



Purchasing Division

## Invitation for Bid

IFB-4230-16-DH  
HVAC for City Hall I.T. Server Room

### **Responses Due:**

May 10, 2016 prior to 3:30pm

**Accepting Electronic Responses Only**

**Responses Only Submitted Through the Rocky Mountain E-Purchasing System (RMEPS)**

<https://www.rockymountainbidsystem.com/default.asp>

(Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. 800-835-4603)

### **Purchasing Representative:**

Duane Hoff Jr., Senior Buyer

[duaneh@gjcity.org](mailto:duaneh@gjcity.org)

970-244-1545

This document has been developed specifically to solicit competitive responses for this solicitation, and may not be the same as previous City of Grand Junction solicitations. All vendors are urged to thoroughly review this solicitation prior to responding. Submittal by **FAX IS NOT ACCEPTABLE** for this solicitation.

# **Invitation for Bids**

## **Table of Contents**

Section 1	Instruction to Bidders
Section 2	General Contract Conditions
Section 3	Statement of Work
Section 4	Contractor's Bid Form
	Price Proposal/Bid Schedule Form
	Attachments

# **1. Instructions to Bidders**

- 1.1. **Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to provide and install an HVAC system for the new I.T. Server Room located at City Hall. All dimensions and scope of work should be verified by Contractors prior to submission of bids.
- 1.2. **Mandatory Site Visit/Briefing:** **Prospective bidders are required to attend a site visit/briefing on April 25, 2016 at 10:00am.** Meeting location shall be at City Hall, Break Room, 250 N. 5<sup>th</sup> Street, Grand Junction, CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).
- 1.3. **The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout this Solicitation. The term Owner means the Owner or his authorized representative.
- 1.4. **Prequalification Requirement: CITY ONLY** Contractors submitting bids over \$50,000 must be pre-qualified in accordance with the City's "*Rules and Procedures for Pre-qualification of Contractors*". All bids received by the specified time will be opened, but the City will reject bids over \$50,000 from contractors who have not been prequalified. Application forms for prequalification are available at the Administration Office of the Department of Public Works and Planning, City Hall, 250 North Fifth Street, Room 245. Call 970-256-4126 or 970-244-1555 for additional information. Due to the time required to process applications, *all applications must be submitted no later than two weeks prior to the Response Due Date.* Application link: <http://www.gjcity.org/PreQualification.aspx>
- 1.5. **Submission:** **Each proposal shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (<https://www.rockymountainbidssystem.com/default.asp>).** *This site offers both "free" and "paying" registration options that allow for full access of the Owner's documents and for electronic submission of proposals. (Note: "free" registration may take up to 24 hours to process. Please Plan accordingly.)* Please view our "**Electronic Vendor Registration Guide**" at <http://www.gjcity.org/BidOpenings.aspx> for details. (Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. **800-835-4603**)
- 1.6. **Printed Form for Price Bid:** All Price Bids must be made upon the Contractor's Bid Form attached, and should give the amounts both in words and in figures, and must be signed and acknowledged by the bidder.
- 1.7. **Exclusions:** No oral, telephonic, emailed, or facsimile bid will be considered

- 1.8. **Contract Documents:** The complete IFB and bidder's response compose the Contract Documents. Copies of these documents can be obtained from the City Purchasing website, <http://www.gjcity.org/BidOpenings.aspx>.
- 1.9. **Examination of Specifications:** Bidders shall thoroughly examine and be familiar with the project Statement of Work. The failure or omission of any Offeror to receive or examine any form, addendum, or other document shall in no way relieve any Offeror from any obligation with respect to his bid. The submission of a bid shall be taken as evidence of compliance with this section.
- 1.10. **Questions Regarding Statement of Work:** Any information relative to interpretation of Scope of Work or specifications shall be requested of the Purchasing Representative, in writing, in ample time prior to the response time.
- 1.11. **Addenda & Interpretations:** If it becomes necessary to revise any part of this solicitation, a written addendum will be posted electronically on the City's website at <http://www.gjcity.org/BidOpenings.aspx>. The Owner is not bound by any oral representations, clarifications, or changes made in the written specifications by Owner, unless such clarification or change is provided in written addendum form from the City Purchasing Representative.
- 1.12. **Taxes:** The Owner is exempt from State retail and Federal tax. The bid price must be net, exclusive of taxes.
- 1.13. **Offers Binding 60 Days:** Unless otherwise specified, all formal offers submitted shall be binding for sixty (60) calendar days following opening date, unless the Bidder, upon request of the Purchasing Representative, agrees to an extension.
- 1.14. **Collusion Clause:** Each bidder by submitting a bid certifies that it is not party to any collusive action or any action that may be in violation of the Sherman Antitrust Act. Any and all bids shall be rejected if there is evidence or reason for believing that collusion exists among bidders. The Owner may, or may not, accept future bids for the same services or commodities from participants in such collusion.
- 1.15. **Public Disclosure Record:** If the bidder has knowledge of their employee(s) or sub-contractors having an immediate family relationship with a City/County employee or elected official, the bidder must provide the Purchasing Representative with the name(s) of these individuals. These individuals are required to file an acceptable "Public Disclosure Record", a statement of financial interest, before conducting business with the City/County.

## **2. General Contract Conditions for Construction Projects**

- 2.1. **The Contract:** This Invitation for Bid, submitted documents, and any negotiations, when properly accepted by the City/County, shall constitute a contract equally binding between the City/County and Contractor. The contract represents the entire and integrated agreement between the parties hereto and supersedes all

prior negotiations, representations, or agreements, either written or oral. The contract may be amended or modified with Change Orders, Field Orders, or Addendums.

- 2.2. The Work:** The term Work includes all labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in such construction.
- 2.3. Execution, Correlation, Intent, and Interpretations:** The Contract Documents shall be signed in not less than triplicate by the Owner (City/County) and Contractor. City/County will provide the contract. By executing the contract, the Contractor represents that he/she has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents. The Contract Documents are complementary, and what is required by any one, shall be as binding as if required by all. The intention of the documents is to include all labor, materials, equipment and other items necessary for the proper execution and completion of the scope of work as defined in the technical specifications and drawings contained herein. All drawings, specifications and copies furnished by the City/County are, and shall remain, City/County property. They are not to be used on any other project, and with the exception of one contract set for each party to the contract, are to be returned to the owner on request at the completion of the work.
- 2.4. The Owner:** The Owner is the City of Grand Junction and/or Mesa County, Colorado and is referred to throughout the Contract Documents. The term Owner means the Owner or his authorized representative. The Owner shall, at all times, have access to the work wherever it is in preparation and progress. The Contractor shall provide facilities for such access. The Owner will make periodic visits to the site to familiarize himself generally with the progress and quality of work and to determine, in general, if the work is proceeding in accordance with the contract documents. Based on such observations and the Contractor's Application for Payment, the Owner will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in the contract. The Owner will have authority to reject work which does not conform to the Contract documents. Whenever, in his reasonable opinion, he considers it necessary or advisable to insure the proper implementation of the intent of the Contract Documents, he will have authority to require the Contractor to stop the work or any portion, or to require special inspection or testing of the work, whether or not such work can be then be fabricated, installed, or completed. The Owner will not be responsible for the acts or omissions of the Contractor, and sub-Contractor, or any of their agents or employees, or any other persons performing any of the work.
- 2.5. Contractor:** The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents. The term Contractor means the Contractor or his authorized representative. The Contractor shall carefully study and compare the General Contract Conditions of the Contract, Specification and Drawings, Scope of Work, Addenda and Modifications and shall at once report to the Owner any error, inconsistency or omission he may discover.

Contractor shall not be liable to the Owner for any damage resulting from such errors, inconsistencies or omissions. The Contractor shall not commence work without clarifying Drawings, Specifications, or Interpretations.

- 2.6. Sub-Contractors:** A sub-contractor is a person or organization who has a direct contract with the Contractor to perform any of the work at the site. The term sub-contractor is referred to throughout the contract documents and means a sub-contractor or his authorized representative.
- 2.7. Award of Sub-Contractors & Other Contracts for Portions of the Work:** As soon as practicable after bids are received and prior to the award of the contract, the successful Contractor shall furnish to the Owner, in writing for acceptance, a list of the names of the sub-contractors or other persons or organizations proposed for such portions of the work as may be designated in the proposal requirements, or, if none is so designated, the names of the sub-contractors proposed for the principal portions of the work. Prior to the award of the contract, the Owner shall notify the successful Contractor in writing if, after due investigation, has reasonable objection to any person or organization on such list. If, prior to the award of the contract, the Owner has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the successful Contractor may, prior to the award, withdraw their proposal without forfeiture of proposal security. If the successful Contractor submits an acceptable substitute with an increase in the proposed price to cover the difference in cost occasioned by the substitution, the Owner may, at their discretion, accept the increased proposal or may disqualify the Contractor. If, after the award, the Owner refuses to accept any person or organization on such list, the Contractor shall submit an acceptable substitute and the contract sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. However, no increase in the contract sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.
- 2.8. Supervision and Construction Procedures:** The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the contract.
- 2.9. Warranty:** The Contractor warrants to the Owner that all materials and equipment furnished under this contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards may be considered defective. If required by Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. If within ten (10) days after written notice to the Contractor requesting such repairs or replacement, the Contractor should neglect to make or undertake with due diligence to the same, the City may make such repairs or replacements. All indirect and direct costs of such correction or removal or replacement shall be at the Contractor's expense.

The Contractor will also bear the expenses of making good all work of others destroyed or damaged by the correction, removal or replacement of his defective work.

- 2.10. Permits, Fees, & Notices:** The Contractor shall secure and pay for all permits, governmental fees and licenses necessary for the proper execution and completion of the work. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work. If the Contractor observes that any of the Contract Documents are at variance in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be adjusted by approximate modification. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility and shall bear all costs attributable.
- 2.11. Responsibility for Those Performing the Work:** The Contractor shall be responsible to the Owner for the acts and omissions of all his employees and all sub-contractors, their agents and employees, and all other persons performing any of the work under a contract with the Contractor.
- 2.12. Use of the Site:** The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.
- 2.13. Cleanup:** The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of work he shall remove all his waste materials and rubbish from and about the project, as well as all his tools, construction equipment, machinery and surplus materials.
- 2.14. Insurance Requirements:** The selected Bidder agrees to procure and maintain, at its own cost, policy(s) of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by the Bidder pursuant to this Section. Such insurance shall be in addition to any other insurance requirements imposed by this Contract or by law. The Bidder shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to this Section by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types. Bidder shall procure and maintain and, if applicable, shall cause any Subcontractor of the Bidder to procure and maintain insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Owner. All coverage shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by the Bidder pursuant to this Section. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage. Minimum coverage limits shall be as indicated below unless specified otherwise in the Special Conditions:

(a) Worker Compensation insurance to cover obligations imposed by applicable laws for any employee engaged in the performance of work under this Contract, and Employers' Liability insurance with minimum limits of:

Five Hundred Thousand Dollars (\$500,000) each accident,  
Five Hundred Thousand Dollars (\$500,000) disease - policy limit, and  
Five Hundred Thousand Dollars (\$500,000) disease - each employee

(b) General Liability insurance with minimum combined single limits of:

One Million Dollars (\$1,000,000) each occurrence and  
One Million Dollars (\$1,000,000) per job aggregate.

The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards. The policy shall contain a severability of interests provision.

(c) Comprehensive Automobile Liability insurance with minimum combined single limits for bodily injury and property damage of not less than:

One Million Dollars (\$1,000,000) each occurrence and  
One Million Dollars (\$1,000,000) aggregate

This policy shall provide coverage to protect the contractor against liability incurred as a result of the professional services performed as a result of responding to this Solicitation.

With respect to each of Bidder's owned, hired, or non-owned vehicles assigned to be used in performance of the Work. The policy shall contain a severability of interests provision. The policies required by paragraphs (b), and (c) above shall be endorsed to include the City and/or County, and the City's and/or County's officers and employees as additional insureds. Every policy required above shall be primary insurance, and any insurance carried by the Owner, its officers, or its employees, or carried by or provided through any insurance pool of the Owner, shall be excess and not contributory insurance to that provided by Bidder. No additional insured endorsement to any required policy shall contain any exclusion for bodily injury or property damage arising from completed operations. The Bidder shall be solely responsible for any deductible losses under any policy required above.

**2.15. Indemnification:** The Contractor shall defend, indemnify and save harmless the Owner, and all its officers, employees, insurers, and self-insurance pool, from and against all liability, suits, actions, or other claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or



fault of the Contractor, or of any Contractor's agent, employee, sub-contractor or supplier in the execution of, or performance under, any contract which may result from proposal award. Contractor shall pay any judgment with cost which may be obtained against the Owner growing out of such injury or damages.

- 2.16. Miscellaneous Conditions:** Material Availability: Contractors must accept responsibility for verification of material availability, production schedules, and other pertinent data prior to submission of bid. It is the responsibility of the bidder to notify the Owner immediately if materials specified are discontinued, replaced, or not available for an extended period of time. OSHA Standards: All bidders agree and warrant that services performed in response to this invitation shall conform to the standards declared by the US Department of Labor under the Occupational Safety and Health Act of 1970 (OSHA). In the event the services do not conform to OSHA standards, the Owner may require the services to be redone at no additional expense to the Owner.
- 2.17. Time:** The Contract Time is the period of time allotted in the Contract Documents for completion of the work. The date of commencement of the work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract or such other date as may be established therein, or as established as entered on the Bid Form. The Date of Substantial Completion of the work or designated portions thereof is the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents.
- 2.18. Progress & Completion:** The Contractor shall begin work on the date of commencement as defined in the Contract, and shall carry the work forward expeditiously with adequate forces and shall complete it within the contract time.
- 2.19. Payment & Completion:** The Contract Sum is stated in the Contract and is the total amount payable by the Owner to the Contractor for the performance of the work under the Contract Documents. Upon receipt of written notice that the work is ready for final inspection and acceptance and upon receipt of application for payment, the Owner's Project Manager will promptly make such inspection and, when he finds the work acceptable under the Contract Documents and the Contract fully performed, the Owner shall make payment in the manner provided in the Contract Documents.
- 2.20. Quantities of Work and Unit Price:** Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work. The City does not expressly or by implication agree that the actual amount of Work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price. The City also reserves the right to make changes in the Work including the right to delete any bid item in its entirety or add additional bid items.
- 2.21. Bid Bond:** Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of: a certified or cashier's check drawn on an approved national bank or trust company in the state of Colorado, and made

payable without condition to the City; or a **Bid Bond** written by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid amount. Once a Bid is accepted and a Contract is awarded, the apparent successful bidder has ten calendar days to enter into a contract in the form prescribed and to furnish the bonds with a legally responsible and approved surety. Failure to do so will result in forfeiture of the Bid Guaranty to the City as Liquidated Damages.

- 2.22. Performance & Payment Bonds:** Contractor shall furnish a Performance and a Payment Bond, each in an amount at least equal to that specified for the contract amount as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These bonds shall remain in effect for the duration of the Warranty Period (as specified in the Special Conditions). Contractor shall also furnish other bonds that may be required by the Special Conditions. All bonds shall be in the forms prescribed by the Contract Documents and be executed by such sureties as (1) are licensed to conduct business in the State of Colorado and (2) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Accounts, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the Authority Act. If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements of clauses (1) and (2) of this section, Contractor shall within five (5) days thereafter substitute another bond and surety, both of which shall be acceptable to the City.
- 2.23. Retention:** The Owner will deduct money from the partial payments in amounts considered necessary to protect the interest of the Owner and will retain this money until after completion of the entire contract. The amount to be retained from partial payments will be five (5) percent of the value of the completed work, and not greater than five (5) percent of the amount of the Contract. When the retainage has reached five (5) percent of the amount of the Contract no further retainage will be made and this amount will be retained until such time as final payment is made.
- 2.24. Liquidated Damages for Failure to Enter Into Contract: CITY ONLY** Should the Successful Bidder fail or refuse to enter into the Contract within ten Calendar Days from the issuance of the Notice of Award, the City shall be entitled to collect the amount of such Bidder's Bid Guaranty as Liquidated Damages, not as a penalty but in consideration of the mutual release by the City and the Successful Bidder of all claims arising from the City's issuance of the Notice of Award and the Successful Bidder's failure to enter into the Contract and the costs to award the Contract to any other Bidder, to readvertise, or otherwise dispose of the Work as the City may determine best serves its interest.
- 2.25. Liquidated Damages for Failure to Meet Project Completion Schedule: CITY ONLY** If the Contractor does not achieve Final Completion by the required date, whether by neglect, refusal or any other reason, the parties agree and stipulate that

the Contractor shall pay liquidated damages to the City for each such day that final completion is late. As provided elsewhere, this provision does not apply for delays caused by the City. The date for Final Completion may be extended in writing by the Owner.

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **\$350.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as: additional engineering, inspection and oversight by the City and its agents; additional contract administration; inability to apply the efforts of those employees to the other work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is substantially complete. In addition to the Work being substantially complete, Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

If the Contractor shall fail to pay said liquidated damages promptly upon demand thereof after having failed to achieve Final Completion on time, the City shall first look to any retainage or other funds from which to pay said liquidated damages; if retainage or other liquid funds are not available to pay said liquidated damages amounts, the Surety on the Contractor's Performance Bond and Payment Bond shall pay such liquidated damages. In addition, the City may withhold all, or any part of, such liquidated damages from any payment otherwise due the Contractor. Liquidated damages as provided do not include any sums to reimburse the City for extra costs which the City may become obligated to pay on other contracts which were delayed or extended because of the Contractor's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other contracts resulting from the Contractor's failure of timely performance, the Contractor agrees to pay these costs that the City incurs because of the Contractor's delay, and these payments are separate from and in addition to any liquidated damages.

The Contractor agrees that the City may use its own forces or hire other parties to obtain Substantial or Final Completion of the work if the time of completion has elapsed and the Contractor is not diligently pursuing completion. In addition to the

Liquidated Damages provided for, the Contractor agrees to reimburse the City for all expenses thus incurred.

- 2.26. Contingency/Force Account:** Contingency/Force Account work will be authorized by the Owner's Project Manager and is defined as minor expenses to cover miscellaneous or unforeseen expenses related to the project. The expenses are not included in the Drawings, Specifications, or Scope of Work and are necessary to accomplish the scope of this contract. Contingency/Force Account Authorization will be directed by the Owner through an approved form. Contingency/Force Account funds are the property of the Owner and any Contingency/Force Account funds, not required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account funds, that are not authorized by Owner or Owner's Project Manager.
- 2.27. Protection of Persons & Property:** The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Contractor shall erect and maintain, as required by existing safeguards for safety and protection, and all reasonable precautions, including posting danger signs or other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent utilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct by the Contractor in the execution of the work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or it shall make good such damage or injury in an acceptable manner.
- 2.28. Changes in the Work:** The Owner, without invalidating the contract, may order changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by Change Order and shall be executed under the applicable conditions of the contract documents. A Change Order is a written order to the Contractor signed by the Owner issued after the execution of the contract, authorizing a change in the work or an adjustment in the contract sum or the contract time. The contract sum and the contract time may be changed only by Change Order.
- 2.29. Claims for Additional Cost or Time:** If the Contractor wishes to make a claim for an increase in the contract sum or an extension in the contract time, he shall give the Owner written notice thereof within a reasonable time after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property in which case the Contractor shall precede in accordance with the regulations on safety. No such claim shall be valid unless so made. Any change in the contract sum or contract time resulting from such claim shall be authorized by Change Order.

- 2.30. Minor Changes in the Work:** The Owner shall have authority to order minor changes in the work not involving an adjustment in the contract sum or an extension of the contract time and not inconsistent with the intent of the contract documents.
- 2.31. Field Orders:** The Owner may issue written Field Orders which interpret the Contract Documents in accordance with the specifications, or which order minor changes in the work in accordance with the agreement, without change in the contract sum or time. The Contractor shall carry out such Field Orders promptly.
- 2.32. Uncovering & Correction of Work:** The Contractor shall promptly correct all work rejected by the Owner as defective or as failing to conform to the contract documents whether observed before or after substantial completion and whether or not fabricated installed or competed. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Owner's additional services thereby made necessary. If within one (1) year after the date of completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the contract documents, any of the work found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discover of condition. All such defective or non-conforming work under the above paragraphs shall be removed from the site where necessary and the work shall be corrected to comply with the contract documents without cost to the Owner. The Contractor shall bear the cost of making good all work of separate Contractors destroyed or damaged by such removal or correction. If the Owner prefers to accept defective or non-conforming work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the payment or contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.
- 2.30. Amendment:** No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All amendments to the contract shall be made in writing by the Owner.
- 2.31. Assignment:** The Contractor shall not sell, assign, transfer or convey any contract resulting from this IFB, in whole or in part, without the prior written approval from the Owner.
- 2.32. Compliance with Laws:** Bids must comply with all Federal, State, County and local laws governing or covering this type of service and the fulfillment of all ADA (Americans with Disabilities Act) requirements.
- 2.33. Confidentiality:** All information disclosed by the Owner to the Contractor for the purpose of the work to be done or information that comes to the attention of the

Contractor during the course of performing such work is to be kept strictly confidential.

- 2.34. Conflict of Interest:** No public official and/or City/County employee shall have interest in any contract resulting from this IFB.
- 2.35. Contract Termination:** This contract shall remain in effect until any of the following occurs: (1) contract expires; (2) completion of services; (3) acceptance of services or, (4) for convenience terminated by either party with a written *Notice of Cancellation* stating therein the reasons for such cancellation and the effective date of cancellation.
- 2.36. Employment Discrimination:** During the performance of any services per agreement with the Owner, the Contractor, by submitting a Bid, agrees to the following conditions:
- 2.36.1.** The Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap, or national origin except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Contractor. The Contractor agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- 2.36.2.** The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, shall state that such Contractor is an Equal Opportunity Employer.
- 2.36.3.** Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- 2.37. Immigration Reform and Control Act of 1986 and Immigration Compliance:** The Offeror certifies that it does not and will not during the performance of the contract employ illegal alien workers or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or the immigration compliance requirements of State of Colorado C.R.S. § 8-17.5-101, *et.seq.* (House Bill 06-1343).
- 2.38. Ethics:** The Contractor shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official, or agent of the Owner.
- 2.39. Failure to Deliver:** In the event of failure of the Contractor to deliver services in accordance with the contract terms and conditions, the Owner, after due oral or written notice, may procure the services from other sources and hold the Contractor responsible for any costs resulting in additional purchase and administrative services. This remedy shall be in addition to any other remedies that the Owner may have.

