



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
DEFK9013

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
JOHN ABBOTT 304-558-2544

VENDOR

RFQ COPY
 TYPE NAME/ADDRESS HERE

SHIP TO

DIV ENGINEERING & FACILITIES
 ARMORY BOARD SECTION

 1707 COONSKIN DRIVE
 CHARLESTON, WV
 25311-1099 304-341-6368

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B	FREIGHT TERMS
05/05/2009				

BID OPENING DATE: 05/20/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
				ADDENDUM #01		
				THIS ADDENDUM IS ISSUED TO CLARIFY, MODIFY, & ADD TO THE ORIGINAL REQUEST FOR QUOTATION SPECIFICATIONS; & ANSWER VENDOR QUESTIONS PER THE ATTACHED DOCUMENTATION. NOTE: THERE WILL BE AN ADDENDUM #02 ISSUED AT A LATER TIME TO ADDRESS ADDITIONAL VENDOR QUESTIONS.		
				BID OPENING DATE IS EXTENDED TO 5/20/2009; 1:30 PM		
0001	1	LS		031-06		
				BUILDING & HVAC RENOVATION		
				***** THIS IS THE END OF RFQ DEFK9013 ***** TOTAL:		

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
5. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.
14. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
15. **WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT:** If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in case of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130

Pre-Bid Meeting Minutes

Contract: DEFK9013

Coonskin Armory Building and HVAC Renovation, Charleston, WV

The following constitutes Pre-bid Meeting Minutes for DEFK9013, Coonskin Armory Building and HVAC Renovation.

A pre-bid meeting was conducted at the site for the referenced project at 1330 hrs 22 APR 2009. During the pre-bid meeting, LTC Suver welcomed those present for expressing interest in the subject project. Key Owner representatives were introduced and the following agenda items were covered:

1. ADMINISTRATIVE:

- a. All present contractors signed in.
- b. The project is a federally funded, State administrated project.
- c. The user of the facility will be the West Virginia Army National Guard.
- d. The Administrator of the contract will be the Construction & Facilities Management Office, WVARNG.

2. INTRODUCTION:

- a. LTC Suver outlined key personnel associated with the project and address for the office. LTC Suver was introduced as the Administrative Contracting Officer, and Joe McClung as the Project Manager. Phone numbers and address were identified as follows:
- b.
 - i. Address
1703 Coonskin Drive
Charleston, WV 25311
 - ii. LTC Bill Suver Administrative Contracting Officer
Bill.suver@wv.ngb.army.mil
(304) 561-6454

iii. Joe McClung, Project Manager
Email: joesph.mcclung@us.army.mil
561-6548 (o)

c. John Abbott is the buyer for State Purchasing Division. All questions must be submitted in writing to Mr. Abbott, who will distribute for resolution. Direct discussion is **not** authorized with the Engineer, the Facilities Engineer, or the Project Manager. State Wage Rates applies for this project.

3. The Designer of Record, Ron L. Bolen, AIA

Michael Baker Jr., Inc.
5088 West Washington Street
2nd Floor
Charleston, West Virginia 25313

(304) 769-0821 phone
(304) 769-8022 fax

4. LTC Suver discussed security, work hours, access to the site, and temporary facilities. The Contractor will have access to the site from 0700 to 1800 hrs, Monday to Friday and the contractors will have to work in the evenings if the office area is occupied. The contractor is required to provide to the Superintendent, a listing of personnel, which will be gaining access to the site. Superintendence: In accordance with Contract documents, the Contractor must maintain full-time, active superintendent on the job.
5. Contract Duration 180 days to complete the project after the NTP and an additional 90 days if either or both alternates are taken for a total of 270 days..
6. All construction activities will be in conjunction with OHSA, Safety and Health Requirements Manual (US Army Corps of Engineers). As noted, the Army safety and health standards mirror OHSA. All construction activities on site will be a hardhat area and marked as such. Cleanup is required daily by each perspective sub and General Contractor: No open dumps of construction materials and no burning on site.
7. LTC Suver discussed the submittal process and encouraged the contractors to stay with the manufacturers outlined in the specifications and any proposed substitution must be submitted prior to bidding.
8. The meeting was opened for Questions by the Contractors. See attached addendum items.
9. LTC Suver closed the meeting and thanked the Contractors for their interest in the project. LTC Suver outlined that the meeting notes will be published through state purchasing, along with

clarifications to contract documents. Any questions will be addressed through an Addendum released after the question period has closed. It was also stressed that any further questions between now and bid award must be directed to John Abbott at State Purchasing.

Prepared by:

BILL SUVER
Business Manager
CFMO, WVARNG

ATTACHMENTS:

1: PRE-BID CONFERENCE SIGN IN SHEET

**Charleston Armory HVAC Renovations
And Architectural Improvements
DEFK - 9013**

Addendum No.: 1
Issue Date: May 5, 2009
Architects Project No.: 115063

From: **Michael Baker Jr., Inc.**
5088 Washington Street, West
Charleston, West Virginia 25313

To: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Contract Documents dated **March 13, 2009** as noted below. Acknowledge receipt of this Addendum by inserting the number and issue date of this addendum in the blank space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of **4 pages** and the attached documents:

A1.1 – Specification Section 00100 – Instructions to Bidders	- 9 pages
A1.2 – Specification Section 00300 - Bid Form	- 3 pages
A1.3 – Specification Section 01045 – Cutting and Patching	- 3 pages
A1.4 – Specification Section 05120 – Structural Steel	- 7 pages
A1.5 – Specification Section 13852 – Digital, Addressable Fire-Alarm System	- 5 pages
A1.6 – Specification Section 15081 – Duct Insulation	- 7 pages
A1.7 – Specification Section 15740 – Energy Recovery Ventilators	- 5 pages
A1.8 – Drawing A3.1 – Revised Detail 11	- 1 page
A1.9 – Drawing M0.1 – Revised Notes 16 & 17.	- 1 page
A1.10 – Drawing M1.2 – Revised Mechanical Plan	- 1 page
A1.11 – Drawing M1.2 – Revised Mechanical Plan	- 1 page
A1.12 – Drawing M1.4 – Revised Mechanical Plan	- 1 page
A1.13 – Drawing M1.4 – Revised Mechanical Plan	- 1 page
A1.14 – Drawing M2.4 – Revised Piping Plan	- 1 page

CHANGES TO BIDDING REQUIREMENTS:

1. REVISE Section 00100 – Instructions to Bidders as per attachment “A1.1”.
2. REVISE Section 00300 – Bid Form as per attachment “A1.2”.
3. CLARIFICATION to Supplemental Conditions Article 11.4 as follows:

“Contractor is required to provide Builders Risk Insurance as defined in this article.”

CHANGES TO CONDITIONS OF THE CONTRACT (DIVISION 1):

4. ADD Paragraph 3.1.C to Section 01030 as follows:

Charleston Armory
Project No. – 115063

ADDENDUM NUMBER 1

ADD1 - 1

- C. Alternate No. 3 Combined Bid Alternate.
 - 1. Description: Provide a combined bid for all work described in the documents for Base Bid and Alternates 1 & 2 collectively.
- 5. ADD Paragraph 1.3.A.5. to Section 01311 as follows:
 - A. Contractor shall provide Coordination drawings as required to resolve conflicts between various trades and existing conditions as found which present adjustments required for the project. These coordination drawings will be submitted to the Architect / Owner for review and approval of suggested adjustments.
- 6. ADD Paragraph 1.3.A.6. to Section 01311 as follows:
 - B. Contractor shall coordinate with the Owner for scheduling of all work within the complex.
 - a. Contractor shall give notice of a minimum of 48 hours in advance of a planned utility shut down event.
 - b. Contractor shall give a minimum of 48 hours notice to any work to be done in offices, and all work to be performed on the second floor of the Tag Wing shall be done in evenings or on weekends.

CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 16):

- 7. CLARIFICATION to all specification sections regarding LEED Submittals as follows:

“Contractor is not required to submit LEED submittals as defined in various specifications.”
- 8. ADD specification section 01045 “Cutting and Patching” to the Contract Documents as per Attachment “A1.3”.
- 9. CLARIFICATION to paragraph 3.2.F specification section 01500 as follows:

“Contractor is required to provide toilets, lavatories and drinking water for all contractors, sub-contractors and suppliers as defined in this paragraph.”
- 10. CLARIFICATION to paragraph 3.5.C.2.a specification section 01500 as follows:

“Contractor is not required to clean existing ductwork that is to remain, only ductwork that has been installed within the contract.”
- 11. ADD specification section 05120 “Structural Steel” to the Contract Documents as per Attachment “A1.4”.
- 12. ADD paragraph 1.7.A.3 specification section 07531 as follows:
 - 3. The existing roof was manufactured by “Carlisle” and the Installer was “Kalkreuth Roofing and Sheet Metal” (304 -232-8540).
- 13. ADD specification section 13852 “Digital, Addressable Fire-Alarm System” as per attachment “A1.5”. Contractor shall coordinate with the Fire Alarm system contractor that

is currently installing a new fire alarm system with smoke detectors specified in this section for final connections to smoke detectors.

14. REVISE paragraph 3.2.B specification section 15053 to read as follows:

C. Refer to Division 5 Section "Structural Steel" for structural steel.

15. DELETE paragraph 1.6.C specification section 15053 entirely.

16. DELETE paragraph 3.2.F specification section 15062 entirely.

17. ADD specification section 15081 "Duct Insulation" to the Contract Documents as per Attachment "A1.6".

18. REVISE paragraph 1.3.H specification section 15513 to read as follows:

H. Submit under provisions of Section 01300 Submittals.

19. DELETE paragraph 2.11.A specification section 15732 entirely.

20. ADD specification section 15740 "Energy Recovery Ventilators" to the Contract Documents as per Attachment "A1.3".

21. CLARIFICATION to paragraph 1.7.A.3 specification section 15745 as follows:

"Contractor is required to provide spare heat-pump units as defined in this paragraph. The Contractor shall coordinate with the Owner for on-site storage location."

22. REVISE paragraph 2.4.B.1. specification section 15815 to read as follows:

1. Galvanized Coating Designation: shall meet or exceed G90 label.

23. ADD paragraphs 3.1.M, N & O specification section 15815 as follows:

M. Non-Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same metal thickness as duct. Overlap opening on four sides by at least 1-1/2 inches.

N. Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire damper, sleeve, and firestopping sealant. Fire and smoke dampers are specified in Division 15 Section "Duct Accessories." Firestopping materials and installation methods are specified in Division 7 Section "Firestopping."

CHANGES TO DRAWINGS:

24. DELETE note 12 on D1.1 entirely.

25. REVISE details 1 & 2 / D2.1 note regarding pneumatic tubing should read as follows:

.....and all pneumatic tubing within mechanical room and as encountered above ceilings, etc.

