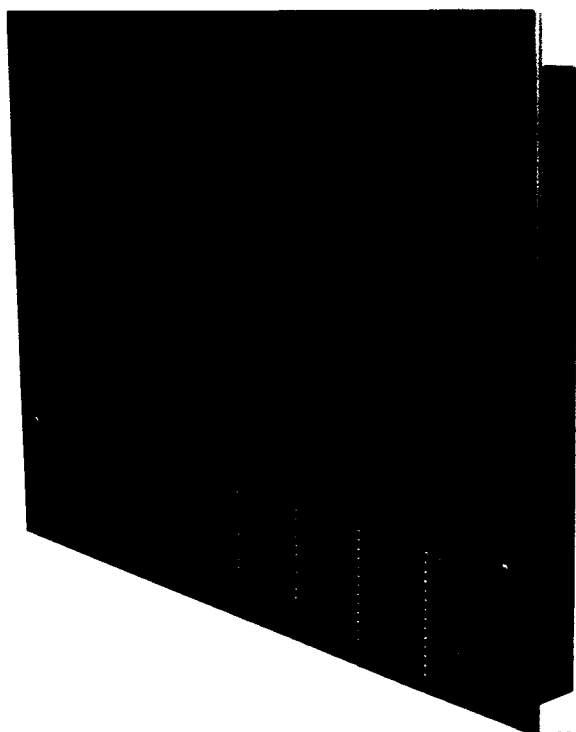
SF-A/SFG-A

Type SF-A: The Type SFA Free-Standing Cabinet Enclosure is designed to be used exposed and fitted flush against the wall. Readily installed without alteration of wall interior, the SFA enclosure is frequently used for system modernization where it is desirable to avoid the expense of recessing the unit in the wall. Arched inlet shown is standard. Unit may be provided with integral inlet grille, (SFG-A). See page 18. (SFG-A available in stainless steel, consult factory).



SW-A

Type SW-A: This model is fully exposed wall hung with outlet grille located in sloping top. Enclosure wraps around unit and fastens to sides with clips. Air inlet is through open bottom of unit. Slope of top is 30°. See page 15. Consult factory for availability with stainless steel.



RF-A/RFG-A AND FWG-A

Type RF-A: Designed to be fully recessed within the wall. The flanged edge metal front contains the outlet grille and inlet opening and is fastened by screws. It is easily removable for heating element access. The standard unit is arranged for floor mounting with arched inlet opening, (RF-A). Unit may be provided with integral inlet grille (RFG-A shown). TYPE FWG-A unit is similar, but for wall mounting with integral inlet grille. All units extend 13/16" from wall. See pages 19 & 20. Consult factory for availability of FWG-A and RFG-A models in stainless steel.

CONVECTOR STEAM RATINGS

TABLE 1

STEAM RATINGS IN EDR (215°F at 65° E.A.T.)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT *TYPES FS-A, SR-A, RF-A, PW-A					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT TYPE SW-A				
		18	20	24	26	32	14	18	20	26	32
4	20	9.3	10.4	11.8	12.3	13.0	12.2	13.0	13.4	13.9	14.6
	24	11.5	13.0	15.0	15.4	16.6	15.4	16.4	16.9	17.7	18.4
	28	13.8	15.9	18.1	18.6	19.9	18.7	19.9	20.4	21.3	22.1
	32	16.1	18.6	21.3	21.8	23.6	21.9	23.4	24.0	25.1	26.2
	36	18.2	21.4	24.4	25.0	27.0	25.2	26.9	27.6	28.9	30.2
	40	20.4	24.0	27.3	28.2	30.4	28.3	30.4	31.2	32.6	33.8
	44	22.6	26.8	30.6	31.3	33.9	31.6	33.9	34.8	36.3	37.8
	48	24.8	29.5	33.6	34.6	37.3	34.8	37.3	38.3	40.0	41.6
	52	27.3	32.5	36.9	37.8	40.6	38.1	40.6	41.4	43.5	45.2
6	20	13.5	15.1	17.7	18.3	20.2	18.8	20.6	21.2	22.3	23.7
	24	16.8	18.9	22.3	23.0	25.6	23.7	26.1	26.8	28.9	29.9
	28	20.2	23.0	27.0	27.8	30.7	28.7	31.5	32.3	34.7	36.2
	32	23.4	26.8	31.5	32.6	36.0	33.6	37.0	37.9	40.9	42.2
	36	26.8	30.6	36.0	37.5	41.3	38.5	42.3	43.6	46.8	48.4
	40	30.2	34.7	40.7	42.3	46.6	43.4	47.7	49.1	52.7	54.8
	44	33.6	38.5	45.3	47.1	51.7	48.3	53.2	54.5	58.9	61.1
	48	37.0	42.5	49.9	51.8	56.9	53.2	58.6	60.2	64.7	67.1
	52	40.6	46.6	54.6	56.4	62.1	58.4	63.7	65.5	70.4	73.3
8	20	16.8	18.9	21.0	21.4	23.2	24.0	25.4	26.2	28.2	29.3
	24	21.3	23.8	26.4	27.3	29.5	30.3	32.4	33.4	36.0	37.5
	28	26.6	29.0	32.0	32.9	35.5	37.0	39.2	40.2	43.4	45.1
	32	31.5	33.8	37.5	38.6	41.8	43.2	46.2	47.3	51.1	53.3
	36	36.3	38.8	43.1	44.4	48.0	49.8	53.0	54.5	58.8	61.2
	40	41.1	43.9	48.8	50.1	54.1	56.1	59.9	61.6	66.4	69.1
	44	46.0	49.0	54.1	55.8	60.4	62.6	66.7	68.6	73.8	76.8
	48	49.8	54.0	59.7	61.4	66.6	69.1	73.6	75.4	81.5	84.9
	52	56.1	59.3	65.3	67.1	72.8	75.8	80.2	82.3	88.9	92.6

TABLE 1A

STEAM RATINGS IN BTU/H (215°F at 65° E.A.T.)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT *TYPES FS-A, SR-A, RF-A, PW-A					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT TYPE SW-A				
		18	20	24	26	32	14	18	20	26	32
4	20	2230	2500	2830	2950	3120	2930	3120	3220	3340	3500
	24	2760	3120	3600	3700	3980	3700	3940	4060	4250	4420
	28	3310	3820	4340	4460	4780	4490	4780	4900	5110	5300
	32	3860	4460	5110	5230	5660	5260	5620	5760	6020	6290
	36	4370	5140	5860	6000	6480	6050	6460	6620	6940	7250
	40	4900	5760	6550	6770	7300	6790	7300	7490	7820	8110
	44	5420	6430	7340	7510	8140	7580	8140	8350	8710	9070
	48	5950	7080	8060	8300	8950	8350	8950	9190	9600	9980
	52	6550	7800	8860	9070	9740	9140	9740	9940	10440	10850
6	20	3240	3620	4250	4390	4850	4510	4940	5090	5350	5690
	24	4030	4540	5350	5520	6140	5690	6260	6430	6940	7180
	28	4850	5520	6480	6670	7370	6890	7560	7750	8330	8690
	32	5620	6430	7560	7820	8640	8060	8880	9100	9820	10130
	36	6430	7340	8640	9000	9910	9240	10150	10460	11230	11620
	40	7250	8330	9770	10150	11180	10420	11450	11780	12650	13150
	44	8060	9240	10870	11300	12410	11590	12770	13080	14140	14660
	48	8880	10200	11980	12430	13660	12770	14060	14450	15530	16100
	52	9740	11180	13100	13540	14900	14020	15290	15720	16900	17590
8	20	4030	4540	5040	5140	5570	5760	6100	6290	6770	7030
	24	5110	5710	6340	6550	7080	7270	7780	8020	8640	9000
	28	6380	6960	7680	7900	8520	8880	9410	9650	10420	10820
	32	7560	8110	9000	9260	10030	10370	11090	11350	12260	12790
	36	8710	9310	10340	10660	11520	11950	12720	13080	14110	14690
	40	9860	10540	11710	12020	12980	13460	14380	14780	15940	16580
	44	11040	11760	12980	13390	14500	15020	16010	16460	17710	18430
	48	11950	12960	14330	14740	15980	16580	17660	18100	19560	20380
	52	13460	14230	15670	16100	17470	18190	19250	19750	21340	22220

*Derating factors for inlet grilles, see Page 12 Table 7.

HOT WATER CAPACITIES – @ 20° TEMPERATURE DROP – MBH*

SLOPING TOP CABINETS TYPES SW-A & SF-A **

20° DROP HEIGHT	DEPTH SYMBOL	SLOPING OUTLET TYPES – 65° ENTERING AIR								AVERAGE WATER TEMP. 170°			
		LENGTH								52"	56"	60"	64"
		20"	24"	28"	32"	36"	40"	44"	48"				
TYPE SF-A 18	4 6 8	1.4 2.2 2.9	1.8 2.8 3.7	2.2 3.3 4.4	2.6 3.9 5.2	3.0 4.5 6.0	3.4 5.1 6.7	3.8 5.7 7.5	4.1 6.3 8.3	4.5 6.9 9.1	4.9 7.6 10.0	5.2 8.1 10.6	5.6 8.6 11.5
TYPE SF-A 20 TYPE SW-A 14	4 6 8	1.5 2.3 3.0	1.9 2.9 3.8	2.3 3.5 4.6	2.7 4.1 5.4	3.1 4.7 6.2	3.5 5.4 6.9	3.9 6.0 7.7	4.3 6.6 8.5	4.7 7.2 9.3	5.1 7.8 10.2	5.5 8.4 10.9	5.9 9.0 11.8
TYPE SF-A 24 TYPE SW-A 18	4 6 8	1.6 2.5 3.2	2.0 3.2 4.0	2.4 3.8 4.8	2.9 4.5 5.7	3.3 5.2 6.5	3.7 5.9 7.4	4.2 6.5 8.2	4.6 7.2 9.0	5.0 7.8 9.8	5.4 8.5 10.6	5.8 9.1 11.5	6.3 9.8 12.5
TYPE SF-A 26 TYPE SW-A 20	4 6 8	1.7 2.6 3.2	2.1 3.3 4.1	2.5 3.9 4.9	2.9 4.6 5.8	3.4 5.3 6.7	3.8 6.0 7.6	4.2 6.7 8.4	4.7 7.4 9.3	5.1 8.0 10.1	5.5 8.7 10.9	5.9 9.4 11.8	6.4 10.0 12.6
TYPE SF-A 32 TYPE SW-A 26	4 6 8	1.8 2.8 3.5	2.2 3.5 4.4	2.6 4.2 5.3	3.1 5.0 6.3	3.5 5.7 7.2	4.0 6.5 8.1	4.4 7.2 9.1	4.9 7.9 9.9	5.3 8.6 10.9	5.8 9.4 11.9	6.2 9.7 12.7	6.7 10.0 13.6
TYPE SW-A 32	4 6 8	1.9 2.9 3.6	2.3 3.7 4.6	2.7 4.4 5.5	3.2 5.2 6.5	3.7 6.0 7.5	4.2 6.7 8.5	4.6 7.5 9.4	5.1 8.3 10.3	5.5 9.0 11.4	6.0 9.8 12.3	6.5 10.5 13.3	7.1 11.4 14.4

SEE CORRECTION FACTORS FOR 10° and 30° TEMP. DROP Pg. 12

20° DROP HEIGHT	DEPTH SYMBOL	SLOPING OUTLET TYPES – 65° ENTERING AIR								AVERAGE WATER TEMP. 180°			
		LENGTH								52"	56"	60"	64"
		20"	24"	28"	32"	36"	40"	44"	48"				
TYPE SF-A 18	4 6 8	1.7 2.5 3.3	2.1 3.2 4.2	2.5 3.8 5.1	3.0 4.5 6.0	3.4 5.2 6.9	3.9 5.8 7.6	4.3 6.5 8.6	4.8 7.2 9.5	5.2 7.9 10.4	5.6 8.7 11.2	6.0 9.2 12.2	6.4 9.8 13.0
TYPE SF-A 20 TYPE SW-A 14	4 6 8	1.8 2.7 3.3	2.2 3.4 4.3	2.6 4.0 5.2	3.1 4.7 6.1	3.5 5.4 7.1	4.0 6.1 7.9	4.5 6.8 8.9	4.9 7.5 9.8	5.3 8.2 10.7	5.8 8.9 11.5	6.2 9.6 12.5	6.7 10.2 13.3
TYPE SF-A 24 TYPE SW-A 18	4 6 8	1.8 2.4 3.4	2.3 3.7 4.6	2.8 4.4 5.5	3.3 4.7 6.1	3.8 6.0 7.4	4.3 6.7 8.4	4.8 7.5 9.4	5.2 8.2 10.5	5.7 8.9 11.3	6.2 9.7 12.2	6.7 10.5 13.2	7.2 11.2 14.2
TYPE SF-A 26 TYPE SW-A 20	4 6 8	1.9 3.0 3.7	2.4 3.8 4.7	2.9 4.5 5.7	3.4 5.3 6.7	3.9 6.1 7.7	4.4 6.9 8.7	4.9 7.7 9.7	5.4 8.5 10.5	5.8 9.2 11.6	6.3 9.9 12.6	6.8 10.8 13.6	7.3 11.5 14.5
TYPE SF-A 32 TYPE SW-A 26	4 6 8	1.9 3.1 4.0	2.5 4.0 5.0	3.0 4.8 6.1	3.5 5.7 7.2	4.1 6.6 8.2	4.6 7.4 9.3	5.1 8.3 10.5	5.6 9.1 11.6	6.1 9.9 12.5	6.6 10.9 13.7	7.1 11.6 14.6	7.7 12.3 15.6
TYPE SW-A 32	4 6 8	2.1 3.4 4.2	2.6 4.2 5.3	3.1 5.1 6.4	3.7 6.0 7.5	4.2 6.8 8.6	4.8 7.7 9.7	5.3 8.6 10.7	5.8 9.5 12.0	6.3 10.3 13.0	6.9 11.1 14.3	7.5 12.1 15.3	8.1 12.9 16.5