- 2.40. Failure to Enforce:** Failure by the Owner at any time to enforce the provisions of the contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the contract or any part thereof or the right of the Owner to enforce any provision at any time in accordance with its terms.
- 2.41. Force Majeure:** The Contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by the contract due to legal strikes, fires, riots, rebellions, and acts of God beyond the control of the Contractor, unless otherwise specified in the contract.
- 2.42. Independent Contractor:** The Contractor shall be legally considered an Independent Contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the Owner. The Owner shall be at no time legally responsible for any negligence or other wrongdoing by the Contractor, its servants, or agents. The Owner shall not withhold from the contract payments to the Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security Tax or any other amounts for benefits to the Contractor. Further, the Owner shall not provide to the Contractor any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.
- 2.43. Nonconforming Terms and Conditions:** A bid that includes terms and conditions that do not conform to the terms and conditions of this Invitation for Bid is subject to rejection as non-responsive. The Owner reserves the right to permit the Contractor to withdraw nonconforming terms and conditions from its bid prior to a determination by the Owner of non-responsiveness based on the submission of nonconforming terms and conditions.
- 2.44. Ownership:** All plans, prints, designs, concepts, etc., shall become the property of the Owner.
- 2.45. Oral Statements:** No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in this document and/or resulting agreement. All modifications to this request and any agreement must be made in writing by the Owner.
- 2.46. Patents/Copyrights:** The Contractor agrees to protect the Owner from any claims involving infringements of patents and/or copyrights. In no event shall the Owner be liable to the Contractor for any/all suits arising on the grounds of patent(s)/copyright(s) infringement. Patent/copyright infringement shall null and void any agreement resulting from response to this IFB.
- 2.47. Remedies:** The Contractor and Owner agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.
- 2.48. Venue:** Any agreement as a result of responding to this IFB shall be deemed to have been made in, and shall be construed and interpreted in accordance with, the laws of the City of Grand Junction, Mesa County, Colorado.

- 2.49. Expenses:** Expenses incurred in preparation, submission and presentation of this IFB are the responsibility of the company and cannot be charged to the Owner.
- 2.50. Sovereign Immunity:** The Owner specifically reserves its right to sovereign immunity pursuant to Colorado State Law as a defense to any action arising in conjunction to this agreement.
- 2.51. Non-Appropriation of Funds:** The contractual obligation of the Owner under this contract is contingent upon the availability of appropriated funds from this fiscal year budget as approved by the City Council or Board of County Commissioners from this fiscal year only. State of Colorado Statutes prohibit obligation of public funds beyond the fiscal year for which the budget was approved. Anticipated expenditures/obligations beyond the end of the current Owner's fiscal year budget shall be subject to budget approval. Any contract will be subject to and must contain a governmental non-appropriation of funds clause.
- 2.52. Cooperative Purchasing:** Purchases as a result of this solicitation are primarily for the City/County. Other governmental entities may be extended the opportunity to utilize the resultant contract award with the agreement of the successful provider and the participating agencies. All participating entities will be required to abide by the specifications, terms, conditions and pricings established in this Bid. The quantities furnished in this bid document are for only the City/County. It does not include quantities for any other jurisdiction. The City or County will be responsible only for the award for its jurisdiction. Other participating entities will place their own awards on their respective Purchase Orders through their purchasing office or use their purchasing card for purchase/payment as authorized or agreed upon between the provider and the individual entity. The City/County accepts no liability for payment of orders placed by other participating jurisdictions that choose to piggy-back on our solicitation. Orders placed by participating jurisdictions under the terms of this solicitation will indicate their specific delivery and invoicing instructions.
- 2.53. Keep Jobs in Colorado Act:** Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a). If Contractor claims it is entitled to a waiver pursuant to C.R.S. §8-17-101(1), Contractor shall state that there is insufficient Colorado labor to perform the work such that compliance with Article 17 would create an undue burden that would substantially prevent a project from proceeding to completion, and shall include evidence demonstrating the insufficiency and undue burden in its response.

Unless expressly granted a waiver by the Owner pursuant to C.R.S. §8-17-101(1), Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a).



**2.53.1.** "Public project" is defined as:

- (a) any construction, alteration, repair, demolition, or improvement of any land, building, structure, facility, road, highway, bridge, or other public improvement suitable for and intended for use in the promotion of the public health, welfare, or safety and any maintenance programs for the upkeep of such projects
- (b) for which appropriate or expenditure of moneys may be reasonably expected to be \$500,000.00 or more in the aggregate for any fiscal year
- (c) except any project that receives federal moneys.

### **3. Statement of Work**

**3.1. General:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to provide and install an HVAC system for the new I.T. Server Room located at City Hall. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

Complete installation of a new CRAC system for the new I.T. computer server room. The system will have outdoor condensing units and evaporator units installed as part of the server racks.

#### **3.2. Special Conditions & Provisions:**

**3.2.1 Pricing:** Pricing shall be all inclusive to include but not be limited to: all labor, equipment, supplies, materials, freight (F.O.B. Destination – Freight Pre-paid and Allowed to each site), travel, mobilization costs, fuel, set-up and take down costs, and full-time inspection costs, and all other costs related to the successful completion of the project.

The Owner shall not pay nor be liable for any other additional costs including but not limited to: taxes, shipping charges, insurance, interest, penalties, termination payments, attorney fees, liquidated damages, etc.

**3.2.2** Contractor must meet all federal, state, and local rules, regulations, and requirements for providing such services.

**3.2.3 Licenses and Permits:** Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.10. Contractor shall supply to Owner all copies of finalized permits.

**3.2.4 Contractor Staging Area:** Awarded Contractor shall coordinate with Owner for proposed project staging area (if required).

**3.2.5 Freight/Shipping:** All freight/shipping shall be F.O.B. Destination – Freight Pre-Paid and Allowed to City Hall, 250 N. 5<sup>th</sup> Street, Grand Junction, CO.

**3.2.6 Equipment/Product/Materials Quantities:** Contractor shall be responsible for determining all measurements for correctness, and all quantities of equipment/products/materials required for successful project completion.

**3.2.7 Working Schedule:** Monday-Friday 7:00am-5:30pm, however, the City is open to Contractor working evening and weekends, if desired. Any additional work schedule changes shall be coordinated with the City's Project Manager.

**3.2.8 Project Schedule:** 45 calendar days from receipt of Notice to Proceed. Note: Equipment lead time for order and delivery shall not count toward the 45 calendar days.

**3.2.9 Project Location:** City of Grand Junction, City Hall, 250 N. 5<sup>th</sup> Street, Grand Junction, CO.

**3.2.10 Contract:** A binding contract shall consist of: (1) the IFB and any amendments thereto, (2) the bidder's response (bid) to the IFB, (3) clarification of the bid, if any, and (4) the City's Purchasing Department's acceptance of the bid by "Notice of Award" or by "Purchase Order". All Exhibits and Attachments included in the IFB shall be incorporated into the contract by reference.

A. The contract expresses the complete agreement of the parties and, performance shall be governed solely by the specifications and requirements contained therein.

B. Any change to the contract, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the bidder and the City Purchasing Division or by a modified Purchase Order prior to the effective date of such modification. The bidder expressly and explicitly understands and agrees that no other method and/or no other document, including acts and oral communications by or from any person, shall be used or construed as an amendment or modification to the contract.

**3.2.11 Mandatory Site Visit/Briefing:** Prospective bidders are required to attend a site visit/briefing on April 25, 2016 at 10:00am. Meeting location shall be at City Hall, Break Room, 250 N. 5<sup>th</sup> Street, Grand Junction, CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

### **3.3. Scope of Work:**

1. The contractor shall secure all permits or applications and pay any and all fees.
2. Contractor is responsible for verifying all measurements and dimensions before ordering materials and performing the installation.
3. The contractor is responsible for all work, materials, and labor to install a complete working system whether specified or implied.
4. All work is to be performed in strict compliance with all local codes and all other regulation governing work of this type.

5. All equipment and materials shall be as specified or “Approved Equal” by the Engineer or Architect.
6. All of the attached documents and all notes contained therein are part of this scope of work.
7. Contractor is to supply and install all control wiring and thermostats as required.
8. Contractor is to coordinate with their electrical contractor for the location of wiring for all of the equipment.
9. The outdoor condensing unit’s concrete pad and enclosure will be installed by others and will already be in place for the installation of the equipment in this project.
10. Contractor shall coordinate with the project manager for work schedules, site access, equipment and vehicle staging areas, parking, and sidewalk and parking area closures.
11. Contractor is to supply and put in place any necessary safety barricades for sidewalks and parking areas to insure the safety of the public for the duration of this project.

**Attachments:**

1. Grand Junction City Hall Server Room design plans set by Bighorn Engineering containing the following sheets: M1-1, M1-2, M1-3, M1-4, E1-1, E1-2.
2. Liebert AHU and CU specifications document, 9 pages.
3. Liebert IntelliSlot Controller specifications document, 1 page.
4. City Hall HVAC Condensing Enclosure design plans set, sheets S1 and S2, by DWT & Associates, for reference.

**3.4. IFB Tentative Time Schedule:**

Invitation For Bids available	April 15, 2016
Site Visit/Briefing	April 25, 2016
Inquiry deadline, no questions after this date	April 29, 2016
Addendum Posted	May 4, 2016
Submittal deadline for proposals	May 10, 2016
City Council or Board of Commissioners Approval	June 1, 2016
Contract execution (unless Council approval required)	June 2, 2016
Bonding & Insurance Cert due	June 10, 2016
Work begins no later than	Upon receipt of Notice to Proceed – June 13, 2016
Final Completion	45 calendar days from Notice to Proceed

**3.5. Questions Regarding Scope of Services:**

Duane Hoff Jr., Senior Buyer  
 City of Grand Junction  
[duaneh@gjcity.org](mailto:duaneh@gjcity.org)

## **4. Contractor's Bid Form**

**Bid Date:** \_\_\_\_\_

**Project:** IFB-4230-16-DH "HVAC for City Hall Server Room"

**Bidding Company:** \_\_\_\_\_

**Name of Authorized Agent:** \_\_\_\_\_

**Email** \_\_\_\_\_

**Telephone** \_\_\_\_\_ **Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

The undersigned Bidder, in compliance with the Invitation for Bids, having examined the Instruction to Bidders, General Contract Conditions, Statement of Work, Specifications, and any and all Addenda thereto, having investigated the location of, and conditions affecting the proposed work, hereby proposes to furnish all labor, materials and supplies, and to perform all work for the Project in accordance with Contract Documents, within the time set forth and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this Contractor's Bid Form is a part.

The undersigned Contractor does hereby declare and stipulate that this offer is made in good faith without collusion or connection to any person(s) providing an offer for the same work, and that it is made in pursuance of, and subject to, all terms and conditions of the Instructions to Bidders, the Specifications, and all other Solicitation Documents, all of which have been examined by the undersigned.

The Contractor also agrees that if awarded the Contract, to provide insurance certificates within ten (10) working days of the date of Notification of Award. Submittal of this offer will be taken by the Owner as a binding covenant that the Contractor will be prepared to complete the project in its entirety.

The Owner reserves the right to make the award on the basis of the offer deemed most favorable, to waive any formalities or technicalities and to reject any or all offers. It is further agreed that this offer may not be withdrawn for a period of sixty (60) calendar days after closing time. Submission of clarifications and revised offers automatically establish a new thirty day (30) period.

**RECEIPT OF ADDENDA:** the undersigned Contractor acknowledges receipt of Addenda to the Solicitation, Specifications, and other Contract Documents.

State number of Addenda received: \_\_\_\_\_.

It is the responsibility of the Bidder to ensure all Addenda have been received and acknowledged.

**PRICE BID SCHEDULE: IFB-4230-16-DH HVAC for City Hall I.T. Server Room**

Item No.	Description	Total Bid Price
1	All labor, equipment, supplies, materials, freight (F.O.B. Destination – Freight Pre-paid and Allowed to each site), travel, mobilization costs, fuel, set-up and take down costs, and full-time inspection costs, and all other costs related to the successful completion of the project., as per the solicitation documents.	

**Total Bid Price Written:**

\_\_\_\_\_

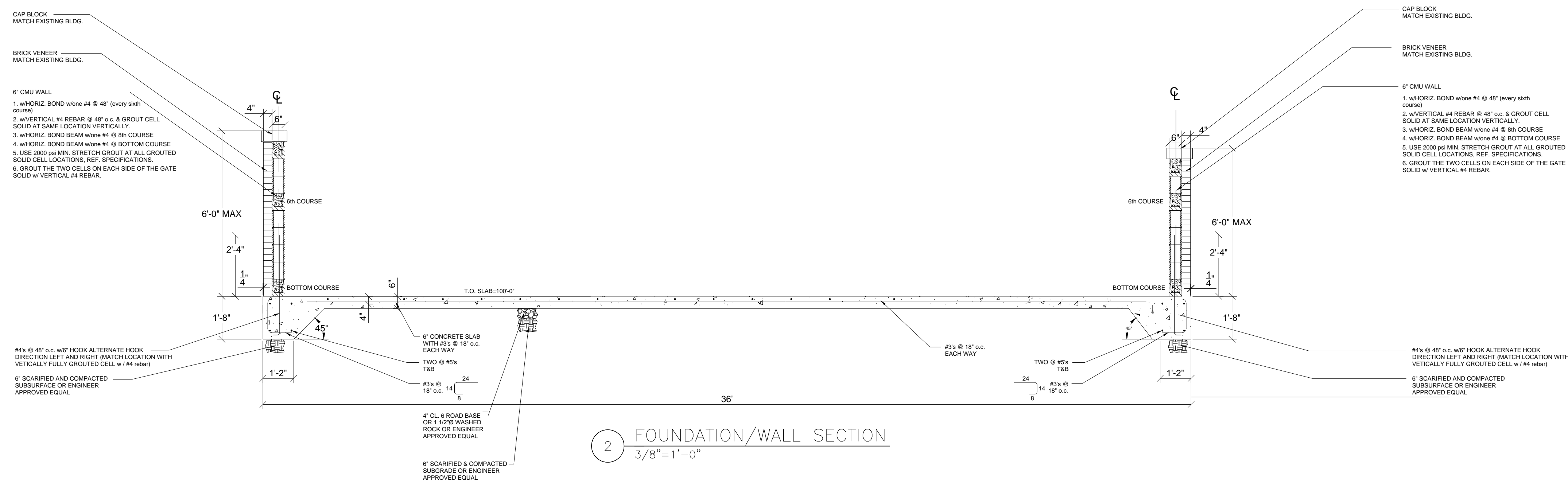
- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt #98-903544.
- Direct purchases by Mesa County are tax exempt from Colorado Sales or Use Tax. Tax exempt #98-04241.
- The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- Prompt payment discount of \_\_\_\_\_percent of the net dollar amount will be offered to the Owner if the invoice is paid within \_\_\_\_\_ days after the receipt of the invoice.
- The undersigned certifies and agrees that this bid is submitted in accordance with all applicable Federal, State, County, and City laws.

*By signing below, the Undersigned agree to comply with all terms and conditions contained herein.*

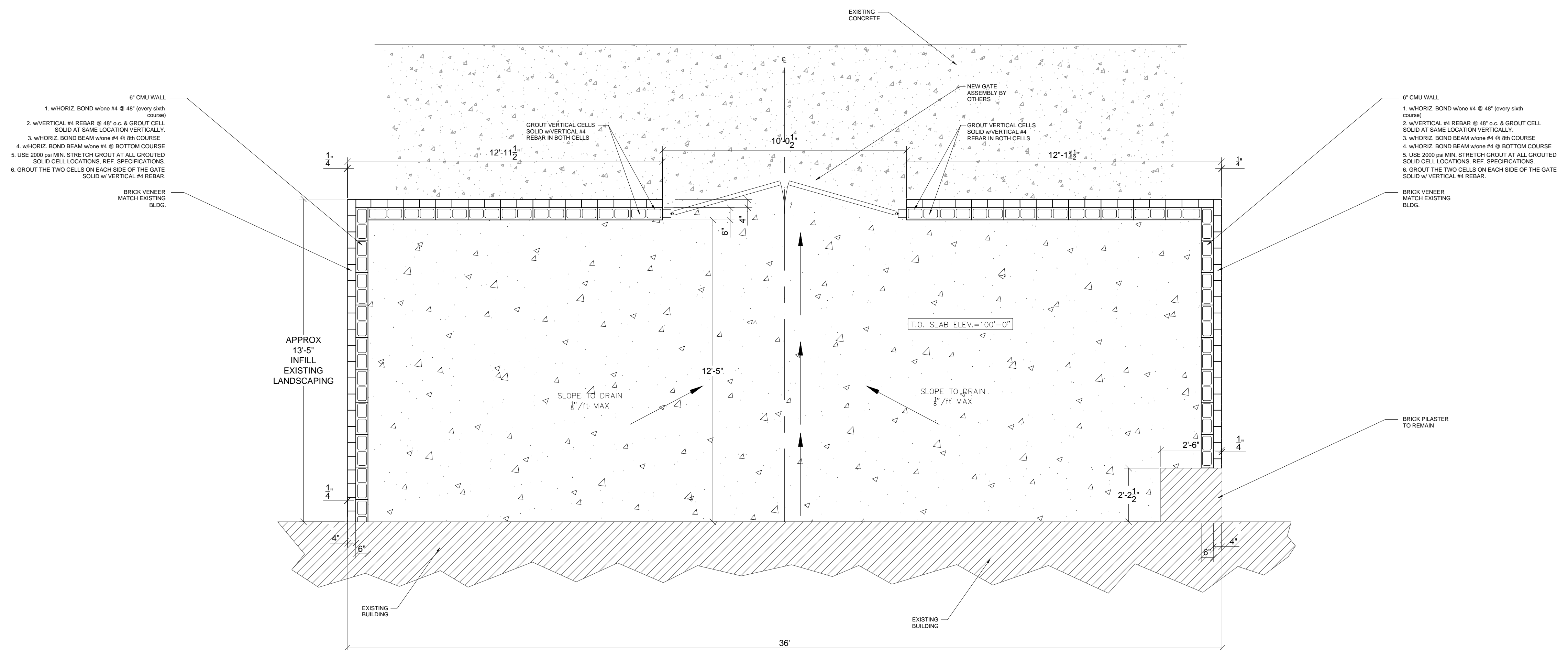
**Company:** \_\_\_\_\_

**Authorized Signature:** \_\_\_\_\_

**Title:** \_\_\_\_\_



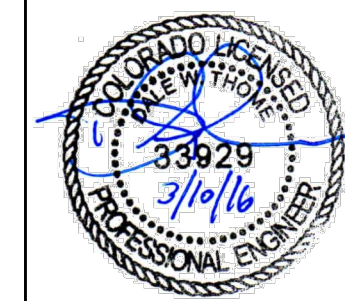
2 FOUNDATION/WALL SECTION  
3/8"=1'-0"



1 FOUNDATION PLAN  
3/8"=1'-0"

REVISION	DATE	DESCRIPTION	BY	CHKD

CITY OF GRAND JUNCTION	GRAND JUNCTION, CO
<b>CITY HALL</b> <b>HVAC CONDENSING ENCLOSURE</b> <b>GRAND JCT CO</b> <small>FOUNDATION/MASONRY PLAN</small>	
<b>DWT &amp; ASSOCIATES</b> 667 Copper Canyon Drive Grand Junction, Colorado, 81505 Tele: 970-261-1517 dalethome@gmail.com	
DRAWN BY: DWT	CHECKED BY: TRB
DATE: 3.10.16	
SCALE: Horiz: 3/8"=1'-0"	
Project No:	
	
SHEET	
S1	



# General Notes and Specifications

## GENERAL NOTES

1. DESIGN OF FOUNDATION IS BASED UPON DRY CONDITIONS. EXCAVATION TO BE VERIFIED BY ENGINEER.

ALLOWABLE BEARING PRESSURE- 1,500PSF

2. SOIL BENEATH SLABS ON GRADE SHALL BE ENGINEER APPROVED MATERIAL, FREE OF FROST, WATER AND FOREIGN DEBRIS. COMPACTED IN ACCORDANCE WITH SPECIFICATIONS WITH MINIMUM DENSITY AS FOLLOWS:

FOOTINGS, WALLS 95% OF MAXIMUM STANDARD PROCTOR  
ASTM D698

SLABS 95% OF MAXIMUM STANDARD PROCTOR  
ASTM D698

BACKFILL 95% OF MAXIMUM STANDARD PROCTOR  
(NON-SWELLING MATERIAL)

3. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF FORMING TO INSPECT THE OPEN EXCAVATION AND/OR PIER DRILLING TO DETERMINE THAT THE SOIL CONDITIONS ARE CONSISTENT WITH DESIGN CRITERIA. IF THE SOIL PROPERTIES ARE FOUND TO BE DIFFERENT FROM THIS CRITERIA, THEN THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT THE FOUNDATION DESIGN MAY BE REVIEWED.

4. ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF CONCRETE PLACEMENT TO INSPECT THE REINFORCEMENT.

5. CONTRACTOR AND/OR OWNER SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND NOTIFY ENGINEER OF ANY DISCREPANCIES FOR CORRECTION OR VERIFICATION PRIOR TO COMMENCING WORK IN THE AFFECTED AREA.

6. CONTRACTOR AND/OR OWNER SHALL NOTIFY ENGINEER OF ANY POSSIBLE OMISSION PRIOR TO THE CONSTRUCTION OF THE AFFECTED WORK.

7. ALL INTERIOR UTILITIES AND UTILITY CASINGS TO BE LOCATED AND APPROVED PRIOR TO PLACEMENT OF CONCRETE.

8. ALL STRUCTURAL SUBSTITUTIONS TO BE APPROVED BY ENGINEER.

9. DESIGN LIVE LOADS ARE IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2012 EDITION WITH THE FOLLOWING MINIMUM CRITERIA:

SNOW LIVE LOAD 30 PSF + DRIFTING  
ROOF DEAD LOAD 10 PSF + 10 PSF AT OVERFRAME  
FLOOR LIVE LOAD 50 PSF  
CORRIDOR LIVE LOAD 80 PSF  
FLOOR DEAD LOAD 15 PSF

WIND  
V-ult.....115 MPH  
EXPOSURE C  
IMPORTANCE 1.0

SEISMIC  
DESIGN CATEGORY B  
SEISMIC COEFFICIENT 0.374  
IMPORTANCE 1.0  
Sds = 0.23  
Sd1 = 0.08  
SITE CLASS C  
FORCE RESISTING SYSTEM - MASONRY SHEAR WALL

11. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LOCATION OF MECHANICAL OPENINGS, FLOOR DRAINS, INSERTS, DEPRESSIONS, BURIED CABLES AND UTILITIES, ETC. WITH MECHANICAL AND ELECTRICAL DRAWINGS.

12. EXCAVATIONS UNDER EXISTING CONCRETE FOR ELECTRICAL AND MECHANICAL WORK SHALL BE BACKFILLED WITH A LEAN CONCRETE MIX HAVING A MINIMUM COMPRESSIVE STRENGTH OF 1000 PSI AT 28 DAYS. THIS LEAN CONCRETE FILL SHOULD EXTEND OUT AND DOWN FROM THE EDGES OF THE FOOTING AT A MINIMUM SLOPE OF 9 VERTICAL TO 12 HORIZONTAL AND SHALL BE PACKED TIGHT TO THE BOTTOM OF THE FOOTING.

13. THIS FOUNDATION DESIGN DOES NOT PRECLUDE THE FOUNDATION FROM POSSIBLE MOVEMENT OF 2" OR LESS. FOUNDATION ENGINEER IS NOT RESPONSIBLE FOR MOISTURE OR WATER IN STRUCTURE SUBSOILS THAT IS NOT EVIDENT UPON EXCAVATION OR DURING CONSTRUCTION. FOUNDATION ENGINEER IS NOT RESPONSIBLE FOR ADVERSE EFFECTS (HEAVING OR SETTLING) DUE TO MOISTURE IN STRUCTURE SUBSOILS AFTER CONSTRUCTION INCLUDING BUT NOT LIMITED TO: IRRIGATION RUNOFF FROM LAWNS OR LANDSCAPING-SURFACE AND SUBSURFACE (INCLUDING ADJACENT LAND OWNERS IRRIGATION RUNOFF-SURFACE AND SUBSURFACE), ROOF DRAINAGE WHICH HAS CONCENTRATED DIRECTLY ADJACENT TO THE FOUNDATION, AND CHANGES IN SUBSURFACE MOISTURE CONDITIONS DUE TO UNFORSEEABLE CHANGES IN THE GROUNDWATER LEVELS.