26. REVISE detail 11/A3.1 as per attached sketch "A1.9".
27. ADD to detail 6/S3.1 the following note number 6:
6. The Building Perimeter Trim shall extend from wall to wall along the exterior window walls. The existing steel lintels at window heads shall be covered with furring and 5/8" Drywall.
28. DELETE note # 12 on Drawing D1.1 entirely.
29. REVISE note 24 on M0.1 as follows:
24. Insulate all supply and outside air duct with international energy code compliant insulation as indicated in spec section 15081 (omit table).
30. REVISE note 8 on M0.1 and spec section 15815.2.4/B.1 to read:
8. Galvanized sheet metal G90 or greater. (omit reference to G60)
31. DELETE reference to perforated sheet metal liner in note 16 on M0.1.
And ADD metal nosing to upstream side (leading edge) of all lined sections. Install duct liner in compliance with SMACNA standards or manufactures written instructions.
32. ADD notes 16 and 17 on M0.2 to insulate the boiler secondary loop.
33. CLARFICATION Drawing M1.1
Should Alternate #2 not be taken, all remaining equipment serving the drill hall (i.e. boiler & pump) shall be incorporated into the DDC controls to function as it presently does.
34. REVISE Drawing M1.2 to delete Fire Dampers as shown on attachments A1.10 & A1.11.
35. REVISE Drawing M1.4 as shown on attachments A1.12 & A1.13.
36. ADD notes 16 and 17 on M2.1 insulation to gas piping within the Drill Hall see notes for type and thickness.
37. REVISE Drawing M2.4 as shown on attachment A1.14.

END OF ADDENDUM

ADDENDUM # 1 – ATTACHMENT “A1.5”

SECTION 00100 – INSTRUCTIONS TO BIDDERS**PART 1 - GENERAL****1.1 SUMMARY**

- A. The WVARNG, C&FMO, hereinafter called the "Owner" invites bids on the forms included. All blanks must be appropriately filled in. Bids will be received at the time and place set forth in the Advertisement.
- B. Any Bid received after the stated date and time will be returned to the Bidder unopened.
- C. This project is funded in part by the Owner. Bidders must comply with all bidding requirements and conditions set forth in the Project Manual. All bidders and bidder's subcontractors shall be licensed in compliance with SB 409 (West Virginia Contractor's Licensing Act). All bidders shall include their license number on the Bid Form.
- D. Definitions:
 - 1. Bidding Documents include the following:
 - a. Bidding Requirements: Advertisement, Instructions to Bidders, the Bid Form, and other sample bidding and contract forms.
 - b. Proposed Contract Documents: The form of Agreements between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.
 - 2. A Bidder is a person or entity who submits a Bid.
 - 3. A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

1.2 BIDDING DOCUMENTS

- A. Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement in the number and for the deposit sum stated therein. The deposit will be refunded to Bidders who return the Bidding Documents in good condition within ten days after receipt of Bids. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.
- B. Bidding Documents will not be issued directly to Sub-bidders or others unless specifically offered in the Advertisement. All interested parties may refer to documents on file at locations as identified in the Advertisement.
- C. Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- D. Addenda: Addenda will be mailed or delivered to all Bidders who are known to have received a complete set of Bidding Documents. Copies of Addenda will also be made available wherever Bidding Documents are on file for inspection.

1.3 BIDDER'S REPRESENTATIONS

- A. By submitting a Bid, the Bidder represents that:

ADDENDUM # 1 – ATTACHMENT “A1.5”

1. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the Bidding Documents and have found them complete and free from ambiguities and sufficient for the purpose intended.
 2. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed.
 3. The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.
 4. The Bidder and all workers, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the Bidding Documents.
 5. The Bid is based solely upon the Bidding Documents, including properly issued written addenda, and not upon any other written representation.
 6. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors has relied upon any verbal representations from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the Bid figure.
- B. If any Bidder is in doubt as to the true meaning of any part of the Bidding Documents, the Bidder may submit to the Architect a written request for an interpretation thereof. The Bidder will be responsible for its prompt and actual delivery. An interpretation of Bidder's request will be made only by addenda.

1.4 BIDDING PROCEDURES

- A. Bids shall be made on forms identical to the form included with the Bidding Documents.
- B. All blanks on the bid form shall be filled in by typewriter or manually in ink.
- C. Where so indicated on the bid form, sums shall be expressed in both words and figures. In case of discrepancy between the two, the amount written in words shall govern.
- D. All erasures, interpolations and other physical changes in the bid form shall be signed or initialed by the bidder. Bids containing any conditions, omissions, erasures, alterations or items not called for in the Bid Form, or irregularities of any kind may be rejected by the Owner as being incomplete or irregular.
- E. Bids shall give the full business address of the Bidder and shall be signed by authorized representative with his or her usual signature. Bids by partnerships shall be signed with the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations shall be signed with the name of the corporation, followed by the signature and designation of the president, secretary or other person authorized to act in the matter. The names of all persons signing shall also be typed or printed below the signature.
- F. Any Bidder may withdraw his proposal after it has been received by the Owner but prior to bid opening time and date. The Bidder shall make a request for withdrawal, in writing, and such a request shall be received by the Owner prior to the time specified in the Notice to Contractors, bound herewith, for the opening of the proposals.
- G. Bids shall be enclosed in two envelopes (outer and inner) both of which shall be sealed and clearly labeled to indicate the project and to guard against openings prior to the time designated for the receipt of Bids. Identify the Bidder's name and the name of the project on the outside of both envelopes, with the notation "SEALED BID ENCLOSED."

1.5 SUBSTITUTIONS

- A. Requests for approval of substitutions must be received by Baker at least fourteen (14) days prior to the date for receipt of bids to be given consideration. Direct requests to the Architect at

ADDENDUM # 1 – ATTACHMENT “A1.5”

address stated on the “Request for Substitution (Prior to Bid)” form following this document. Requests must be received by the Architect by mail or messenger. Receipt of substitution requests by fax are not permitted and will be rejected.

1. Certain manufactured items or systems may be specified singly under Base Bid, with Alternates provided for other similar manufactured items or systems to establish basis for comparison and competitive bidding; therefore, no additional manufactured items or systems will be approved under Base Bid for those so specified.
- B. Submission shall be made by prime Bidders; no consideration will be given to items submitted directly by manufacturers, suppliers, distributors or subcontractors. Substitutions of materials, products or equipment for those items specified will be considered only when submitted with a completed “Request for Substitution (Prior to Bid)” form. Substitution requests must be accompanied by manufacturer’s original product data information. Reproduced copies of manufacturer’s product data will not be permitted and will be rejected. Burden of proof of merit of requested substitution is upon submitter; modifications of provisions of the Request for Substitution Form shall be stated on Contractor’s letterhead and attached with request form and other attachments.
- C. Approved requests will be set forth in Addenda issued in accordance with these Instructions to Bidders. All items allowed by Addenda are subject to full provisions of original Bidding Documents, including all modifications thereto and shall be warranted as substitutions conforming to the Bidding Documents.

1.6 LIST OF PROPOSED SUBCONTRACTOR AND EQUIPMENT/MATERIAL SUPPLIERS

- A. The Bidder submitting the lowest qualified Bid as determined by the Owner and Architect at the time of the Bid shall submit a listing of all subcontractors and all major equipment/material suppliers along with the contractor’s license number for each subcontractor as required by the “West Virginia Contractor Licensing Act.” Proposed for each major branch of work itemized and described in the contract documents within two hours after the completion of the bid opening. This information is to be provided on the “List of Proposed Subcontractors, Equipment/Material Suppliers.”
1. Failure to submit a list of subcontractors and equipment/material suppliers along with the contractor’s license number for each proposed subcontractor within two hours of the designated bid time shall result in disqualification of the Bidder’s proposal.
 2. Only one subcontractor or equipment/material supplier may be listed for each area to work.
 3. A copy of all contractor’s and subcontractor’s licensing certificate must be submitted to the agency receiving bids for review prior to the award of construction contracts.
- B. In addition, the successful bidder, thereafter known as the Contractor, may be requested within thirty (30) calendar days after award of contract to furnish to the Owner or Architect a more detailed and complete list of the materials and equipment, together with the product manufacturer’s name and catalog number and catalog cut or illustration thereof.
- C. Each Bidder shall establish the reliability and responsibility of all proposed subcontractors and equipment/material suppliers being proposed to perform the work, and verify availability of proposed subcontractors.
- D. Prior to award of the Contract, the Owner and Architect will review the list of proposed subcontractors and equipment/material suppliers and advise the Bidder of any actions that may be necessary in order to meet the requirements of the Contract Documents. The Bidder may be requested to change an unsatisfactory subcontractor or equipment/material supplier. Proposed subcontractors or equipment/material suppliers found to be unsatisfactory jointly by the Owner, Architect and the Bidder, shall be changed to an acceptable subcontractor or equipment/material supplier at no additional cost to the Owner, as the Contractor has full responsibility for execution of the work.

ADDENDUM # 1 – ATTACHMENT “A1.5”

1. Should it develop that any of the equipment or materials named do not meet the requirements and intent of the Contract Documents, the Bidder shall be required to furnish to the Owner other materials or equipment acceptable and fully complying with the specifications at no change in contract price. Preliminary review and acceptance of the listing provided shall not relieve the Contractor from furnishing equipment and materials in complete accordance with the specifications.

1.7 BID SECURITY

- A. Each Bid shall be accompanied by a bid bond payable to the Owner for five percent (5%) of the total Bid issued by an A.M. Best, A- or better rated surety company listed on the most current Federal Register, Circular 570, and authorized to do business in the state of the proposed project, and signed or cosigned by a resident state agent. Should the Bidder refuse to enter into a contract with the Owner on the terms stated in the Bidding Documents or fail to furnish bonds covering faithful performance of the Contract and all obligations arising there under, the full amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.
- B. Letters of Credit, certified cashier's check, and personal securities are not acceptable as bid security.
- C. The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until one of the following:
 1. The Contract has been executed and bonds have been furnished.
 2. The specified time has elapsed so that Bids may be withdrawn.
 3. All Bids have been rejected.

1.8 PERFORMANCE BOND AND PAYMENT BOND

- A. The Bidder to whom any contract is awarded, shall pay for, execute and deliver to the Owner via the Architect, within ten (10) days after award of contract by Owner and before signing the contract a corporate surety Performance and Labor and Material Payment Bond on AIA Document A311 (or equivalent form), to be executed by an A.M. Best, A- or better rated surety company listed on the most current Federal Register, Circular 570, and which is authorized to do business in the resident state of the Project and signed or cosigned by a resident state agent, and which is satisfactory to and approved by the Owner and the SBA in the sum of one hundred percent (100%) of the amount of the contract, insuring the full and faithful performance of the work and payment in full for all materials, machinery, equipment and labor, and covering all the guarantees called for in the specifications and all other obligations arising there under.
 1. The cost of the bond shall be included in the Bid.
 2. The Owner will not accept responsibility for direct payments to subcontractors performing work on projects by way of consignment.
- B. Should the successful Bidder fail or refuse to deliver the required bond and all other Contract Documents, properly executed, within ten (10) days after receipt of the Owner's letter of intent to award a Contract, the Bidder shall forfeit the bid security as liquidated damages, not as a penalty.

1.9 PROJECT CONDITIONS

- A. Site Information: Data from limited subsurface investigation reports are available to the Contractor for information only. Conditions are not intended as representations or warranties of accuracy.

ADDENDUM # 1 – ATTACHMENT “A1.5”

cy or continuity between soil borings. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.

1. Bidders must satisfy themselves by personal examination of the site of the Work and by such other means as they may wish as to the actual conditions there existing. Additional test borings and other exploratory operations may be performed by Bidder.
2. Data is made available for the convenience of the Contractor. Data may be obtained from the Architect by requesting same on Contractor's letterhead, signed by a legal representative of the Contractor, in following form:
 - a. “Please forward copy of soil investigation report for _____(Project Name). _____(Bidder) herein releases the Owner and Architect from any responsibility or obligations as to its accuracy or completeness or for any additional compensation for work performed under the contract due to the assumptions based on use of such furnished information or data.”

- B. Successful Architectural, Mechanical, and Electrical Contractors will be required to video the entire project prior to start of construction. All areas, including alternate areas 1 & 2, will be videoed for uses to insure the existing conditions are restored to original condition or better.

