

# CITY OF SANTA FE



## “REQUEST FOR BIDS”

‘16/33/B

CIP # 518B Fort Marcy HVAC Replacement

## PROJECT MANUAL

**BIDS DUE:**

**June 7, 2016**

**2:00 PM**

**PURCHASING OFFICE**

**CITY OF SANTA FE**

**2651 SIRINGO ROAD – BUILDING “H”**

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**PRE-BID INFORMATION**  
**(00 0100)**

**(00 0101) DEBARRED OR SUSPENDED CONTRACTORS**

A business (contractor, subcontractor, or supplier) that has either been debarred or suspended pursuant to the requirements of City Purchasing Manual or Section 13-1-177 through 13-1-180, and 13-4-17 NMSA 1978 as amended or City Purchasing provisions, shall not be permitted to do business with the City and shall not be considered for award of Contract during the period for which it is debarred or suspended.

## (00 1100) ADVERTISEMENT FOR BIDS

CITY OF SANTA FE  
CAPITAL IMPROVEMENTS PROGRAM

### ADVERTISEMENT FOR BIDS

SEALED BIDS FOR: CIP 518B – Fort Marcy HVAC Replacement  
'16/33/B

PRE-BID CONFERENCE: May 18, 2016  
2:00 PM  
CoSF Facilities Division Office  
2651 Siringo Road  
Building E  
Santa Fe, New Mexico 87505

TO BE OPENED AT: Purchasing Office  
2651 Siringo Road  
Building H  
Santa Fe, New Mexico 87505  
(505) 955-5711

TIME: 2:00 P.M. Local Prevailing Time

DATE: June 7, 2016

ADDRESSED TO: City Purchasing Officer  
City of Santa Fe  
2651 Siringo Road  
Building H  
Santa Fe, New Mexico 87505

Bids will be received until the above time, then opened publicly at the Purchasing Director's office or other designated place, and read aloud. BIDS RECEIVED AFTER THE ABOVE TIME WILL BE RETURNED UNOPENED.

Bidding Documents are posted on the City web site [www.santafenm.gov](http://www.santafenm.gov) and also may be obtained from Robert Montoya, City of Santa Fe, Public Works Department-Facilities Division Project Administrator at (505) 955-5933 or at 2651 Siringo Road, Building E, Santa Fe NM 87507. Drawings and specifications are available by hard copy or electronic copies may be obtained by calling the City of Santa Fe. A deposit is not required.

#### BIDDING DOCUMENTS MAY BE REVIEWED AND/OR OBTAINED AT THE FOLLING LOCATIONS:

City of Santa Fe Website  
[http://www.santafenm.gov/bids\\_rfps](http://www.santafenm.gov/bids_rfps)

Bidders may also pickup hardcopies of RFB# 16/33/B at  
2651 Siringo Road  
Building E  
Santa Fe, NM 87501

Bid Documents will also be on file at Builders News and Plan Room, Construction Reporter, and Dodge Reports in Albuquerque, and online through Reed Construction Data.

Bids for the project will be presented in the form of a base bid plus alternates if any. Award will be made to the bidder providing the lowest total base bid. Bidder shall Bid all items listed in the Scope of Work. Bidder shall include in the signed documents their license and classification. Contract award will be made to the responsible Bidder submitting the low Base Bid. However the Owner may award the contract to the responsible Bidder submitting the low combined Bid (Base Bid plus Additive Alternate and applicable Gross Receipts Taxes), within the amount of funds available, if applicable.

Bid security, made payable to the City of Santa Fe, the "Owner" in the amount of 5% of the proposal sum shall be submitted with the Bid. Bid security shall be in the form of a Bid Bond issued by Surety licensed to conduct business in the State of New Mexico, or by certified check. The Bidders security shall be retained by the Owner until the Contract is signed; the other Bidder's security shall be returned as soon as practicable. Failure or refusal by the successful Bidder to enter into Contract with the Owner will constitute Liquidated Damages in favor of the Owner. The bid shall also include a signed "Non-Collusion Affidavit of Prime Bidders", signed "Certificate of Non-Segregated Facilities", a signed "Certificate of Bidder Regarding Equal Employment Opportunity", a Subcontractor's Listing and; if applicable, a Local Preference Application. The project is subject to the New Mexico Office of Labor Commission, Minimum Wage Rates for the State of New Mexico. Such wage rates are bound into the Contract Documents. The successful Bidder shall, upon notice of award of contract, secure from each of his Subcontractors a signed "Non-Collusion Affidavit of Subcontractors".