14. SOIL/MOISTURE CONDITIONS DURING CONSTRUCTION TO BE DOCUMENTED BY CONTRACTOR PRIOR TO APPROVAL. ALL BACKFILL TO BE COMPACTED AND CERTIFIED BY ENGINEER PRIOR TO APPROVAL. (REFERENCE NOTE #9) IF MOISTURE IS ENCOUNTERED DURING CONSTRUCTION, NOTIFY ENGINEER IMMEDIATELY. USE OF THESE PLANS AS PERMIT DOCUMENTS CONSTITUTES ACCEPTANCE OF THESE TERMS.

## CONCRETE

1. ALL CONCRETE DESIGN, MATERIALS AND CONSTRUCTION SHALL CONFORM TO ACI STANDARD 318-05, THE IBC 2012 EDITION, THE CRSI MANUAL OF STANDARD PRACTICE AND THE PROJECT SPECIFICATIONS. ALL AGGREGATE SHALL BE ANGULAR AND SHALL BE IN ACCORDANCE WITH APPLICABLE IBC STANDARDS. MECHANICALLY VIBRATE ALL CONCRETE WHEN BEING PLACED.

2. CEMENT FOR CONCRETE SHALL BE TYPE-II PORTLAND CEMENT IN ACCORDANCE WITH ASTM C150 AND ALL APPLICABLE IBC STANDARDS.

3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

FOOTING, WALL, PIERS 3500 PSI CEMENT TYPE/II  
SLABS ON GRADE 3500 PSI CEMENT TYPE/II

4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60, EXCEPT PILASTER TIES, GRADE BEAM STIRRUPS, AND DOWELS MAY BE GRADE 40. ALL REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60.

5. REINFORCEMENT SHALL BE DETAILED IN ACCORDANCE WITH THE ACI DETAILING MANUAL, LATEST EDITION. THE USE OF HEAT WHILE BENDING BARS WILL NOT BE PERMITTED. FORMWORK SHALL BE DESIGNED, ERECTED AND REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS.

6. REINFORCEMENT SHALL BE PLACED SO THAT THE FOLLOWING MINIMUM CONCRETE PROTECTION IS PROVIDED UNLESS NOTED OTHERWISE.

CONCRETE SURFACES POURED AGAINST GROUND 3" CLEAR

FORMED SURFACES EXPOSED TO GROUND OR WEATHER

BAR #6 AND LARGER 2" CLEAR  
BAR #5 AND SMALLER 1-1/2" CLEAR  
SLABS ON GRADE AT CENTERS

ALL BARS TO BE CONTINUOUS AROUND CORNERS

7. REINFORCEMENT SHALL BE SECURELY TIED AND SHALL BE SUPPORTED WITH METAL OR PLASTIC CHAIRS OR HUNG FROM FORMS.

8. GRADE BEAMS/STEM WALLS SHALL NOT HAVE JOINTS IN A HORIZONTAL PLANE. ANY STOP IN CONCRETE WORK MUST BE MADE AT MID SPAN WITH VERTICAL BULKHEADS AND HORIZONTAL KEYS SPACED 6" ON CENTER, UNLESS NOTED OTHERWISE.

9. ALL FOUNDATION EXCAVATIONS, BACKFILL AND COMPACTION TO BE INSPECTED BY ENGINEER.

10. CONTINUOUS HORIZONTAL BARS AND CORNER BARS IN FOOTING, STEM WALLS/GRADE BEAMS AND SLABS SHALL BE LAPPED A MINIMUM OF 36 BAR DIAMETERS AT SPLICES. SPLICE LOCATION SHALL BE STAGGERED WHERE POSSIBLE.

11. VERTICAL DOWEL BARS IN WALLS AND COLUMNS SHALL BE LAPPED A MINIMUM OF 46 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

12. ADDITIONAL (2) #5 BARS (ONE EACH FACE) WITH A 2'-0" PROJECTION SHALL BE PLACED DIAGONALLY ACROSS THE CORNERS OF ALL OPENINGS AND VERTICAL STEPS IN WALLS.

13. STEM WALLS/GRADE BEAMS BELOW GRADE SHALL HAVE BACKFILL PLACED EQUALLY ON BOTH SIDES UNTIL THE REQUIRED LEVELS ARE REACHED.

14. WHERE ALL INTERIOR SLABS ON GRADE ABUTT WALLS, A BOND BREAKER OF ASPHALT IMPREGNATED CELOTEX SHALL BE PROVIDED BETWEEN WALL AND EDGE OF SLAB.

15. CONTROL AND/OR CONSTRUCTION JOINTS IN SLABS ON GRADE SHALL BE SPACED AT INTERVALS ENCLOSING NO MORE THAN 144 SQUARE FEET WITH A MAXIMUM OF 12 FEET IN ANY ONE DIRECTION. CONSTRUCTION JOINTS SHALL BE FORMED WITH METAL LOAD KEY JOINT.

16. CONSTRUCTION JOINTS (COLD JOINTS) SHALL BE PROVIDED IN WALLS AND GRADE BEAMS WHICH ARE OVER 70 FEET IN A STRAIGHT RUN. WATERSTOPS AND KEYWAYS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS WHERE INTERIOR SLABS ON GRADE OCCUR BELOW EXTERIOR GRADE. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.

17. CAST-IN-PLACE CONCRETE SHALL BE SUBJECT TO TESTING BY AN INDEPENDENT TESTING LABORATORY AS FOLLOWS: 1 TEST CYLINDER FOR FOOTINGS, 1 TEST CYLINDER FOR STEM WALLS AND 1 TEST CYLINDER FOR FLATWORK.

## MASONRY

1. GROUT SHALL BE PROPORTIONED BY VOLUME AND SHALL HAVE SUFFICIENT WATER ADDED TO PRODUCE CONSISTENCY WITHOUT SEGREGATION.

A. FINE GROUT SHALL BE COMPOSED OF ONE PART PORTLAND CEMENT TO WHICH MAY BE ADDED NOT MORE THAN ONE-TENTH PART HYDRATED LIME OR LIME PUTTY, AND TWO AND ONE-FOURTH TO THREE PARTS SAND.

B. COURSE GROUT SHALL BE COMPOSED OF ONE PART PORTLAND CEMENT TO WHICH MAY BE ADDED NOT MORE THAN ONE-TENTH PART HYDRATED LIME OR LIME PUTTY, AND TWO TO THREE PARTS SAND, AND NOT MORE THAN TWO PARTS GRAVEL.

C. TRANSIT MIXED GROUT FOR MASONRY  
MINIMUM 28-DAY COMPRESSIVE STRENGTH-2000 PSI  
AGGREGATE SIZE-3/8" MAXIMUM  
SLUMP-7 INCH MINIMUM, 10 INCH MAXIMUM

COURSE GROUT MAY BE USED IN GROUT SPACES IN BRICK MASONRY 2 INCHES OR MORE IN HORIZONTAL DIMENSION AND IN GROUT SPACES IN FILLED-CELL CONSTRUCTION 3 INCHES OR MORE IN BOTH HORIZONTAL DIMENSIONS. GROUT SHALL BE CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACING BEFORE LOSS OF PLASTICITY IN A MANNER TO FILL THE GROUT SPACE. GROUT POURS GREATER THAN 12 INCHES SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION TO MINIMIZE VOIDS DUE TO WATER LOSS. GROUT POURS 12 INCHES OR LESS IN HEIGHT SHALL BE MECHANICALLY VIBRATED OR PUDDLED.

2. ALL MASONRY DESIGN, FABRICATION AND CONSTRUCTION SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2012 EDITION UTILIZED IN THE CITY OF GRAND JUNCTION, COLORADO.

3. ALL HOLLOW CONCRETE UNIT (BLOCK) ASSEMBLIES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH,  $f_{m1}$ , OF 1500 PSI. CONCRETE BLOCK SHALL CONFORM TO TYPE N-1 AND SHALL BE LIGHTWEIGHT. HOLLOW UNIT MASONRY SHALL HAVE FULL MORTAR COVERAGE ON THE FACE SHELLS AND ON THE WEBS. SURROUNDING CELLS TO BE FILLED WITH GROUT. VERTICAL HEAD JOINTS SHALL BE WELL BUTTERED FOR A FULL THICKNESS EQUAL TO THE FACE SHELL OF THE UNIT.

4. SOLID UNIT MASONRY SHALL HAVE FULL MORTAR COVERAGE ON THE FULL WIDTH OF THE UNIT. VERTICAL HEAD JOINTS SHALL BE WELL BUTTERED FOR THE FULL WIDTH OF THE UNIT.

5. HORIZONTAL WIRE REINFORCEMENT IN PARAPETS SHALL BE PLACED IN BED JOINTS AT 16" O.C. VERTICAL SPACING. ADDITIONAL REINFORCEMENT SHALL BE PLACED IN THE FIRST BED JOINT ABOVE AND BELOW OPENINGS AND SHALL EXTEND 2'-0" BEYOND OPENINGS.

6. NOMINAL WIDTH OF JOINT REINFORCEMENTS SHALL BE EQUAL TO THE NOMINAL WIDTH OF THE WALL, OR AS DETAILED. JOINT REINFORCEMENT AT CORNERS AND INTERSECTIONS SHALL BE PREFABRICATED UNITS.

7. CONTROL JOINTS SHALL BE PLACED IN ALL MASONRY WALLS AT A MAXIMUM SPACING OF 30'-0" O.C. OR AS NOTED ON THE DRAWINGS. HORIZONTAL WIRE REINFORCEMENT SHALL BE DISCONTINUOUS AT ALL CONTROL JOINTS. BOND BEAM REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONTROL JOINTS. STEP BOND BEAMS AS REQUIRED AND DETAILED TO ACCOMMODATE JOIST BEARINGS, EMBEDDED PLATES, ETC IN ORDER TO MAINTAIN CONTINUOUS UNOBSTRUCTED ROOF OR FLOOR DIAPHRAGM CONNECTIONS.

8. WHERE CONCRETE BLOCK WALLS INTERSECT CONCRETE FOUNDATION WALLS, PROVIDE #4 BARS @16" O.C. EXTENDING 24" EACH WAY.

9. VERTICAL REINFORCEMENT SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60. ALL SPLICES IN VERTICAL REINFORCEMENT SHALL BE LAPPED A MINIMUM OF 48 BAR DIAMETERS INTO THE BLOCK WALL AND SHALL BE GROUTED SOLID. SPLICED BARS SHALL BE SEPARATED BY ONE BAR DIAMETER OR WIRED TOGETHER.

10. PROVIDE TWO FULL HEIGHT BARS AT ALL WALL CORNERS, WALL ENDS, AND AT EACH JAMB OF ALL WALL OPENINGS.

11. VERTICAL REINFORCEMENT SHALL BE SECURED IN PLACE IN LOCATION SHOWN ON DRAWINGS AND SHALL BE HELD IN POSITION AT TOP AND BOTTOM.

12. GROUT FOR VERTICAL REINFORCING AND BOND BEAMS SHALL BE PEA-GRAVEL CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS OF 2000 PSI. MIX DESIGNS SHALL BE SUBMITTED AND APPROVED PRIOR TO GROUTING.

13. CELLS CONTAINING REINFORCEMENT SHALL BE SOLIDLY FILLED WITH GROUT. GROUT SHALL BE POURED IN LIFTS OF NOT MORE THAN 6'-0". THEN THE GROUT SHALL BE VIBRATED INTO PLACE AND SHALL BE STOPPED 1-1/2" BELOW THE TOP OF A COURSE TO FORM A KEY WITH THE NEXT COURSE ABOVE.

14. ALL CORNERS, BOND BEAMS AND CELLS BELOW FINISH GRADE SHALL BE GROUTED SOLID. VERTICAL CELLS OR CORES TO BE GROUTED SHALL MAINTAIN A CONTINUOUS UNOBSTRUCTED AREA NOT LESS 2'-1/2" X 3"

15. MORTAR FOR ALL EXTERIOR WALLS AND BEARING WALLS SHALL BE TYPE S

16. WHERE OTHER REINFORCING IS NOT REQUIRED BY THE DRAWINGS, PROVIDE ONE #5 BAR AT ALL SIDES OF, AND ADJACENT TO, EVERY OPENING WHICH EXCEEDS 24" IN EITHER DIRECTION. EXTEND VERTICAL BARS FULL HEIGHT OF WALL. EXTEND HORIZONTAL BARS 24" BEYOND EACH SIDE OF THE OPENING. WHERE POSSIBLE PROVIDE A U-BLOCK IMMEDIATELY BELOW AND ONE COURSE ABOVE THE OPENING AND GROUT THE REINFORCING IN PLACE.

17. CONTINUE BOND BEAMS MINIMUM 2'-0" AROUND CORNERS. WHERE BOND BEAM STEPS, LAP BOND BEAM COURSES MINIMUM 2'-0".

18. ALL INTERIOR MASONRY PARTITIONS SHALL BE REINFORCED WITH #4 VERTICAL BARS AT 48" O.C. AND GROUTED FULL UNLESS DETAILED OTHERWISE.

19. MASONRY DESIGN IS BASED ON FULL ALLOWABLE DESIGN STRESSES.

REVISION	DATE	DESCRIPTION	BY	CHKD

CITY OF GRAND JUNCTION

GRAND JUNCTION, CO

CITY HALL

HVAC CONDENSING ENCLOSURE

GRAND JCT CO

FOUNDATION/MASONRY PLAN

DWT & ASSOCIATES  
667 Copper Canyon Drive  
Grand Junction, Colorado, 81505  
Tele: 970-261-1517  
dalethome6@gmail.com

DRAWN BY: DWT	CHECKED BY: TRB
DATE: 3.10.16	SCALE: Horiz: 1/4"=1'-0"
Project No:	

**SHEET**

S2



MECHANICAL PROVISIONS

1. SCOPE OF WORK

- A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
- B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND ALL OTHER REGULATION GOVERNING WORK OF THIS NATURE.
- C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
- D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

- A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

- A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

4. FLEXIBLE DUCT WORK

- A. FLEXIBLE TYPE DUCT SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50.
- B. USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN 6 LINEAR FEET PER RUN.
- C. CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

5. DUCTWORK

- A. THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS.
- B. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
- C. CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS.
- D. ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS, SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 150 CFM.
- E. ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA" STANDARDS AND ACCEPTED GOOD PRACTICE.
- F. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED.
- G. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.
- H. ALL SUPPLY AND RETURN DUCTWORK 15 FEET DOWNSTREAM OF THE HVAC UNIT SHALL BE INTERNALLY LINED WITH A 1/2" ACOUSTICAL DUCT LINER UNLESS OTHERWISE NOTED ON THE DRAWINGS.

6. DRAINAGE PIPING

- A. (CONDENSATE) SHALL BE SCHEDULE 40 PVC PIPE WITH SOLVENT JOINTS. PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS SHALL BE ROUTED TO FLOOR DRAIN, ROOF DRAIN OR INDIRECT WASTE DRAIN.

7. HVAC CONTROLS

- A. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

8. ELECTRICAL

- A. CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

9. PIPE SUPPORTS

- A. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAP TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET.

10. GAS PIPING

- A. PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE IRON FITTINGS. WHERE GAS PIPE CONNECTS TO EQUIPMENT, IT SHALL BE PROVIDED WITH A DRIP LEG THE FULL SIZE OF THE RUNOUT, A 100% SHUT-OFF VALVE AND A UNION. GAS PIPING CONTAINING PRESSURE GREATER THAN 9" W.G. SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH WELDED JOINTS.

11. MISCELLANEOUS

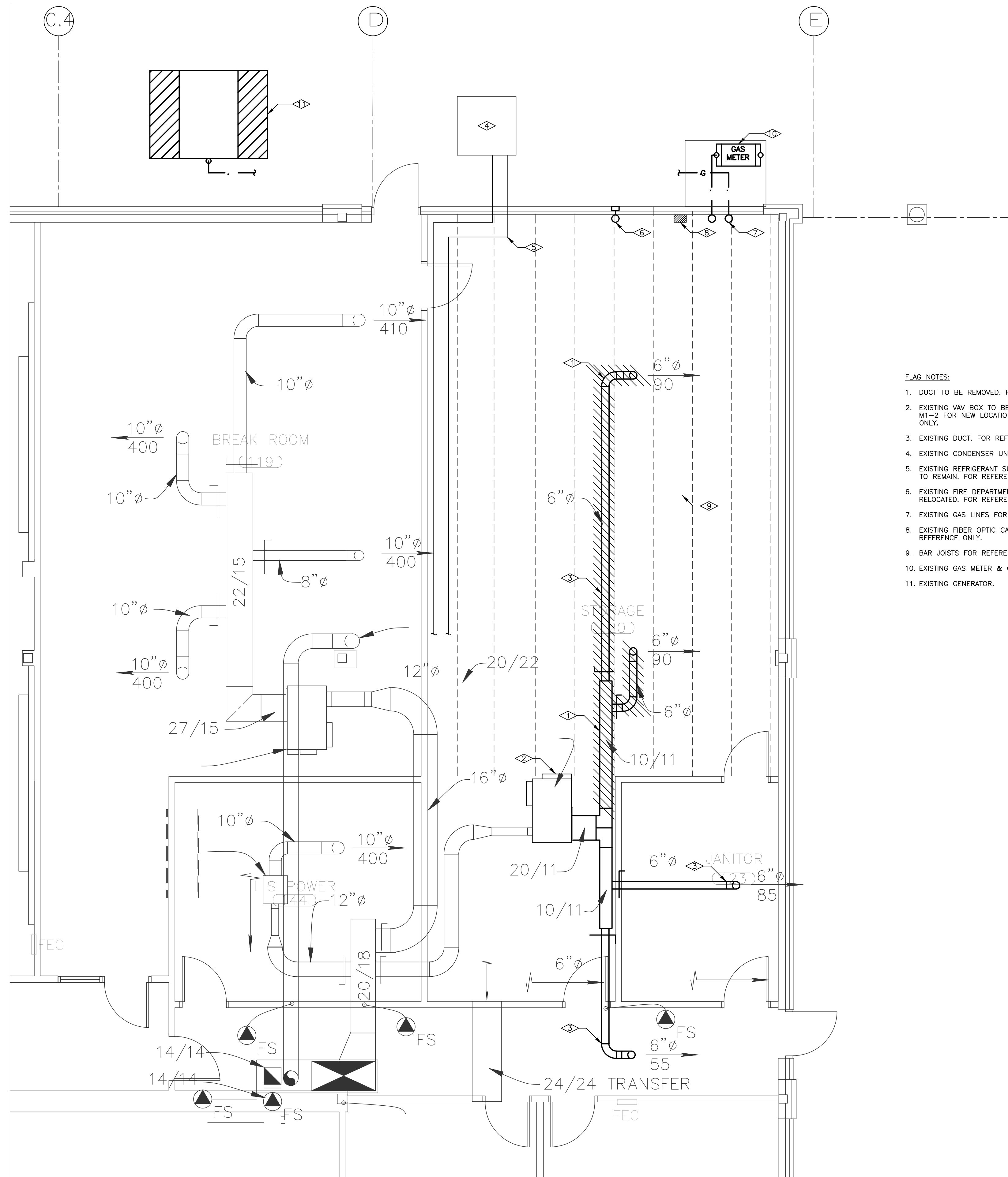
- A. ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE.
- B. COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS.
- C. VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.
- D. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT.
- E. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.

12. TESTING AND BALANCING

- A. THE HVAC SYSTEM SHALL BE TESTED AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

13. GUARANTEE

- A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.
- B. FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

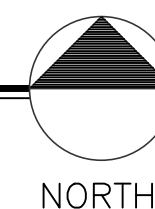


FLAG NOTES:

1. DUCT TO BE REMOVED. FOR REFERENCE ONLY.
2. EXISTING VAV BOX TO BE RELOCATED. SEE SHEET M1-2 FOR NEW LOCATION. FOR REFERENCE ONLY.
3. EXISTING DUCT. FOR REFERENCE ONLY.
4. EXISTING CONDENSER UNIT TO REMAIN.
5. EXISTING REFRIGERANT SUCTION & LIQUID LINES TO REMAIN. FOR REFERENCE ONLY.
6. EXISTING FIRE DEPARTMENT CONNECTION TO BE RELOCATED. FOR REFERENCE ONLY.
7. EXISTING GAS LINES FOR REFERENCE ONLY.
8. EXISTING FIBER OPTIC CABLE BOX FOR REFERENCE ONLY.
9. BAR JOISTS FOR REFERENCE ONLY.
10. EXISTING GAS METER & CONCRETE PAD.
11. EXISTING GENERATOR.

MECHANICAL EXISTING FLOOR PLAN

SCALE: 1/4"=1'-0"



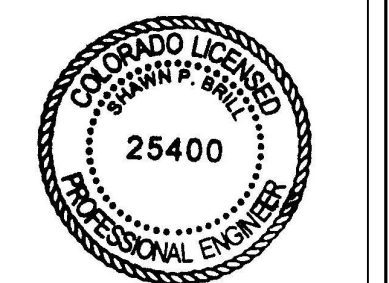
DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITION TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.