1.10 MODIFICATION OR WITHDRAWAL OF BID

- A. A Bid may not be modified, withdrawn or canceled by the Bidder for a period of sixty (60) days following the date for receipt of Bids.
- B. Prior to the date and time for receipt of Bids, Bidders may modify or withdrawal Bids by written notice. Such notice must be signed by the Bidder, and must be received by the party designated for receipt of Bids prior to the date and time set for receipt of Bids. A modification shall be worded in a manner which does not reveal the amount of the Bid originally submitted.

1.11 CONSIDERATION OF BIDS

- A. It is the intent of the Owner to award a contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities or irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.
- B. The Owner shall have the right to reject any or all Bids, reject a Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or reject a Bid which is in any way incomplete or irregular.
- C. The Owner shall have the right to accept separate bids for Architectural, Mechanical & Electrical Base Bids and/or Alternates and to accept any Alternates in any order or combination to determine the low Bidder(s) on the basis of the sum of the Base Bid and Alternates accepted.

1.12 TIME SCHEDULE AND LIQUIDATED DAMAGES

- A. The Work shall begin no later than seven (7) days after Owner's signing of the Contract and/or issuance of Notice to Proceed, and shall be completed and ready for occupancy no later than the specified completion date, which is stipulated in the Bid Form.
- B. The time set for completion shall apply to all trades and branches of the work whether the items of work are performed by the Contractor or by any subcontractor.
- C. The Bidder shall note that the Conditions of the Contract include a provision for liquidated damages for delays beyond the stipulated date of Completion.

1.13 CONTRACTOR'S LICENSING

- A. Bidders and their proposed subcontractors shall be licensed in compliance with SB 409 (WV Contractor's Licensing Act). All Bidders shall include their License Number in their Bid Proposal.
- B. Each Subcontractor shall register with WV Tax Department (304) 558-2500, WV Employment Security (304) 558-2524, WV Workers Compensation (304) 558-2580, Secretary of State (304) 558-4000 and WV Department of Labor (304) 558-7890. All companies must be registered with each of these agencies before their Contractors License to work in West Virginia can be issued.
- C. For further information regarding Contractors Licensing contact: West Virginia Division of Labor, Capital Complex, Building 3, Room 319, Charleston, West Virginia 25305; Phone: (304) 558-7890.

1.14 WAGE RATES

- A. Bidders and their proposed subcontractors shall pay the prevailing wage rate in accordance with Chapter 21 of the West Virginia Code.
- B. In preparation of Bids, contractors are reminded this project is subject to requirements found in the "West Virginia Jobs Act," Chapter 21, Article 1C of the West Virginia Code and all Department of Labor regulations.
- C. Each Bidder shall be responsible for obtaining a current and correct schedule of the prevailing wage rates, as determined by the WV Department of Labor for the resident county of the Project.
 - 1. Bidders may obtain current wage rates at www.state.wv.us/csr, or contact the office of the WV Secretary of State (304) 558-6000.
- D. Bidders are reminded that subject to the provisions of Chapter 21-5A of the West Virginia Code, a legible statement of all fair minimum wage rates to be paid the various classes of workers employed, shall be posted in a prominent place at the project site by each Contractor and subcontractor.

1.15 BUY AMERICAN ACT—CONSTRUCTION MATERIALS

- A. Definitions. As used in this clause--
 - a. Component means an article, material, or supply incorporated directly into a construction material.
 - b. Construction material means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.
- B. Cost of components means--
 - a. For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or
 - b. For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph

ADDENDUM # 1 – ATTACHMENT “A1.5”

of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

- C. Domestic construction material means--
- a. An unmanufactured construction material mined or produced in the United States; or
 - b. A construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic.
 - c. Foreign construction material means a construction material other than a domestic construction material.
- D. United States means the 50 States, the District of Columbia, and outlying areas.
- E. Domestic preference. (1) This clause implements the Buy American Act (41 U.S.C. 10a-10d) by providing a preference for domestic construction material. The Contractor shall use only domestic construction material in performing this contract, except as provided in paragraphs (b)(2) and (b)(3) of this clause.
- F. This requirement does not apply to the construction material or components listed by the Government as follows: NONE [Contracting Officer to list applicable excepted materials or indicate "none"]
- G. The Contracting Officer may add other foreign construction material to the list in paragraph (b)(2) of this clause if the Government determines that
- H. The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the requirements of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;
- I. The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or
- J. The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.
- K. Request for determination of inapplicability of the Buy American Act. (1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(3) of this clause shall include adequate information for Government evaluation of the request, including--
- L. A description of the foreign and domestic construction materials;
- a. Unit of measure;
 - b. Quantity;
 - c. Price;
 - d. Time of delivery or availability; Location of the construction project;
 - e. Name and address of the proposed supplier; and
 - f. A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.
- M. A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.
- N. The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).
- O. Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.
- P. If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(3)(i) of this clause.

ADDENDUM # 1 – ATTACHMENT “A1.5”

- Q. Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.
- R. Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:
 - S. Foreign and Domestic Construction Materials Price Comparison
 - T. Construction material description Unit of measure Quantity Price (dollars) \1\
 - a. Item 1 Foreign construction material Domestic construction material.
 - b. Item 2 Foreign construction material Domestic construction material.
- U. Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued). List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary. Include other applicable supporting information.

END OF DOCUMENT

Attachment: Request for Substitution (Prior to Bid)

REQUEST FOR SUBSTITUTION (PRIOR TO BID)

This form must be submitted by a prime Bidder. Submissions by sub-bidders, suppliers or product representatives will not be accepted.

Instructions:

1. *Include product description, manufacturer's specifications, drawings, photographs, performance and test data adequate for evaluation of the request.*
2. *Include description of changes, if any, to Contract Documents required for the proper installation of proposed substitution.*
3. *When more than one model or system is shown on data submitted, identify specific product, including model or system and all applicable accessories to be proposed as a substitute.*
4. *Comply with requirements of Document 00100 – Instructions to Bidders.*

To: **Michael Baker, Jr., Inc.**
5088 West Washington Street
2nd Floor
Charleston, WV 25313

Date: _____

Section: _____

Article: _____

Specified Product/Manufacturer: _____

Proposed Substitute: _____

The undersigned certifies that the following statements, unless modified on attachments, are correct:

1. The function, appearance, quality and warranty of the proposed substitution are equivalent or superior to the specified product or system.
2. The proposed substitution does not affect dimensions shown on Drawings.
3. The proposed substitution shall not change the building design, engineering design or detailing.
4. The proposed substitution shall have no adverse effect on other trades, the construction schedule or specified warranty requirements.
5. Maintenance and service parts shall be locally available for the proposed substitution.

Submitted by:

Architect/Engineer's Review Comments:

Signature/Title: _____

____ Accepted ____ Accepted As Noted

Prime Bidder: _____

____ Not Accepted ____ Received Too Late

Address: _____

____ Not a Substitutable Item

Signature: _____

Telephone: _____

Review Date: _____

Attachments

SECTION 00300 – BID FORM

**West Virginia Army National Guard
Construction & Facilities Management Office
Charleston Armory HVAC Renovations and Architectural Improvements**

BID PROPOSAL

Proposal of _____ (“BIDDER”), organized and existing under the laws of the State of _____ doing business as (an individual), (a partnership), (a corporation).

**To: West Virginia Purchasing Division
2019 Washington Street East
Charleston, West Virginia 25305**

In compliance with your Invitation for Bids, BIDDER hereby proposes to perform all WORK for the construction of the Charleston Armory HVAC Renovations and Architectural Improvements Project in strict accordance with the CONSTRUCTION DOCUMENTS, within the time set forth therein, and at the prices stated below.

BIDDER(S) 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 180 consecutive calendar days for Base Bid and 90 consecutive calendar days for Alternates 1 & 2, thereafter, subject to weather conditions. BIDDER(S) further agrees to pay as liquidated damages, the sum of five hundred dollars (\$500.00) per day for each calendar day of delay in completion of work.

The BIDDER(S) further acknowledges receipt of the following addenda:

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

BIDDER(S) acknowledges the Owner's right to waive any informalities or to reject any or all bids.

The BIDDER(S) may not withdraw this Bid within 90 days after the actual date of the opening thereof.

BIDDER(S) agrees to perform all the work described in the CONTRACT DOCUMENTS for the amounts listed below. The Bidder, being familiar with local conditions affecting the cost of the Work and the Contract Documents, including Instructions to Bidders, Bid Form, General Conditions, Drawings, Specifications, and any Addenda or Clarifications issued, hereby propose to furnish all material, labor, tools, taxes, transportation and expendable equipment necessary for the satisfactory and complete installation of the “**Charleston Armory HVAC Renovations and Architectural Improvements**” in every detail and ready for operation, all in full accordance with, and in conformity to, the Contract Documents, for the stipulated sums as follows:

BASE BID:

GENERAL TRADES BASE BID (TAG Wing):

For the sum of: _____
_____ (\$ _____).

The stated Base Bid is subject to the following additions or deductions for Alternates which the Owner may select. ('Provide' means 'furnish and install.' Include in bids below all related coordination and modification requirements associated with the Work of each Alternate.) Alternate Bids may also be bid optionally as a separate contract bid.

ALTERNATES:

Alternate Bid No. 1 – Headquarters Building Alternate.

Provide work described in the Contract Documents as Alternate No. 1, including all Architectural, Mechanical and Electrical:

ADD the sum of: _____
_____ \$ _____.

Alternate Bid No. 2 – Drill Floor Alternate.

Provide work described in the Contract Documents as Alternate No. 2, including all Architectural, Mechanical, and Electrical:

ADD the sum of: _____
_____ \$ _____.

Alternate Bid No. 3 – Combined Bid Alternate.

Provide work described in the Contract Documents as Alternate No. 3, including all Architectural, Mechanical, and Electrical:

ADD the sum of: _____
_____ \$ _____.

UNIT PRICES:

Unit Price No. 1 – Removal and Repair of existing interior domestic water lines

Provide work described in the Unit Price Specification Section 01026 for each of the following sizes of interior domestic water lines:

- ¾" diameter copper domestic water line sum of: \$ _____ per LF.
- 1" diameter copper domestic water line sum of: \$ _____ per LF.

ADDENDUM # 1 – ATTACHMENT “A1.2”

2" diameter copper domestic water line sum of: \$ _____ per LF.
 3" diameter copper domestic water line sum of: \$ _____ per LF.
 4" diameter copper domestic water line sum of: \$ _____ per LF.

The total work to be performed under this Contract shall be paid for under the pay items listed on the Bid Form. The cost of any labor, equipment, materials or work called for in the Specifications, shown on the Drawings, or necessary for a complete and satisfactory installation, but which are not specifically mentioned on the Bid Form shall be included in the appropriate pay item by the CONTRACTOR at no additional expense to the OWNER.

All cost to the CONTRACTOR for transportation, plant, labor, tools, materials, equipment, insurance, workmen's compensation, licenses, permits, taxes, general overhead, and all other expenses incidental to or necessary for the prosecution of the Work, plus all profits, shall be included in the unit prices for the applicable items.

(SEAL – If Bid is by a Corporation)

Respectfully Submitted

Attest

Signature

Date

Name (Typed)

Title (Typed)

Address

Contractor's License Number

NOTE: The Contractor's License Number is to be included on this Bid Form.