The Owner reserves the right to reject any and all Bids, to waive technicalities, and to accept the Bid it deems to be in the best interest of the City of Santa Fe.

The contractor shall be required to comply with 2009 NEW MEXICO COMMERCIAL BUILDING CODE, SECTION 14.7.2.23 NMAC and the 2009 INTERNATIONAL BUILDING CODE (IBC) CHAPTER 15.

The work designated as **CIP 518B -- Fort Marcy HVAC Replacement**

The scope for this project is the renovation of the HVAC system at the Ft. Marcy Recreation Complex in Santa Fe, NM.

Bids will be received by the City of Santa Fe and will be delivered to City of Santa Fe, Purchasing Office, 2651 Siringo Road, Bldg. H Santa Fe, New Mexico 87505 **until 2:00 P.M. local prevailing time June 7, 2016. Any bid received after this deadline will not be considered.**

**ATTEST:**

  
\_\_\_\_\_  
Robert Rodarte, Purchasing Director  
City of Santa Fe, New Mexico

Received by the Santa Fe New Mexican on: 04/28/16

To be published on: 05/03/16

Received by the Albuquerque Journal on: 4/28/16

To be published on: 05/03/16

## (00 1100) BID SCHEDULE

CITY OF SANTA FE  
CAPITAL IMPROVEMENTS PROGRAM

### (00 1114) BID SCHEDULE

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- |   |   |
|---|---|
| 1. ISSUANCE OF BID PACKET:                  | May 3, 2016   |
| 2. PRE-BID CONFERENCE:                      | May 18, 2016<br><br>2:00 PM<br>CoSF Facilities Division Office<br>2651 Siringo Road<br>Building E<br>Santa Fe, New Mexico 87505 |
| 3. BID SUBMITTAL DEADLINE:                  | June 7, 2016  |
| 4. OPENINGS OF BIDS RECEIVED:               | June 7, 2016  |
| 5. RECOMMENDATION OF AWARD:                 |   |
| 6. PUBLIC WORKS/CIP AND LAND USE COMMITTEE: | June 27, 2016   |
| 7. FINANCE COMMITTEE:                       | July 5, 2016  |
| 8. CITY COUNCIL:                            | July 27, 2016   |

DATES OF CONSIDERATION BY COMMITTEES AND CITY COUNCIL ARE TENTATIVE AND SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE NOTE THAT THE CONTRACTOR BEING RECOMMENDED FOR SELECTION WILL NOT BE REQUIRED TO ATTEND COMMITTEE OR CITY COUNCIL MEETINGS.

# INSTRUCTIONS TO BIDDERS

## (00 2100)

### 1.0 DEFINITIONS AND TERMS

- 1.1 Terms used in these Bidding Documents which are defined in the Conditions of the Contract for Construction (General, Supplementary, and other conditions) have the meanings assigned to them in those Conditions.

### 2.0 EXAMINATION OF BIDDING DOCUMENTS AND SITE

- 2.1 Before submitting a Bid, each Bidder must (a) examine the Bidding Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress, or performance of the work, (c) familiarize himself with Federal, State, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress, or performance of the work, and (d) study and carefully correlate the Bidder's observations with the Bidding Documents.
- 2.2 On request, the Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.
- 2.3 The lands upon which the work is to be performed rights-of-way for access thereto, and other lands designated for use by the Contractor in performing the work are identified in the Bidding Documents.
- 2.4 The submission of a Bid will constitute an incontrovertible representation by the Bidder that has complied with every requirement of this Section and that the Bidding Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work.