**Bighorn Consulting Engineers, Inc.**  
Mechanical & Electrical Engineers  
569 S. Westgate Dr., Suite 1  
Grand Junction, CO 81505  
phone: 970-241-8709, fax: 970-241-9514

**GRAND JUNCTION, CITY HALL  
SERVER ROOM**  
250 N. 5TH STREET  
GRAND JUNCTION, COLORADO

DATE:	ISSUED FOR:
2-27-16	CONSTRUCTION DRAWINGS



DATE:	2-27-16
JOB NO:	15-156
DRAWN BY:	BCE
CHECKED BY:	BCE
SCALE:	AS SHOWN
SHEET NUMBER:	M1-1



**GENERAL NOTES:**

1. DUCT DIMENSIONS INCLUDE INSULATION LINING.

**GENERAL CLEAN AGENT SYSTEM NOTES:**

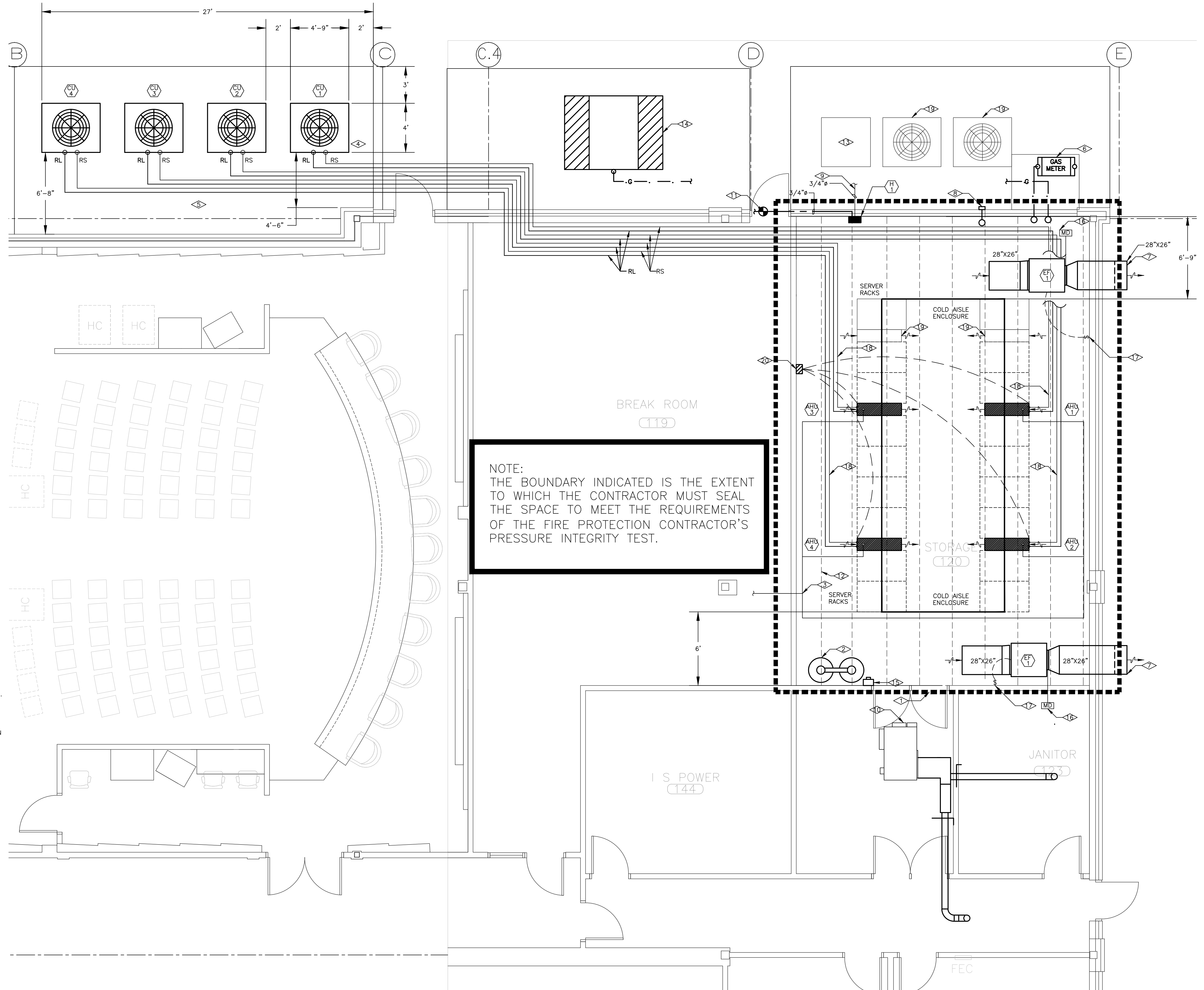
1. THE ENTIRE PERIMETER OF THE SPACE TO BE PROTECTED MUST BE SEALED TO ENSURE THE AGENT IS HELD IN THE SPACE UPON RELEASE. THE SPACE MUST BE SEALED TO MEET THE REQUIREMENTS OF THE FIRE PROTECTION CONTRACTOR'S PRESSURE INTEGRITY TEST.
2. THE FIRE PROTECTION CONTRACTOR SHALL PROVIDE AND INSTALL A FULLY FUNCTIONAL MINIMAX CLEAN AGENT FIRE PROTECTION SYSTEM. THIS SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
  - 2.1. NOVEC 1230 CLEAN AGENT FIRE SUPPRESSION SYSTEM FOR THE GRAND JUNCTION SERVER ROOM, AND SPACES OUTLINED ON THE DRAWING. THE AREA OF THE SPACE IS APPROXIMATELY 915 FT<sup>2</sup> AND THE VOLUME IS APPROXIMATELY 12,905 FT<sup>3</sup>. FIRE PROTECTION CONTRACTOR TO VERIFY DIMENSIONS OF THE SPACE. NO UNDER FLOOR SPACE IS ASSOCIATED WITH THIS PROJECT.
  - 2.2. AGENT RELEASE CONTROL PANEL, AGENT TANK(S), AND AMOUNT OF NOVEC 1230 CLEAN AGENT REQUIRED, AND SMOKE DETECTION BY CONVENTIONAL MEANS.
  - 2.3. SHALL INCLUDE THE FOLLOWING: MANUAL RELEASE STATIONS, ABORT STATIONS, HORN/STROBES, AND NOZZLES.
  - 2.4. WARNING SIGNS, REQUIRED PIPING, CONDUITS, WIRING, AND FITTINGS.
  - 2.5. LABOR TO INSTALL DETECTION AND CONTROL FOR CLEAN AGENT SYSTEM AND PIPING FOR CLEAN AGENT SYSTEM. ALSO, INCLUDE ONE ROOM INTEGRITY TEST AND ONE FINAL WITH LOCAL AUTHORITY HAVING JURISDICTION.
  - 2.6. SYSTEM TO INCLUDE AGENT RELEASING PANEL WITH CONTROL RELAYS FOR HVAC INTERLOCK AND MAIN BUILDING FIRE ALARM INTERLOCK. CONTRACTOR TO INCLUDE WIRING FROM THE RELEASE PANEL TO THE MAIN BUILDING FIRE ALARM PANEL. ALSO, INCLUDE WIRING TO THE EPO SWITCHES.
3. CONTRACTOR SHALL PROVIDE PATCHING, PAINTING, AND SEALING OF ROOM FOR INTEGRITY TESTING.
4. A LICENSED ELECTRICIAN SHALL PROVIDE THE 120/1/60 ELECTRICAL WORK.
5. CONTRACTOR SHALL PROVIDE PAINTING AND SPECIAL IDENTIFICATION OF PIPING.
6. CONTRACTOR SHALL PROVIDE AND INSTALL LOW LEAKAGE DAMPERS WHERE DUCTWORK PENETRATES THE ENVELOPE OF THE CLEAN AGENT SYSTEM BOUNDARY. CONTRACTOR SHALL VERIFY ALL DAMPER SIZES PRIOR TO ORDERING.
7. THE EXISTING WET SPRINKLER SYSTEM SHALL BE REMOVED FROM THE SPACE SERVED BY THE CLEAN AGENT SYSTEM. VERIFY ALL OTHER PORTIONS OF THE BUILDING SERVED BY THE WET SPRINKLER SYSTEM REMAIN FUNCTIONAL. THE FDC WILL REMAIN AND BE RELOCATED AS SHOWN.
8. CONTRACTOR TO ENSURE COMPATIBILITY OF EXISTING FIRE ALARM CONTROL PANEL WITH NEW CLEAN AGENT CONTROLS.

**FLAG NOTES:**

1. DASHED LINE INDICATES THE VOLUME TO BE INCLUDED IN THE NOVEC 1230 CLEAN AGENT GAS FIRE SUPPRESSION SYSTEM.
2. POTENTIAL LOCATION OF CLEAN AGENT TANK(S).
3. CONDENSATE DRAINAGE FROM AHU TO NEAREST FIXTURE IN ADJACENT BREAK ROOM.
4. NEW CONCRETE PAD FOR CONDENSING UNITS.
5. REFRIGERANT LINES TO BE SIZED BY MANUFACTURER.
6. EXISTING GAS METER & CONCRETE PAD.
7. DUCT PENETRATION THROUGH WALL SEE DETAIL ON SHEET M1-3 FOR MORE INFORMATION.
8. FIRE DEPARTMENT CONNECTION TO REMAIN AT CURRENT LOCATION.
9. CONDENSATE DRAIN FROM HUMIDIFIER PENETRATING THROUGH WALL. PROVIDE WITH HEAT WRAP & INSULATION.
10. NEW LOCATION OF EXISTING VAV. CONTRACTOR TO INTEGRATE VAV INTO EXISTING DUCTWORK AND RE-BALANCE SUPPLY TO CORRIDOR AND JANITOR CLOSET TO PREVIOUS REQUIRED CFM.
11. HUMIDIFIER SHALL TIE INTO EXISTING DOMESTIC COLD WATER LINE.
12. EXISTING BAR JOISTS IN ROOM.
13. EXISTING CONDENSER UNIT & CONCRETE PAD.
14. EXISTING BACKUP GENERATOR.
15. CONTROL PANEL & ABORT SWITCH FOR CLEAN AGENT.
16. LOW LEAKAGE MOTORIZED DAMPER TO OPEN WHEN EF-1 IS ON. TO REMAIN CLOSED OTHERWISE.
17. START/STOP SWITCHES FOR EF-1.
18. REFRIGERANT LINES FROM CEILING DOWN TO AIR HANDLER UNIT.
19. EQUIPMENT FOR FUTURE EXPANSION.
20. VNSA161 CONTROLLER FOR AIR HANDLER UNITS PROVIDE WITH 120/1/60 SERVICE.

**SEQUENCE OF OPERATION:**

1. THE EXISTING TRANE BAS WILL COMMUNICATE TO THE NEW CRAC UNIT VIA A BACnet CARD INTERFACE. PROVIDE COMMABLE FROM TRANE TO THE CRAC CONTROLLER. CONFIRM POINTS WITH CRAC MANUFACTURER. PROVIDE POINT MAPPING AND GRAPHICS ON TRANE SYSTEM.
2. PROVIDE ROOM TEMPERATURE SENSOR CONNECTED TO TRANE BAS SYSTEM. SENSOR TO PROVIDE HIGH TEMPERATURE ALARM FUNCTION.
3. IF THE CRAC UNIT FAILS AND CEASES TO OPERATE AND THE HIGH TEMPERATURE ALARM IS ACTIVATED, THEN THE EXHAUST FANS EF-1 (BOTH) SHALL START.



**NOTE:**  
THE BOUNDARY INDICATED IS THE EXTENT TO WHICH THE CONTRACTOR MUST SEAL THE SPACE TO MEET THE REQUIREMENTS OF THE FIRE PROTECTION CONTRACTOR'S PRESSURE INTEGRITY TEST.

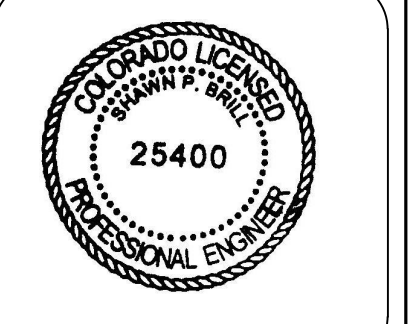
**MECHANICAL FLOOR PLAN**  
SCALE: 1/4"=1'-0"  
NORTH

DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT, THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.

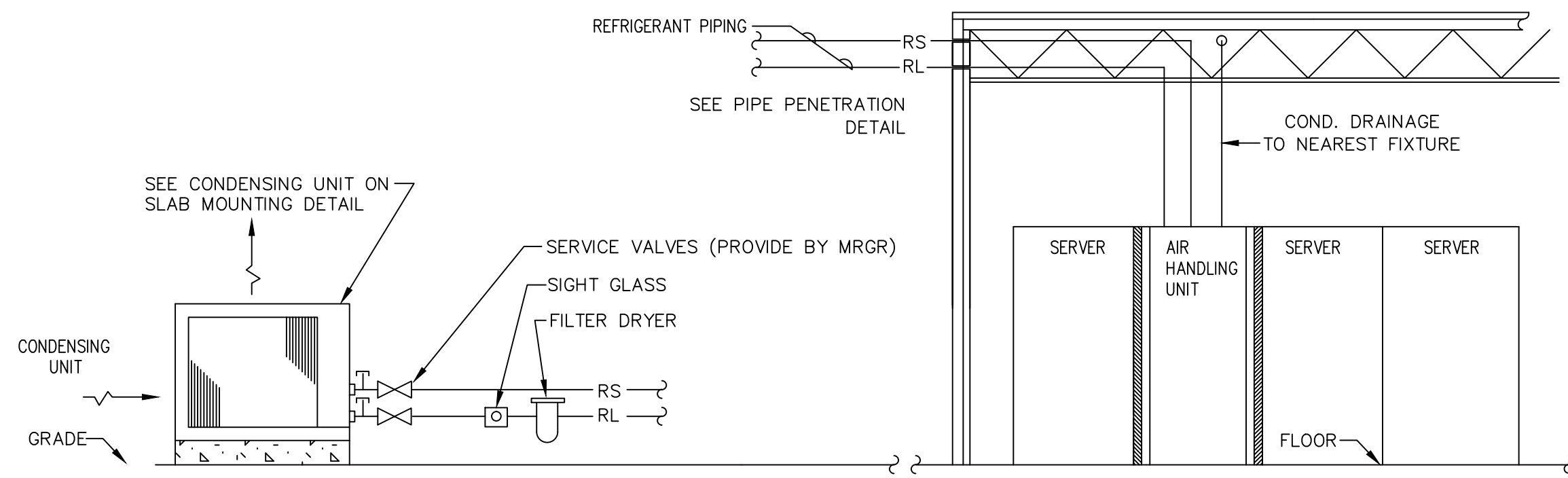
**Bighorn Consulting Engineers, Inc.**  
Mechanical & Electrical Engineers  
569 S. Westgate Dr., Suite 1  
Grand Junction, CO 81505  
phone: 970-241-8709, fax: 970-241-9514

**GRAND JUNCTION, CITY HALL  
SERVER ROOM**  
250 N. 5TH STREET  
GRAND JUNCTION, COLORADO

DATE:	ISSUED FOR:
2-27-16	CONSTRUCTION DRAWINGS



DATE:	2-27-16
JOB NO.:	15-156
DRAWN BY:	BCE
CHECKED BY:	BCE
SCALE:	AS SHOWN
SHEET NUMBER:	M1-2



**AIR CONDITIONING SYSTEM DETAIL WITH VERTICAL AIR HANDLING UNIT & SLAB MOUNTED CONDENSING UNIT**

NOT TO SCALE

AIR HANDLING UNIT SCHEDULE														
EQUIPMENT NO.	SERVICE	SUPPLY AIR (CFM)	ELECTRIC REHEAT (KW)	SUPPLY AIR E.S.P. (IN. W.G.)	COOLING NOM. (TONS)	FILTERS	SUPPLY FAN (HP)	ELECTRICAL			UNIT WEIGHT (LBS.)	MANUFACTURER & MODEL	OPTIONS /ACCESSORIES	
								V./PH./HZ.	FLA	MCA				MOCP
AHU-1	SERVER RM	2,250	N/A	0.75	5	-	-	460/3/60	16.8	20	30	507	LEIBERT- CR019RA	NOTE-1
AHU-2	SERVER RM	2,250	N/A	0.75	5	-	-	460/3/60	16.8	20	30	507	LEIBERT- CR019RA	NOTE-1
AHU-3	SERVER RM	2,250	N/A	0.75	5	-	-	460/3/60	16.8	20	30	507	LEIBERT- CR019RA	NOTE-1
AHU-4	SERVER RM	2,250	N/A	0.75	5	-	-	460/3/60	16.8	20	30	507	LEIBERT- CR019RA	NOTE-1

NOTES:  
1. UNIT INCLUDES 8 FILTERS, DIGITAL SCROLL COMPRESSORS, LOCKING ELECTRICAL DISCONNECT (65 KAIC), CONDENSATE PUMP, EC FANS, IS-UNITY DP COMMUNICATIONS CARD, 2 LEAK DETECTORS. PROVIDE vNSA16I CONTROLLER FOR INTERUNIT COMMUNICATIONS 120/1/60 SERVICE W/ CAT5 OR BETTER CABLES PER UNIT FROM EACH CRAC TO VNSA8, CONDENSATE ALARM, COMMON ALARM, AND MANUFACTURER LEAD/LAG CONTROL.

EXHAUST FAN SCHEDULE										
EQUIPMENT NO.	SERVICE	LOCATION	CFM	EXTERNAL STATIC PRESS (IN. W.G.)	MOTOR				MANUFACTURER & MODEL	OPTIONS/ACCESSORIES
					WATTS	HP	RPM	VOLT/PH/HZ		
EF-1	SERVER RM	INTERIOR BAR JOISTS	7000	1	-	5.00	1725	460/3/60	GREENHECK- BDF-150-50	NOTE-1

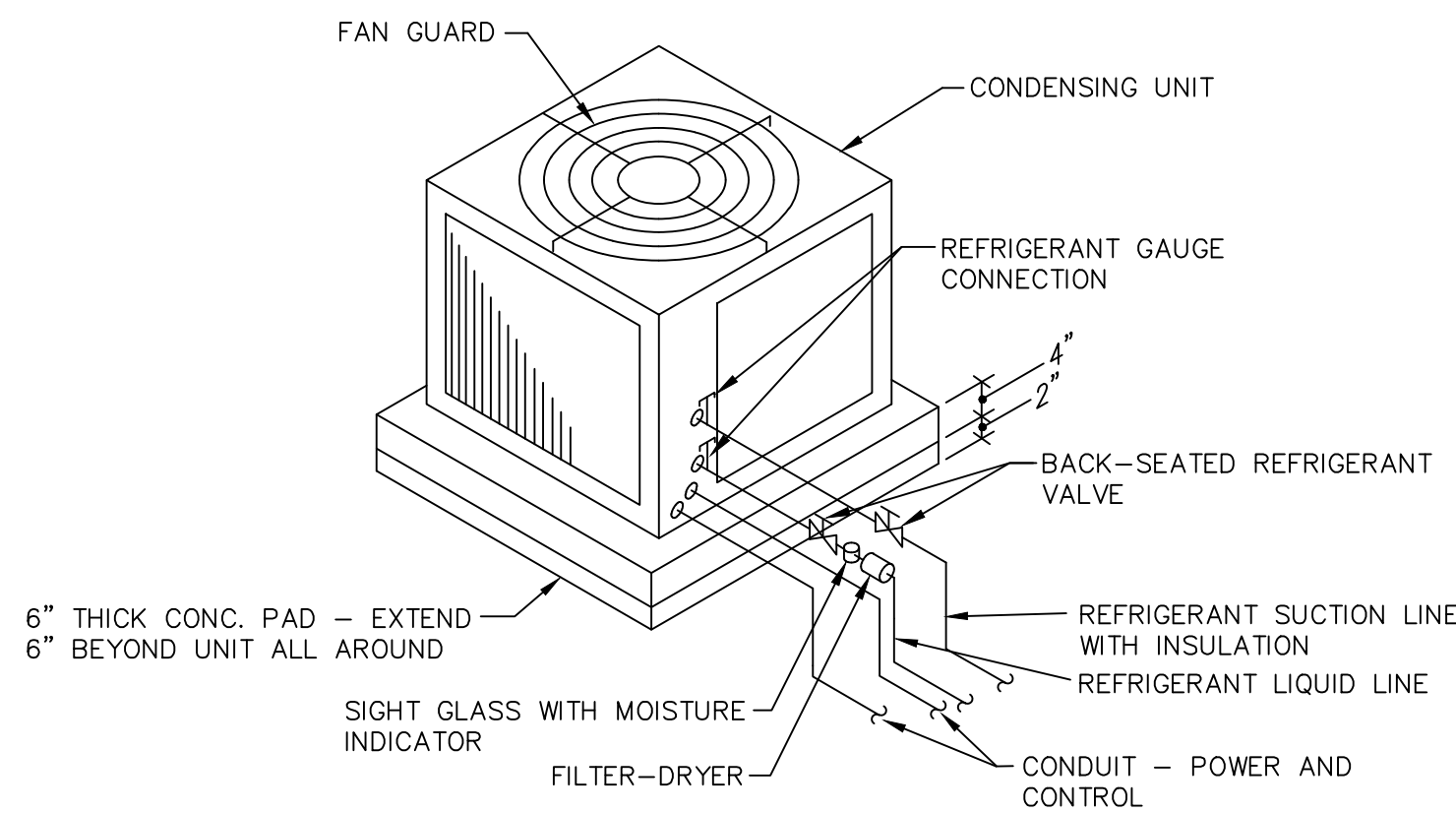
NOTES:  
1. PROVIDE WITH DISCONNECT SWITCH, MOTOR STARTER, JUNCTION BOX MOUNTED & WIRED, LOW LEAKAGE MOTORIZED DAMPER, WIRING PIGTAIL.

AIR COOLED CONDENSING UNIT SCHEDULE										
EQUIPMENT NO.	SERVICE	NOMINAL COOLING CAPACITY (TON)	REFRIG. PIPING		ELECTRIC			MANUFACTURER & MODEL	OPTIONS/ACCESSORIES	
			LIQUID	VAPOR	V/PH/HZ	FLA (A)	MOP (A)			MCA (A)
CU-1	AHU-1	-	5/8	7/8	460/3/60	1.4	15	1.9	LEIBERT - MCM040	NOTE-1
CU-2	AHU-2	-	5/8	7/8	460/3/60	1.4	15	1.9	LEIBERT - MCM040	NOTE-1
CU-3	AHU-3	-	5/8	7/8	460/3/60	1.4	15	1.9	LEIBERT - MCM040	NOTE-1
CU-4	AHU-4	-	5/8	7/8	460/3/60	1.4	15	1.9	LEIBERT - MCM040	NOTE-1

NOTES:  
1. PROVIDE LINE SETS AS RECOMMENDED BY MANUFACTURER, SEE AHU FOR MORE DETAILS. MICROCHANNEL CONDENSER WITH EC FANS RATED AT 105 °F, WITH FACTORY DISCONNECT SWITCH. DUAL REFRIGERANT CIRCUITS WITH LEE TEMP RECEIVER ON EACH CIRCUIT (120/1/60 150 WATT POWER REQUIRED FOR EACH RECEIVER). FIELD PROVIDED CANBUS CONTROL CABLING BETWEEN CRAC AND ACC.

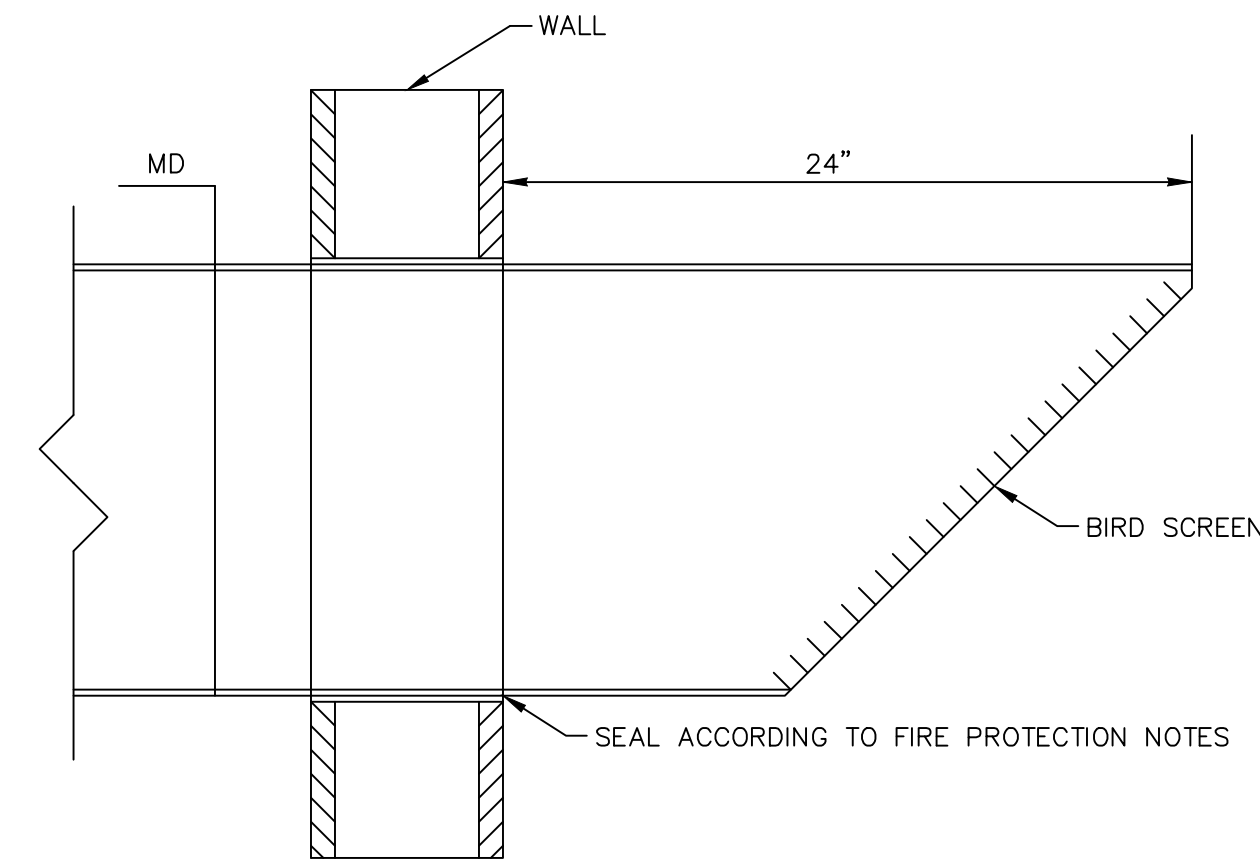
HUMIDIFIER SCHEDULE									
EQUIPMENT NO.	SERVICE	LOCATION	OUTPUT (LBS./HR.)	KW	AMPS	V/PH/HZ	MANUFACTURER & MODEL	OPTIONS/ACCESSORIES	
H-1	AHU	SERVER RM.	20	8		460/3/60	NORTEC - NH-EL 020	NOTE - 1	

NOTES:  
1. PROVIDE WITH IN COLD ROW MOUNTED HUMIDISTAT, MODULATING THERMOSTAT, WALL MOUNTED, & CONDENSATE TUBE DRAIN.