END OF SECTION

SECTION 01045 – CUTTING AND PATCHING**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for cutting and patching.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01040 - Coordination for procedures for coordinating cutting and patching with other construction activities.
 - 2. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.2 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural steel.
 - d. Lintels.
 - e. Structural decking.
 - f. Miscellaneous structural metals.
 - g. Equipment supports.
 - h. Piping, ductwork, vessels, and equipment.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Primary operational systems and equipment.
 - b. Fire protection systems.
 - c. Control systems.
 - d. Communication systems.
 - e. Electrical wiring systems.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of

cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.2 PREPARATION

- A. Protection: Protect new construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- B. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- C. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
 - 5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or

ADDENDUM # 1 – ATTACHMENT “A1.3”

partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 05120 – STRUCTURAL STEEL**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes structural steel and architecturally exposed structural steel.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Engineer structural steel connections required by the Contract Documents to be selected or completed by the fabricator to withstand design loadings indicated.
- B. Engineering Responsibility: Engage a fabricator who utilizes a qualified professional engineer to prepare calculations, Shop Drawings, and other structural data for structural steel connections.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Shop Drawings: Detailing fabrication of structural steel components.
1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 3. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify high-strength bolted slip-critical, direct-tension, or tensioned shear/bearing connections.
 4. Include Shop Drawings signed and sealed by a qualified professional engineer responsible for their preparation.
- C. Test Reports: Mill test reports signed by manufacturers certifying that their products, including the following, comply with requirements.
1. Structural steel, including chemical and physical properties.
 2. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
 3. Direct-tension indicators.
 4. Shop primers.
 5. Nonshrink grout.

ADDENDUM # 1 – ATTACHMENT “A1.4”

1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** Engage an experienced Installer who has completed structural steel work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. **Fabricator Qualifications:** Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the Work.
- C. **Comply with applicable provisions of the following specifications and documents:**
 - 1. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
 - 2. AISC's "Specification for Allowable Stress Design of Single-Angle Members."
 - 3. AISC's "Seismic Provisions for Structural Steel Buildings."
 - 4. ASTM A 6 "Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use."
 - 5. Research Council on Structural Connections' (RCSC) "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. **Welding Standards:** Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 SEQUENCING

- A. Supply anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. **Structural Steel Shapes, Plates, and Bars:** As follows:
 - 1. Carbon Steel: ASTM A 36.
 - 2. High-Strength, Low-Alloy Columbium-Vanadium Steel: ASTM A 572, Grade 50.
 - 3. High-Strength, Low-Alloy Structural Steel: ASTM A 588, Grade 50, corrosion resistant.
- B. **Anchor Rods, Bolts, Nuts, and Washers:** As follows:

1. Unheaded Rods: ASTM A 572, Grade 50.
 2. Unheaded Rods: ASTM A 36.
 3. Unheaded Bolts: ASTM A 687, high strength, where indicated.
 4. Headed Bolts: ASTM A 307, Grade A; carbon-steel, hex-head bolts; and carbon-steel nuts, unless otherwise indicated.
 5. Headed Bolts: ASTM A 325, Type 1, heavy hex steel structural bolts and heavy hex carbon-steel nuts, where indicated.
 6. Headed Bolts: ASTM A 490, Type 1, heavy hex steel structural bolts and heavy hex carbon-steel nuts, where indicated.
 7. Washers: ASTM A 36.
- C. High-Strength Bolts, Nuts, and Washers (unless otherwise indicated): ASTM A 325, Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers.
1. Finish: Plain, uncoated.
- D. Nonhigh-Strength Bolts, Nuts, and Washers (where indicated): ASTM A 307, Grade A; carbon-steel, hex-head bolts; carbon-steel nuts; and flat, unhardened steel washers.
1. Finish: Plain, uncoated.
- E. Welding Electrodes: Comply with AWS requirements.

2.2 PRIMER

- A. Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer with good resistance to normal atmospheric corrosion, complying with performance requirements of FS TT-P-664.
- B. Primer: SSPC-Paint 25; red iron oxide, zinc oxide, raw linseed oil and alkyd primer.

2.3 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application, and a 30-minute working time.

2.4 FABRICATION

- A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in Shop Drawings.
 1. Camber structural steel members where indicated.
 2. Identify high-strength structural steel according to ASTM A 6 and maintain markings until steel has been erected.
 3. Mark and match-mark materials for field assembly.

ADDENDUM # 1 – ATTACHMENT “A1.4”

4. Fabricate for delivery a sequence that will expedite erection and minimize field handling of structural steel.
 5. Complete structural steel assemblies, including welding of units, before starting shop-priming operations.
 6. Comply with fabrication tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.
- B. Fabricate architecturally exposed structural steel with exposed surfaces smooth, square, and free of surface blemishes, including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness.
1. Remove blemishes by filling, grinding, or by welding and grinding, prior to cleaning, treating, and shop priming.
 2. Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
- C. Finishing: Accurately mill ends of columns and other members transmitting loads in bearing.
- D. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's printed instructions.
- E. Holes: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on Shop Drawings.
1. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.
 2. Weld threaded nuts to framing and other specialty items as indicated to receive other work.

2.5 SHOP CONNECTIONS

- A. Shop install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
1. Bolts: ASTM A 325 high-strength bolts, unless otherwise indicated.
 2. Connection Type: Snug tightened, unless indicated as slip-critical, direct-tension, or tensioned shear/bearing connections.
- B. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.
1. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent surface bleeding of back-side welding on exposed steel surfaces. Grind smooth exposed fillet welds 1/2 inch and larger. Grind flush butt welds. Dress exposed welds.

2.6 SHOP PRIMING

- A. Shop prime steel surfaces, except the following:
1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
 3. Surfaces to be high-strength bolted with slip-critical connections.
 4. Surfaces to receive sprayed-on fireproofing.
 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare surfaces according to SSPC-SP 2 "Hand Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.7 SOURCE QUALITY CONTROL

- A. Materials and fabrication procedures are subject to inspection in mill, shop, and field. Such inspections will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
1. Promptly remove and replace materials or fabricated components that do not comply.
- B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated on Drawings. Verify dimensions at site whenever possible without causing delay in the work.
1. Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Before erection proceeds, and with the steel erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements.
- B. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in

ADDENDUM # 1 – ATTACHMENT "A1.4"

intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section.
- B. Base and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
 - 1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
 - 3. Pack grout solidly between bearing surfaces and plates so no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
 - a. Comply with manufacturer's instructions for proprietary grout materials.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 1. Maintain erection tolerances of architecturally exposed structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
- E. Splice members only where indicated.
- F. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- G. Finish sections thermally cut during erection equal to a sheared appearance.
- H. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

- A. Install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1. Bolts: ASTM A 325 high-strength bolts, unless otherwise indicated.
 2. Connection Type: Snug tightened, unless indicated as slip-critical, direct-tension, or tensioned shear/bearing connections.
- B. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.
1. Comply with AISC specifications referenced in this Section for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 2. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent surface bleeding of back-side welding on exposed steel surfaces. Grind smooth exposed fillet welds 1/2 inch and larger. Grind flush butt welds. Dress exposed welds.

3.5 FIELD QUALITY CONTROL

- A. Owner may, at Owner's option, engage an independent testing and inspecting agency to perform field inspections and tests and to prepare test reports.
1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from requirements.
- B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.
- C. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

3.6 CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting.
1. Apply by brush or spray to provide a minimum dry film thickness of 1.5 mils.

END OF SECTION

ADDENDUM # 1 – ATTACHMENT “A1.5”

SECTION 13852 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 1. System smoke detectors.

1.3 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

1.4 SYSTEM DESCRIPTION

- A. Noncoded, UL-certified addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.
- B. Noncoded addressable system, with automatic sensitivity control of certain smoke detectors and multiplexed signal transmission, dedicated to fire-alarm service only.

1.5 SUBMITTALS

- A. General Submittal Requirements:
 1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
 2. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design.
 - b. NICET-certified fire-alarm technician, Level III minimum.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
 1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.

2. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
 3. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
- D. Qualification Data: For qualified Installer.
- E. Field quality-control reports.
- F. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
 3. Record copy of site-specific software.
 4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
 - a. Frequency of testing of installed components.
 - b. Frequency of inspection of installed components.
 - c. Requirements and recommendations related to results of maintenance.
 - d. Manufacturer's user training manuals.
 5. Manufacturer's required maintenance related to system warranty requirements.
 6. Abbreviated operating instructions for mounting at fire-alarm control unit.
- 1.6 QUALITY ASSURANCE
- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.
 - B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.
 - C. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.
 - D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- 1.7 PROJECT CONDITIONS
- A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

ADDENDUM # 1 – ATTACHMENT “A1.5”

1. Notify Architect and Owner no fewer than two days in advance of proposed interruption of fire-alarm service.
2. Do not proceed with interruption of fire-alarm service without Owner's written permission.

1.8 SEQUENCING AND SCHEDULING

- A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, match existing equipment on-site.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:
 1. Duct smoke detectors.
- B. Fire-alarm signal shall initiate the following actions:
 1. Continuously operate alarm notification appliances.
 2. Identify alarm at fire-alarm control unit and remote annunciators.
 3. Transmit an alarm signal to the remote alarm receiving station.
 4. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
 5. Record events in the system memory.
- C. System trouble signal initiation shall be by one or more of the following devices and actions:
 1. Open circuits, shorts, and grounds in designated circuits.
 2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
 3. Abnormal position of any switch at fire-alarm control unit or annunciator.
- D. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators. Record the event on system printer.

2.3 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
 1. Comply with UL 268; operating at 24-V dc, nominal.
 2. Detectors shall be match existing wire type.
 3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
 5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
 6. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
- B. Duct Smoke Detectors: Photoelectric type complying with UL 268A.
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
 2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
 3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
 4. Each sensor shall have multiple levels of detection sensitivity.
 5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
 6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
 1. Connect new equipment to existing control panel in existing part of the building.
 2. Connect new equipment to existing monitoring equipment at the supervising station.
 3. Expand, modify, and supplement existing [control] [monitoring] equipment as necessary to extend existing [control] [monitoring] functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
- C. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.

3.2 CONNECTIONS

- A. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet (1 m) from the device controlled. Make an

ADDENDUM # 1 – ATTACHMENT “A1.5”

addressable confirmation connection when such feedback is available at the device or system being controlled.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 16 Section "Electrical Identification."
- B. Install framed instructions in a location visible from fire-alarm control unit.

3.4 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by Architect and authorities having jurisdiction.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.
- F. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
- G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

SECTION 15081 – DUCT INSULATION**PART 1 - GENERAL****1.1 SUMMARY**

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

1.2 SUMMARY

- A. This Section includes semirigid and flexible duct, plenum, and breeching insulation; insulating cements; field-applied jackets; accessories and attachments; and sealing compounds.
- B. Related Sections include the following:
1. Division 7 Section "Firestopping" for firestopping materials and requirements for penetrations through fire and smoke barriers.
 2. Division 15 Section "Equipment Insulation" for insulation materials and application for pumps, tanks, hydronic specialties, and other equipment.
 3. Division 15 Section "Pipe Insulation" for insulation for piping systems.

1.3 SUBMITTALS

- A. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for the following:
1. Removable insulation sections at access panels.
 2. Application of field-applied jackets.
 3. Applications at linkages for control devices.
- C. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets with requirements indicated. Include dates of tests.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this Section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.
1. Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.
 2. Insulation Installed Outdoors: Flame-spread rating of 75 or less, and smoke-developed rating of 150 or less.

ADDENDUM # 1 – ATTACHMENT “A1.6”

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate clearance requirements with duct installer for insulation application.