20° DROP HEIGHT	DEPTH SYMBOL	SLOPING OUTLET TYPES – 65° ENTERING AIR								AVERAGE WATER TEMP. 190°			
		LENGTH								52"	56"	60"	64"
		20"	24"	28"	32"	36"	40"	44"	48"				
TYPE SF-A 18	4 6 8	1.9 2.8 3.7	2.4 3.6 4.7	2.9 4.3 5.7	3.4 5.1 6.7	3.9 5.9 7.7	4.4 6.6 8.7	4.8 7.3 9.7	5.4 8.1 10.8	5.8 8.9 11.7	6.3 9.8 12.6	6.8 10.4 13.7	7.3 11.0 14.9
TYPE SF-A 20 TYPE SW-A 14	4 6 8	2.0 3.0 3.7	2.5 3.8 4.8	3.0 4.5 5.8	3.5 5.3 6.9	4.0 6.1 8.0	4.5 6.9 9.0	5.0 7.7 9.9	5.5 8.5 10.9	6.0 9.3 12.0	6.6 10.0 13.2	7.1 10.8 14.1	7.6 11.7 15.0
TYPE SF-A 24 TYPE SW-A 18	4 6 8	2.0 3.3 4.1	2.6 4.1 5.2	3.1 5.0 6.2	3.7 5.9 7.3	4.3 6.7 8.4	4.8 7.6 9.5	5.4 8.4 10.5	5.9 9.3 11.8	6.4 10.1 12.7	7.0 10.9 13.7	7.5 11.8 14.9	8.1 12.6 16.1
TYPE SF-A 26 TYPE SW-A 20	4 6 8	2.1 3.4 4.2	2.7 4.3 5.3	3.2 5.1 6.4	3.8 6.0 7.5	4.4 6.9 8.6	4.9 7.8 9.8	5.5 8.7 11.0	6.0 9.5 12.1	6.5 10.4 13.1	7.1 11.2 14.3	7.7 12.1 15.3	8.3 12.9 16.3
TYPE SF-A 32 TYPE SW-A 26	4 6 8	2.2 3.5 4.5	2.8 4.6 5.7	3.4 5.5 6.9	4.0 6.5 8.1	4.6 7.4 9.3	5.1 8.4 10.5	5.7 9.3 11.9	6.3 10.4 13.0	6.9 11.2 14.1	7.5 12.2 15.4	8.1 13.0 16.5	8.7 13.9 17.8
TYPE SW-A 32	4 6 8	2.3 3.8 4.6	2.9 4.8 5.9	3.5 5.7 7.1	4.1 6.7 8.4	4.8 7.7 9.7	5.4 8.7 11.1	6.0 9.7 12.1	6.6 10.8 13.4	7.2 11.7 14.7	7.8 12.8 15.9	8.5 13.6 17.2	9.2 14.5 18.6

* MBH – Thousands BTU/HR.

** Derating factors for inlet grilles, see Page 12 Table 7.

MISCELLANEOUS CAPACITY AND SELECTION DATA

Selection

1. Determine the conditions of the system. (If hot water, the average temperature, temp. drop, etc.)
2. Determine the MBH capacity of the unit as required for each location as shown on plans or based on heat loss calculations.
3. Refer to the hot water capacity tables on page 8 thru 11 which list capacities at the conditions for the job, for the model convector required.
4. Locate in table the required capacity and read convector size from columns showing Depth, Length, Height.

Table 2

LOW WATER TEMPERATURE CORRECTION FACTORS	
AVERAGE WATER TEMPERATURE F°	CORRECTION FACTORS
160	0.51
150	0.43
140	0.36
130	0.29
120	0.22
110	0.15
100	0.09
90	0.04

Table 3

HOT WATER BTU per Sq. Ft. Steam EDR							
Hot Water Temperature Drop (°F)	Average Water Temperature (°F)						
	160	170	180	190	200	210	220
10° Drop	120	140	160	181	201	222	243
20° Drop	104	123	141	159	177	195	213
30° Drop	96	114	131	149	166	184	202

Refer: Table 1 & 2 Pages 6 & 7

A convector to be used with hot water may be selected on the basis of its EDR (steam) rating through the use of the conversion factors listed here.

Example: Heat Loss 8000 BTU
 Average water temperature 180°
 Temperature drop 10°
 Factor from table #3 160

$$\frac{8000}{160} = 50.0 \text{ EDR}$$

From EDR column in rating table select convector with EDR rating of approximately 50.0 (Table 1 & 2 Page 6 & 7)

Table 4

Correction Factors for Steam Pressures Other Than 1 Psi Gauge*						
FACTOR	PRESSURE PSI GAUGE					
	5	10	15	20	25	50
BTU PER SQ. FT.	269	301	327	351	374	463

*Apply factor to Tables 1, 1A, 2 and 2A to obtain rating at other than 1 psi gauge. (Pages 6 & 7).

Note: Max Recommended operating pressure 150 PSIG, (365.9°F).

For conversion from steam to hot water, use table factors as multiplier rather than a divisor.

Table 5

Length "L"	DERATING PERCENTAGE REDUCTION TABLE							
	Free Standing, Non-Recessed Non-Standard Access Door Locations				Semi-Recessed or Recessed Non-Standard Access Door Locations			
	3 or 4	3 & 4	5 or 6	5 & 6	3 or 4	3 & 4	5 or 6	5 & 6
20	6%	12%	18%	35%	2.5%	5%	7.5%	15%
24	5	9	14	28	2	4	6	12
28	4	8	11	23	1.8	3.2	5.2	9.8
32	3	6	11	20	1.5	2.8	4.5	8.2
36	3	6	8	17	1.2	2.5	3.8	7.5
40	3	5	8	15	1	2.2	3	6.8
44	2	5	7	14	1	2	3	6
48	2	4	6	12	1	1.8	3	5.2
52	2	4	5	11	.8	1.5	2.2	4.5
56	2	4	5	11	.8	1.5	2.2	4.5
60	2	3	5	10	.8	1.5	2.2	4.5
64	2	3	5	9	.8	1.2	2.2	3.8

Note: Derating factors do not apply to units with end pockets.

Table 7

Due to the restriction to air flow, the percentages should be subtracted from the BTU output when inlet grilles are specified.

DERATING FACTORS FOR INLET GRILLES			
TYPES: FSG-A, SRG-A, RFG-A FWG-A, PWG-A, SFG-A			
HEIGHT	DEPTH		
	4	6	8
20	3%	6%	9%
24	2%	5%	7%
32	1%	2%	3%

Refer: All Tables Pages 6-11

Table 6

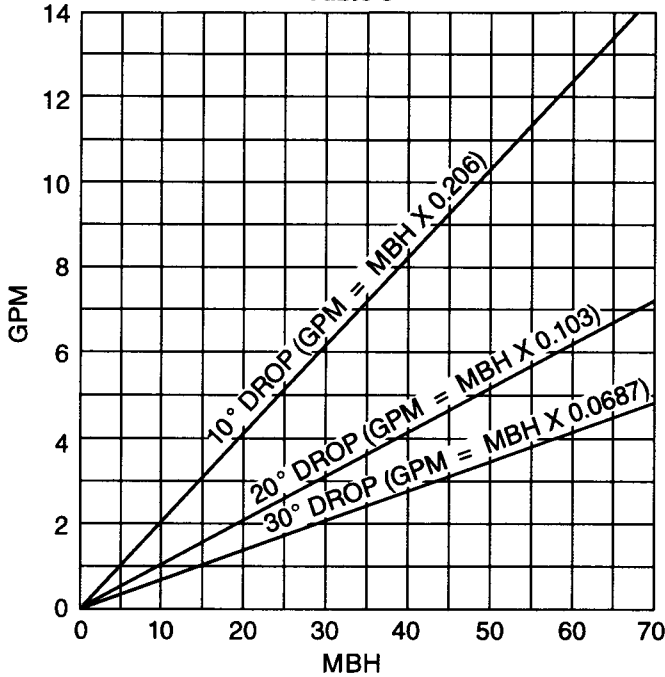
WATER FLOW IN G.P.M.	PRESSURE LOSS IN FEET OF WATER		
	4 inch models	6 inch models	8 inch models
.25	0.044	—	—
.50	0.160	0.070	0.046
1	0.597	0.270	0.167
2	2.220	1.047	0.616
3	—	2.260	1.367
4	—	3.793	2.380
5	—	—	3.673

Charted figures showing pressure drop through Convectors with forced hot water. Used for determining pressure head requirement. Based on 64"-length units, but applicable to shorter units, as most loss is due to headers.

REFER TO P. 21 FOR ELEMENT & PIPING INFORMATION

MISCELLANEOUS CAPACITY AND SELECTION DATA

GALLONS PER MINUTE OF HOT WATER REQUIRED
Table 8



The chart above may be used to determine the approximate GPM required for the desired MBH with various water temperature drops.

Formulas shown in chart with temperature drops may also be used for determining GPM.

EXAMPLE: $\left\{ \begin{array}{ll} \text{MBH} & 15 \\ \text{Temperature drop} & 10^\circ \\ \text{Factor from formula} & .206 \\ 15 \times .206 = & 3.09 \text{ GPM} \end{array} \right.$

Where systems are designed for low flow rates (velocity) it has been determined by ASHRAE and the Hydronics Institute (I.B.R.) that a minimum flow rate of .25 F.P.S. should be observed. No formal test information is available for performance below the .25 F.P.S. at this point in time.
REF:

$$\begin{aligned} \text{BTU} &= \text{GPM} \times 500 \times \text{TD} \\ \text{GPM} &= (\text{BTU} + 500) \div \text{TD} \\ \text{TD} &= (\text{BTU} + 500) \div \text{GPM} \end{aligned}$$

CORRECTIONS WHEN USING GLYCOL SOLUTION IN SYSTEM

		Propylene Glycol
1. Heat transfer @ 180°F, with no increase in flow rate	20% solution	.982*
	30% solution	.961*
	40% solution	.934*
	50% solution	.902*
2. G.P.M. req'd @ 180°F, (no correction to pump curve)	20°Δt	110%*
3. Pump head req'd @ 180°F, with increase in G.P.M.		123%*
4. Freezing Point	50% by volume	-37°F
	40%	-14°F
	30%	+ 2°F
	20%	+15°F

*Compared To Water.

OUTPUT-FLOW RATE CORRECTIONS
Table 9

Convector Depth	Tubes per Element	Min. Flow Rate (0.25 Ft./Sec) GPM	MBH Based on T.D. & Min. Flow Rate		
			10TD	20TD	30 TD
4	2	0.14	0.7	1.4	2.1
6	3	0.21	1.0	2.1	3.2
8	4	0.28	1.4	2.8	4.2

Note: TABLE 9 shows MBH which result at specific water temperature drops and minimum water flow rates which are required to maintain turbulent flow within element tubes. If the MBH output rating capacities shown on pages 8 to 11 fall below those shown in TABLE 9 for the minimum flow rates, this indicates that the GPM required at a 20 Deg. water temperature drop is less than the minimum GPM required to maintain turbulent flow.

Example: From page 8, -20° water temperature drop
 -170° F. AWT, 65° F. EA
 -Unit: FSA-18, 8" deep, 24" long
 -MBH = 2.6 (Rated capacity)

This capacity rating is less than the MBH (2.8) shown in TABLE 9 for a 20 Deg. F. TD and the minimum flow rate of 0.28 GPM.

Applying the following formula to the example above, we may determine the GPM required for a 20 Deg. F. TD at 2.6 MBH.

$$\text{GPM} = \frac{2.6 \text{ MBH}}{500 \times 20 \text{ TD}} \quad \text{GPM} = 0.26$$

Again, this GPM is too low to maintain turbulent flow within the element tubes. Therefore, use Min. GPM of 0.28 per TABLE 9.