### 3.1 BIDDING DOCUMENTS

#### 3.2 COPIES OF BIDDING DOCUMENTS

- 3.2.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement may be obtained as indicated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good and complete condition within fifteen (15) calendar days after opening of Bids.
- 3.2.2 Complete sets of Bidding Documents shall be used in preparing Bids; the Owner does not assume responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 3.2.3 The Owner, in providing for copies of Bidding Documents available on the above terms, does so only for the purpose of obtaining Bids on the work and does not confer a license or grant for any other use.

#### 3.3 INTERPRETATIONS

- 3.3.1 All questions about the meaning or intent of the Bidding Documents shall be submitted to the Purchasing Officer in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by the Owner as having received the Bidding Documents. Questions received less than ten (10) days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 3.3.2 Bidders and Subcontractors shall promptly notify the Owner in writing. Addenda will be mailed or delivered to all parties who have received Bid packages. Request/Questions received less than ten (10) days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretation or clarifications will be without legal effect.

#### 3.4 SUBSTITUTE MATERIAL AND EQUIPMENT

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "of-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that substitute "of-equal" item of material or equipment may be furnished or used by the Contractor if acceptable to the Owner, application of such acceptance will not be considered by the Owner until after the "effective date of the Contract." The

procedure for submittal of any such application by the Contractor and consideration by the Owner is set forth in the Contract Documents.

### **3.5 ADDENDA**

- 3.5.1 No oral interpretations of the meaning of the specifications or other pre-bid documents will be binding. Oral communications are permitted in order to make assessment for an addendum. **ANY QUESTIONS CONCERNING THE BID SHOULD BE ADDRESSED PRIOR TO BID OEPNING DATE.**

Every request for such interpretations should be in writing addressed to Robert Rodarte, Purchasing Officer, 2651 Siringo Road, Bldg H, Santa Fe, New Mexico 87505 and to be given consideration must be received at least ten (10) days prior to the date fixed for the opening of the bids.

- 3.5.2 Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be delivered to all prospective bidders not later than three (3) days prior to the date fixed for the opening of the bids. Failure of any bidder to receive any such addendum or interpretations shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

- 3.5.3 The City reserves the right to not comply with these time frames if a critical addendum is required or if the proposal deadline needs to be extended due to a critical reason in the best interest of the City of Santa Fe.

### **4.1 BIDDING PROCEDURES**

- 4.1 The person or persons opening the bids will adhere to the following procedure:
- 4.2 Bid – Name the Bidder and the Number of Bidder’s New Mexico Contractor’s License with a check for proper signatures.
- 4.3 Bid Bond only for the highest option bid.
- 4.4 Non-Collusion Affidavit of Prime Bidder.
- 4.5 Submittal, acknowledgement of Addenda, if any.
- 4.6 Properly executed Bid Form.
- 4.7 Equal Employment Opportunity
- 4.8 Certification of Non-segregated Facilities.
- 4.09 The state or any political subdivision of the state shall not accept a bid on a public works project subject to the Public Works Minimum Wage Act from a prime contractor that does not provide proof of required registration for itself.

If any of the other requirements have not been met, the bid shall be disqualified and considered a non-responsive bid. Any disqualified bids will not be read.

### **4.2 FORM AND STYLE OF BIDS**

- 4.2.1 Bids shall be submitted on forms identical to the form included with the Bidding Documents.
- 4.2.2 All blanks on the Bid Form shall be filled in by typewriter or manually in ink.
- 4.2.3 Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and, in case of discrepancy between the two, the amount written in words shall govern.
- 4.2.4 Any interlineation, alteration, or erasure must be initialed by the signer of the Bid.
- 4.2.5 All requested Additive or Deductive Alternate Bids shall be Bid. If no change in the Base Bid is required, enter “No Change.”