1.7 SCHEDULING

- A. Schedule insulation application after testing duct systems. Insulation application may begin on segments of ducts that have satisfactory test results.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Mineral-Fiber Insulation:
 - a. CertainTeed Manson.
 - b. Knauf FiberGlass GmbH.
 - c. Owens-Corning Fiberglas Corp.
 - d. Schuller International, Inc.

2.2 INSULATION MATERIALS

- A. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IB, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
- B. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.

2.3 FIELD-APPLIED JACKETS

- A. General: ASTM C 921, Type 1, unless otherwise indicated.

2.4 ACCESSORIES AND ATTACHMENTS

- A. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq. yd..

1. Tape Width: 4 inches.
 - B. Bands: 3/4 inch wide, in one of the following materials compatible with jacket:
 1. Stainless Steel: ASTM A 666, Type 304; 0.020 inch thick.
 2. Galvanized Steel: 0.005 inch thick.
 3. Aluminum: 0.007 inch thick.
 4. Brass: 0.010 inch thick.
 5. Nickel-Copper Alloy: 0.005 inch thick.
 - C. Wire: 0.080-inch, nickel-copper alloy; 0.062-inch, soft-annealed, stainless steel; or 0.062-inch, soft-annealed, galvanized steel.
 - D. Self-Adhesive Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness indicated.
- 2.5 VAPOR RETARDERS
- A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL APPLICATION REQUIREMENTS

- A. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of ducts and fittings.
- B. Refer to schedules at the end of this Section for materials, forms, jackets, and thicknesses required for each duct system.
- C. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

ADDENDUM # 1 – ATTACHMENT “A1.6”

- D. Apply multiple layers of insulation with longitudinal and end seams staggered.
- E. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.
- F. Keep insulation materials dry during application and finishing.
- G. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.
- H. Apply insulation with the least number of joints practical.
- I. Apply insulation over fittings and specialties, with continuous thermal and vapor-retarder integrity, unless otherwise indicated.
- J. Hangers and Anchors: Where vapor retarder is installed, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic. Apply insulation continuously through hangers and around anchor attachments.
- K. Insulation Terminations: For insulation application where vapor retarders are installed, seal ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
- L. Apply insulation with integral jackets as follows:
 - 1. Pull jacket tight and smooth.
 - 2. Joints and Seams: Cover with tape and vapor retarder as recommended by insulation material manufacturer to maintain vapor seal.
 - 3. Vapor-Retarder Mastics: Where vapor retarders are installed, apply mastic on seams and joints and at ends adjacent to duct flanges and fittings.
- M. Cut insulation according to manufacturer's written instructions to prevent compressing insulation to less than 75 percent of its nominal thickness.
- N. Install vapor-retarder mastic on ducts and plenums scheduled to receive vapor retarders.
 - 1. Ducts with Vapor Retarders: Overlap insulation facing at seams and seal with vapor-retarder mastic and pressure-sensitive tape having same facing as insulation. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-retarder seal.
 - 2. Ducts without Vapor Retarders: Overlap insulation facing at seams and secure with outward clinching staples and pressure-sensitive tape having same facing as insulation.
- O. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
 - 1. Seal penetrations with vapor-retarder mastic.
 - 2. Apply insulation for exterior applications tightly joined to interior insulation ends.
 - 3. Seal insulation to roof flashing with vapor-retarder mastic.
- P. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and partitions, except fire-rated walls and partitions.
- Q. Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire/smoke damper sleeves for fire-rated wall and partition penetrations.

R. Floor Penetrations: Terminate insulation at underside of floor assembly and at floor support at top of floor.

1. For insulation indicated to have vapor retarders, taper termination and seal insulation ends with vapor-retarder mastic.

3.4 MINERAL-FIBER INSULATION APPLICATION

A. Blanket Applications for Ducts and Plenums: Secure blanket insulation with adhesive and anchor pins and speed washers.

1. Apply adhesives according to manufacturer's recommended coverage rates per square foot, for 100 percent coverage of duct and plenum surfaces.
2. Install anchor pins and speed washers on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
 - a. On duct sides with dimensions 18 inches and smaller, along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
 - b. On duct sides with dimensions larger than 18 inches. Space 16 inches o.c. each way, and 3 inches maximum from insulation joints. Apply additional pins and clips to hold insulation tightly against surface at cross bracing.
 - c. Anchor pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
 - d. Do not overcompress insulation during installation.
3. Impale insulation over anchors and attach speed washers.
4. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
5. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation segment with 1/2-inch staples, 1 inch o.c., and cover with pressure-sensitive tape having same facing as insulation.
6. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. Secure with steel band at end joints and spaced a maximum of 18 inches o.c.
7. Apply insulation on rectangular duct elbows and transitions with a full insulation segment for each surface. Apply insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
8. Insulate duct stiffeners, hangers, and flanges that protrude beyond the insulation surface with 6-inch- wide strips of the same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with anchor pins spaced 6 inches o.c.
9. Apply vapor-retarder mastic to open joints, breaks, and punctures for insulation indicated to receive vapor retarder.

B. Board Applications for Ducts and Plenums: Secure board insulation with adhesive and anchor pins and speed washers.

1. Apply adhesives according to manufacturer's recommended coverage rates per square foot, for 100 percent coverage of duct and plenum surfaces.
2. Space anchor pins as follows:
 - a. On duct sides with dimensions 18 inches and smaller, along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.

ADDENDUM # 1 – ATTACHMENT “A1.6”

- b. On duct sides with dimensions larger than 18 inches. Space 16 inches o.c. each way, and 3 inches maximum from insulation joints. Apply additional pins and clips to hold insulation tightly against surface at cross bracing.
 - c. Anchor pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
 - d. Do not overcompress insulation during installation.
3. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
 4. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation segment with 1/2-inch staples, 1 inch o.c., and cover with pressure-sensitive tape having same facing as insulation.
 5. Apply insulation on rectangular duct elbows and transitions with a full insulation segment for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Apply insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
 6. Insulate duct stiffeners, hangers, and flanges that protrude beyond the insulation surface with 6-inch- wide strips of the same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with anchor pins spaced 6 inches o.c.
 7. Apply vapor-retarder mastic to open joints, breaks, and punctures for insulation indicated to receive vapor retarder.

3.5 FIELD-APPLIED JACKET APPLICATION

- A. Apply glass-cloth jacket, where installed, directly over bare insulation or insulation with factory-applied jackets.
 1. Apply jacket smooth and tight to surface with 2-inch overlap at seams and joints.
 2. Embed glass cloth between two 0.062-inch- thick coats of jacket manufacturer's recommended adhesive.
 3. Completely encapsulate insulation with jacket, leaving no exposed raw insulation.

3.6 DUCT SYSTEM APPLICATIONS

- A. Insulation materials and thicknesses are specified in schedules at the end of this Section.
- B. Materials and thickness for systems listed below are specified in schedules at the end of this Section.
- C. Insulate the following plenums and duct systems:
 1. Indoor concealed supply,- and outside-air ductwork.
 2. Indoor exposed supply-, return-, and outside-air ductwork in Mechanical Room.
- D. Items Not Insulated: Unless otherwise indicated, do not apply insulation to the following systems, materials, and equipment:
 1. Factory-insulated flexible ducts.
 2. Factory-insulated plenums, casings, terminal boxes, and filter boxes and sections.
 3. Flexible connectors.
 4. Vibration-control devices.

5. Testing agency labels and stamps.
6. Nameplates and data plates.
7. Access panels and doors in air-distribution systems.
8. Round and rectangular duct exposed in conditioned spaces.

3.7 INDOOR DUCT AND PLENUM APPLICATION SCHEDULE

A. Service: Round, supply-air ducts, concealed.

1. Material: Mineral-fiber blanket.
2. Thickness: 2 inches.
3. Number of Layers: One.
4. Field-Applied Jacket: Foil and paper.
5. Vapor Retarder Required: Yes.

B. Service: Rectangular, supply-air ducts, concealed.

1. Material: Mineral-fiber blanket.
2. Thickness: 2 inches.
3. Number of Layers: One.
4. Field-Applied Jacket: Foil and paper.
5. Vapor Retarder Required: Yes.

C. Service: Round, outside-air ducts, exposed.

1. Material: Mineral-fiber blanket.
2. Thickness: 2 inches.
3. Number of Layers: One.
4. Field-Applied Jacket: Foil and paper.
5. Vapor Retarder Required: Yes.

END OF SECTION

ADDENDUM # 1 – ATTACHMENT “A1.7”

SECTION 15740 – ENERGY RECOVERY VENTILATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Energy Recovery Ventilator shall be as manufactured by "Greenheck" or approved equal provided all specifications are met. Greenheck Model ERH is used as the basis of design. Units shall be listed per ANSI/UL 1995, Heating and Cooling Equipment. Energy transfer ratings of the energy recovery wheel shall be ARI Certified. Ventilators shall bear the AMCA Certified Rating Seals for Air Performance. Performance shall be as scheduled on plans. Exhaust discharge and outside air intake shall not be located on the same side on roof top units.

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: Include in emergency, operation, and maintenance manuals.
- F. Warranty: Special warranty specified in this Section.

1.3 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of split-system units and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- D. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/ IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

1.4 COORDINATION

- A. Coordinate size and of concrete bases for units. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Division 3 Section "Cast-in-Place Concrete."
- B. Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Division 7 Section "Roof Accessories."

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Energy recovery ventilator and motors: one year from date of Substantial Completion. Energy recovery wheel: five years from date of Substantial Completion.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Greenheck
 - 2. Loren Cook Company
 - 3. Carrier Air Conditioning; Div. of Carrier Corporation.
 - 4. Lennox
 - 5. Mitsubishi Electronics America, Inc.; HVAC Division.
 - 6. Renewaire
 - 7. Trane Company (The); Unitary Products Group.
 - 8. York International Corp.

2.2 UNIT CASING AND FRAMES

- A. Unit shall be of internal frame type construction of galvanized steel. Frame and panels shall be G90 galvanized steel. All panels exposed to the weather shall be a minimum of 18 gauge galvanized steel. Unit shall be internally lined with galvanized sheet metal creating a double wall.
- B. Where top panels are joined there shall be an overlapping, standing seam to insure positive weather protection. All metal-to-metal seams shall be factory sealed, requiring no caulking at job site. Factory applied exterior finish.
- C. Unit base to be designed for curb mounting. Unit base shall overhang the curb for a positive seal against water run-off.

2.3 WEATHERHOODS

- A. Weatherhoods shall be the same finish as the unit. Outdoor air weatherhood shall incorporate a louvered design and moisture eliminator. Weatherhoods shall be tested in accordance with AMCA Standard 500-L and achieve an 'A' water penetration classification rating up to 8 in/hr rainfall at 50 mph.

2.4 INSULATION

- A. Unit casing to be insulated with 1 inch fiberglass. Insulation shall meet requirements of NFPA 90A and tested to meet UL 181 erosion requirements. Insulation to be enclosed in double wall construction.