The water temperature drop which may be expected when using the Min. GPM can be determined using the following formula:

$$\text{TD} = \frac{2.6 \text{ MBH}}{500 \times 0.28} \quad \text{TD} = 18.57 \text{ Deg. F.}$$

Note: By using the higher flow rate, a lower water temperature drop will be experienced. Because of this, the average water temperature will be higher and result in a somewhat higher output capacity. For many installations, the use of the minimum GPM from TABLE 9 will be satisfactory, without further consideration. However, if required, a closer approximation may be obtained by dividing by two and subtracting the result from the entering water temperature of 180 Deg. F.

$$\text{i.e. } 180 - \left(\frac{18.57}{2} \right) = 170.7 \text{ Deg. F. AWT}$$

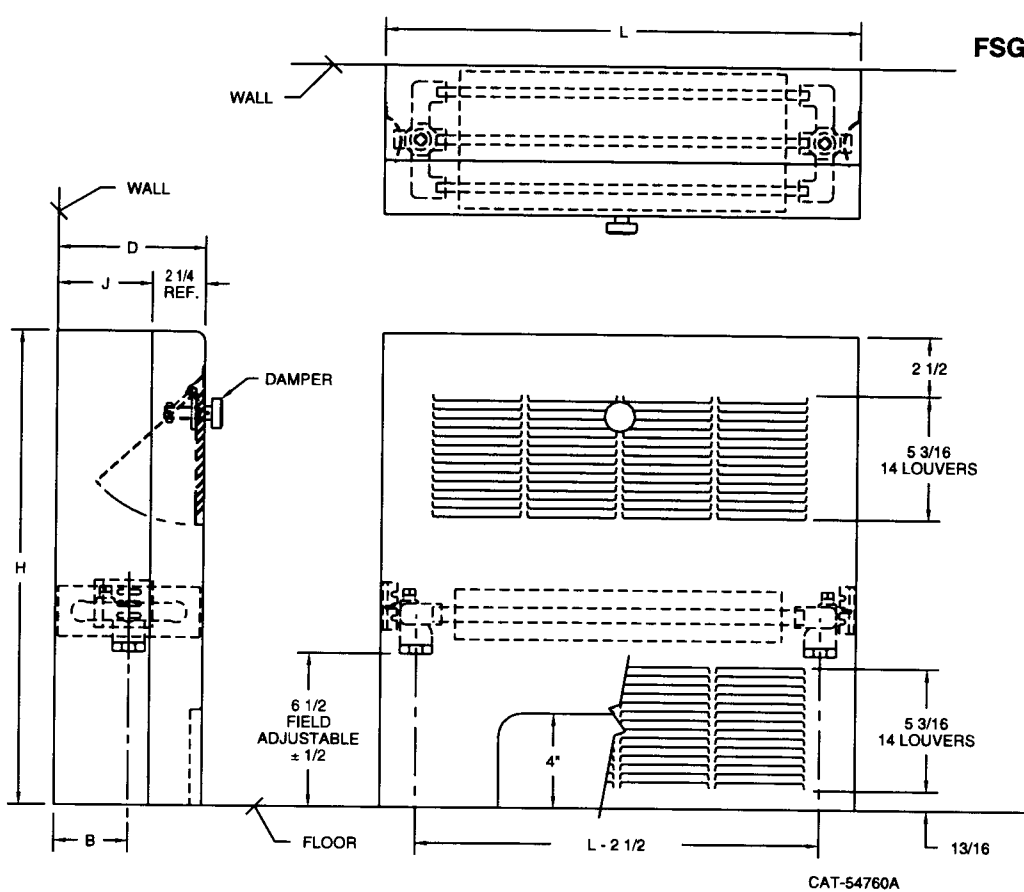
Then, the new MBH rating may be determined by interpolation between the ratings shown on page 8 for the unit at 170 AWT and 180 AWT. In the above example, the new rating would be 2.61 MBH which would be very close to the actual performance without resorting to further iterations.

CONVECTOR DESIGN/INSTALLATION DATA

TYPE FS-A / FSG-A

TABLE					
MODEL	D	H	L	B	J
418	4-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
420		20			
424		24			
426		26			
432		32			
618	6-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
620		20			
624		24			
626		26			
632		32			
818	8-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
820		20			
824		24			
826		26			
832		32			

NOTE: When adding end pockets liner and front length increase.



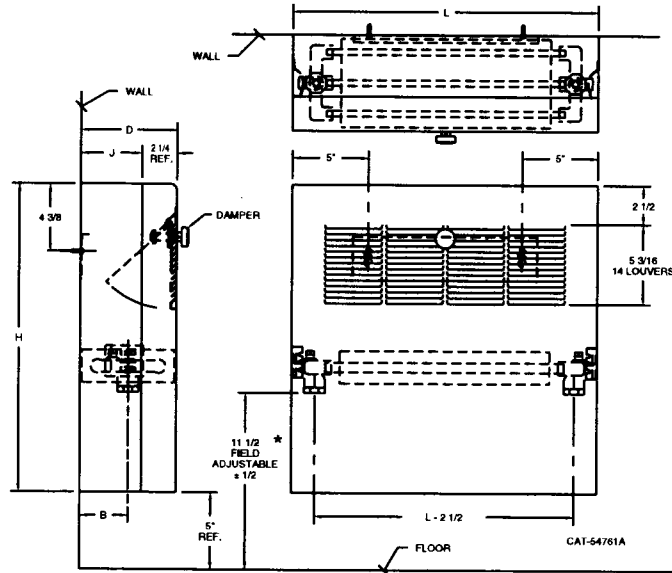
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CONVECTOR DESIGN/INSTALLATION DATA

TYPE W-A

W-A

TABLE					
MODEL	D	H	L	B	J
414	4-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
418		18			
420		20			
426		26			
432		32			
614	6-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
618		18			
620		20			
626		26			
632		32			
814	8-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
818		18			
820		20			
826		26			
832		32			



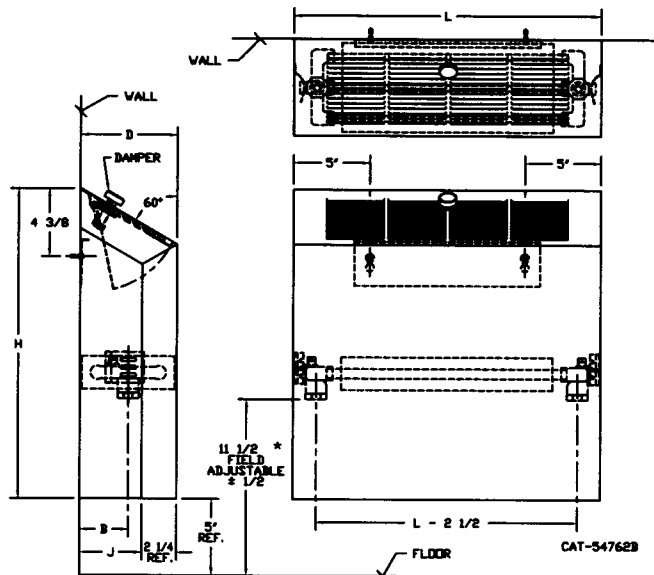
* 7-1/2" For 14" High Units

NOTE: When adding end pockets liner and front length increase.

TYPE SW-A

SW-A

TABLE					
MODEL	D	H	L	B	J
414	4-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
418		18			
420		20			
426		26			
432		32			
614	6-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
618		18			
620		20			
626		26			
632		32			
814	8-1/4	14	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
818		18			
820		20			
826		26			
832		32			



* 7-1/2" For 14" High Units

NOTE: When adding end pockets liner and front length increase.

CONVECTOR DESIGN/INSTALLATION DATA

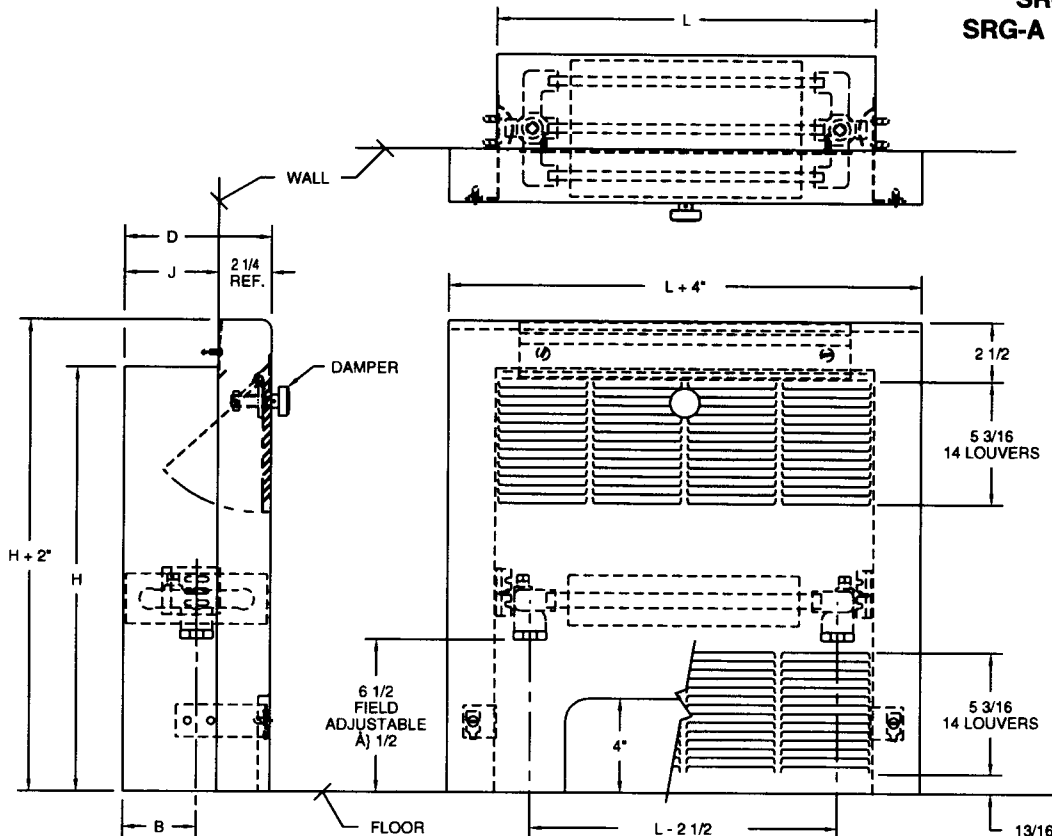
TYPE SR-A / SRG-A

TABLE					
MODEL	D	H	L	B	J
416	4-1/4	16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
418		18			
422		22			
424		24			
430		30			
616	6-1/4	16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
618		18			
622		22			
624		24			
630		30			
816	8-1/4	16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
818		18			
822		22			
824		24			
830		30			

NOTE: Order by Liner Dimensions — L x H.
When adding end pockets liner and front length increase.

Ratings, pages 6 thru 9, equivalent to
FSA Models. (SRA 416 = FSA 418)

SR-A = ARCHED INLET
SRG-A = LOUVERED INLET
(Grille)



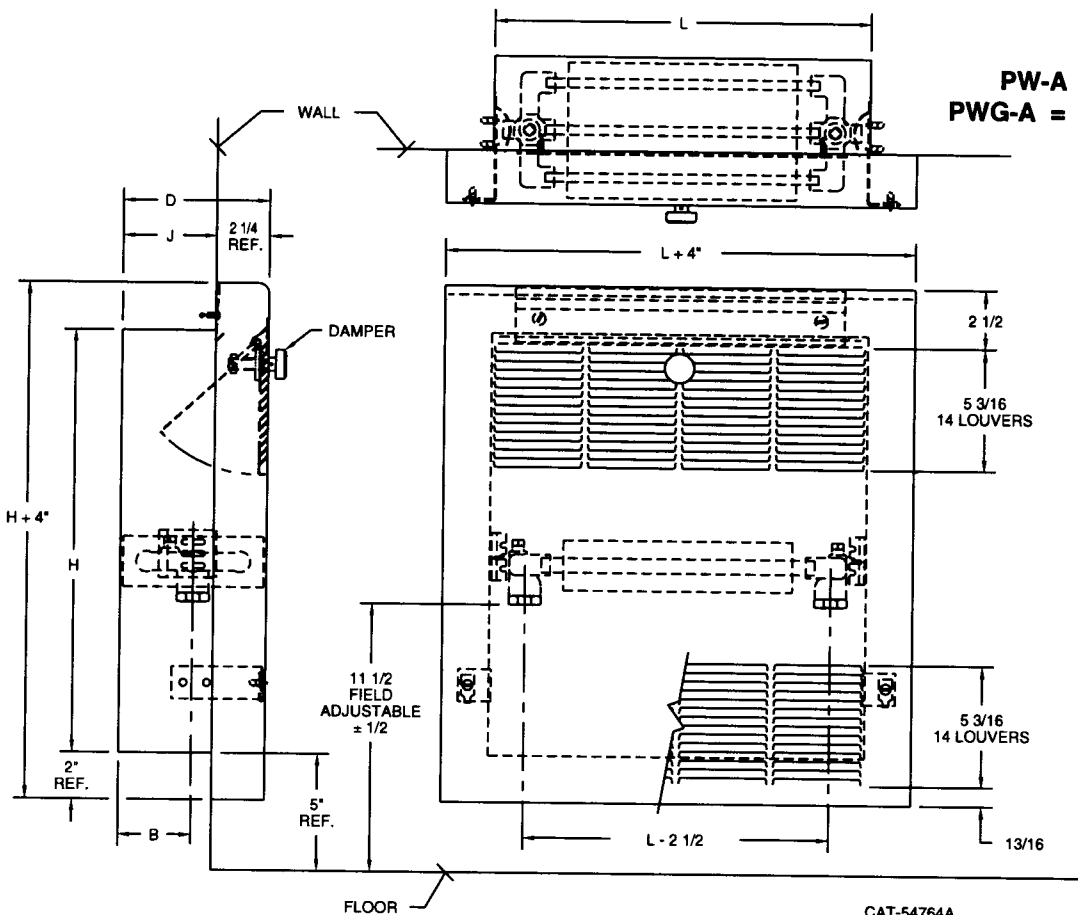
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CONVECTOR DESIGN/INSTALLATION DATA

TYPE PW-A / PWG-A

TABLE					
MODEL	D	H	L	B	J
418	4-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
420		20			
424		24			
426		26			
428		28			
618	6-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
620		20			
624		24			
626		26			
628		28			
818	8-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
820		20			
824		24			
826		26			
828		28			

NOTE: Order by Liner Dimensions — L x H.
When adding end pockets liner and front length increase.