- 4.2.6 Where there are two or more major items of work (identified as “Bid Lots”) for which separate quotations are requested, the Bidder may, at his discretion, submit quotations for any or all items, unless otherwise specified. Additionally, the Bidder may submit a lump sum price for all lots for which the Bidder has submitted separate quotations.
- 4.2.7 Each copy of the Bid shall include the complete name of the Bidder and a statement that the Bidder is a sole proprietor, a partnership, by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the applicable New Mexico Certificate of Incorporation number or Certificate of Authority number. The Bid shall include the current Contractor’s license number and type, and the current Contractor’s preference number. A Bid submitted by an agent shall have a current Power of Attorney attached certifying the agent’s authority to bind the Bidder.
- 4.2.8 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).
- 4.2.9 The address, to which communications regarding the Bid are to be directed, must be shown.

### **4.3 BID SECURITY**

- 4.3.1 Bid security only for the highest option bid in an amount equal to at least 5% of the amount of the Bid shall be a bond provided by a Surety company authorized to do business in this State, or the equivalent in cash, or otherwise supplied in a form satisfactory to the Owner. All Bonds shall be executed by such sureties as are named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies.
- 4.3.2 The Bid security shall be in the amount of five percent (5%) of the highest Bid amount submitted, unless otherwise stipulated, pledging that the Bidder will enter into a Contract with the Owner in the terms stated herein and will furnish bonds covering the faithful performance of the Contract and payment of all obligations arising there under. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the Bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.
- 4.3.3 The Owner will have the right to retain the Bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.
- 4.3.4 When the Bidding Documents require Bid security, noncompliance by the Bidder requires that the Bid be rejected.
- 4.3.5 If a Bidder is permitted to withdraw his Bid before award, no action shall take place against the Bidder or the Bid Security.

### **4.4 PRE-BID CONFERENCE**

- 4.4.1 The Owner of Record shall conduct a **Mandatory** Pre-Bid Conference approximately ten (10) calendar days prior to the Bid opening date stated in the Invitation for Bid with failure to attend to disqualify any bids.
- 4.4.2 The Owner of Record and his consultants, as applicable, shall be represented. Prospective Bidders and Prospective Subcontractors should ask questions regarding substitutions and/or request clarification of the Bidding Documents. The failure of a Bidder, Subcontractor, or Vendor to attend shall be interpreted to mean that the Bid Documents are clear and acceptable to all non participants at the Pre-Bid Conference. Such clarity and acceptability shall be presumed with respect to all Bidders.
- 4.4.3 Questions and requests for clarification are to be presented in written form. Responses will be written and issued as Addenda. No verbal response shall be binding.

### **4.5 RESIDENT PREFERENCE & LOCAL PREFERENCE**

#### **INTENT AND POLICY**

The city recognizes that the intent of the state resident preference statute is to give New Mexico businesses and contractors an advantage over those businesses, manufacturers and contractors from outside the State of New Mexico. The underlying

policy is to give a preference to those persons and companies who contribute to the economy of the State of New Mexico by maintaining businesses and other facilities within the state and giving employment to residents of the state (1969 OP. Att'y Gen. No. 69-42). The city also has adopted a policy to include a local preference to those persons and companies who contribute to the economy of the County of Santa Fe by maintaining businesses and other facilities within the county and giving employment to residents of the county.

#### APPLICATION-IN-STATE AND OUT OF STATE BIDDERS

With acknowledgment of this intent and policy, the preference will only be applied when bids are received from in-state and county businesses, manufacturers and contractors that are within 5% of low bids received from out-of-state businesses, manufacturers and contractors (13-1-21 (A) -1-21 (F) and 13-4-2 (C) NMSA 1978).

To be considered a resident for application of the preference, the in-state bidder must have included a valid state purchasing certification number with the submitted bid.

Thus it is recommended that in-state bidders obtain a state purchasing certification number and use it on all bids, in order to have the preference applied to their advantage, in the event an out-of-state bid is submitted. In submitting a bid, it should never be assumed that an out-of-state bid will not be submitted.

For information on obtaining a state purchasing certification number, the potential bidder should contact the State of New Mexico Taxation and Revenue.

All resident preferences shall be verified through the State Purchasing Office. Applications for resident preference not confirmed by the state Purchasing Office will be rejected. The certification must be under the bidder's business name submitting the bid.