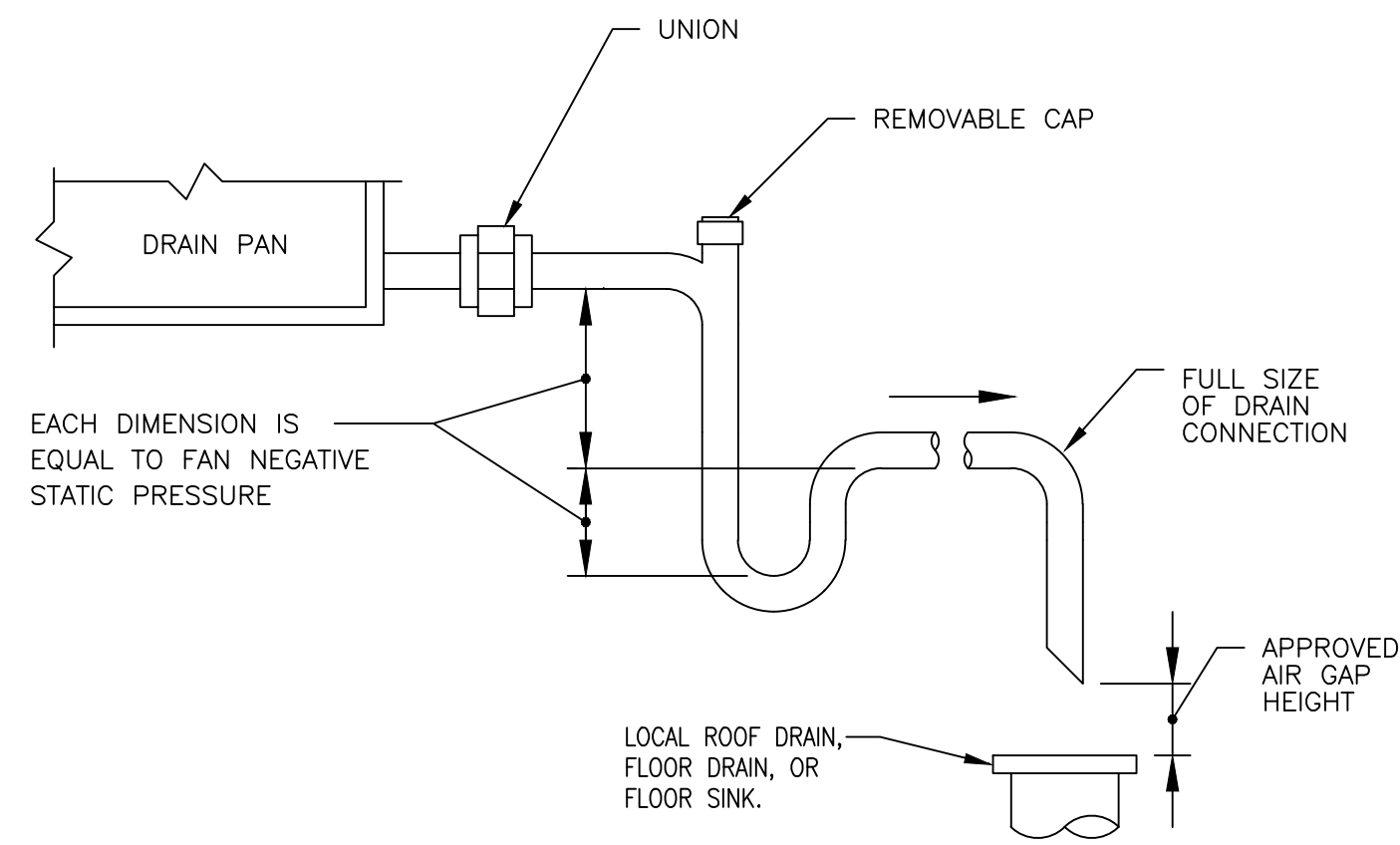
**AIR-COOLED CONDENSING UNIT - SLAB MOUNTED AT GRADE**

N.T.S.



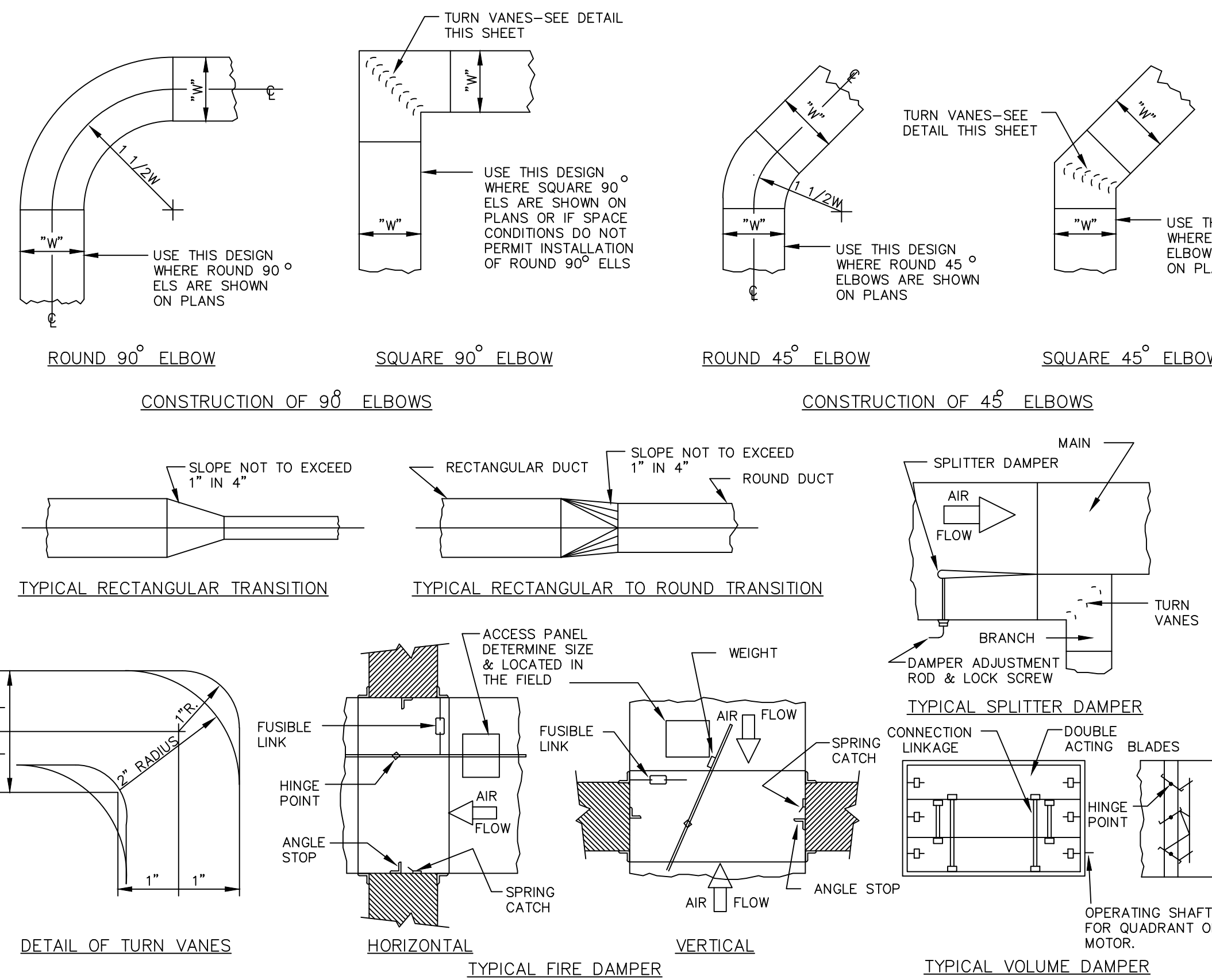
**DUCT PENETRATION THROUGH WALL DETAIL**

NOT TO SCALE



**CONDENSATE DRAIN DETAIL**

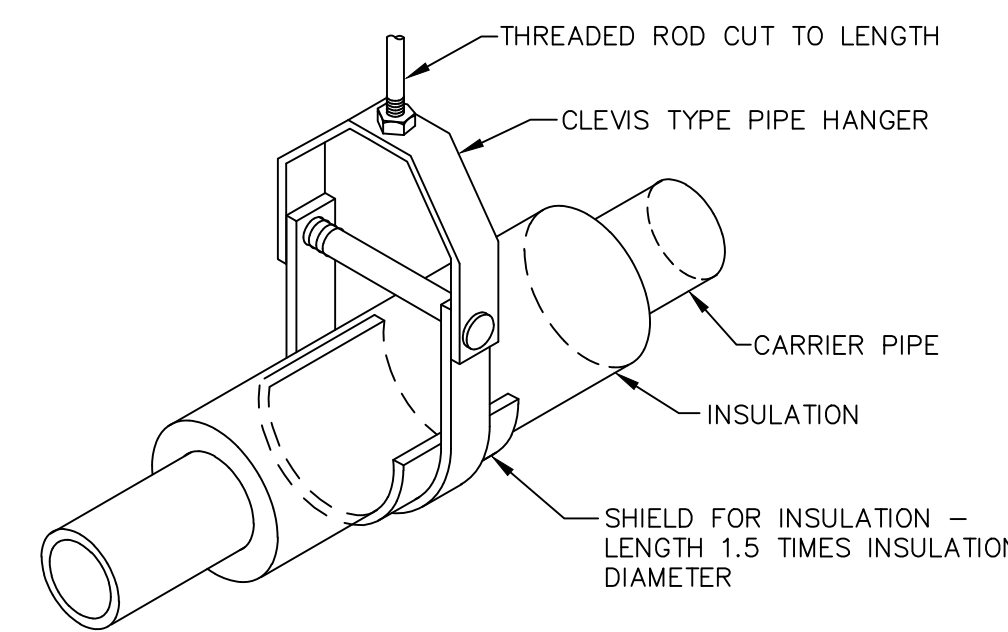
N.T.S.



**DETAILS OF THE LOW VELOCITY DUCT LAYOUT**

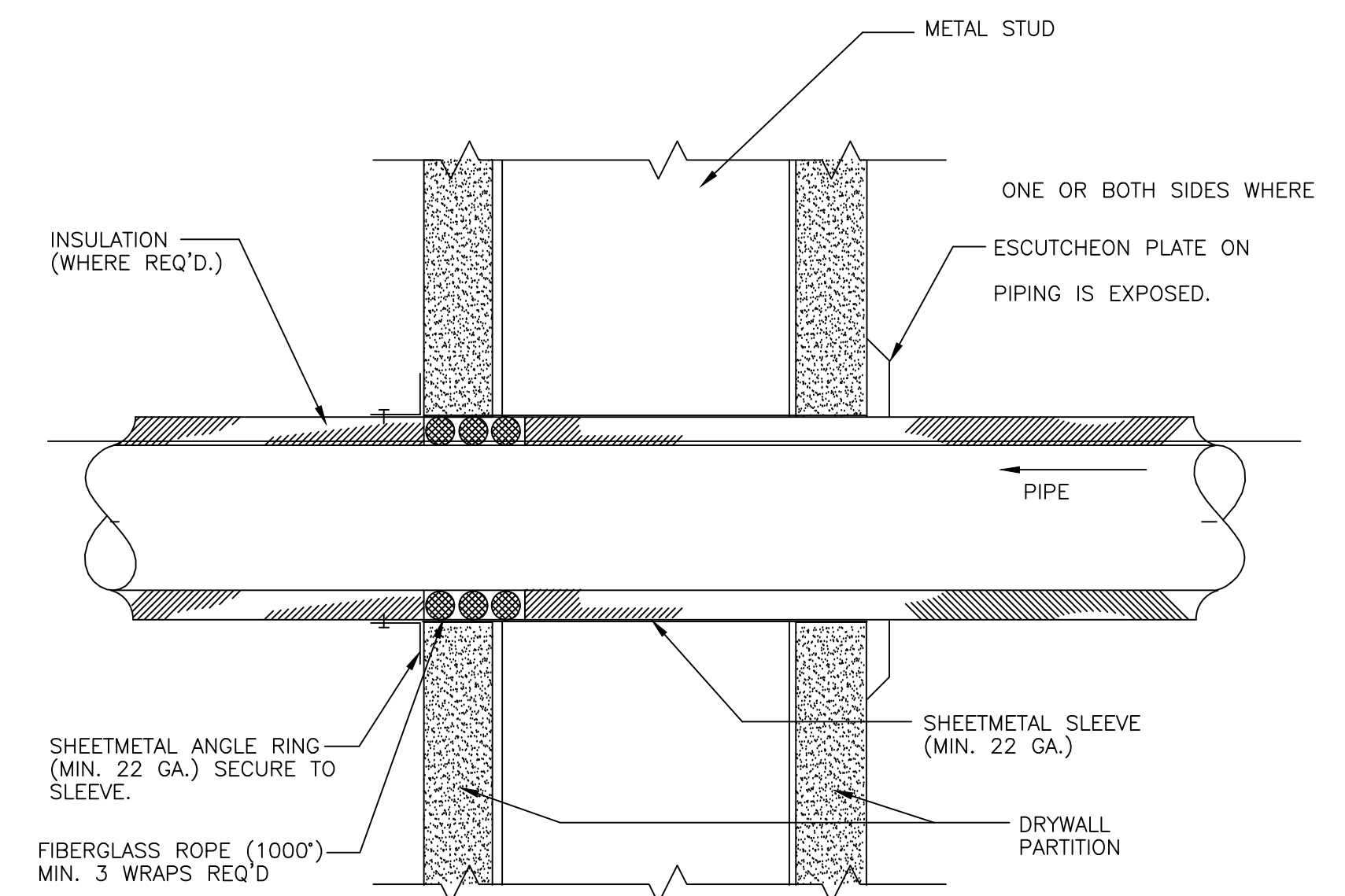
NO SCALE

- INSTALLATION NOTES**
1. ALL DUCTS SHALL BE CONSTRUCTED AND ERECTED IN A NEAT AND WORKMANLIKE MANNER.
  2. DUCTS SHALL BE CONSTRUCTED OF THE WEIGHTS, GAGES AND MATERIAL SHOWN IN THE SCHEDULE ON THESE DRAWINGS.
  3. THE DIMENSION SHOWN FOR ALL DUCTS SHOWN IN PLAN GIVE THE WIDTH FIRST AND THEN THE HEIGHT.
  4. DUCT RISERS SHOULD BE SUPPORTED BY ANGLES AT EVERY FLOOR.
  5. AIR TURN SHALL BE INSTALLED IN ALL ABRUPT ELBOWS TO PREVENT TURBULENCE.
  6. DUCTS SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION IN AN APPROVED MANNER.
  7. DIVERGING TRANSITION PIECES SHALL BE MADE AS GRADUAL AS POSSIBLE.
  8. INSTALL FIRE DAMPERS IN ACCORDANCE WITH UL 555.
  9. ACCESS PANELS SHOULD BE PLACED BEFORE AND/OR AFTER EQUIPMENT INSTALLED IN THE DUCT.
  10. DUCT AREA SHOULD NOT BE DECREASED MORE THAN 10 PERCENT WHEN OBSTRUCTIONS CANNOT BE AVOIDED, AND THEN A STREAMLINED FITTING SHOULD BE USED.
  11. FLEXIBLE FABRIC CONNECTIONS (OR EQUAL) SHOULD BE USED ON BOTH INLETS AND OUTLETS OF ALL FANS AND AIR HANDLING UNITS.
  12. JOINTS AND SEAMS OF SUPPLY DUCTS SHALL BE FASTENED SECURELY AND MADE AIR TIGHT.



**CLEVIS TYPE PIPE HANGER FOR INSULATED PIPE**

N.T.S.



**PIPE SLEEVE THROUGH WALL DETAIL**

NOT TO SCALE

DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.

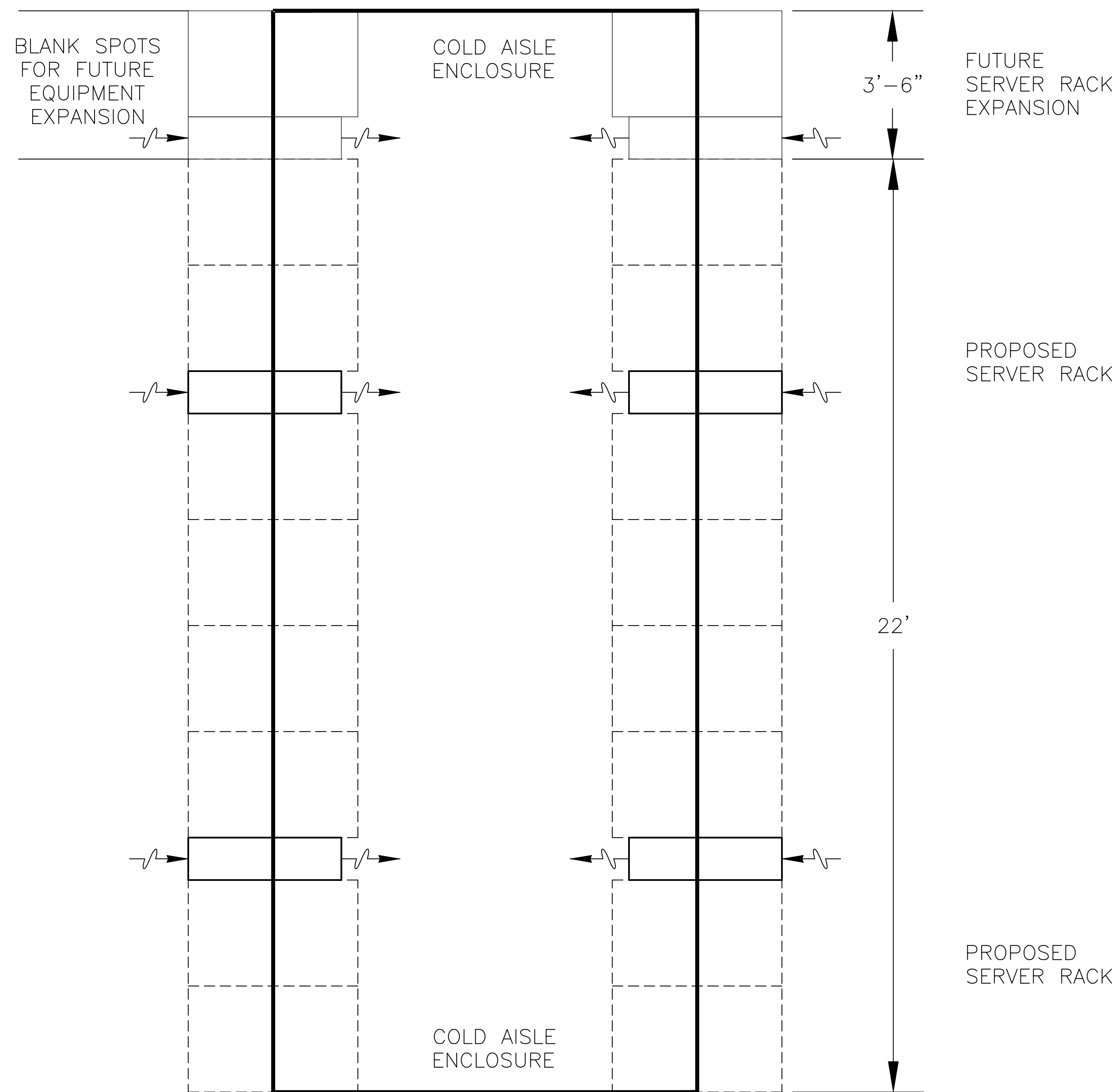
**Bighorn Consulting Engineers, Inc.**  
Mechanical & Electrical Engineers  
569 S. Westgate Dr., Suite 1  
Grand Junction, CO 81505  
phone: 970-241-8709, fax: 970-241-9514