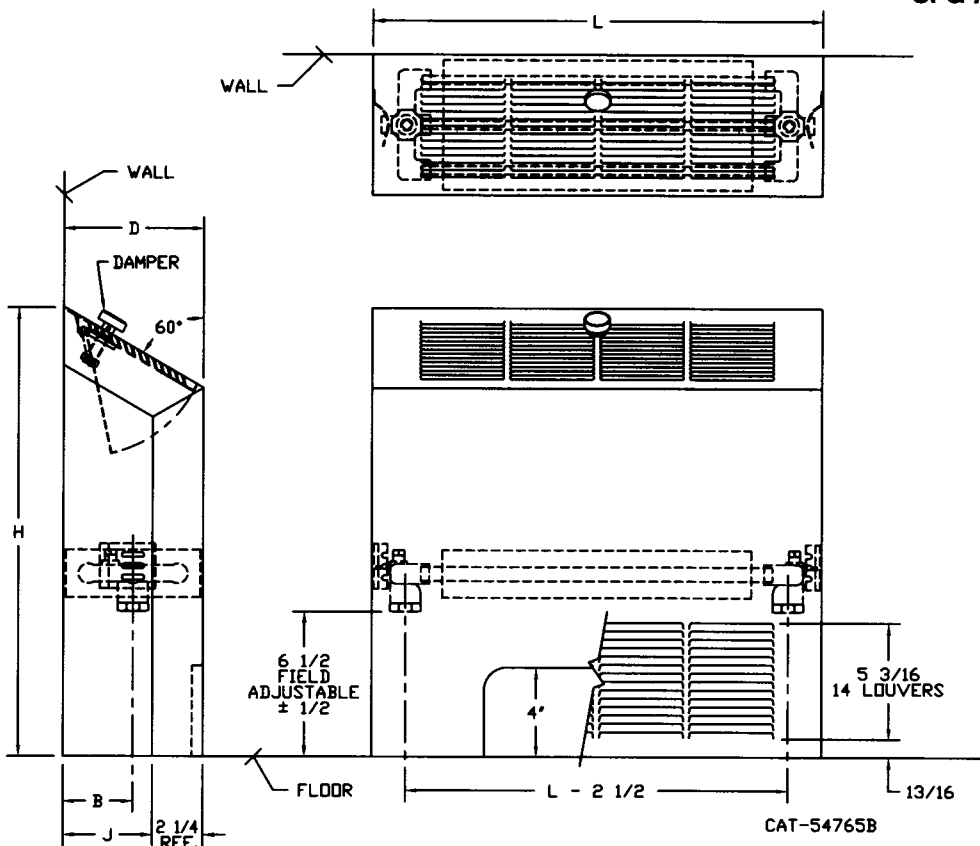
CONVECTOR DESIGN/INSTALLATION DATA

TYPE SF-A / SFG-A

TABLE					
MODEL	D	H	L	B	J
418	4-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	2
420		20			
424		24			
426		26			
432		32			
618	6-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	4
620		20			
624		24			
626		26			
632		32			
818	8-1/4	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	6
820		20			
824		24			
826		26			
832		32			

NOTE: When adding end pockets liner and front length increase.

SF-A = ARCHED INLET
SFG-A = LOUVERED INLET
(Grille)



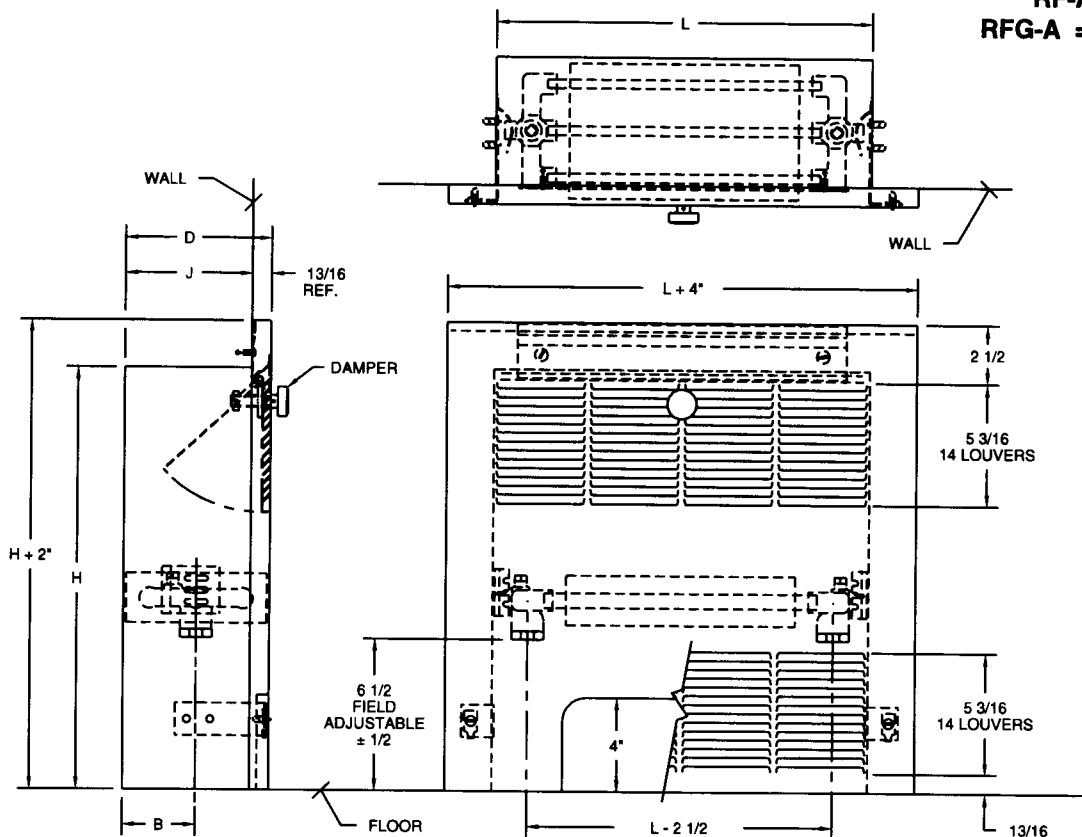
CONVECTOR DESIGN/INSTALLATION DATA

TYPE RF-A / RFG-A

TABLE					
MODEL	D	H	L	B	J
418	4-13/16	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	2-1/8	4
420		20			
424		24			
426		26			
432		32			
618	6-13/16	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	3-1/8	6
620		20			
624		24			
626		26			
632		32			
818	8-13/16	18	20,24,28, 32,36,40, 44,48,52, 56,60,64,	4-1/8	8
820		20			
824		24			
826		26			
832		32			

NOTE: Order by Liner Dimensions — L x H.
When adding end pockets liner and front length increase.

RF-A = ARCHED INLET
RFG-A = LOUVERED INLET
(Grille)



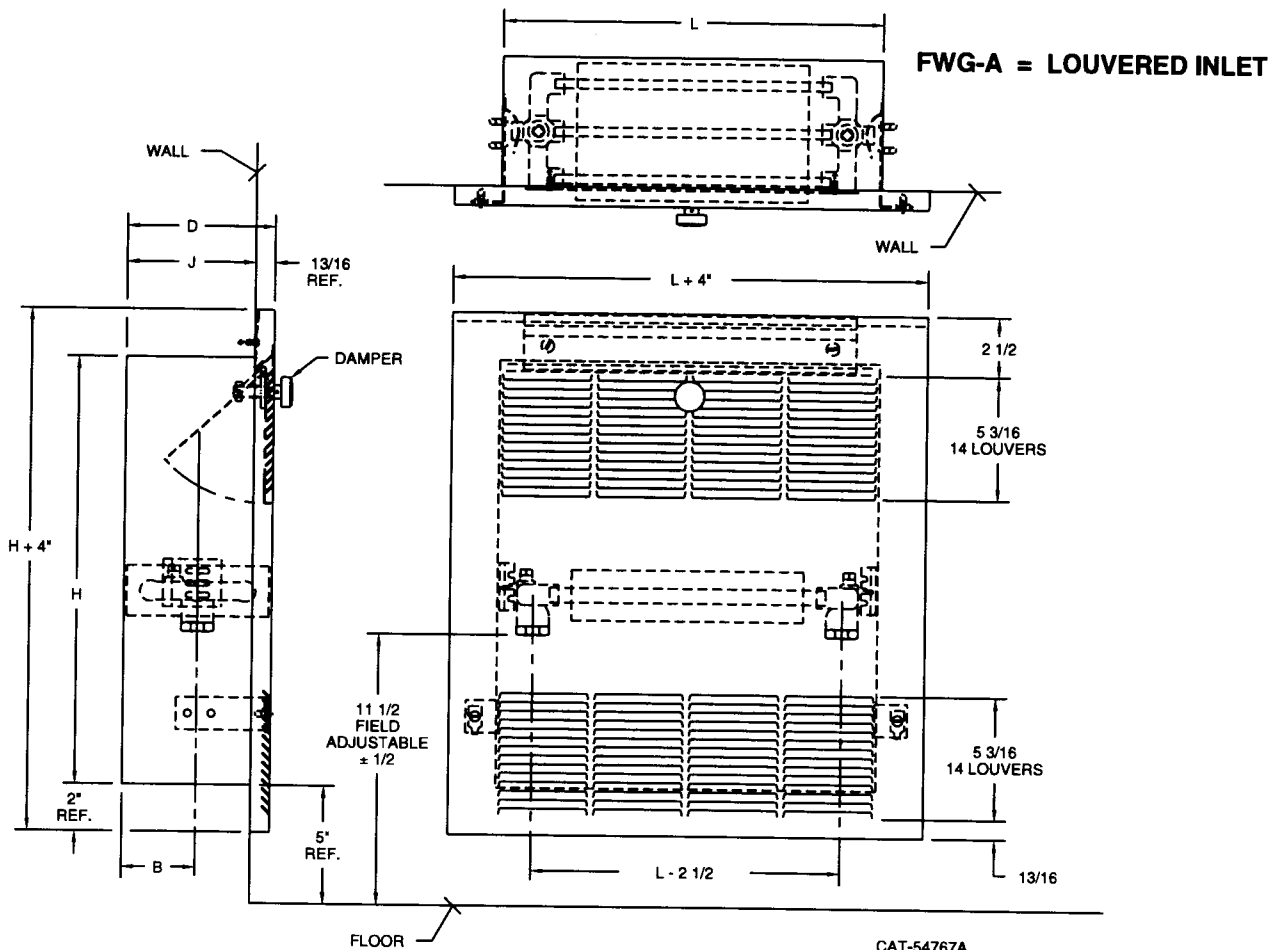
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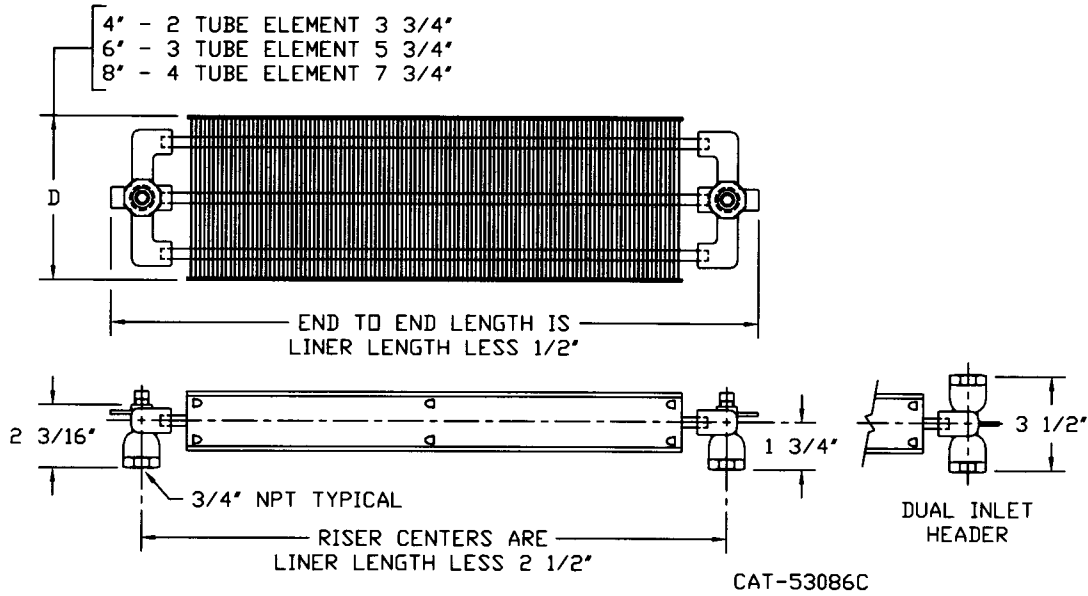
TYPE FWG-A

TABLE					
MODEL	D	H	L	B	J
418	4-13/16	18	20,24,28,	2-1/8	4
420		20	32,36,40,		
424		24	44,48,52,		
426		26	56,60,64,		
432		32			
618	6-13/16	18	20,24,28,	3-1/8	6
620		20	32,36,40,		
624		24	44,48,52,		
626		26	56,60,64,		
632		32			
818	8-13/16	18	20,24,28,	4-1/8	8
820		20	32,36,40,		
824		24	44,48,52,		
826		26	56,60,64,		
832		32			

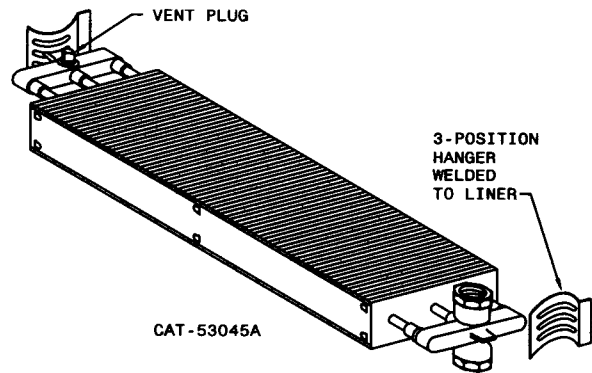
NOTE: Order by Liner Dimensions — L x H.
When adding end pockets liner and front length increase.



CONVECTOR DESIGN/INSTALLATION DATA



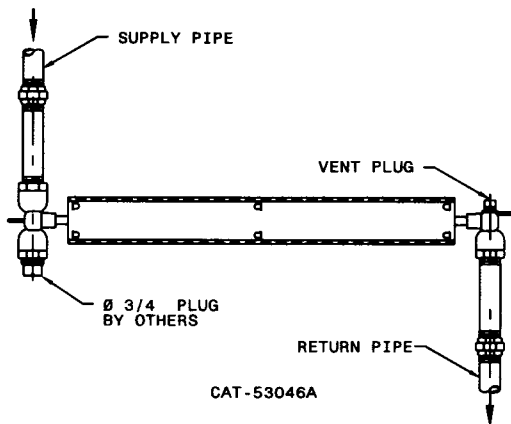
NOTE: When ordering convectors with end pockets always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size. Coil fins are 2 1/2" high by width shown above and are mechanically bonded to copper tube at 10 fins per inch.