2.5 ENERGY RECOVERY WHEEL

- A. Wheel shall be of the enthalpy type for both sensible and latent heat recovery and be designed to insure laminar flow. Energy transfer ratings must be ARI Certified to Standard 1060 and bear the ARI certification symbol for ARI Air-to-Air Energy Recovery Ventilation Equipment Certification Program based on ARI 1060. Ratings "in accordance with 1060" without certification are not acceptable. Desiccant shall be silica gel for maximum latent energy transfer. Wheel shall be constructed of lightweight polymer media to minimize shaft and bearing loads. Polymer media shall be mounted in a stainless steel rotor for corrosion resistance.
- B. Wheel design shall consist of removable segments for ease of service and/or cleaning. Silica gel desiccant shall be permanently bonded to wheel media to retain latent heat capability after cleaning. Wheels with sprayed on desiccant coatings are not acceptable. Wheels with desiccant applied after wheel formation are not acceptable. Energy recovery device shall transfer moisture entirely in the vapor phase.
- C. Energy recovery drive belt material shall be high strength urethane and shall be factory installed in a pre-stretched state, eliminating the need for field belt tension adjustment. Link style belts are not acceptable.

2.6 ACCESS DOORS

- A. All components shall be easily accessible through removable doors for exhaust, supply, filter, and damper compartments. Energy recovery wheels (smaller than 54 inches) shall be mounted in a slide-out track for ease of inspection, removal, and cleaning.

2.7 ROOF CURBS

- A. Roof curb to be supplied by unit manufacturer for field assembly. Curb shall consist of die formed galvanized steel sections. Curb shall be full perimeter type with gasketing provided for field installation between curb and unit base.

2.8 FAN SECTIONS

- A. Centrifugal fans to be double width, double inlet, forward curved type. All blower wheels shall be statically and dynamically balanced. Ground and polished steel fan shafts shall be

mounted in permanently lubricated, sealed ball bearing pillow blocks. Bearings shall be selected for a minimum (L10) life in excess of 100,000 hours at maximum cataloged operating speeds. Separate motors for exhaust and supply blowers shall be provided. Adjustable sheaves on belt-driven fans with motors less than 10 hp shall allow independent balancing of exhaust and supply airflows. Fan and motor assemblies are mounted to unit base with neoprene isolators as standard. Fans shall be located in draw-through position in reference to the energy recovery wheel.

2.9 MOTORS AND DRIVES

- A. Motors shall be energy efficient, complying with EPACT standards, for single speed ODP and TE enclosures. Motors shall be permanently lubricated, heavy-duty type, matched to the fan load and furnished at the specified voltage, phase, and enclosure. Drives shall be sized for a minimum of 150% of driven horsepower. Pulleys shall be of the fully machined cast type, keyed and securely attached to the fan wheel and motor shafts; 10 horsepower and less shall be supplied with an adjustable drive pulley. Energy wheel motors shall have integral overload protection.

2.10 FILTERS

- A. Supply and exhaust air filters shall be 2-inch thick pleated fiberglass, 30% efficient and tested to meet UL Class 2. Filter racks shall be die-formed galvanized steel.

2.11 ELECTRICAL

- A. All internal electrical components shall be factory wired for single point power connection. Units with electric reheat will be wired with independent power supply. All electrical components shall be UL Listed, Approved, or Classified where applicable and wired in compliance with the National Electrical Code.
- B. Weatherproof, integral door interlocking disconnect switch, motor starters, control circuit fusing, control transformer for 24 VAC circuit, and terminal strip shall be supplied as standard components in the control center. Motor starters consist of a contactor and Class 20 electronic adjustable overload protection and shall be provided for all motors in the unit.

2.12 INDIRECT GAS

- A. Indirect fired gas furnace shall be 80% efficient, ETL Listed for Indoor and Outdoor installation to ANSI Standard Z83.8 - 2002, CGA approved per 2.6 - 2002 and have a blow through fan design. Furnace shall be capable of operation with natural gas or LP gas and have a power venting system. The burner and heat exchanger shall be constructed of aluminized steel. Standard furnace features shall include main gas pressure regulator, main gas valve, electronic staged or electronic modulating controls, direct spark ignition system, high limit and a 24-volt control transformer.

2.13 HOT WATER COIL

- A. Hot water coil shall be factory tested and rated in accordance with ARI 410. Coils shall have copper tubes with permanently expanded aluminum fins, 12 fpi or less.

2.14 ELECTRIC HEAT

- A. Electric heat shall be UL listed and circuit fused per NEC over 48 amps. Heater shall be SCR control, factory wired and installed. Control will be 24 volt with class 2 transformer. Standard air flow switch to shut down heater if air ceases to flow across heater.

PART 3 - EXECUTION**3.1 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

3.2 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service. Complete installation and startup checks according to manufacturer's written instructions.

3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION

ADDENDUM #1-ATTACHMENT "A1.9"

HYDRONIC PIPING NOTES:

- MATERIALS USED SHALL BE RATED FOR THE OPERATING TEMPERATURE AND PRESSURE OF THE HYDRONIC SYSTEM. MATERIALS SHALL BE SUITABLE FOR THE TYPE OF FLUID IN THE HYDRONIC SYSTEM.
- HYDRONIC PIPE SHALL CONFORM TO THE STANDARDS LISTED IN THE TABLE BELOW. THE EXTERIOR OF THE PIPE SHALL BE PROTECTED FROM CORROSION AND DEGRADATION.

MATERIAL	STANDARD
COPPER OR COPPER-ALLOY PIPE	ASTM B 42 - ASTM B 302
COPPER OR COPPER-ALLOY TUBE (TYPE K, L OR M)	ASTM B 75 - ASTM B 88+ ASTM B 251
STEEL PIPE	ASTM A 53 - ASTM A 106
STEEL TUBING	ASTM A 254

- VALVES SHALL BE CONSTRUCTED OF MATERIALS THAT ARE COMPATIBLE WITH THE TYPE OF PIPING MATERIAL AND FLUID IN THE SYSTEM. VALVES SHALL BE RATED FOR THE TEMPERATURES AND PRESSURES OF THE SYSTEMS IN WHICH THE VALVES ARE INSTALLED.
- JOINTS BETWEEN DIFFERENT PIPING MATERIALS SHALL BE MADE WITH APPROVED ADAPTER FITTINGS. JOINTS BETWEEN DIFFERENT METALLIC PIPING MATERIALS SHALL BE MADE WITH APPROVED DIELECTRIC FITTING OR BRASS CONVERTER FITTINGS.
- PIPE SHALL BE CUT SQUARE, REAMED AND CHAMFERED, AND SHALL BE FREE OF BURRS AND OBSTRUCTIONS. PIPE ENDS SHALL HAVE FULL-BORE OPENINGS AND SHALL NOT BE UNDERCUT.
- MECHANICAL JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- JOINTS PREPARED TO BE SOLDERED SHALL BE CLEANED. A FLUX CONFORMING TO ASTM B 813 SHALL BE APPLIED. THE JOINT SHALL BE SOLDERED WITH A SOLDER CONFORMING TO ASTM B 32.
- FLUID IN THE SUPPLY SIDE OF A HYDRONIC SYSTEM SHALL NOT ENTER A TEE FITTING THROUGH THE BRANCH OPENING.
- THE HYDRONIC SYSTEM SHALL BE INSTALLED TO PERMIT THE SYSTEM TO BE DRAINED.
- THE POTABLE WATER SYSTEM SHALL BE PROTECTED FROM BACK FLOW IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE.
- OPENINGS FOR PIPE PENETRATIONS IN WALLS, FLOORS OR CEILING SHALL BE LARGER THAN THE PENETRATING PIPE. OPENINGS THROUGH CONCRETE OR MASONRY BUILDING ELEMENTS SHALL BE SLEEVED. THE ANNULAR SPACE SURROUNDING PIPE PENETRATIONS SHALL BE PROTECTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE.
- THE HYDRONIC PIPING SYSTEM SHALL NOT BE IN DIRECT CONTACT WITH BUILDING MATERIALS THAT CAUSE THE PIPING MATERIAL TO DEGRADE OR CORRODE, OR THAT INTERFERE WITH THE OPERATION OF THE SYSTEM.
- THE HYDRONIC PIPING SYSTEMS SHALL BE PRESSURE TESTED AT ONE AND ONE HALF TIMES THE MAXIMUM SYSTEM DESIGN PRESSURE, BUT NOT LESS THAN 100 PSI.
- PIPING TO BE EMBEDDED IN CONCRETE SHALL BE PRESSURE TESTED PRIOR TO POURING CONCRETE. DURING POURING, THE PIPE SHALL BE MAINTAINED AT THE PROPOSED OPERATING PRESSURE.
- PROVIDE MEANS TO ADD CHEMICALS TO THE CHILLED WATER PIPING SYSTEM AND THE HEATING WATER PIPING SYSTEM AS REQUIRED BY THE PIPING MATERIALS UTILIZED (COPPER OR STEEL). THE CHILLED WATER HYDRONIC SYSTEM SHALL BE A GLYCOL SOLUTION (SEE CHILLER SCHEDULE).
- PIPE INSULATION INSTALLED IN BUILDING SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE, SHALL BE TESTED IN COMPOSITE FORM IN ACCORDANCE WITH ASTM E 84 AND SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND A SMOKE-DEVELOPED INDEX NOT EXCEEDING 450. INSULATION INSTALLED IN AN AIR PLENUM SHALL BE SUITABLE WITH SUCH LOCATION.
- HYDRONIC PIPING SHALL BE INSULATED TO THE THICKNESS REQUIRED BY THE INTERNATIONAL ENERGY CONSERVATION CODE. SEE TABLE BELOW.

FLUID	NOMINAL PIPE DIAMETER	
	≤ 1 1/2"	> 1 1/2"
HOT WATER	1 1/2"	2 1/2"
CHILLED WATER, BRINE OR REFRIGERANT	1 1/2"	1 1/2"

Baker

Michael Baker Jr., Inc.
5088 West Washington St.
Charleston, West Virginia
25313
(304) 769-0821
A unit of Michael Baker Corporation

Drawing Title:
DETAILS, NOTES & SCHED.