**GRAND JUNCTION, CITY HALL  
SERVER ROOM**  
250 N. 5TH STREET  
GRAND JUNCTION, COLORADO

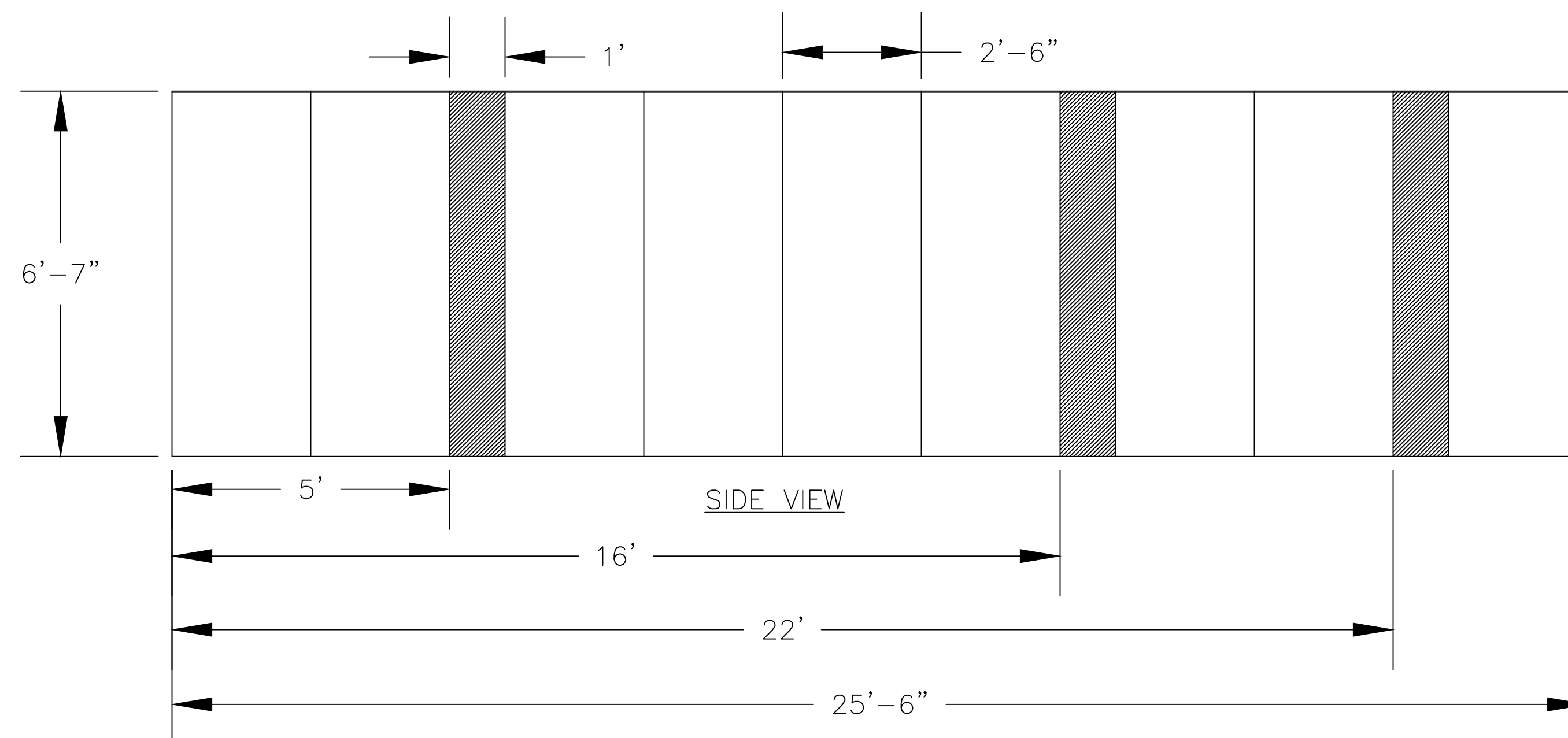
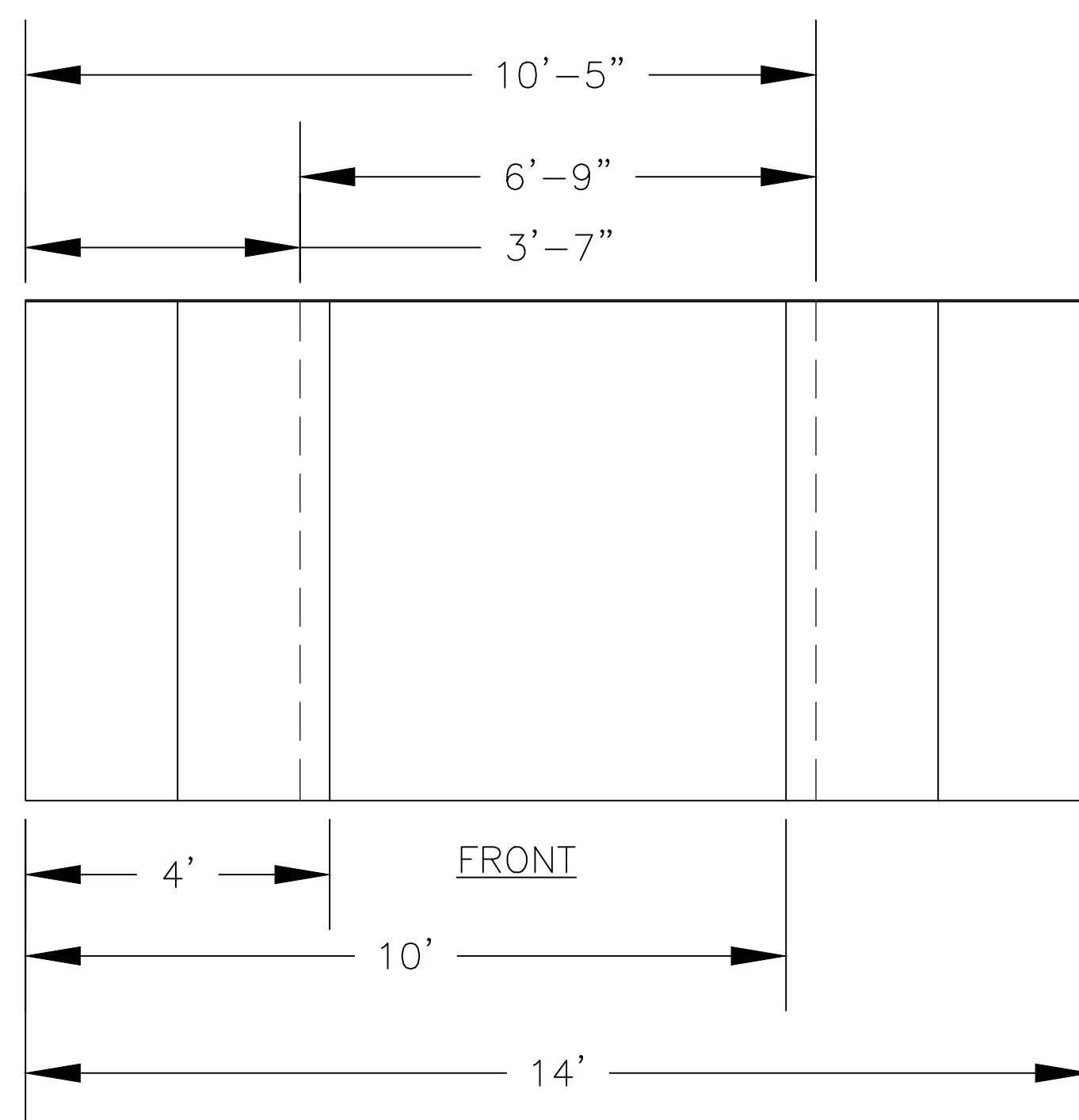
DATE:	ISSUED FOR:
2-27-16	CONSTRUCTION DRAWINGS



DATE:	2-27-16
JOB NO.:	15-156
DRAWN BY:	BCE
CHECKED BY:	BCE
SCALE:	AS SHOWN
SHEET NUMBER:	M1-3



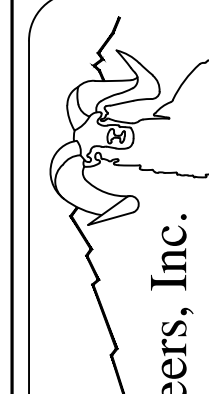
TOP



ORTHOGRAPHIC VIEW'S OF SERVER RACK

SCALE: 1/2"=1'-0"

DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT, THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.



**Bighorn Consulting Engineers, Inc.**  
 Mechanical & Electrical Engineers  
 569 S. Westgate Dr., Suite 1  
 Grand Junction, CO 81505  
 phone: 970-241-8709, fax: 970-241-9514

**GRAND JUNCTION, CITY HALL  
 SERVER ROOM**  
 250 N. 5TH STREET  
 GRAND JUNCTION, COLORADO

DATE:	ISSUED FOR:
2-27-16	CONSTRUCTION DRAWINGS



DATE:	2-27-16
JOB NO:	15-156
DRAWN BY:	BCE
CHECKED BY:	BCE
SCALE:	AS SHOWN
SHEET NUMBER:	M1-4

DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT, THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITIONS TO THIS PROJECT BY OTHERS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.

**Bighorn Consulting Engineers, Inc.**  
 Mechanical & Electrical Engineers  
 569 S. Westgate Dr., Suite 1  
 Grand Junction, CO 81505  
 phone: 970-241-8709, fax: 970-241-9514

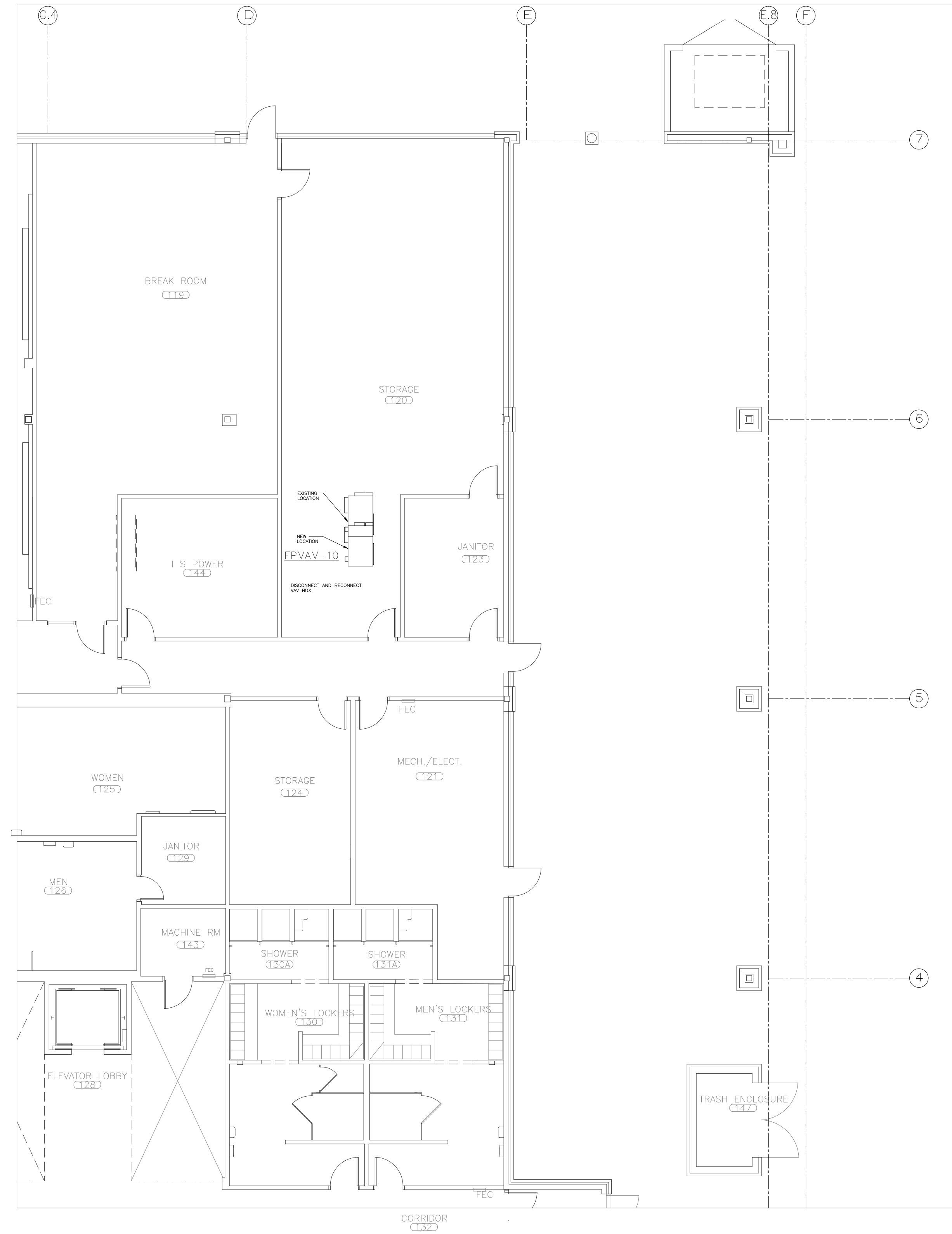
**GRAND JUNCTION, CITY HALL  
 SERVER ROOM**  
 250 N. 5TH STREET  
 GRAND JUNCTION, COLORADO

DATE: 2-27-16  
 ISSUED FOR: CONSTRUCTION DRAWINGS



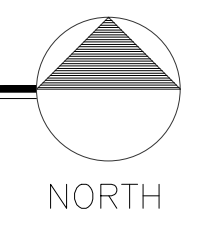
DATE: 2-27-16  
 JOB NO: 15-156  
 DRAWN BY: BCE  
 CHECKED BY: BCE  
 SCALE: AS SHOWN  
 SHEET NUMBER:

**E1-1**



**ELECTRICAL EXISTING FLOOR PLAN**

SCALE: 1/4"=1'-0"



NORTH

DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER. THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF THE DESIGNER. WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXCLUDED OR NOT, THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECTS FOR ADDITION TO THIS PROJECT BY CHECKS EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF THE DESIGNER.

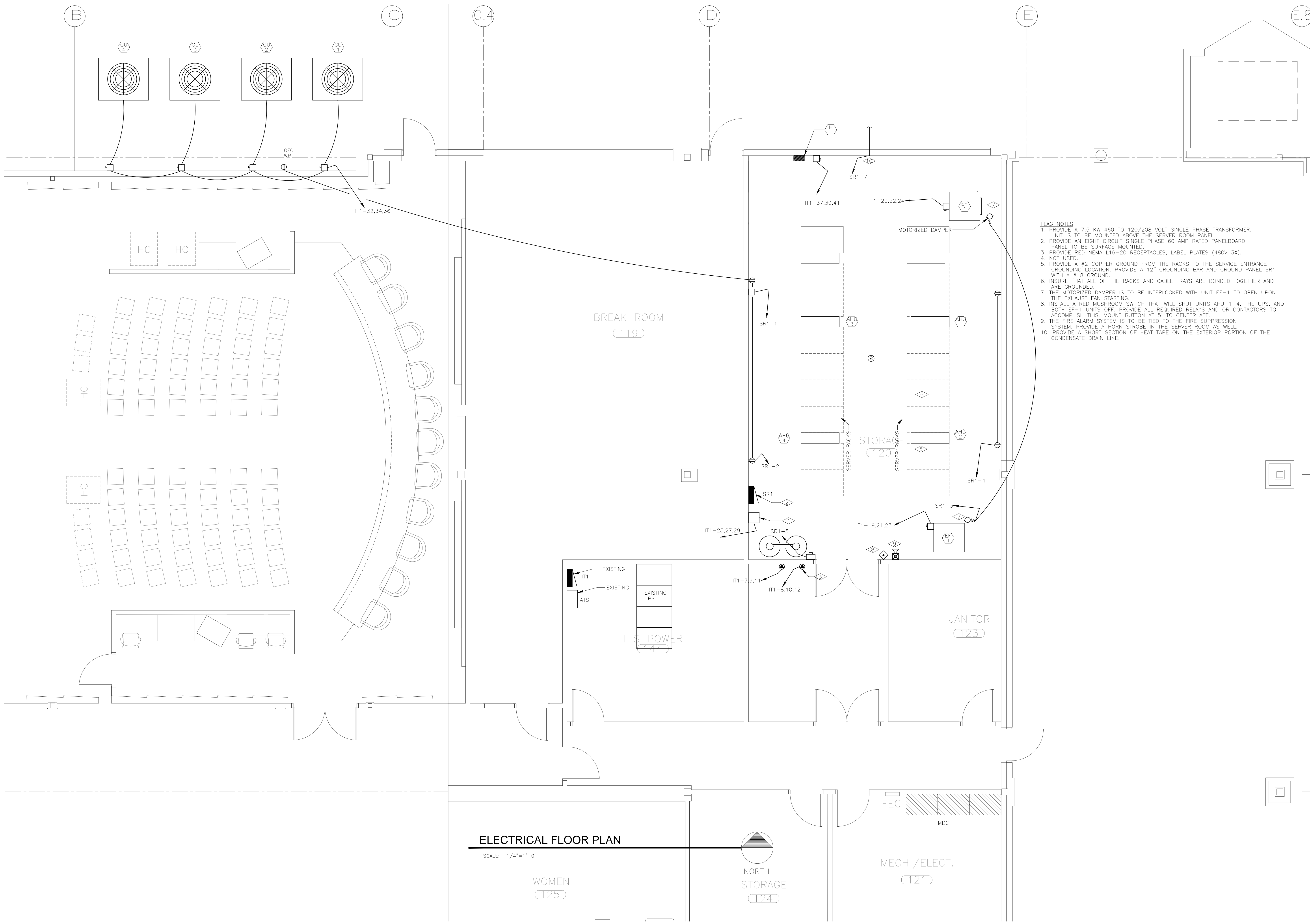
**Bighorn Consulting Engineers, Inc.**  
 Mechanical & Electrical Engineers  
 569 S. Westgate Dr., Suite 1  
 Grand Junction, CO 81505  
 phone: 970-241-8709, fax: 970-241-9514

**GRAND JUNCTION, CITY HALL  
 SERVER ROOM**  
 250 N. 5TH STREET  
 GRAND JUNCTION, COLORADO

DATE: 2-27-16  
 ISSUED FOR: CONSTRUCTION DRAWINGS



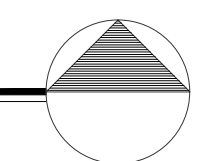
DATE: 2-27-16  
 JOB NO: 15-156  
 DRAWN BY: BCE  
 CHECKED BY: BCE  
 SCALE: AS SHOWN  
 SHEET NUMBER: E1-2



- FLAG NOTES**
1. PROVIDE A 7.5 KW 460 TO 120/208 VOLT SINGLE PHASE TRANSFORMER. UNIT IS TO BE MOUNTED ABOVE THE SERVER ROOM PANEL.
  2. PROVIDE AN EIGHT CIRCUIT SINGLE PHASE 60 AMP RATED PANELBOARD. PANEL TO BE SURFACE MOUNTED.
  3. PROVIDE RED NEMA 116-20 RECEPTACLES, LABEL PLATES (480V 3ø).
  4. NOT USED.
  5. PROVIDE A #2 COPPER GROUND FROM THE RACKS TO THE SERVICE ENTRANCE GROUNDING LOCATION. PROVIDE A 12" GROUNDING BAR AND GROUND PANEL SR1 WITH A # 8 GROUND.
  6. INSURE THAT ALL OF THE RACKS AND CABLE TRAYS ARE BONDED TOGETHER AND ARE GROUNDED.
  7. THE MOTORIZED DAMPER IS TO BE INTERLOCKED WITH UNIT EF-1 TO OPEN UPON THE EXHAUST FAN STARTING.
  8. INSTALL A RED MUSHROOM SWITCH THAT WILL SHUT UNITS AHU-1-4, THE UPS, AND BOTH EF-1 UNITS OFF. PROVIDE ALL REQUIRED RELAYS AND OR CONTACTORS TO ACCOMPLISH THIS. MOUNT BUTTON AT 5' TO CENTER AFF.
  9. THE FIRE ALARM SYSTEM IS TO BE TIED TO THE FIRE SUPPRESSION SYSTEM. PROVIDE A HORN STROBE IN THE SERVER ROOM AS WELL.
  10. PROVIDE A SHORT SECTION OF HEAT TAPE ON THE EXTERIOR PORTION OF THE CONDENSATE DRAIN LINE.

**ELECTRICAL FLOOR PLAN**

SCALE: 1/4"=1'-0"



NORTH  
 STORAGE  
 (124)

MECH./ELECT.  
 (121)

WOMEN  
 (125)

Project: Grand Junction  
 Date: 2/17/2016  
 By: RP  
 Spec by: Bighorn Engineering

## Computer Room Air Conditioning Schedule

Unit	Rooms	Mfg	Model No.	Capacity (MBH)		Evaporator					Humidifier lbs/hr	Reheat kw	Electrical Requirements						
				Total	Sensible	CFM	ESP	kW	Sq. Ft	Rows			Volt	Hz	Ph	FLA	WSA	OPD notes	
CRAC-1, -2, -3, -4		Liebert	CR019RA137	61.2	58.5	2250	0	7.17	6.46	3	na	na	460	60	3	16.8	20	30	1,2,3,4

- Notes:
- 1) Units are Liebert CRV horizontal flow air cooled systems located within the row, 1' wide, utilizing R410A refrigerant
  - 2) Capacity rating at 4500' ASL, 105 F ambient, 75F EAT, 30% RH
  - 3) Units to include 8 filters, digital scroll compressor, no humidifier, no reheat, condensate pump, IS-Unity DP communications card, locking electrical disconnect switch, 5 year compressor warranty, iCom controller, point leak detector, 16 2T sensors (total), Canbus cables (16 total)
  - 4) Provide (1) vNSA16i controller for interunit communications. Requires 120 Volt, 1 Phase power. Field provide (2) CAT5 or better cables per unit from each CRAC to vNSA8.