#### NON-APPLICATION-COMPETING IN-STATE BIDDERS

If the lowest responsive bid and the next responsive bids within 5% of the lowest bid are all from the state of New Mexico, then the resident preference will not be applied and the state purchasing certification number will not be considered. To be considered an in-state bidder in this situation, the bidders must meet the definition criteria of Chapter 13-1-21 (A) (1) and Chapter 13-4-2 (A) NMSA 1978. After examining the information included in the bid submitted, the city Purchasing Director may seek additional information of proof to verify that the business is a valid New Mexico business. If it is determined by the city Purchasing Director that the information is not factual and the low responsive bid is actually an out-of-state bidder and not a New Mexico business, then the procedures in the previous section may be applied.

If the bidder has met the above criteria, the low responsive "resident" bid shall be multiplied by .95. If that amount is then lower than the low responsive bid of a "non-resident" bidder, the award will be based taking into consideration the resident preference of 5%.

#### APPLICATION FOR LOCAL PREFERENCE

For the purposes of this section, the terms resident business and resident manufacturer shall be defined as set out in Section 13-1-21 NMSA 1978; the term local as applied to a business or manufacturer shall mean:

Principal Office and location must be stated: To qualify for the local preference, the principal place of business of the enterprise must be physically located within the Santa Fe County Geographic Boundaries. The business location inserted on the Form must be a physical location, street address or such. DO NOT use a post office box or other postal address. Principal place of business must have been established no less than six months preceding application for certification.

The PREFERENCE FACTOR for resident and local preferences applied to bids shall be .95 for residents and .90 for local. The local preference for proposals shall be 1.10.

New Mexico Resident Veteran Business Preference: New Mexico law, Section 13-1-22 NMSA 1978, provides a preference in the award of a public works contract for a "resident veteran business". Certification by the NM Department of Taxation and Revenue for the resident veteran business requires the Offeror to provide evidence of annual revenue and other evidence of veteran status.

An Offeror who wants the veteran business preference to be applied to its proposal is required to submit with its proposal

the certification from the NM Department of Taxation and Revenue and the sworn affidavit attached hereto as Appendix E.

If an Offeror submits with its proposal a copy of a valid and current veteran resident business certificate, 7%, 8%, or 10% of the total weight of all the evaluation factors used in the evaluation of proposal may be awarded.

The local preference or resident business preference is not cumulative with the resident veteran business preference.

Bids for Goods and Services. When bids for the purchase of goods or services pursuant to Section 22 are received, the lowest responsive bid received from those bidders in the first category listed below shall be multiplied by the Preference Factor. If the resulting price of that bid receiving the preference is lower than or equal to the lowest bid of all bids received, the contract shall be awarded to that bidder receiving the preference. If no bids are received from bidders in the first category, or if the bid receiving the preference does not qualify for an award after multiplication by the Preference Factor, the same procedure shall be followed with respect to the next category of bidders listed to determine if the bid qualifies for award. The priority of categories of bidders is:

- (1) Local business
- (2) Resident business

Proposals for Goods and Services. When proposals for the purchase of goods or services pursuant to Section 23 are received, the evaluation score of the proposal receiving the highest score of all proposals from those proponents in the first category listed above shall be multiplied by the Preference Factor. If the resulting score of that proposal receiving the preference is higher than or equal to the highest score of all proposals received, the contract shall be recommended to that proponent receiving the preference. If no proposals are received from proponents in the first category, or if the proposal receiving the preference does not qualify for an award after multiplication by the Preference Factor, the same procedure shall be followed with respect to the next category of proposals listed to determine if a proponent qualifies for award.

Qualifications for Resident Preference. No resident business or manufacturer, as defined, shall be given any preference in the awarding of contracts for furnishing goods or services to the city, unless it shall have qualified with the State Purchasing Agent as a resident business or manufacturer and obtained a certification number as provided in Section 13-1-22 NMSA 1978. The certification number must be submitted with its bid for an offeror to qualify for this preference. The Central Purchasing Office shall determine if a resident preference is applicable to a particular offer on a case by case basis.