Non-ferrous convector heating elements consist of aluminum fins specially collared and mechanically bonded to 3/8 dia. copper tubes as the primary radiating surface. The tubes are joined at each end by cast brass headers for connection to the system risers. One header is provided with 1/4 in. NPT tapping for venting, the other header is

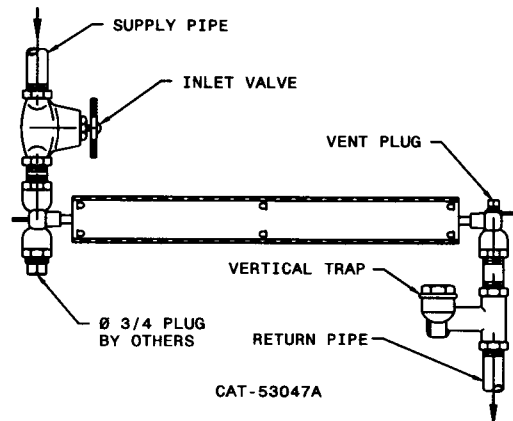
supplied with a 1/4 NPT galvanized plug. All elements have steel side plates for appearance and strength. Standard heating element is supplied with two single 3/4" NPT headers. An optional dual inlet header is available. This allows for piping to come in from the top or bottom of element. Specify DH header one end when required.

HOT WATER SYSTEM



STEAM SYSTEM

(Not recommended for one pipe steam)



CONVECTOR SPECIFICATIONS

CONVECTOR RADIATORS

Furnish and install Convectors where shown on plans.

HEATING ELEMENTS

Convector heating elements shall be non-ferrous consisting of 3/8" diameter copper tubing and .010 thick aluminum plate fins with full-flanged collars. The tubes shall be expanded mechanically into fin collars to form a permanent thermal bond. Fins shall be protected front and back by formed shield plates running entire length of element. Headers shall be cast brass provided with bottom threaded piping connections. Heating elements shall be tested by manufacturer at 100 P.S.I. air pressure under water. Elements shall be supported from brackets on sides of cabinet which shall allow for proper pitching of the element.

CABINETS GENERAL

Cabinets shall be formed from cold rolled steel and shall be suitably braced and reinforced where necessary to provide stiffness, and accurately fitted to prevent air leakage. Cabinet front shall be flanged top and bottom for added rigidity. Top edge of cabinet fronts shall be smoothly formed with 3/8" inside radius. Air outlet louvers (and inlet louvers where required) shall be the venetian type. 18 gauge cold rolled steel heating element support brackets shall be spot welded to inside ends of all Convector cabinets.

After fabrication, all cabinets shall be thoroughly cleaned, and provided with a high quality baked enamel prime coat. Accessory items shall be included as noted per job requirements.

FREE STANDING CABINETS — TYPE FS-A & FSG-A

Type FS-a Convectors shall be constructed from not less than #18 gauge CRS fronts and tops and #20 gauge CRS back, sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be in top face of front panel. Air inlet shall be through (arched opening Type FS-A) (venetian type louvers stamped in lower section of front panel — same length and height as air outlet louvers Type FSG-A).

WALL HUNG FLAT-TOP CABINETS — TYPE W-A

Type W-A Convectors shall be constructed from not less than #18 gauge CRS fronts and tops, and #20 gauge CRS back, sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be at top of front panel. Air inlet shall be through open bottom. Back panel has stiffener with key-hole for added support and for mounting to wall.

WALL HUNG SLOPE TOP CABINETS — TYPE SW-A

Type SW-A cabinets shall be constructed from not less than #18 gauge CRS front and top and #20 gauge CRS back and sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit slip joints. Air outlet louvers of venetian type shall be in slope top. Type SW-A air inlet shall be through open bottom. Back shall be provided with holes for mounting on wall. Back panel has stiffener with key-hole for added support and for mounting to wall.

FREE STANDING SLOPE TOP CABINETS — TYPES SF-A & SFG-A

Type SF-A & SFG-A cabinets shall be constructed from not less than #18 gauge CRS front and top and #20 gauge CRS back and sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be in slope top.

Type SF-A air inlet shall be through arched opening in front panel.

Type SFG-A air inlet shall be through venetian type louvers stamped in front panel, same length and height as air outlet louvers.

PARTIALLY RECESSED CABINETS — TYPE SR-A & SRG-A, PW-A & PWG-A

Type SR-A & PW-A Convectors shall be constructed from not less than #18 gauge CRS wrap-around fronts and #20 gauge CRS recessed liner. Depth of cabinet front from wall shall be 2 1/4 inches. Front shall have radiused front edges and shall extend back to wall and fasten to brackets on liner with screws. Front shall be provided with venetian type air outlet grille (and arched air inlet, SR-A) (and integral inlet air grille, SRG-A & PWG-A). Convectors shall be 3 side overlap (for floor mount models, SR-A & SRG-A) and 4 side overlap for wall mounting, model (PWG-A).

FULLY RECESSED CABINETS — TYPE RF-A & RFG-A & FWG-A

Convectors shall be constructed from not less than #18 gauge CRS fronts and not less than #20 gauge CRS liner. Fronts shall engage into horizontal securing strip as well as utilizing two front positive locking screws. Fronts shall be provided with venetian type air outlet louvers and integral inlet air louvers (arched air inlet for RF-A). Metal front cabinets shall be three (3) side overlap for floor mounting RF-A and RFG-A models. Wall mounting model FWG-A shall be four (4) sided front cabinets. All enclosure styles are available as options.

All enclosure styles are available with heavy gauge CRS.

Fronts: #18 gauge standard

#16 gauge, #14 gauge optional

Liners: #20 gauge standard

#18 gauge, #16 gauge, #14 gauge optional

CONVECTOR SPECIFICATIONS

DAMPERS

Provide factory installed knob-operated dampers for Convector where noted. The operator is to be a fast-action, triple lead screw, knob operated for ease of adjustment.

ACCESS DOORS

Where noted, Convectors shall be provided with access doors. Access doors shall be 4 1/4" x 4 1/4" and shall be located in the non-louvered area*. Access doors shall be hinged on side with straight shaft type hinge and shall close with positive-action snap hinge.

On units 24" high or less, consult factory for available door locations. For units without end pockets at access door locations, an adjustment must be made in the output ratings stated on pages 6 thru 11. See Table 6 on page 12 for derating percentage reductions. No access door available on 14" high units.

END POCKETS

Where noted, Convectors shall be provided with 4" end pockets (right end only) (left end only) (both ends). End pocket shall consist of the cabinet extended in length as noted with #20 gauge CRS baffle spot welded to back of cabinet extending from heating element to air outlet louvers. One end pocket only 64" long units. No end pockets on 64" SRA or RFA units.

NOTE: When ordering convectors with end pockets always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size.

UNIT SIZE SELECTION

Example: Required, a type SW-A convector having an MBH capacity of 14.0, 190° average water temperature with 20° temperature drop. Turn to page 10, and using the table for 190° average water locate a rating of 14.0 or greater. In the columns at the left edge of the table you will find the depth and height of the unit and in the space at the top of the column containing the rating, you will find the length of the unit. It will be noted that several units meet the requirements listed. Select the size which best suits the application.




When ordering convectors with end pockets always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size.

INSTITUTIONAL CABINETS

Furnish and install institutional-type Convectors where indicated. Cabinets shall be as described previously under the specific type except that tamper-resistant fasteners (Hex Head Screws) (Hex Head Concealed Locks) shall be provided. (Dampers and access doors where required shall be provided with Hex Head operators).

OPTIONAL EQUIPMENT

Among optional equipment features available with these Convectors are the following:

1. Damper with Knob Operator. Detailed description on  page 3.
2. Access Door. Provided only when specifically ordered,  hinged for easy access to valves or vents.*
3. Knock-outs on sides of cabinet are optional and will be  provided only when specifically ordered.

Special models of these Convectors can also incorporate such special design features as integral inlet grilles, insulation, special gauge thickness of enclosure, special fasteners to meet unusual requirements, and various institutional type features as described on page 3.

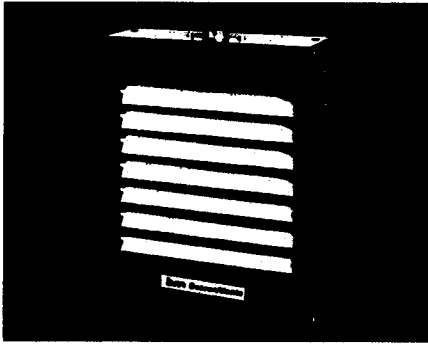
*Note: Refer to page 2 for Standard Access Door Locations #1 & #2. For Non Standard Access Door Locations (3, 4, 5 or 6) consult factory for cost and delivery schedule date.

For units with 14, 16 or 18 inch high liners and grilled (louvered) inlet, a louver bank will be omitted due to the short height of the cover.

Example: Required, an FS-A convector having 40.5 EDR at 215° steam. Select size 6-40-24 from table #1 on page 6, which furnishes 40.7 EDR, or any other size furnishing 40.5 or more EDR. If the requirements are given in BTU's per hour (steam system) divide the BTU requirements by 240 to obtain the EDR capacity required and select the convector direct from table 1 and 2.

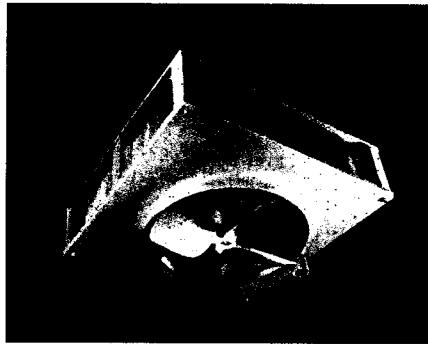
In the interest of product improvement we reserve the right to make changes without notice.

Other Products Manufactured by Beacon/Morris



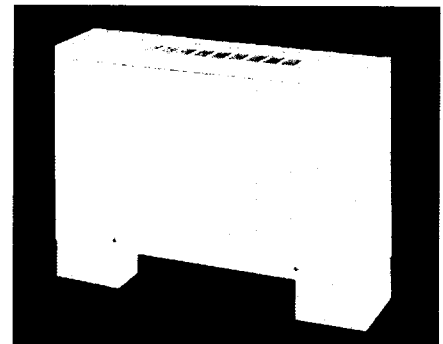
Horizontal Unit Heater.

The Beacon/Morris horizontal steam/hot water unit heaters are available in twenty three models ranging from 8,000 BTUH to 360,000 BTUH (steam ratings). Available at competitive prices, and fast delivery makes it an easy choice.



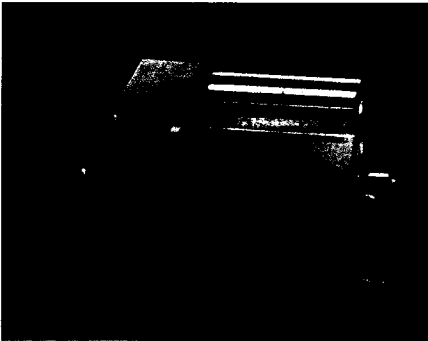
Vertical Unit Heater.

The Beacon/Morris vertical steam/hot water unit heaters are available in ten new models ranging from 35,190 BTUH to 705,000 BTUH (steam). Low temperature models are also available.



Cabinet Unit Heaters.

These units feature a unique solid state speed control for efficient and quiet operation. Available in attractive floor models and basic units for concealed or recessed installations.

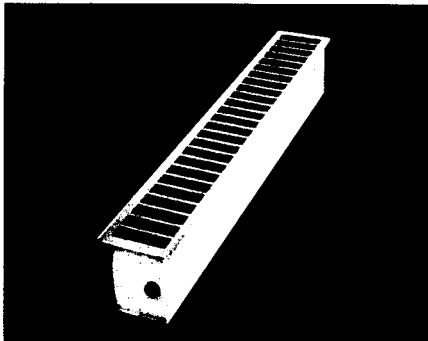


Twin-Flo.

When there's no space left for baseboard, install The Original space-saving Twin-Flo Heaters. Twin-Flo goes where convectors or baseboard cannot.

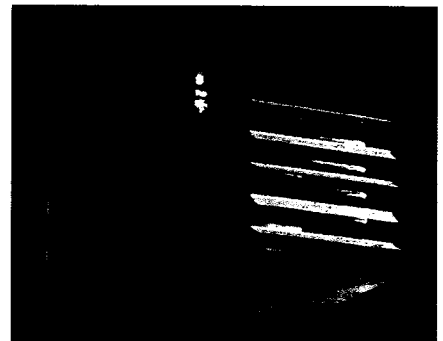
Our Twin-Flo kick space model measures a mere 4" x 12¹/₄" x 12³/₄". But don't let its small size fool you — it delivers 4,278 BTU's, that's the equivalent of 9 feet of baseboard heating. Compact Twin-Flo units install in existing hot water heating systems.

So remember, no matter how tight the space, The Original Twin-Flo can solve your customers' needs. Four models in three sizes to choose from: 4,278, 8,460 and 11,585 BTU outputs. Send for FREE Catalog.



Window/Floor Vectors.

Icy window walls and sliding doors are converted to comfort zones with the Beacon/Morris Window/Floor Vector. Rectangular, grille-topped heaters recess into floor, "catch" cold air falling off window; deliver steady, efficient heat. Fit easily into wood or concrete slab floors or interior window ledges. Rust-resistant steel cabinet, welded steel floor register. In modular 3, 4 or 5-foot lengths to fit all window areas.