Project:
CHARLESTON ARMORY

Revision Description:
HYDRONIC PIPING NOTES

Date:
5/01/09

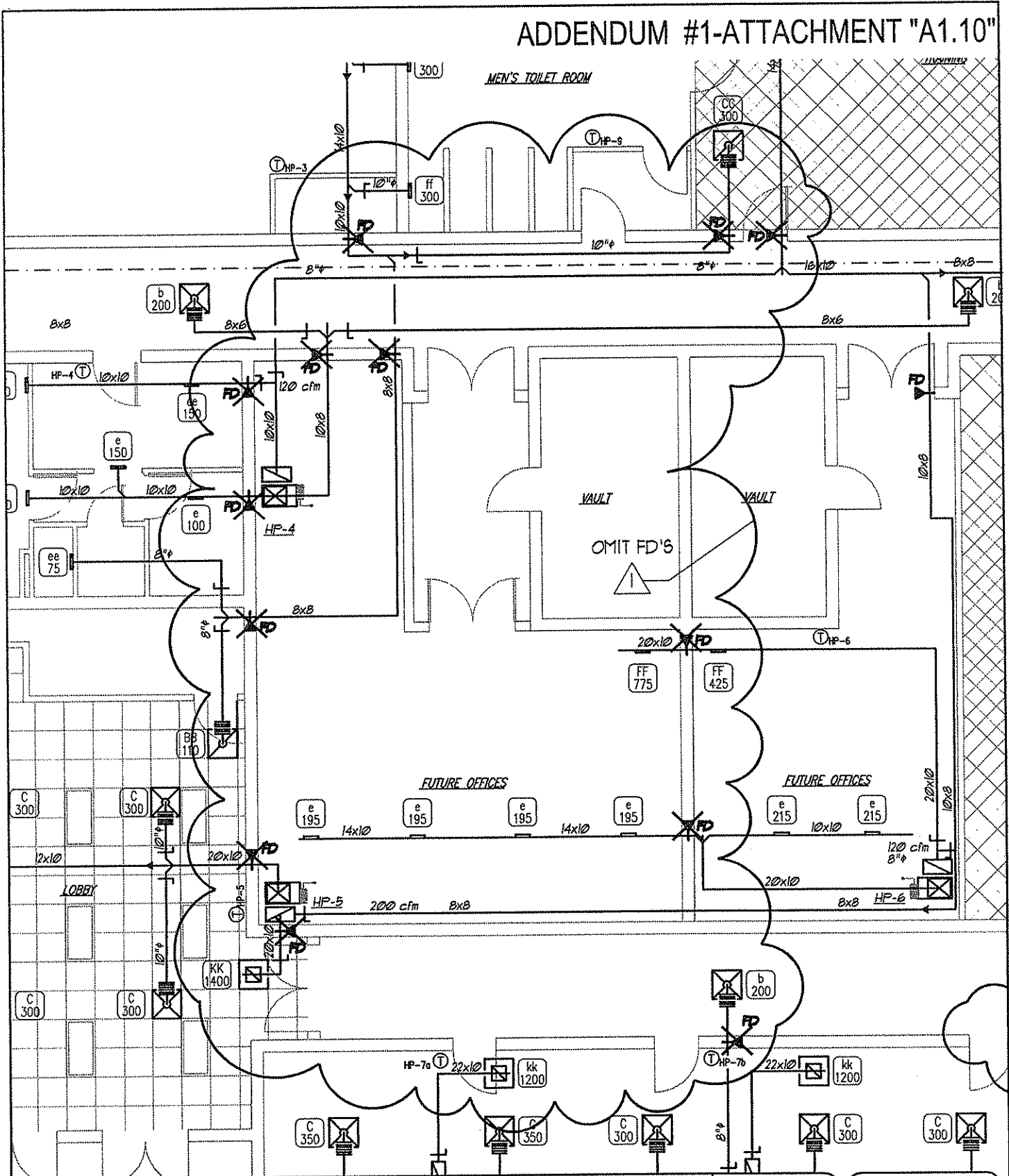
Project No.:
115063

Scale:
NTS

Drawing Number:
M0.2

Sheet 1 of 1

ADDENDUM #1-ATTACHMENT "A1.10"



Baker
 BAKER & ASSOCIATES
 A unit of Michael Baker Corporation

Michael Baker Jr., Inc.
 5088 West Washington St.
 Charleston, West Virginia
 25313
 (304) 769-0821

Drawing Title:
MECH. 1ST. FLOOR PLAN

Project
CHARLESTON ARMORY

Revision Description:
FD'S UPDATE

Date:
5/01/09

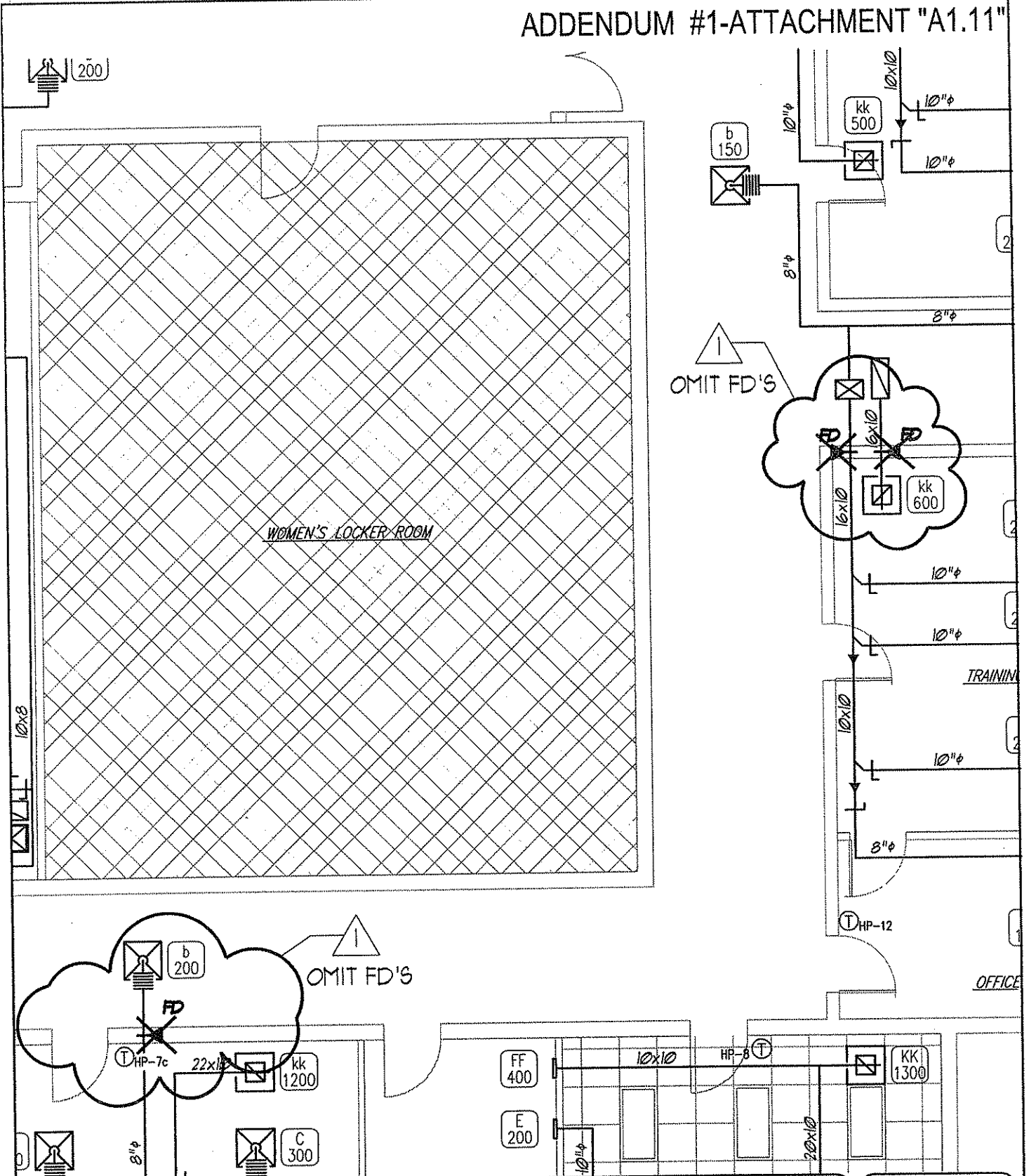
Project No.:
115063

Scale:
NTS

Drawing Number:
M1.2

Sheet 1 of 2

ADDENDUM #1-ATTACHMENT "A1.11"



Baker

BAKER & ASSOCIATES
A unit of Michael Baker Corporation

Michael Baker Jr., Inc.
5088 West Washington St.
Charleston, West Virginia
25313

(304) 769-0821

Drawing Title:
MECHANICAL SUPPORT

Project
CHARLESTON ARMORY

Revision Description:
FD'S UPDATE

Date:
5/01/09

Project No.:
115063

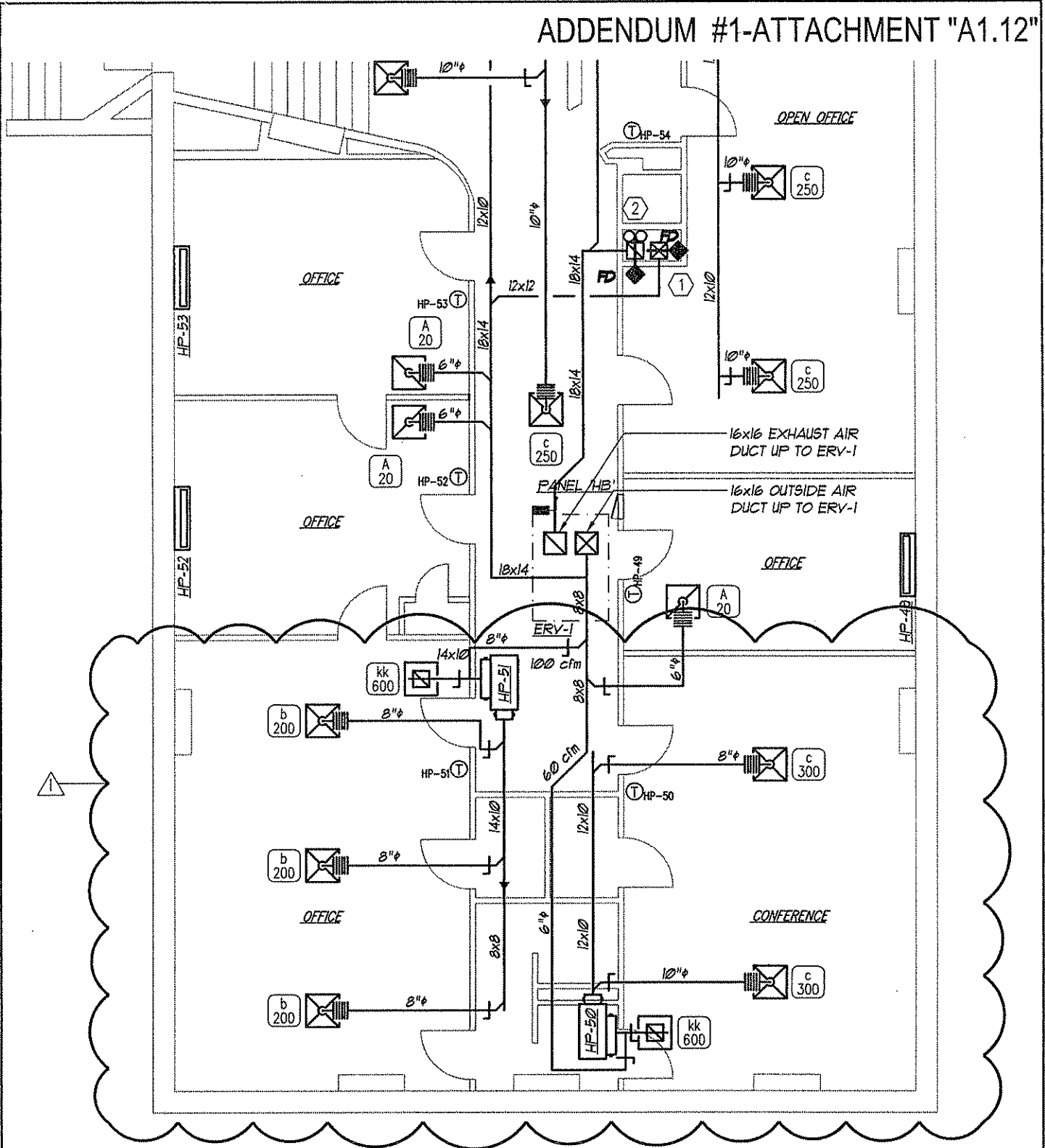
Scale:
NTS

Drawing
Number:

M1.2

Sheet 2 of 2

ADDENDUM #1-ATTACHMENT "A1.12"