Qualifications for Local Preference. The Central Purchasing Office shall have available a form to be completed by all bidders/proponents who desire to apply for the local preference as a local business. The completed form with the information certified by the offeror must be submitted by the bidders/proponents with their bid or proposal to qualify for this preference.

Limitation. No offeror shall receive more than a 10% preference pursuant to this section on any one offer submitted. A bidder may not claim cumulative preferences.

Application. This section shall not apply to any purchase of goods or services when the expenditure of federal and/or state funds designated for a specific purchase is involved and the award requirements of the funding prohibit resident and/or local preference(s). This shall be determined in writing by the department with the grant requirements attached to the Purchasing Office before the bid or request for proposals is issued.

Exception. The City Council at their discretion can approve waiving the Local Preference requirements for specific projects or on a case by case basis if it is the City's best interest to do so.

**New Mexico Resident Preference Number (if applicable) \_\_\_\_\_**

#### **4.6 SUBCONTRACTORS**

4.6.1 The threshold amount for this project is \$5,000.00. The General Contractor must list all Subcontractors who will perform work in excess of this threshold. Only one Subcontractor may be listed for each category as defined on by the Contractor. The Subcontractor Fair Practice Act (13-4-31 through 13-4-43 NMSA 1978) shall apply.

The Bidder shall list the Subcontractors or material suppliers he proposes to use for all trades or items on the Subcontractor Listing Form attached to the Bidding Document. If awarded the contract, the Bidder shall use the firm listed, or himself if "General Contractor has been listed, unless a request for a change or substitution is approved by the Owner of any reason as outlined herein.

- 4.6.2 The Owner shall consider any request for a change in the listed forms if the Bidder can furnish evidence of being able to perform the work in a manner more satisfactory and beneficial to both the Owner and the Bidder by not using the listed form. Satisfactory reasons for a substitution may include the inability to bond or lack of evidence of being able to furnish acceptable materials on schedule. Also, if the Bidder has made a legitimate error in listing a low Subcontractor, a request for substitution, made after the Bid Opening with the Owner's approval, will be considered. The proof of error must be conclusive, based upon the approval of said evidence by the listed Subcontractor or material supplier and/or any other confirmation satisfactory to the Owner.
- 4.6.3 The Bidder shall not list himself as the supplier or as the Subcontractor for any trade unless he has previously performed work of this type or can prove to the Owner's satisfaction that he actually has or will obtain, fully adequate facilities and plans to perform the work with his own forces.
- 4.6.4 Omission or non-compliance with the intent of the Subcontractor Listing will be grounds for considering a Bid as non-responsive.
- 4.6.5 Prior to the award of the Contract, the Owner will notify the Bidder in writing if, after due investigation and written findings of fact, has reasonable and substantial objection to any person or organization on such list and refuses in writing to accept such person or organization, the Bidder may, at his option, (1) withdraw his Bid, or (2) submit an acceptable substitute Subcontractor with no increase in his Bid Price. In the event of withdrawal under this paragraph, Bid security will not be forfeited.
- 4.6.6 The successful Bidder shall, within seven (7) calendar days of notification of selection for the award of Contract for the work, submit the following information to the Owner:
- (A) A signed list of the proprietary names and the suppliers of principal items or systems of materials and equipment proposed for the work; and
  - (B) A list signed by all Subcontractors proposed for the principal portions of the work in accordance with the Subcontractors Listing Form submitted with the Bid.
- 4.6.7 The successful Bidder will be required to establish to the satisfaction of the Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the work described in the Bidding Documents.
- 4.6.8 Persons and organizations proposed by the Bidder and to whom the Owner has made no reasonable objection under the provisions of Paragraph 4.5.7 must be used on the work for which they were proposed and shall not be changed except with the written consent of the Owner.
- 4.6.9 No successful Bidder shall be required to employ any Subcontractor, other person, or organization against whom he has reasonable objection.