Low Profile Tubular Gas-Fired Unit Heaters

BRUT low profile, gas-fired unit heaters are built by design. The durable tubular heat exchanger provides maximum and uniform heat transfer for longer service life.

Best of all, the BRUT conforms to the latest ETL certification standards for residential garage installations.

Five low profile units to choose from 30,000, 45,000, 60,000, 75,000 & 90,000 BTU/Hr.



260 NORTH ELM STREET / WESTFIELD, MASSACHUSETTS 01085 / (413) 562-5423 FAX: (413) 572-3764
7555 TRANMERE DRIVE / MISSISSAUGA, ONTARIO L5S 1L4 CANADA / (905) 672-2991 FAX: (905) 672-2883

www.beacon-morris.com

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page D-28

APPENDIX E

Performance Climate Changer

2/22/2017



Job Name	LFUCG West Hickman WWTP AHU
User Name	(H62)LEX-A
Address	Lexington

Performance Climate Changer

CSIA04

Quantity 1

Job Comments

Where applicable air-handling performance data shall be certified in accordance with AHRI standard 430. Air handlers with multiple direct drive fans, or direct drive fans in an array arrangement are rated in accordance with AHRJ 430.

All weights and dimensions are approximate. Certified prints on request.

Performance Climate Changer

2/22/2017

Unit level options

Module Position: 0

<u>Actual airflow</u>	1200 cfm	<u>Return - 4K Hz</u>	54 dB
<u>Unit elevation</u>	0.00 ft	<u>Return - 8K Hz</u>	47 dB
<u>Unit size</u>	4	<u>Casing - 63 Hz</u>	69 dB
<u>Integral base frame</u>	2.5in. integral base frame	<u>Casing - 125 Hz</u>	66 dB
<u>UL listed unit</u>	UL listed unit	<u>Casing - 250 Hz</u>	62 dB
<u>Circuit number 1</u>	Supply fan motor(s)	<u>Casing - 500 Hz</u>	59 dB
<u>FLA (CV) circuit 1</u>	16.00 A	<u>Casing - 1K Hz</u>	59 dB
<u>MCA circuit 1</u>	20.00 A	<u>Casing - 2K Hz</u>	52 dB
<u>MOP circuit 1</u>	36.00 A	<u>Casing - 4K Hz</u>	47 dB
<u>Fuse size circuit 1</u>	35.00 A	<u>Casing - 8K Hz</u>	43 dB
<u>Circuit number 2</u>	Controls-LL	<u>Supply front - 63 Hz</u>	85 dB
<u>FLA (CV) circuit 2</u>	2.61 A	<u>Supply front - 125 Hz</u>	82 dB
<u>MCA circuit 2</u>	3.26 A	<u>Supply front - 250 Hz</u>	80 dB
<u>MOP circuit 2</u>	5.87 A	<u>Supply front - 500 Hz</u>	80 dB
<u>Fuse size circuit 2</u>	15.00 A	<u>Supply front - 1K Hz</u>	76 dB
<u>Product group</u>	Indoor unit	<u>Supply front - 2K Hz</u>	73 dB
<u>High voltage location</u>	Right	<u>Supply front - 4K Hz</u>	67 dB
<u>Length</u>	117.875 in	<u>Supply front - 8K Hz</u>	62 dB
<u>Width</u>	44.000 in	<u>Outdoor - 63 Hz</u>	63 dB
<u>Installed weight</u>	1057.7 lb	<u>Outdoor - 125 Hz</u>	66 dB
<u>Rigging weight</u>	1057.7 lb	<u>Outdoor - 250 Hz</u>	67 dB
<u>Return - 63 Hz</u>	65 dB	<u>Outdoor - 500 Hz</u>	58 dB
<u>Return - 125 Hz</u>	70 dB	<u>Outdoor - 1K Hz</u>	54 dB
<u>Return - 250 Hz</u>	67 dB	<u>Outdoor - 2K Hz</u>	52 dB
<u>Return - 500 Hz</u>	59 dB	<u>Outdoor - 4K Hz</u>	49 dB
<u>Return - 1K Hz</u>	56 dB	<u>Outdoor - 8K Hz</u>	43 dB
<u>Return - 2K Hz</u>	55 dB		

Controls and VFD/starter

Module Position: 0

<u>Factory controls package</u>	Constant volume	<u>Outside air sensor</u>	None
<u>Automatic Selection</u>	Validation Only	<u>Averaging temperature sensor material</u>	1k Pt 385
<u>Controller mounting</u>	Remote	<u>Design sequence - controls</u>	J
<u>Unit mounting controller location</u>	Right	<u>Number of transformers</u>	1 - Transformer
<u>Controller type</u>	Term block-remote UC controller	<u>Prepackaged solution option used</u>	PPS common configuration not used
<u>LCD screen</u>	No LCD	<u>PPS valid unit configuration</u>	Non valid MP common configuration
<u>Frost protection sensor</u>	None	<u>Total number of control points</u>	2 control points

Warranty

Module Position: 0

<u>Warranty section</u>	Std. warranty only
-------------------------	--------------------

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Performance Climate Changer

2/22/2017

Air mixing section

Module Position:

1

<u>Section type</u>	Air mixing section	<u>Actuator</u>	No
<u>Unit size</u>	4	<u>Opening 1 bottom - airflow</u>	1200 cfm
<u>Mixing section type</u>	reduced length - filter	<u>Filter condition</u>	Mid-life
<u>Filter frame</u>	2"	<u>Filter airflow</u>	1200 cfm
<u>Filter type 1 - run set</u>	Pleated media - MERV 8	<u>Opening 1 back - airflow</u>	1200 cfm
<u>Side access door location</u>	Right	<u>Opening 1 front - airflow</u>	1200 cfm
<u>Back opening type</u>	High velocity parallel damper	<u>Opening 1 bottom - face velocity</u>	1061 ft/min
<u>Back air path</u>	Entering	<u>Opening 1 bottom - pressure drop</u>	0.699 in H2O
<u>Back air path type</u>	Return	<u>Opening 1 back total pressure drop</u>	0.699 in H2O
<u>Back inlet type</u>	Ducted	<u>Opening 1 bottom total pressure drop</u>	0.699 in H2O
<u>Front opening type</u>	Full face opening	<u>Greatest entry PD</u>	0.699 in H2O
<u>Front air path</u>	Leaving	<u>Opening 1 back - area</u>	1.13 sq ft
<u>Top opening type</u>	No opening	<u>Opening 1 back - face velocity</u>	1061 ft/min
<u>Bottom opening type</u>	High velocity opposed damper	<u>Opening 1 back - pressure drop</u>	0.699 in H2O
<u>Bottom air path</u>	Entering	<u>Opening 1 front - area</u>	6.25 sq ft
<u>Bottom air path type</u>	Outside	<u>Opening 1 bottom - area</u>	1.13 sq ft
<u>Bottom inlet type</u>	Ducted	<u>Filter area</u>	5.56 sq ft
<u>Right side opening type</u>	No opening	<u>Filter face velocity</u>	216 ft/min
<u>Left side opening type</u>	No opening	<u>Filter pressure drop</u>	0.545 in H2O
<u>Design sequence</u>	H		

Coil section

Module Position:

2

<u>Coil se [2]-1</u>			
<u>Section type</u>	Horizontal coil	<u>Standard fluid flow rate</u>	9.00 gpm
<u>Unit size</u>	4	<u>Fluid type</u>	Water
<u>Section size</u>	IFB - medium large (1-3 rows)	<u>Coil fluid percentage</u>	100.00 %
<u>Coil application</u>	Heating coil	<u>Target valve pressure drop</u>	4.00 psig
<u>Changeover coil</u>	No	<u>Elec coil control valve type</u>	2-way
<u>System type</u>	Water IFB	<u>Elec coil valve style input</u>	Ball valve
<u>Coil supply/cabinet side</u>	Right	<u>Valve normal position</u>	Normally open
<u>Coil height</u>	Integral face & bypass	<u>Coil face velocity</u>	438 ft/min
<u>IFB - coil size</u>	A-24 horiz IFB coil	<u>Air pressure drop</u>	0.514 in H2O
<u>IFB - coil rows</u>	3 rows	<u>Leaving fluid temperature</u>	160.28 F
<u>IFB - fins per inch</u>	9 fins per inch	<u>Fluid pressure drop</u>	0.75 ft H2O
<u>Drain pan</u>	No drain pan	<u>Coil face area</u>	2.74 sq ft
<u>Design sequence</u>	E	<u>Coil installed weight</u>	205.3 lb
<u>Apply AHRI ranges</u>	No	<u>Actual valve pressure drop</u>	101.472 in H2O
<u>Coil performance airflow</u>	1200 cfm	<u>Elec coil valve style output</u>	Ball valve
<u>Coil elevation</u>	0.00 ft	<u>Coil section pressure drop</u>	0.514 in H2O
<u>Entering dry bulb</u>	60.00 F	<u>Section length</u>	26.500 in
<u>Leaving dry bulb</u>	93.26 F	<u>Section height</u>	29.000 in
<u>Total capacity</u>	43.31 MBh	<u>Section width</u>	44.000 in
<u>Entering fluid temperature</u>	170.00 F	<u>Section weight</u>	342.3 lb
<u>Fluid temperature drop</u>	9.72 F		

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Performance Climate Changer

2/22/2017

Access section

Module Position: 3

<u>Section type</u>	Access/blank/turning	<u>Back opening</u>	Full Face
<u>Unit size</u>	4	<u>Design sequence</u>	B
<u>Section size</u>	Extended medium	<u>Section length</u>	19.000 in
<u>Side access door location</u>	Right	<u>Section width</u>	44.000 in
<u>Door swing direction</u>	Outward swing	<u>Section height</u>	29.000 in
<u>Front opening</u>	Full Face	<u>Section weight</u>	88.0 lb