Baker

Michael Baker Jr., Inc.
5088 West Washington St.
Charleston, West Virginia
25313

BAKER & ASSOCIATES (304) 769-0821
A unit of Michael Baker Corporation

Drawing Title:
MECH. 2ND FLOOR PLAN

Project
CHARLESTON ARMORY

Revision Description:
REVISIONS

Date:
5/01/09

Project No.:
115063

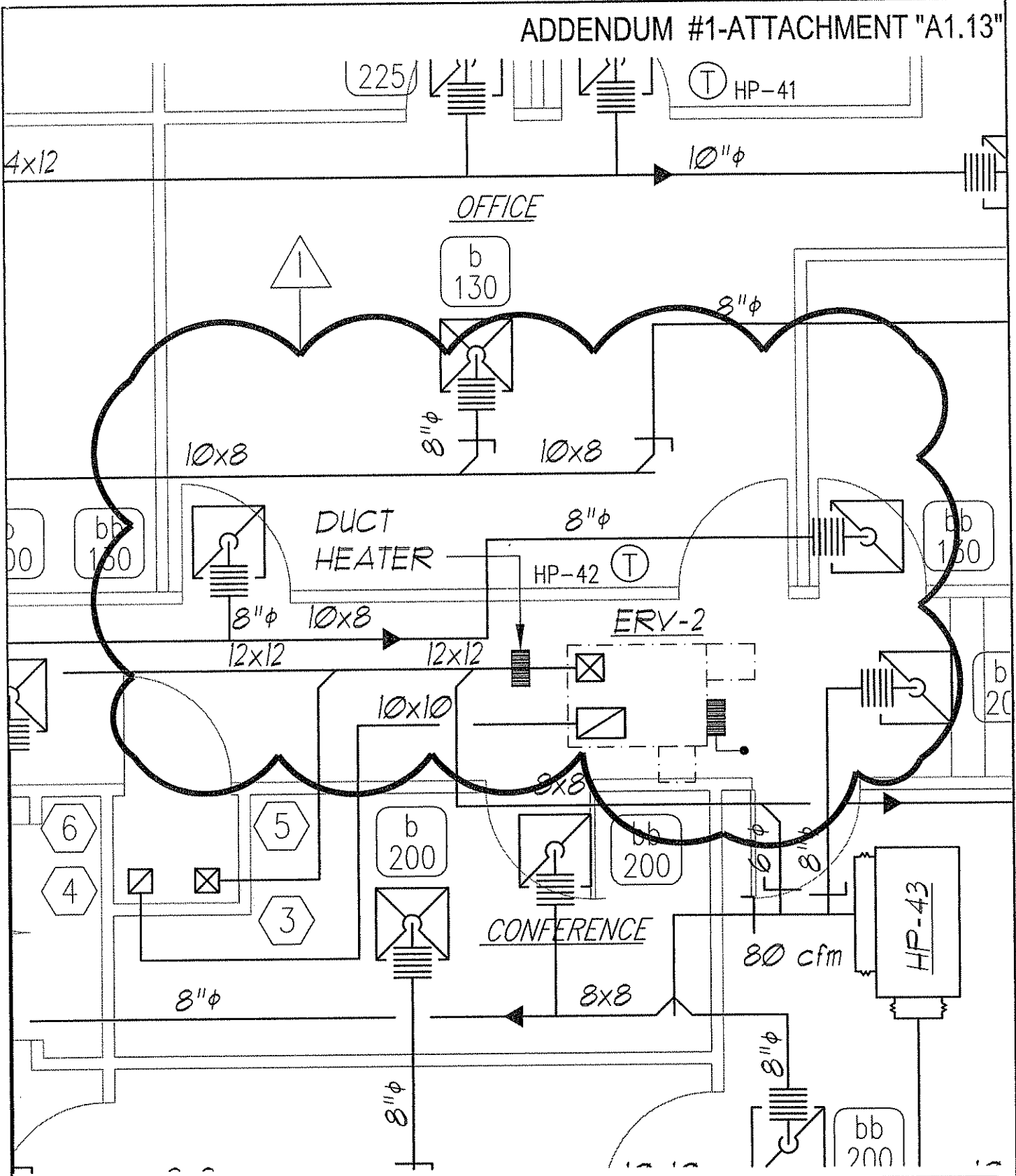
Scale:
NTS

Drawing
Number:

M1.4

Sheet 1 of 2

ADDENDUM #1-ATTACHMENT "A1.13"



Baker
 BAKER & ASSOCIATES
 A unit of Michael Baker Corporation

Michael Baker Jr., Inc.
 5088 West Washington St.
 Charleston, West Virginia
 25313
 (304) 769-0821

Drawing Title:
MECH. 2ND FLOOR PLAN

Project:
CHARLESTON ARMORY

Revision Description:
REVISIONS

Date:
5/01/09

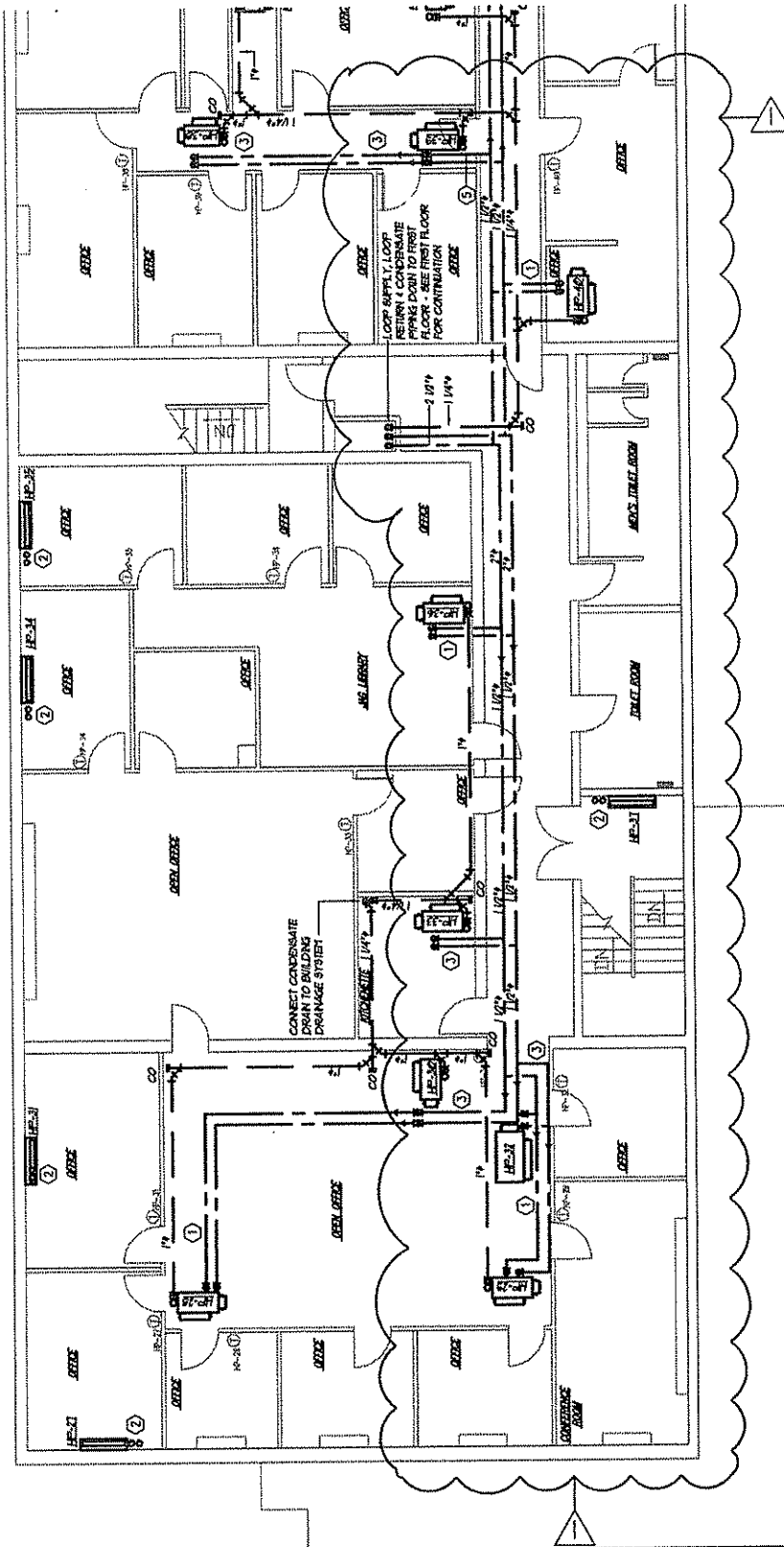
Project No.:
115063

Scale:
NTS

Drawing Number:
M1.4

Sheet 1 of 2

ADDENDUM #1-ATTACHMENT "A1.14"



Baker
 BAKER & ASSOCIATES
 A unit of Michael Baker Corporation

Michael Baker Jr., Inc.
 5088 West Washington St.
 Charleston, West Virginia
 25313

(304) 769-0821

Drawing Title:
MECH. 2ND FLOOR PLAN

Project
CHARLESTON ARMORY

Revision Description:
REVISIONS

Date:
5/01/09

Project No.:
115063

Scale:
NTS

Drawing
 Number:

M2.4

Sheet 1 of 1

Charleston Armory HVAC Renovations & Architectural Improvements
 115063 - Mandatory Pre-Bid 4.21.09 @ 1:30pm @ National Guard

Sign In Sheet

COMPANY NAME	CONTACT	ADDRESS	PHONE	FAX	E-MAIL ADDRESS
FERGUSON BROTHERS	BRYAN MEEK	HUNTINGTON, WV 25704	304 522-8371	304 522-8373	BRYAN MEEK @ G-MAIL.COM
686 Builders Inc.	ROD OREM	912 MADISON AVE 500 CORPORATE CENTER DRIVE SUITE 550 SCOTT DEPOT WV 25560	304 757-9196	304 757-0993	ROREM @ GANDG BUILDERS.COM
Dan Hill Construction	Dan Hill	PO Box 685 Candy Bridge, WV 25085	304 632-1600	304-632 1501	rdanhill@Hotmail. com
Dan Hill Cont.	Tara Elswick	PO Box 685 Candy Bridge, WV 25085	632-1600	632- 1501	elswick@Hotmail. com
XXXXXXXXXX					
CIMCO Inc	Tom Schockcraft	2336 Niagara Ave Martinsburg, WV 25524	304-562-0121	304-566-0310	TSCHOCKCRAFT@CIMCO.WV.COM
Carrier	Bryan Graham	2 Mission Way Scott Depot, WV 25560	304-941-8331	304-957-2018	Bryan.Graham@carrier.us.com
Elco Mechanical	Rod King	1510 Cousland Dr Charleston, WV 25311	304-346-0546	304-346-0548	Rod@king@SUNBELTLINK.MAIL.COM
Elco Mechanical	D Ellis	11	304-346-0546	304-346-0548	11
Dougherty Co.	Eric Smith	600 50th Street Charleston WV	304-925- 6664	304-925- 4280	eric.smith@Dougherty CO.COM
Rock Branch Mech	Ron McInnis	132 Harris Dr Poca, WV 25158	304 755-9101	755-5270	Ron @ WV DSA.NET
Pritchard Elect.	Jerry Gray	2425 8th Ave Huntington, WV 25801	304 529-2566	304 529-2567	Jerry Gray bts @ Pritchard Electric, com
Beckley Mechanical	Eric McIniffey	301 George St. Beckley, WV WV 25805	304 252-1539	304 253-1233	eric.mciniffey@ beckleymechanical.com
Dan Hill Const. Co.	Chris Dietzen	PO Box 36 Candy Bridge, WV 25085	304- 632-1600	304- 632-1501	CDIETZEN@Yahoo. com
Daniel Danna	Scott Danna	50 Ches. WV 25303	744-8479	744-8479	S Danna @ David Danna.NET
Jay Holcomb	Harris Bros.	1533 Hansford St. OWA, WV 25311	343-5566	343-5568	jayhol@verizon.net