## Condenser Schedule

Unit	Serves	Mfg.	Model No.	Ambient Temp	Electrical Requirements			WSA	OPD	Notes
					volt	Ph	FLA			
ACC-1, -2, -3, -4	CRAC-1, -2, -3, -4	Liebert	MCM040E1AD	105	460	3	1.4	1.9	15	1,2,3,4

- Notes:
- 1) Condensers are microchannel design with lee temp flood back control to -30 degrees F.
  - 2) Provide separate 120/1 electrical service for (1) 150 Watt receiver heater per condenser
  - 3) Condenser to be provided with factory disconnect switch
  - 4) Control wiring (Canbus and 24V) from CR019 to condenser to be field provided





# Liebert Rating System



Project Name: **GJ CR035**  
 Sales Rep. Name: **Randall Poet**

Office Name: **AC Systems, Inc.**

Customer Name:  
 Phone Number: **(303) 771-5000**

## CRV Model CR019RA~MCM040E1; Air Cooled



Manufacturer: <b>Liebert North America</b> Unit Power Supply: <b>460/3/60</b> Refrigerant: <b>R410A</b> Internal Filter Class: <b>Merv 1 Std. - 1/2 inch (12.7mm)</b> Unit Airflow (std. motor): <b>2250 CFM</b> ESP: <b>0 InH2O</b>	Spec.sheet output date: <b>28-Jan-16</b> Width: <b>12 in</b> Depth: <b>43.3 in</b> Height: <b>79 in</b> Weight: <b>507 lb</b> Altitude: <b>4500 ft</b>
---	---

Hide/Show

Condenser(s)	Compressor(s)	Evaporator(s)
Manufacturer: <b>Liebert North America</b> Model: <b>MCM040E1</b> Condenser Type: <b>MCH Condenser</b> Design Ambient: <b>105 °F</b> Power Option: <b>460/3/60</b>	Manufacturer: <b>Copeland</b> Model: <b>ZPD72KCE-60Hz</b> Compressor Type: <b>Digital</b> Power Supply: <b>460/3/60</b>	Manufacturer: <b>Liebert North America</b> Model: <b>RTCR019Evapx1</b> Fin Type: <b>Corrugated</b> Number of Rows: <b>3</b> Fin Density: <b>13 1/in</b> Face Area: <b>6.46 ft²</b> Surface Area: <b>204.88 ft²</b>

Hide/Show

Miscellaneous	Cooling Fan(s)
Humidifier Type: <b>No Humidifier</b> Bypass airflow: <b>0 %</b>	Quantity of Fans: <b>5</b> Type: <b>EC Plug Fan In the Unit</b> Power Supply: <b>460/3/60</b> Quantity of Motors: <b>5</b>

System: [Digital Loading: 100%, SC: 10 °F, SH: 10 °F]

Ent DB (°F)	Ent WB (°F)	Ent RH (%)	Ent DP (°F)	Unit Air Vol (CFM)	Air Face Vel (ft/min)	Amb DB (°F)	NTCC (kBtu/hr)	NSCC (kBtu/hr)	THR (kBtu/hr)	Cond. Airflow (CFM)	Lvg DB (°F)	Lvg WB (°F)	Tot Comp Pwr (kW)	Sys Power Input (kW)	Sys SCOP (W/W)	Sys NSCOP (W/W)	Fan kW (kW)
75	55.3	30	41.5	2250	348	95	64.4	60.1	84.1	5682	45.5	42.4	5.44	6.55	2.69	2.69	0.51
75	55.3	30	41.5	2250	348	100	62.8	59.3	83.6	5556	45.9	42.8	5.75	6.85	2.54	2.54	0.51
75	55.3	30	41.5	2250	348	105	61.2	58.5	83	5628	46.3	43.1	6.06	7.17	2.39	2.39	0.51



### System

Compressor Power (kW)	Sat. Discharge Temp. (°F)	Sat. Suction Temp. (°F)
5.44		112.1
5.75		116.8
6.06		121.6

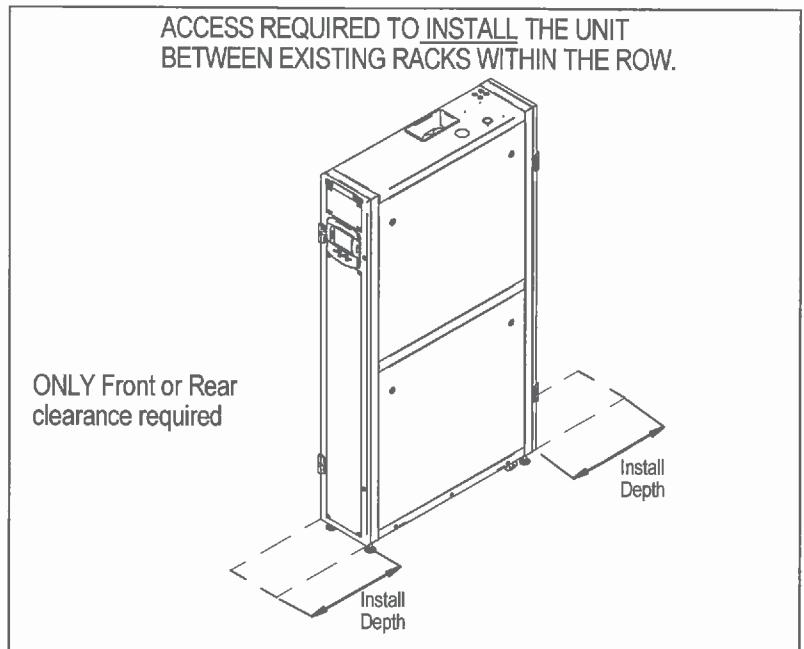
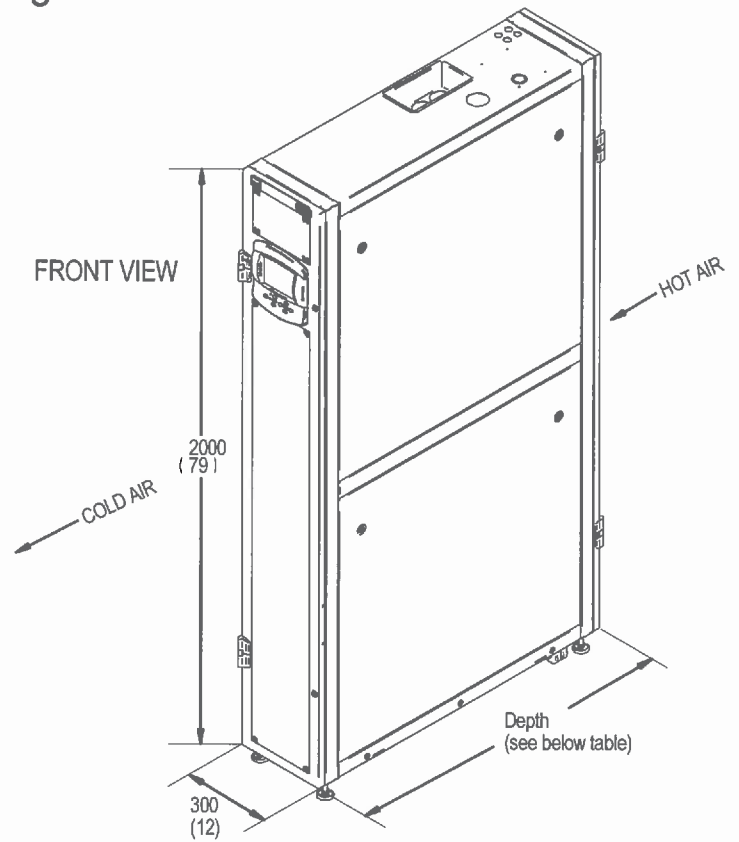
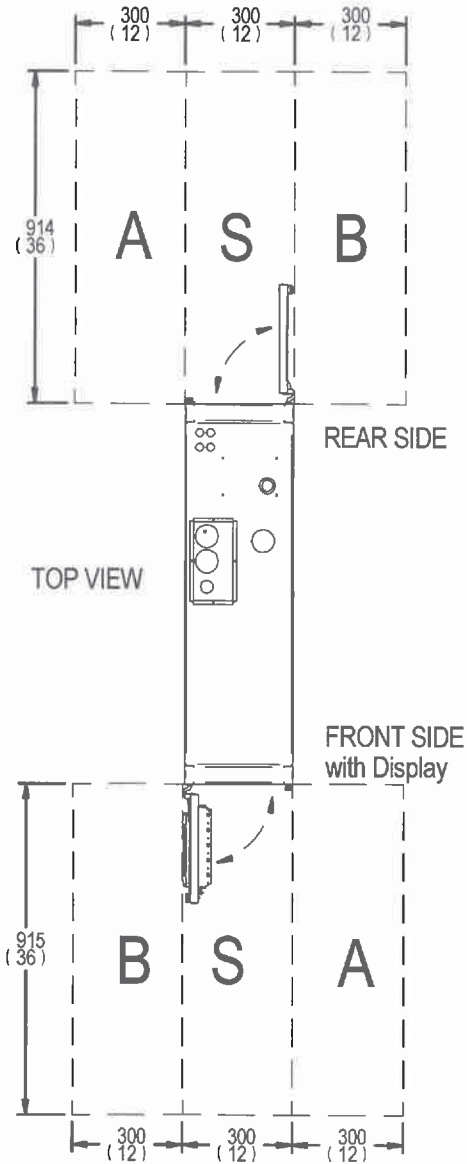
1. Capacity shown has been reduced by fan motor heat (net).

# LIEBERT CRV

## 300mm (12in)

### Cabinet / Floor Planning Dimensional Data

ACCESS REQUIRED TO SERVICE THE UNIT  
BETWEEN EXISTING RACKS WITHIN THE ROW  
Service area is S+A+B



Cooling System	Height, mm (in)	Depth, mm (in)	Install Depth, mm (in)	Dry Weight, +/- 5% kg (lbs)
AIR	2,000 (78.7)	1,100 (43.3)	1,250 (49.2)	230 (507)
WTR/GLY				247 (545)
CW				190 (418)

All dimensions are mm Primary and (in) Secondary unless otherwise noted.



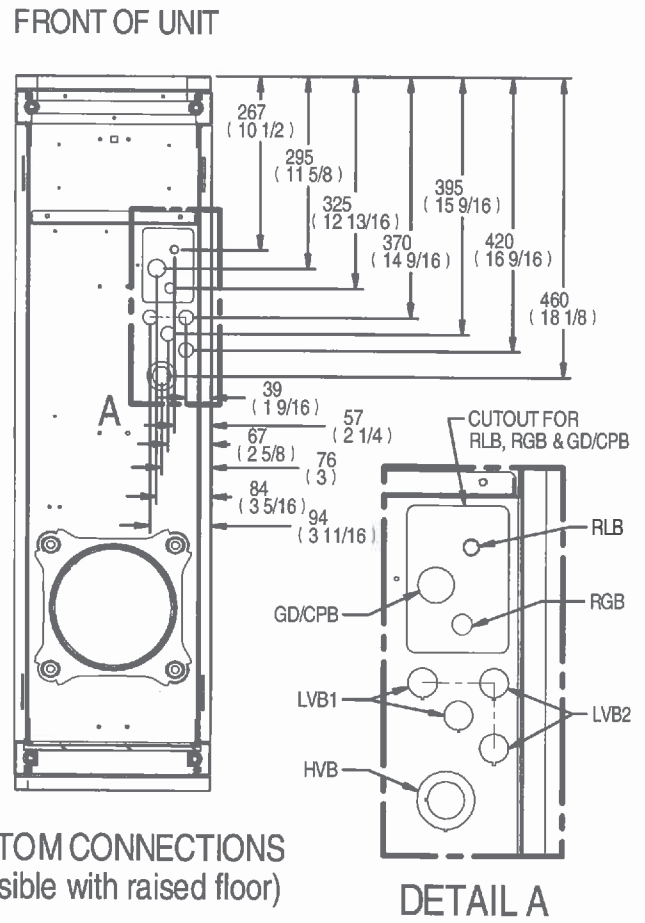
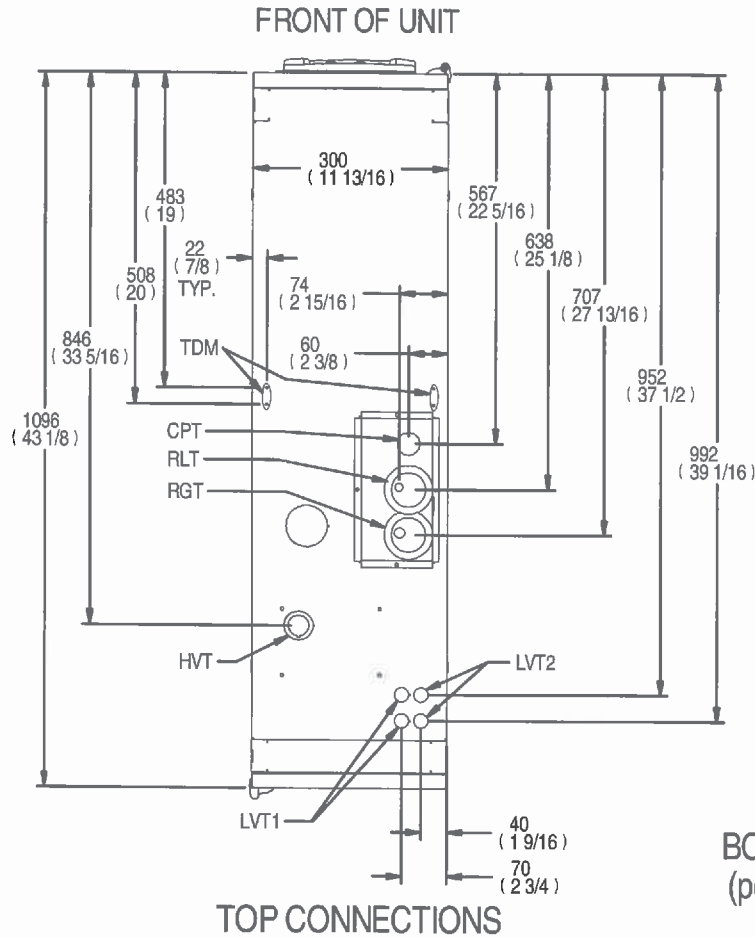
# LIEBERT CRV

## 300mm (12in) ←

### CONNECTIONS: AIR COOLED MODELS

PIPING AND ELECTRICAL CONNECTIONS AVAILABLE AT THE TOP AND BOTTOM OF UNIT.

**ATTENTION, AIR COOLED SYSTEMS MAY REQUIRE ADDITIONAL OIL TO BE ADDED IN THE FIELD IN ORDER TO ALLOW FOR SUFFICIENT COMPRESSOR LUBRICATION. SEE UNIT USER MANUAL FOR DETAILS.**



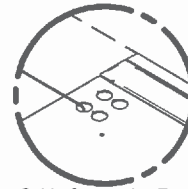
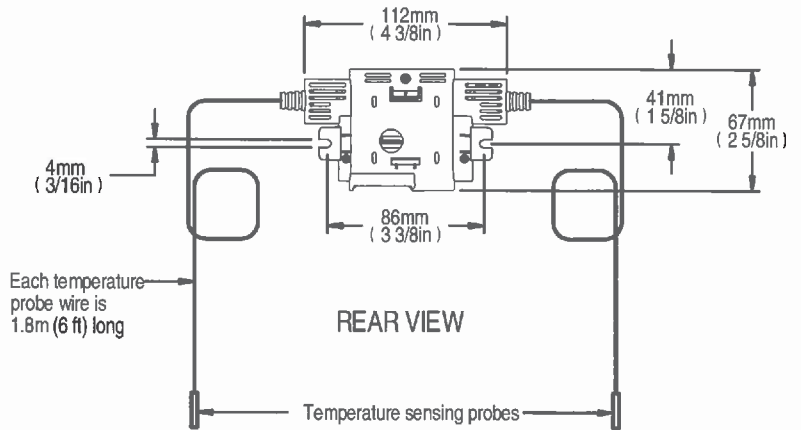
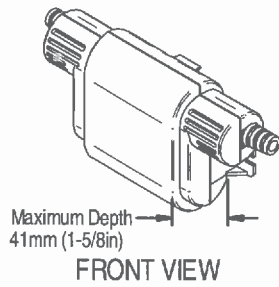
All dimensions are mm primary and (inches secondary) unless otherwise specified.

UNIT TOP CONNECTIONS		CR19 (60Hz)	UNIT BOTTOM CONNECTIONS		CR19 (60Hz)
<b>RLT</b>	Refrigerant Liquid Line Inlet	1/2" O.D. Copper Sweat	<b>RLB</b>	Refrigerant Liquid Line Inlet	1/2" O.D. Copper Sweat
<b>RGT</b>	Refrigerant Gas Line Outlet	5/8" O.D. Copper Sweat	<b>RGB</b>	Refrigerant Gas Line Outlet	5/8" O.D. Copper Sweat
<b>CPT</b>	Condensate Pump	Knockout Hole Diameter 35 mm (1-3/8")	<b>GD</b>	Gravity Coil Pan Drain	Knockout Hole Diameter 44 mm (1-3/4")
			<b>CPB</b>	Condensate Pump	
<b>HVT</b>	High Voltage Top Connection	Combination Knockout 29 mm (1-1/8") & 44 mm (1-3/4")	<b>HVB</b>	High Voltage Bottom Entrance (feed through the base of the unit)	Combination Knockout 29 mm (1-1/8") & 44 mm (1-3/4")
<b>LVT1</b>	Low Voltage Top Connection (Twisted Pair)	Knockout Hole Diameter 22 mm (7/8") 2 places	<b>LVB1</b>	Low Voltage Bottom Connection (Twisted Pair)	Knockout Hole Diameter 22 mm (7/8") 2 places
<b>LVT2</b>	Low Voltage Top Connection (Shielded Cable)	Knockout Hole Diameter 22 mm (7/8") 2 places	<b>LVB2</b>	Low Voltage Bottom Connection (Shielded Cable)	Knockout Hole Diameter 22 mm (7/8") 2 places
<b>TDM</b>	Tie Down (Top) Mounting	Hole Diameter 3 mm (1/8") 4 places			

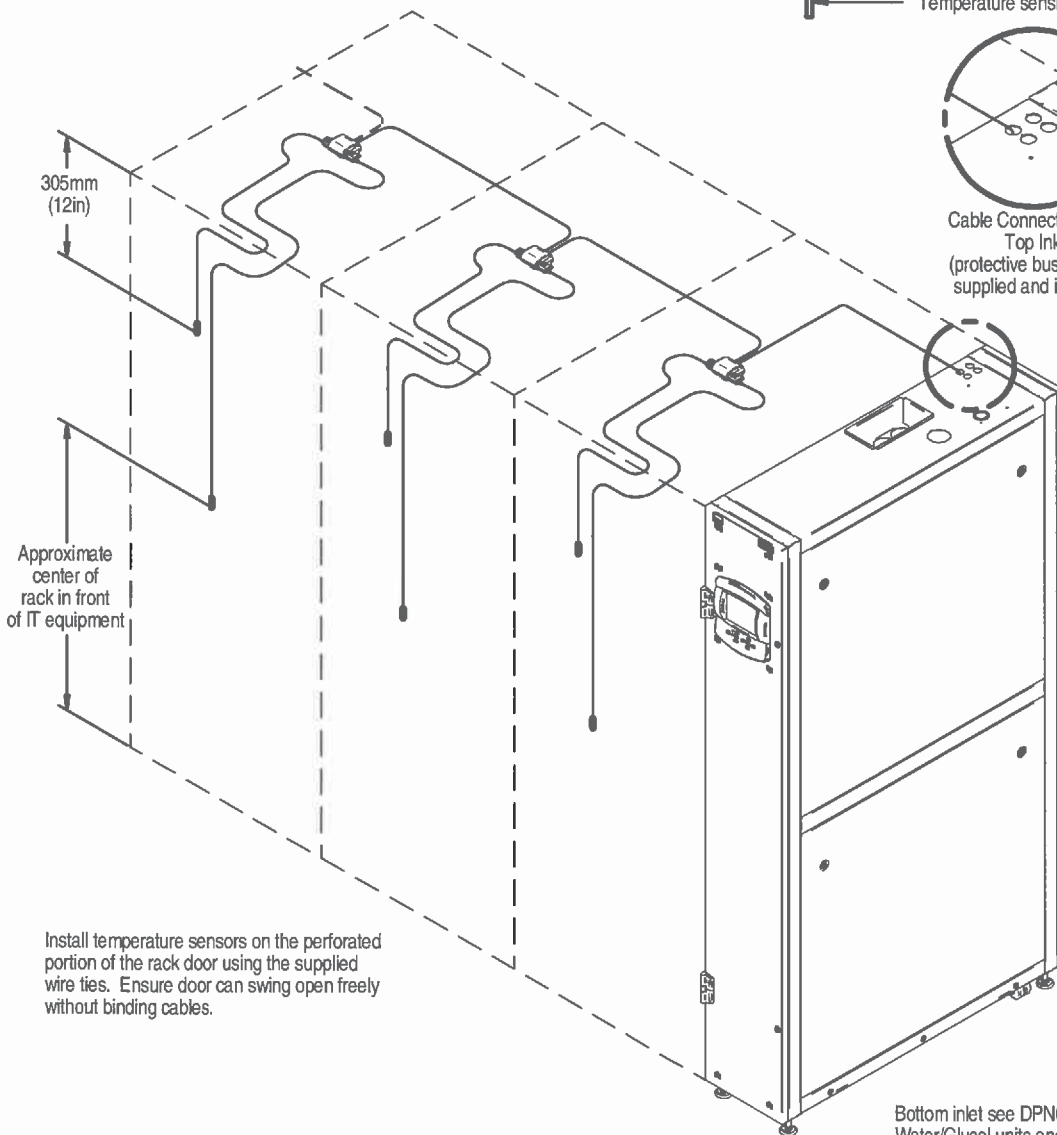
# LIEBERT CRV

## 300mm (12in)

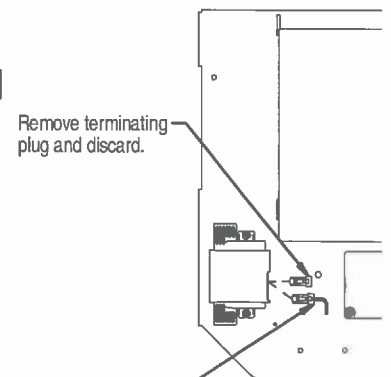
### 2T Rack Temperature Sensor Connections



Cable Connection Entry  
Top Inlet  
(protective bushing field  
supplied and installed)



Install temperature sensors on the perforated portion of the rack door using the supplied wire ties. Ensure door can swing open freely without binding cables.



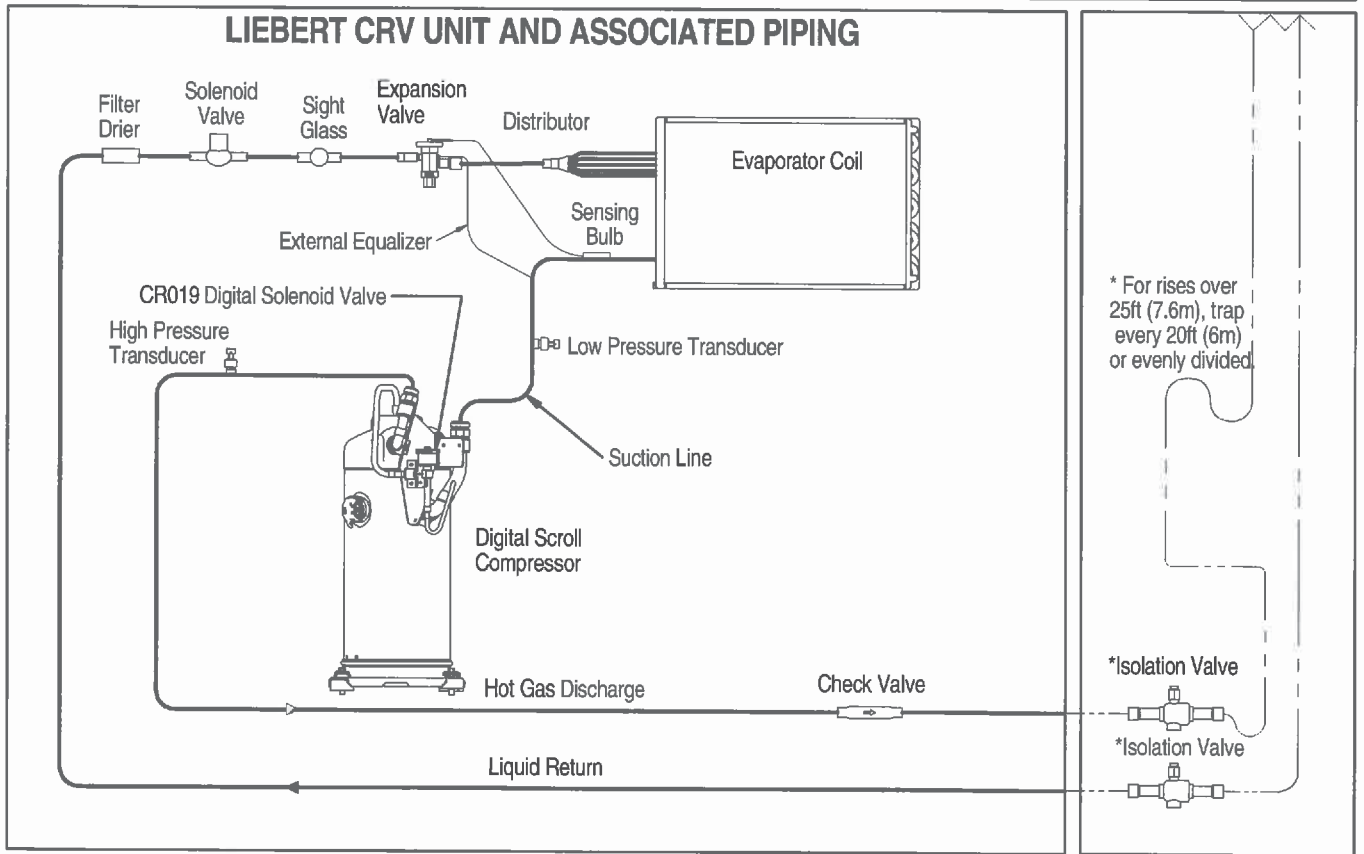
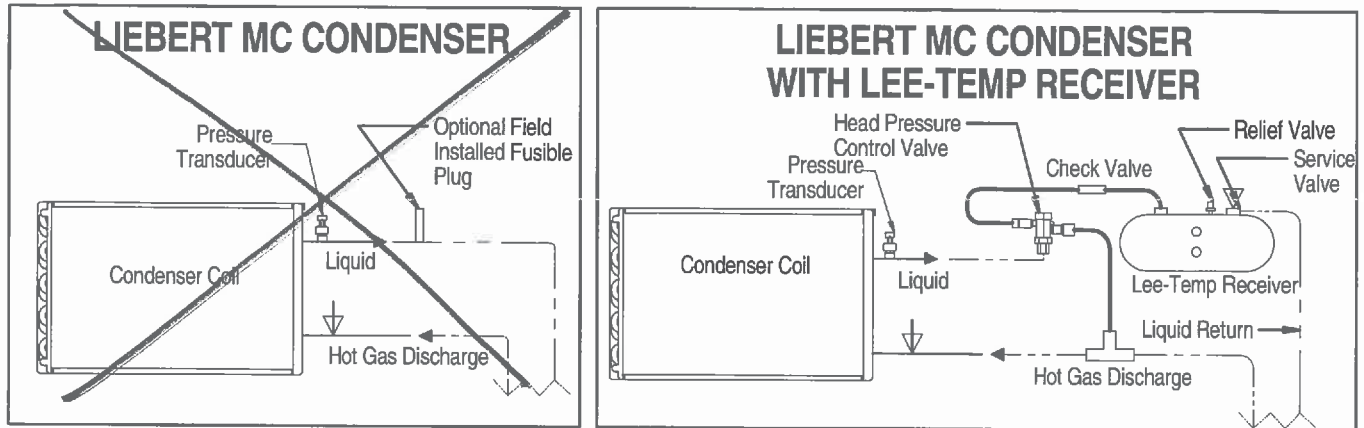
Install "CAN" cable into the slot previously occupied by the terminating plug.