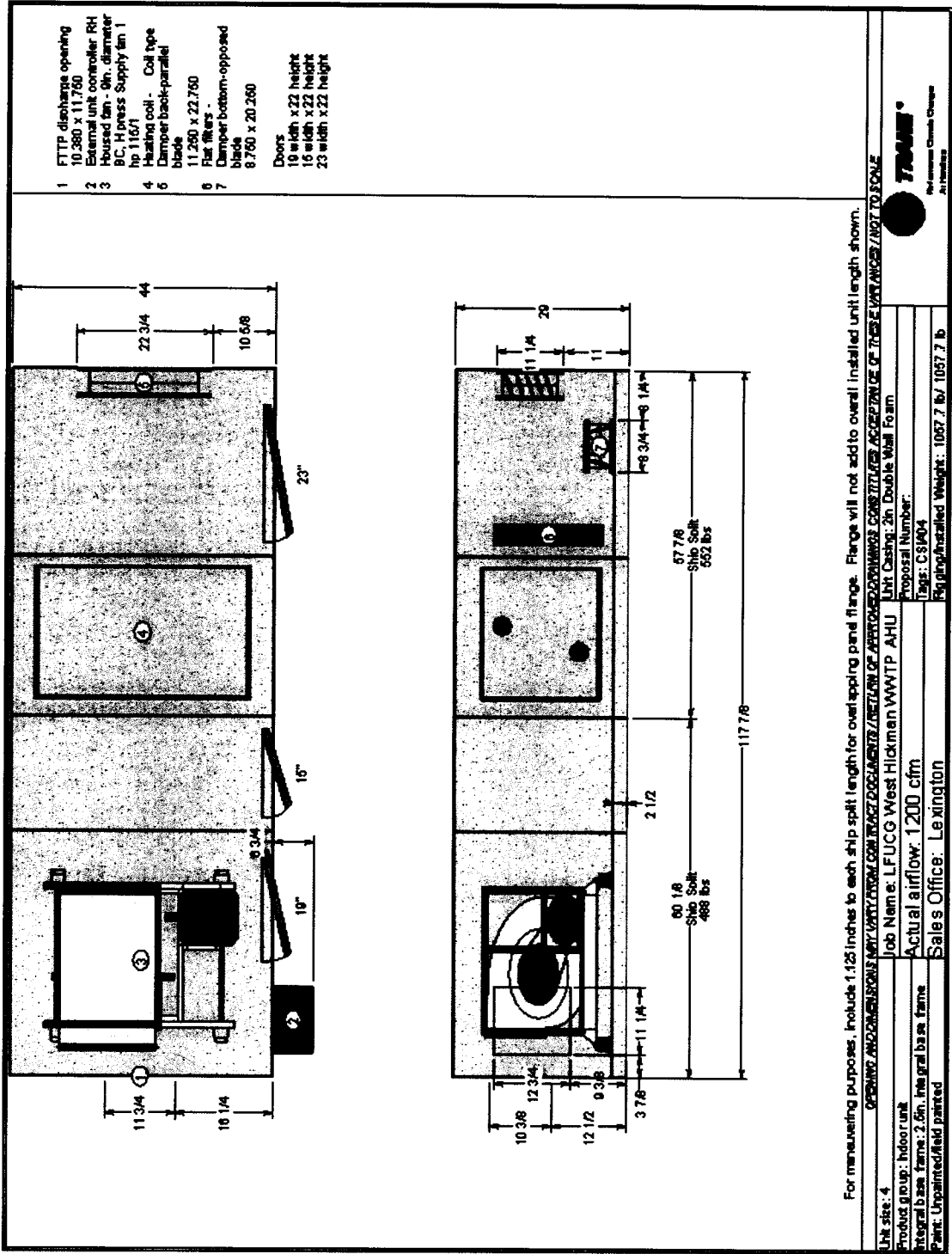
Fan section

Module Position: 4

Fan sec [4]-1			
<u>Section type</u>	Fan	<u>Section weight</u>	418.0 lb
<u>Fan application</u>	Supply fan	<u>Static pressure origin</u>	Program calculated
<u>Unit size</u>	4	<u>Return - 63 Hz</u>	65 dB
<u>Inlet location</u>	Back inlet	<u>Return - 125 Hz</u>	70 dB
<u>Fan orientation</u>	Front-top discharge	<u>Return - 250 Hz</u>	67 dB
<u>Fan discharge</u>	Front top	<u>Return - 500 Hz</u>	59 dB
<u>Side access door location</u>	Right	<u>Return - 1K Hz</u>	56 dB
<u>Drive location</u>	Right side drive	<u>Return - 2K Hz</u>	55 dB
<u>Design sequence</u>	K5	<u>Return - 4K Hz</u>	54 dB
<u>Motor horsepower per fan</u>	1 hp	<u>Return - 8K Hz</u>	47 dB
<u>Full load motor efficiency</u>	85.50 %	<u>Casing - 63 Hz</u>	69 dB
<u>Motor class</u>	NEMA premium compliant	<u>Casing - 125 Hz</u>	66 dB
	ODP	<u>Casing - 250 Hz</u>	62 dB
<u>Motor voltage</u>	115/1	<u>Casing - 500 Hz</u>	59 dB
<u>Cycle</u>	60 cycles/sec	<u>Casing - 1K Hz</u>	59 dB
<u>Drive service factor</u>	1.5 fixed drive	<u>Casing - 2K Hz</u>	52 dB
<u>Motor RPM</u>	1800	<u>Casing - 4K Hz</u>	47 dB
<u>Fan airflow</u>	1200 cfm	<u>Casing - 8K Hz</u>	43 dB
<u>Overall ESP</u>	0.190 in H2O	<u>Supply front - 63 Hz</u>	85 dB
<u>Unit entering ESP</u>	0.095 in H2O	<u>Supply front - 125 Hz</u>	82 dB
<u>Unit discharge ESP</u>	0.095 in H2O	<u>Supply front - 250 Hz</u>	80 dB
<u>Elevation</u>	0.00 ft	<u>Supply front - 500 Hz</u>	80 dB
<u>Minimum temperature</u>	40.00 F	<u>Supply front - 1K Hz</u>	76 dB
<u>Design temperature</u>	70.00 F	<u>Supply front - 2K Hz</u>	73 dB
<u>Fan size and type</u>	9in. diameter BC, H press	<u>Supply front - 4K Hz</u>	67 dB
<u>Total brake horsepower</u>	0.660 hp	<u>Supply front - 8K Hz</u>	62 dB
<u>Total brake horsepower at min temp</u>	0.700 hp	<u>Outdoor - 63 Hz</u>	63 dB
<u>Total static pressure</u>	1.948 in H2O	<u>Outdoor - 125 Hz</u>	66 dB
<u>Speed</u>	2504 rpm	<u>Outdoor - 250 Hz</u>	67 dB
<u>Outlet area</u>	0.85 sq ft	<u>Outdoor - 500 Hz</u>	58 dB
<u>Fan outlet velocity</u>	1417 ft/min	<u>Outdoor - 1K Hz</u>	54 dB
<u>Fan module pressure drop</u>	0.190 in H2O	<u>Outdoor - 2K Hz</u>	52 dB
<u>Fan discharge loss pressure drop</u>	0.000 in H2O	<u>Outdoor - 4K Hz</u>	49 dB
<u>Section height</u>	29.000 in	<u>Outdoor - 8K Hz</u>	43 dB
<u>Section length</u>	41.000 in		
<u>Section width</u>	44.000 in		

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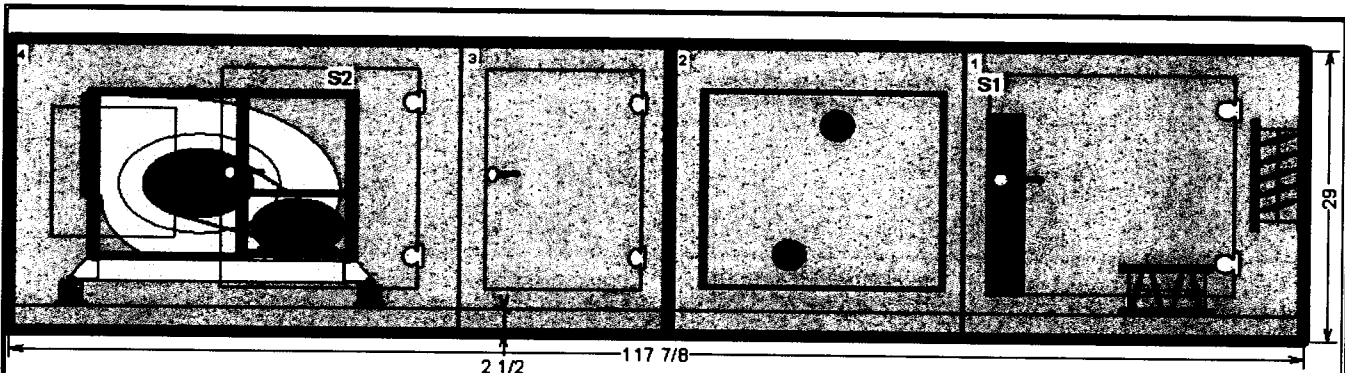


For manufacturing purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM COM FACT DOCUMENTS DUE TO MANUFACTURING TOLERANCES. CONSULT DRAWING FOR THESE VARIANCES / NOT TO SCALE

Unit size: 4	Job Name: LFUCG West Hickman WWTP AHU
Product group: Indoor unit	Proposal Number:
Integral base frame: 2.6in. Integral base frame	Type: C31404
Paint: Unprimed/field painted	Rating/Installed Weight: 1057.7 lb/ 1057.7 lb
Sales Office: Lexington	

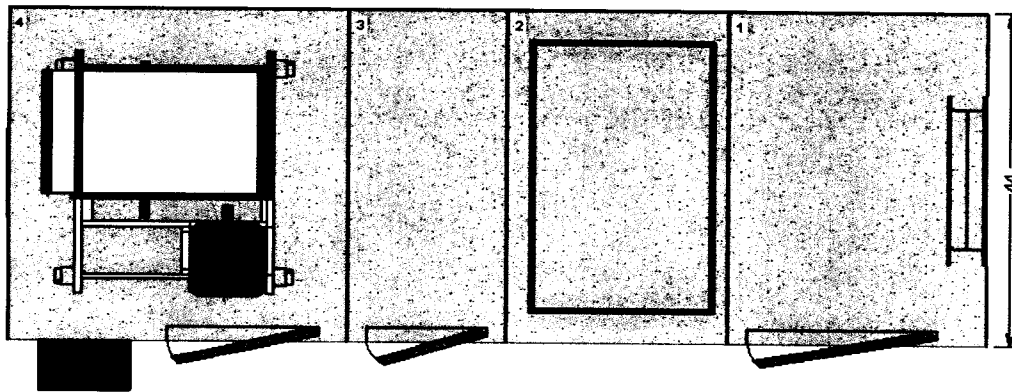




Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches


For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length.

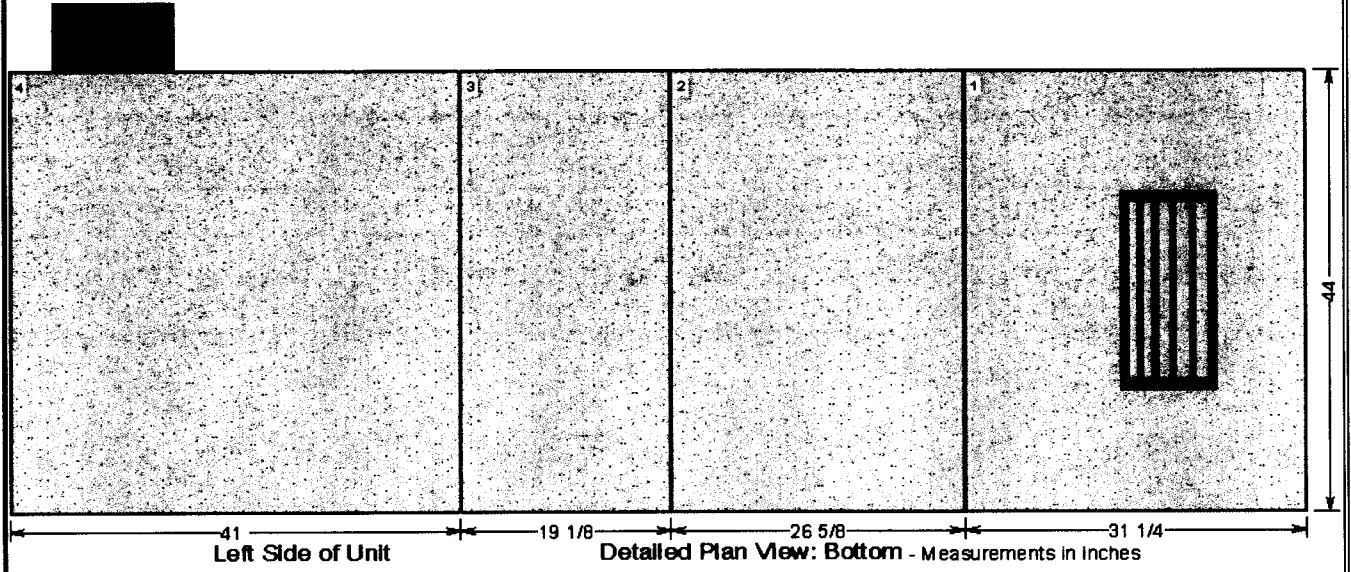
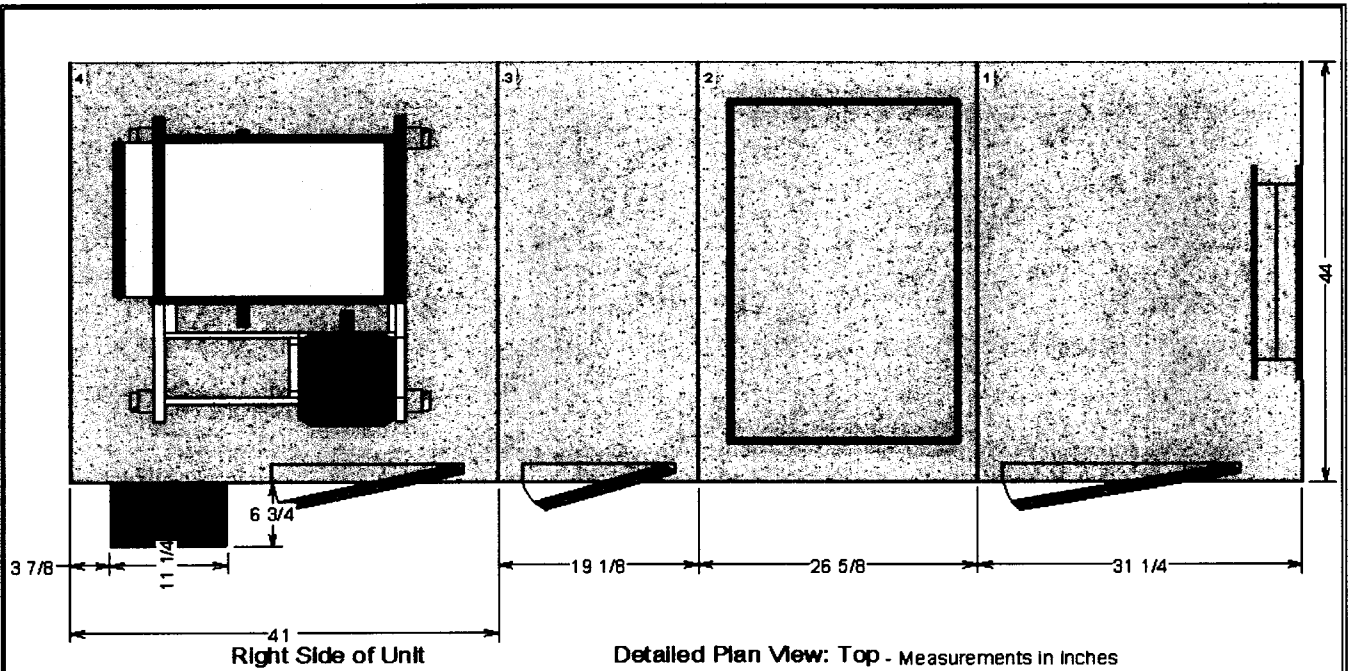
Pos #	Module	Length	Weight
1	Air mixing section	31 1/4	209.40
2	Coil section	26 5/8	342.32
3	Access section	19 1/8	88.00
4	Fan section	41	418.00
		Installed Unit Weight 1057.72 lbs	



Basic Overall Plan View: Top - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

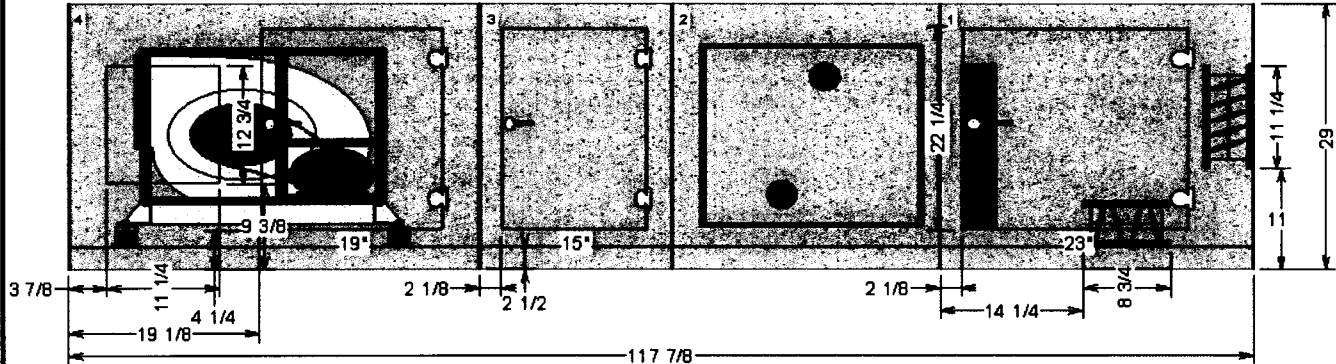
Unit size: 4	Job Name: LFUCG West Hickman WWTP AHU	Unit Casing: 2in Double Wall Foam	 Performance Climate Control All Modes
Product group: Indoor unit	Actual airflow: 1200 cfm	Proposal Number:	
Integral base frame: 2.5in. Integral base frame	Sales Office: Lexington	Tags: CSIA04	
Paint: Unpainted/field painted		Rigging/Installed Weight: 1057.7 lb/ 1057.7 lb	



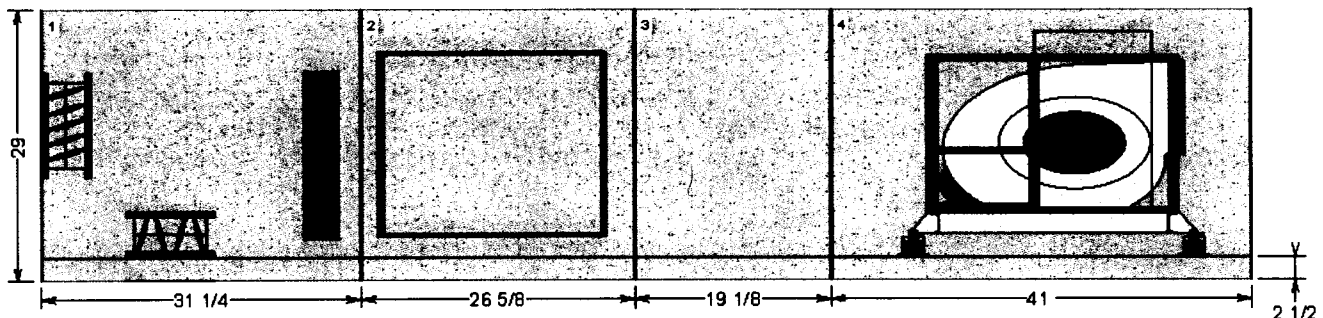
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 4	Job Name: LFUCG West Hickman WWTP AHU	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 1200 cfm	Proposal Number:
Integral base frame: 2.5in. Integral base frame	Sales Office: Lexington	Tags: CSIAD4
Paint: Unpainted/field painted		Rigging/installed Weight: 1057.7 lb/ 1057.7lb





Detailed Elevation View: Right - Measurements in inches

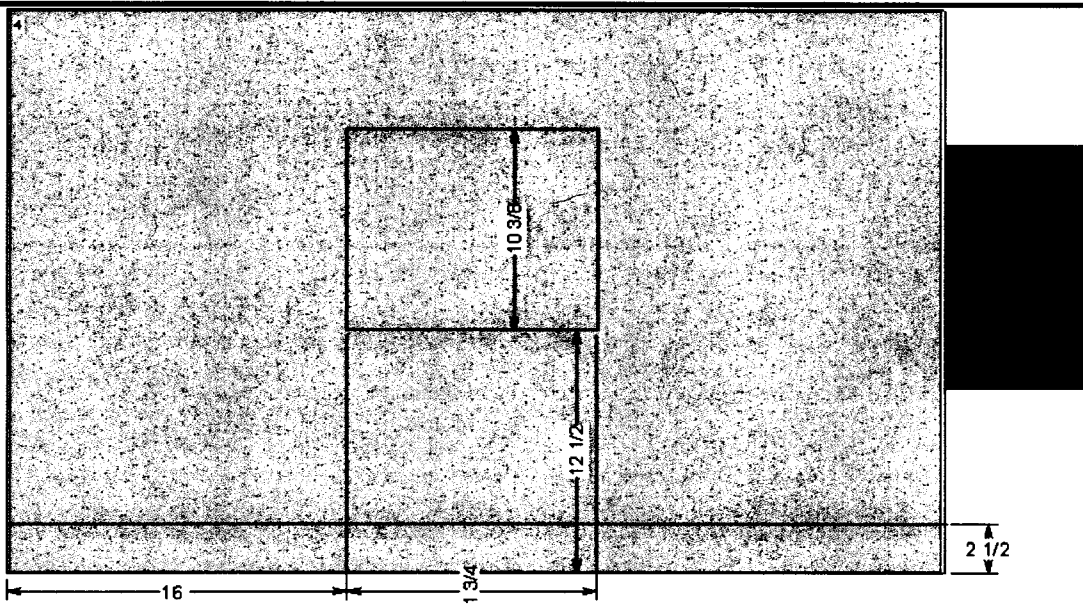


Detailed Elevation View: Left - Measurements in inches

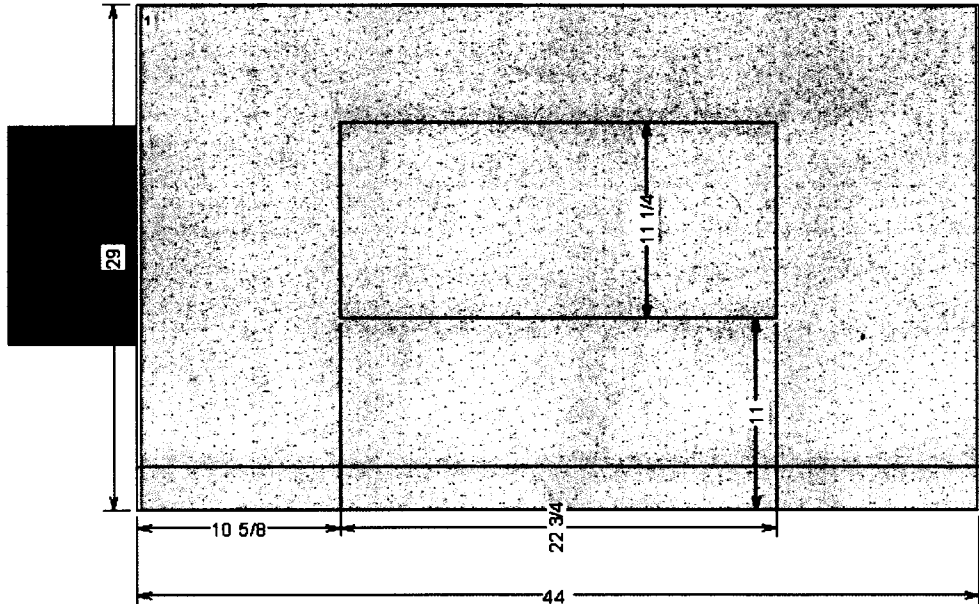
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 4	Job Name: LFUCG West Hickman WWTP AHU	Unit Casing: 2In Double W all Foam
Product group: Indoor unit	Actual airflow: 1200 cfm	Proposal Number:
Integral base frame: 2.6in. Integral base frame	Sales Office: Lexington	Tags: CSIA04
Paint: Unpainted/field painted		Rigging/Installed Weight: 1057.7 lb/ 1057.7lb





Detailed Elevation View: Front - Measurements in inches

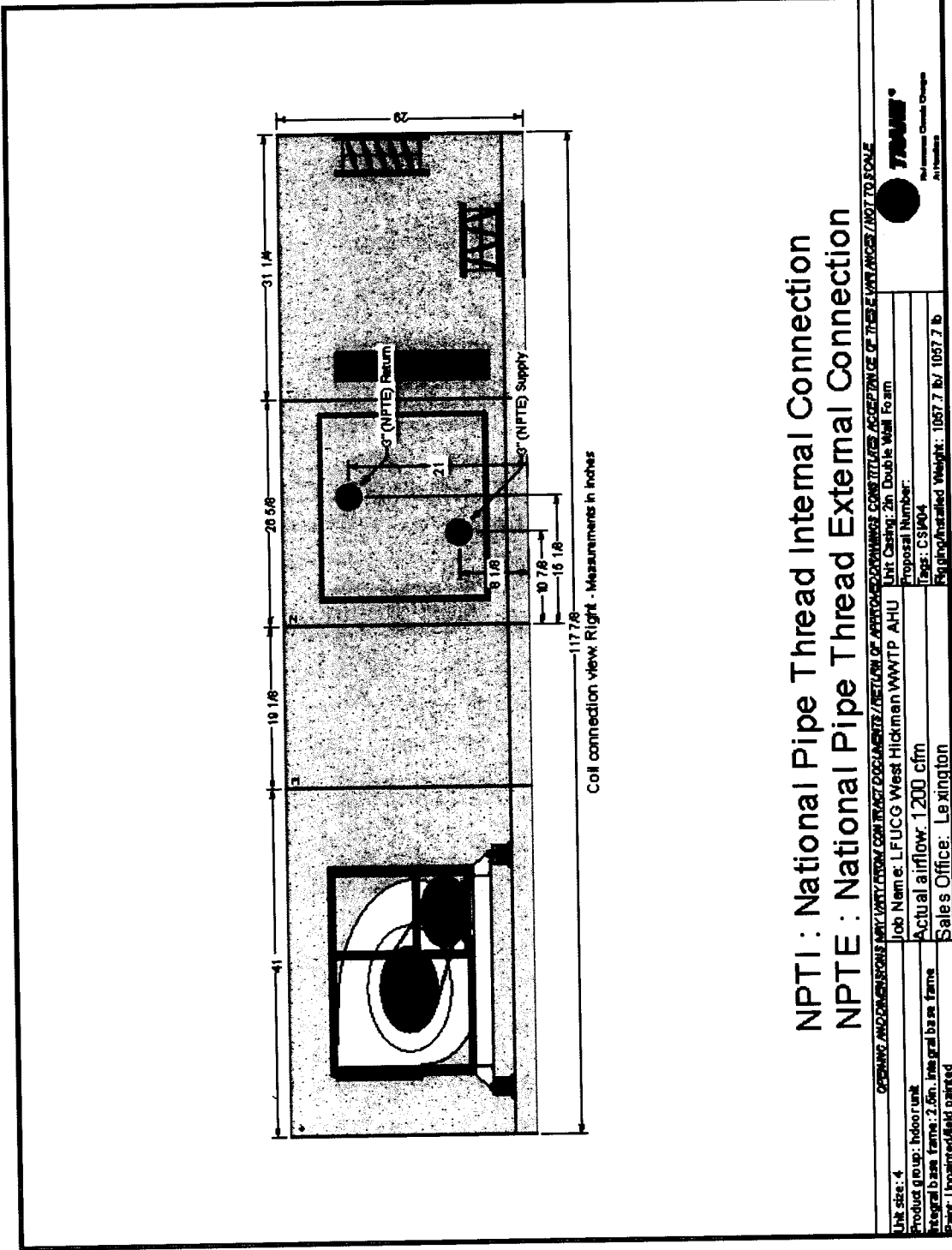


Detailed Elevation View: Back - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

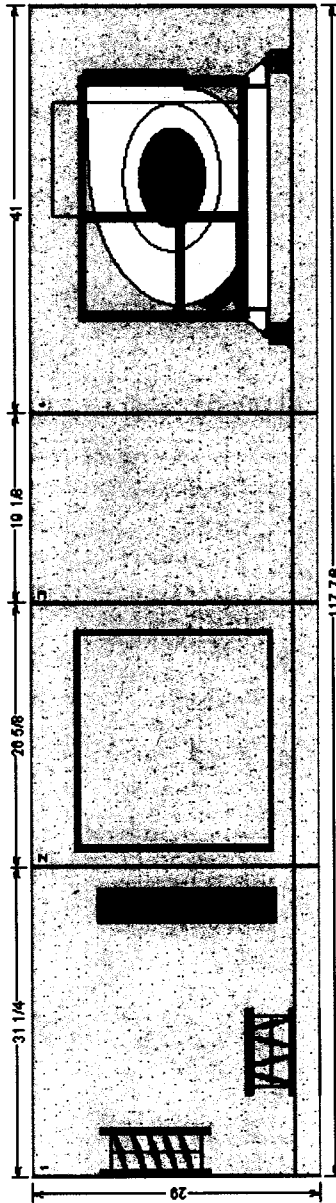
Unit size: 4	Job Name: LFUCG West Hickman WWTP AHU	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 1200 cfm	Proposal Number:
Integral base frame: 2.6in. Integral base frame	Sales Office: Lexington	Tags: CSIA04
Paint: Unpainted/field painted		Rigging/installed Weight: 1057.7 lb/ 1057.7 lb






NPTI : National Pipe Thread Internal Connection
 NPTE : National Pipe Thread External Connection

<small>OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS RETURN OF APPROVED CHANGES CONSULT AGENT OF THESE VARIANCES / NOT TO SCALE</small> TRANE <small>Performance Driven Change All Numbers</small>	
Unit Size: 4	Job Name: LFUGG West Hickman WWTP AHU
Product group: Indoor unit	Unit Casting: 2in Double Wall Foam
Integral base frame: 2.6in. Integral base frame	Proposal Number:
Paint: Unpainted/field painted	Tags: CSIA04
	Actual airflow: 1200 cfm
	Field installed Weight: 1057.7 lb/ 1057.7 lb
	Sales Office: Lexington



Coil connection view Left - Measurements in inches

NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

<small>OPENING AND DIMENSIONS MAY VARY FROM OUR PRACTICES AND/OR NETWORK OF APPROVED CHANNELS. CONSULT US FOR ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE</small>	
Unit size: 4	 <small>Performance Climate Change All Features</small>
Product group: Indoor unit	Unit Casing: 2in Double Wall Foam
Integral base frame: 2.5in. Integral base frame	Proposal Number:
Paint: Unpainted/field painted	Tags: CS1404
	Propagated Weight: 1067.7 lb / 1067.7 lb
	Sales Office: Lexington
	Actual airflow: 1200 cfm
	Job Name: LFUCG West Hickman WWTP AHU