Return air temperature sensor located in the rear of the unit.

Bottom inlet see DPN002813 for Air, DPN003040 for Water/Glycol units and DPN002815 for Chilled Water units (protective bushing field supplied and installed).

# LIEBERT CRV 300mm (12in)

## GENERAL ARRANGEMENT DIAGRAM AIR COOLED WITH LIEBERT MC CONDENSER



————— FACTORY REFRIGERANT PIPING  
 - - - - - FIELD PIPING  
 ↓ SERVICE / SCHRADER (ACCESS) CONNECTION WITH VALVE CORE

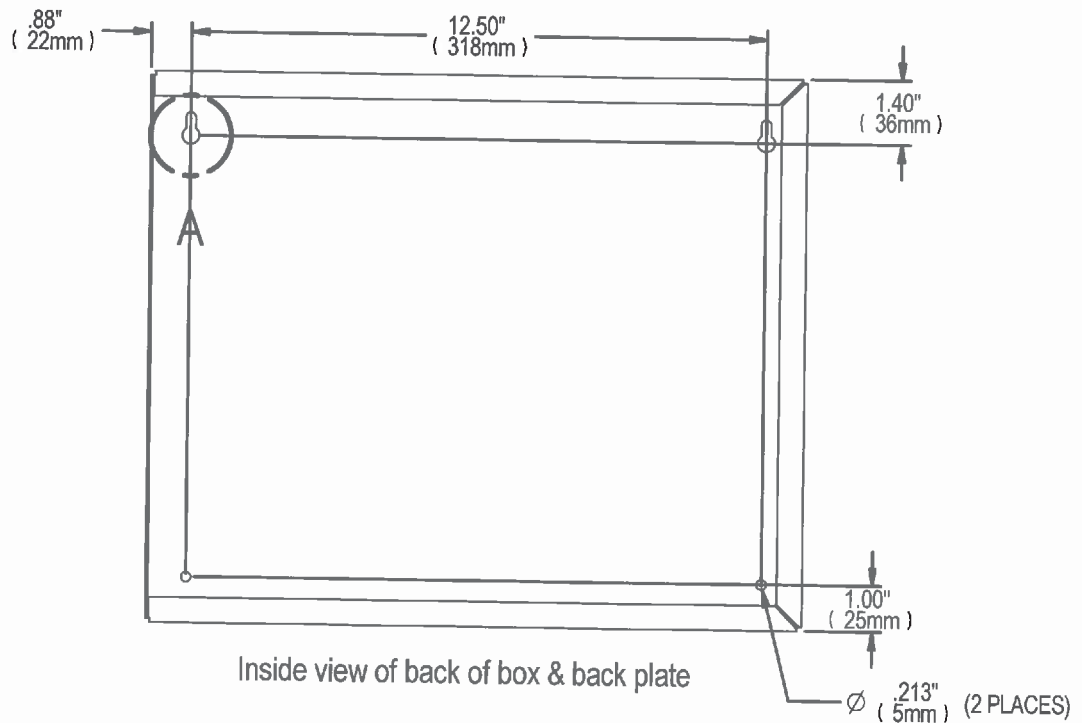
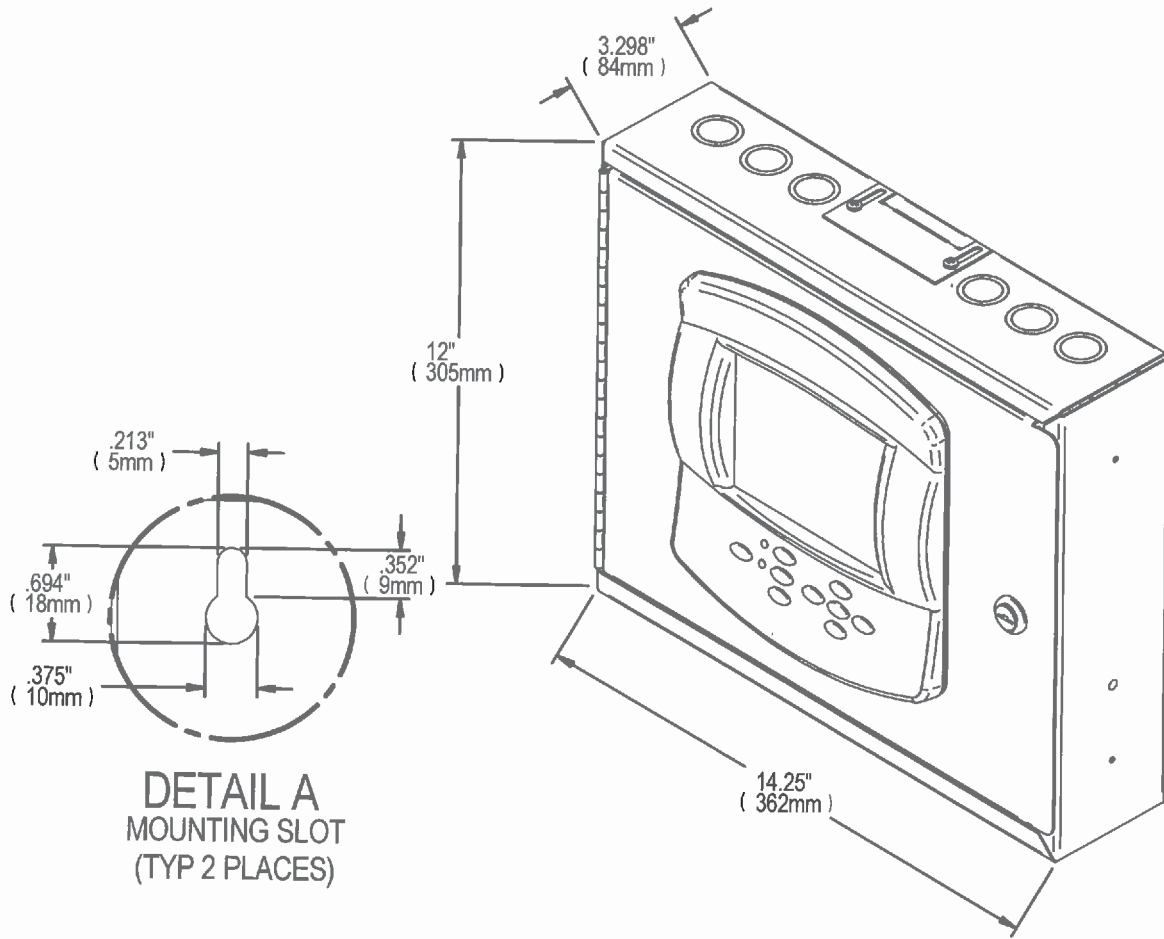
\* Components are not supplied by Liebert but are required for proper circuit operation and maintenance. Isolation valves should be located near the indoor Liebert CRV unit.

**NOTES:**

1. SCHEMATIC REPRESENTATION SHOWN. DO NOT USE FOR SPECIFIC CONNECTION LOCATIONS.
2. ONE OR MORE ADDITIONAL PRESSURE RELIEF VALVES ARE REQUIRED DOWNSTREAM OF ANY AND ALL FIELD-INSTALLED ISOLATION. DO NOT ISOLATE ANY REFRIGERANT CIRCUITS FROM OVERPRESSURIZATION PROTECTION.
3. REFER TO OUTDOOR CONDENSER DOCUMENTS ABOVE FOR PROPER TRAP PLACEMENT.

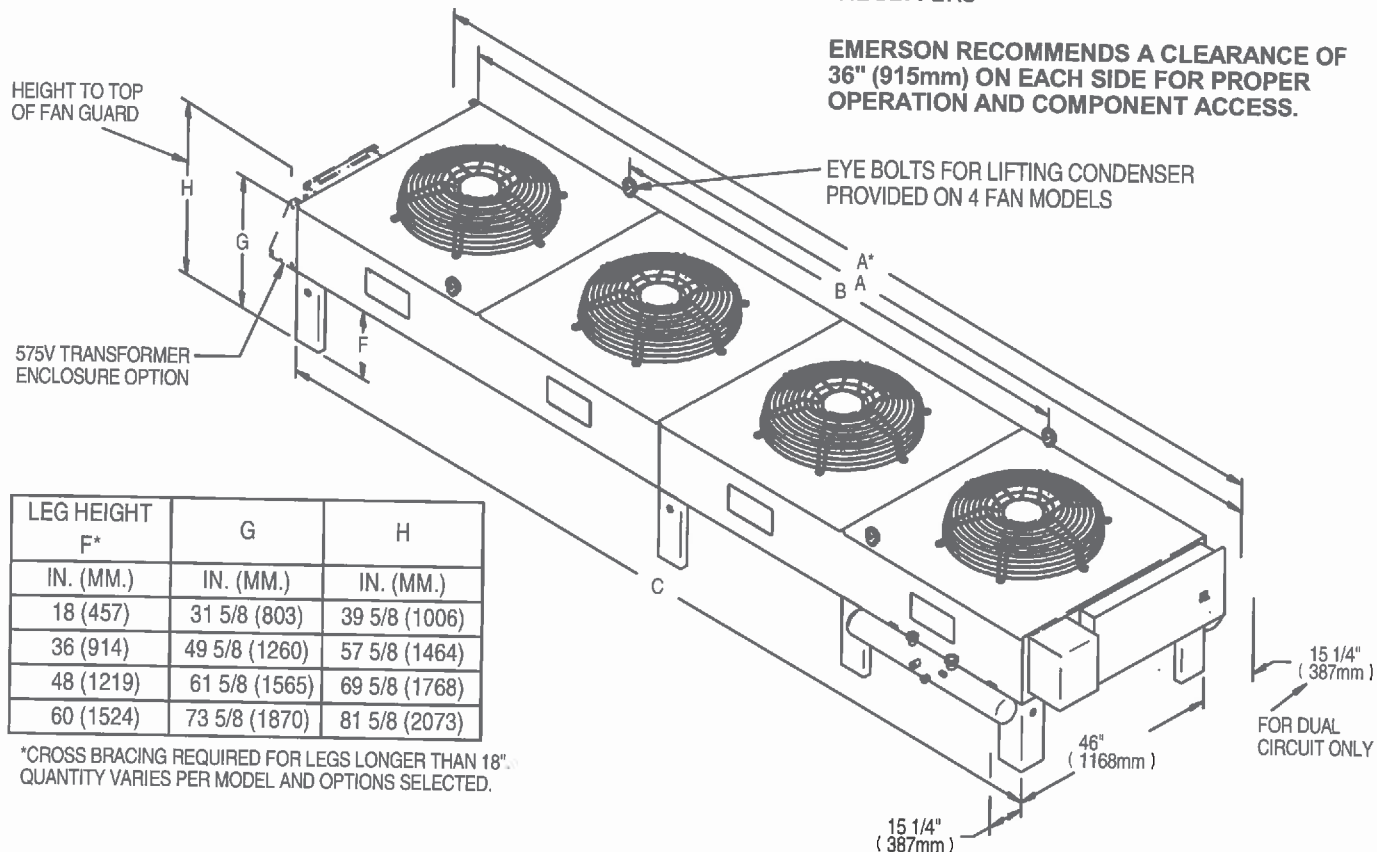
# LIEBERT vNSA

## Network Switch Assembly with iCOM: Dimensions

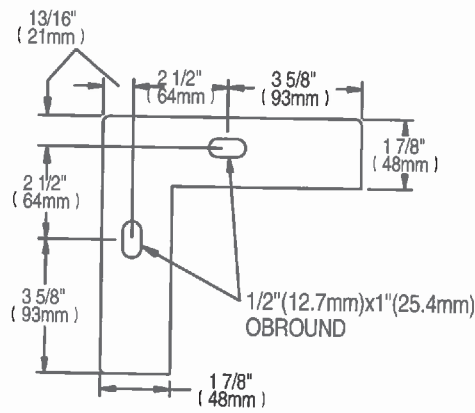
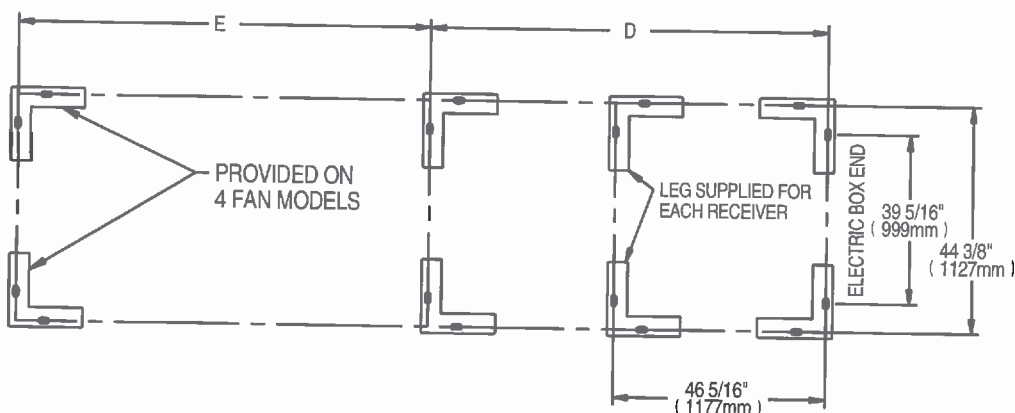


# LIEBERT MC CABINET & ANCHOR DIMENSIONAL DATA

MCM040, MCM080 & MCM160 WITH RECEIVERS



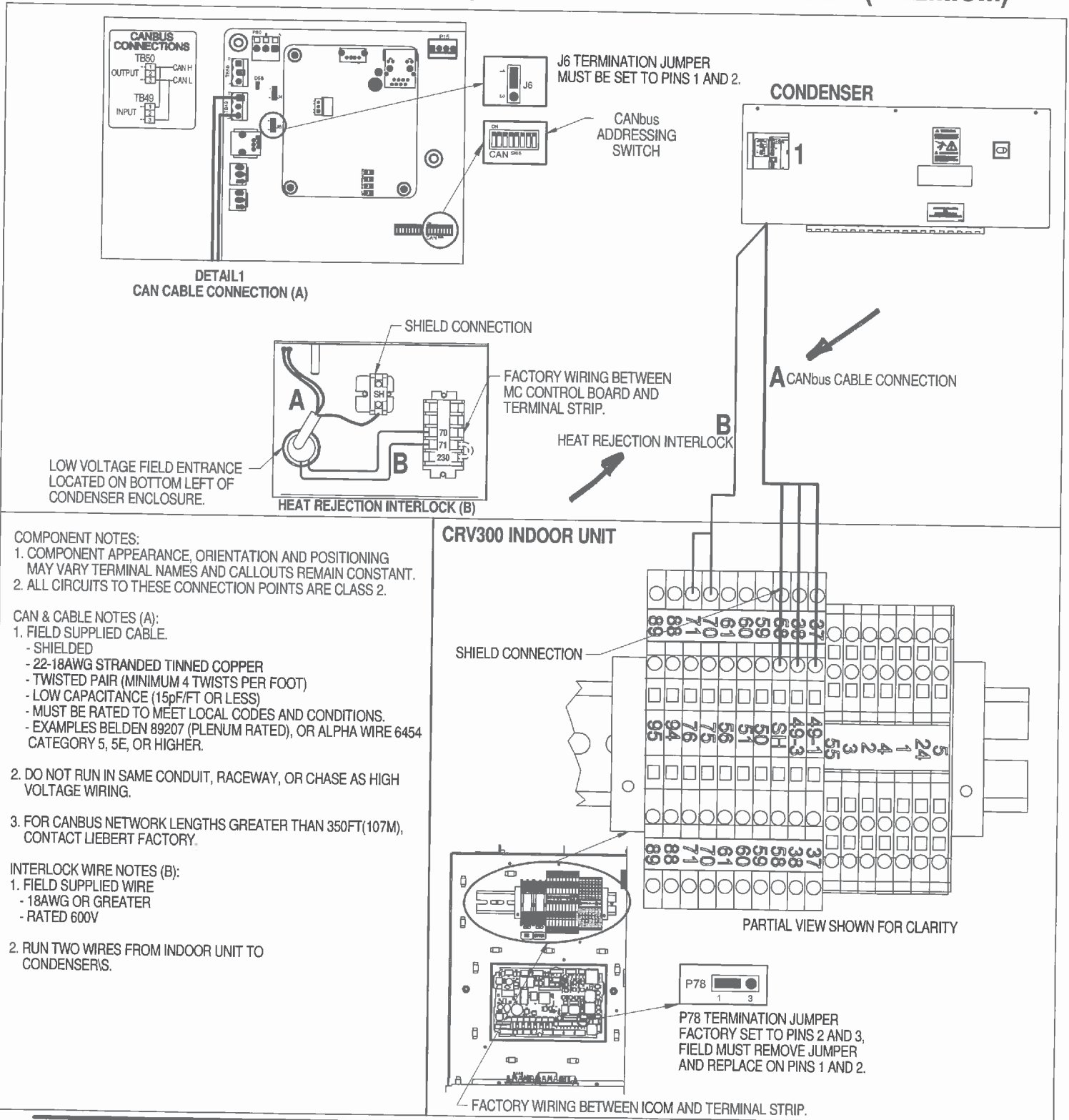
## ANCHOR PLAN



TYPICAL FOOTPRINT

LIEBERT MODEL NO.	NO. FANS	A	A* (575V)	B	C	D	E
		IN. (MM.)	IN. (MM.)	IN. (MM.)	IN. (MM.)	IN. (MM.)	IN. (MM.)
MCM040	1	57 3/16 (1453)	65 3/8 (1661)	-	48 (1219)	46 5/16 (1177)	-
MCM080	2	105 1/4 (2674)	113 7/16 (2882)	-	96 1/16 (2440)	94 7/16 (2398)	-
MCM160	4	202 7/16 (5142)	210 5/8 (5350)	113 1/2 (2883)	192 1/4 (4883)	94 7/16 (2398)	96 3/16 (2444)

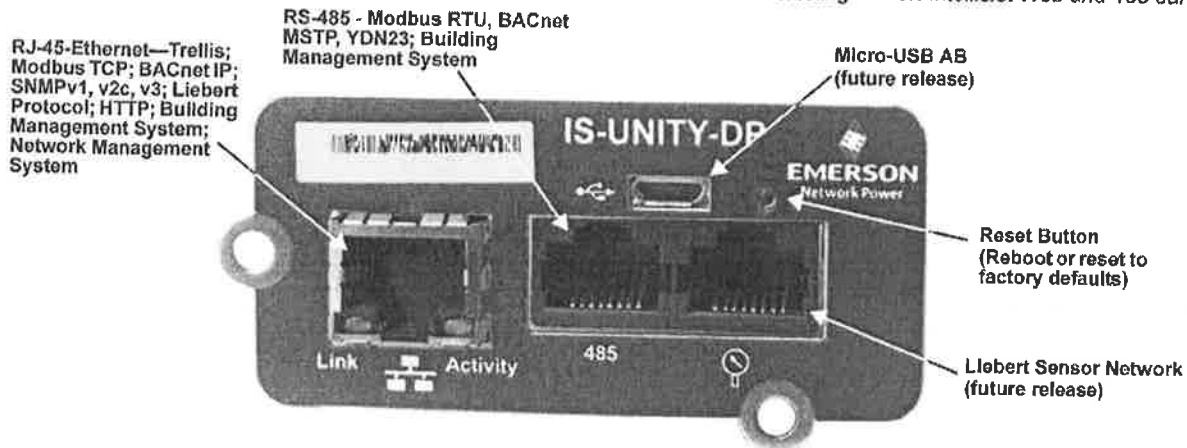
## CANbus & INTERLOCK CONNECTIONS BETWEEN CRV300mm (12in.) & LIEBERT MC CONDENSER (PREMIUM)



# LIEBERT® INTELLISLOT™ UNITY PLATFORM CARDS

## Product Specification/Installation Sheet

Liebert IntelliSlot Unity cards are a form, fit and function replacement for several existing Liebert IntelliSlot Web and 485 cards.



### Description

The Liebert IntelliSlot Unity Platform brings SNMP, BACnet IP, BACnet MSTP, Modbus TCP, Modbus RTU, YDN23 and Web management capability to many models of Emerson Network Power's power and cooling equipment. The cards employ Ethernet and RS-485 networks to monitor and manage a wide range of operating parameters, alarms and notifications.

See **Table 1** for equipment supported and **Table 2** for communication protocols supported.

### Additional Features

- SNMPv1, SNMPv2c and SNMPv3 with MIB-II support
- HTTP/HTTPS 1.1
- BootP
- DHCP per RFC2131/2132
- Remote firmware updates via a Web browser
- IPv4 and IPv6

### Compatibility With Other Emerson Products and Communication Protocols

**Table 1** Compatibility with Liebert equipment

Liebert IntelliSlot Card	Compatible with:
Liebert IS-UNITY-DP Liebert IS-UNITY-LIFE	Liebert APM™, Liebert APS™, Liebert CRV™, Liebert CW™, Liebert Challenger 3000™, Liebert DCP™, Liebert Deluxe System/3™, Liebert DS™, Liebert DSE™, Liebert eXL™, Liebert HPC™, Liebert HPC-S/M/R/W/Generic™, Liebert HPM™, Liebert NXC™, Liebert NXL™*, Liebert NXR™, Liebert PCW™/PDX™, Liebert PeX™*, Liebert XDC™, Liebert XDP™, Liebert XDP-Cray™

**Table 2** Liebert IntelliSlot card communication protocols

Liebert IntelliSlot Card (Part #)	Communication Protocol								
	HTTP HTTPS	Emerson Protocol	Remote Service Delivery Protocol	Email	SMS	SNMP v1, v2c, v3	BACnet IP BACnet MSTP	Modbus TCP Modbus RTU	YDN23 *
Liebert IS-UNITY-DP (IS-UNITY-DP)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Liebert IS-UNITY-LIFE (IS-UNITY-LIFE)	✓	✓	✓	—	—	—	—	—	—

\* YDN23 supported only for Liebert PeX and Liebert NXL.