#### **4.7 SUBMISSION OF BIDS**

- 4.7.1 Bids shall be submitted at the time and place indicated in the Invitation for Bid and shall be submitted in a sealed envelope marked with the Project title and name and address of the Bidder, New Mexico License # \_\_\_\_\_, and accompanied by the Bid Security, Subcontractors Listing, and other required documents listed in the Bid Documents.
- 4.7.2 The envelope shall be addressed to:
- Purchasing Agent/City of Santa Fe  
2651 Siringo Road, Building 'H'  
Santa Fe, NM 87505
- The following information shall be provided on the front of the Bid envelope: Invitation for Bid number, date of opening, time of opening, and New Mexico License Number. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BIDS ENCLOSED" on the face thereof.
- 4.7.3 Bids received after the date and time for receipt of Bids will be returned unopened.
- 4.7.4 The Bidder shall assume full responsibility for timely delivery of Bids at the office of the City's Purchasing

Division, including those Bids submitted by mail. Hand-delivered Bids shall be submitted at the front desk of the City Purchasing Division and will be clocked in at the time received, which must be prior to the time specified. Bids will then be held for public opening.

4.7.5 Oral telephonic, e-mailed or telegraphic Bids are invalid and will not receive consideration.

#### **4.8 CORRECTION OR WITHDRAWAL OF BIDS**

4.8.1 A Bid containing a mistake discovered before Bid Opening may be modified or withdrawn by a Bidder prior to the time set for Bid Opening by delivering written or telegraphic notice to the location designated in the Invitation for Bid as the place where Bids are to be received.

4.8.2 Bid security, if required, shall be in an amount sufficient for the Bid as modified or resubmitted in conformance with Section 4.2.

4.8.3 Withdrawn Bids may be resubmitted up to the time and date designated for the receipt of Bids, provided they are then fully in conformance with the Bid Documents.

4.8.4 After Bid Opening, no modifications in Bid Prices or other provisions of Bids shall be permitted. A low Bidder alleging a material mistake of fact which makes his Bid non-responsive may be permitted to withdraw his Bid if:

(A) The mistake is clearly evident on the face of the Bid document; or

(B) The Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made.

Any decision by the Owner to permit or deny the withdrawal of a Bid on the basis of a mistake contained therein shall be supported by a determination setting forth the grounds for the decision. If withdrawal is permitted, Bid security will not be forfeited.

#### **4.9 NOTICE OF CONTRACT REQUIREMENTS BINDING ON BIDDER**

4.9.1 In submitting this Bid, the Bidder represents that he has familiarized himself with the nature and extent of the following requirements of the Conditions of the Construction Contract (General, Supplementary, and Other Conditions).

(A) Definitions - Sections 1.0 to 1.17;

(B) Bribes, Gratuities, and Kickbacks - Section 4.0;

(C) Contract Bond Requirements - Section 4.2;

(D) Equal Employment Opportunity - Labor Standards Provisions and other listed within the Contract Documents.

#### **4.10 REJECTION OR CANCELLATION OF BIDS**

4.10.1 An Invitation for Bid may be canceled, or any or all Bids may be rejected in whole or in part, when it is in the best interest of the Owner. A determination containing the reasons shall be made part of the Project file. Bid security for rejected Bids shall be returned to the Bidder.

#### **4.11 PROTESTS**

4.11.1 Any Bidder, Offeror, or Contractor who is aggrieved in connection with this procurement (Bid) may protest to the City Purchasing Agent and the Owner in accordance with the requirements. The protest should be made in writing within twenty-four (24) hours after the facts or occurrences giving rise thereto, but in no case more than within fifteen (15) calendar days after the facts or occurrences giving rise thereto.

4.11.2 The complete procedures and requirements regarding protest are available from the Purchasing Office upon request.

#### **4.12 COMPETITIVE SEALED BIDS**

4.12.1 Contracts solicited by competitive sealed Bids shall require that the base Bid amount exclude the applicable state gross receipts taxes or applicable local option taxes, but that the contracting agency shall be required to pay the applicable taxes including any increase in the applicable tax which becomes effective after the date the Contract is entered into. The applicable gross receipts taxes or local option taxes shall be shown as a separate amount on each billing or request for payment made under the contract.

#### **5.1 CONSIDERATION OF BIDS**

#### **5.2 RECEIPT, OPENING, AND RECORDING**

5.2.1 Bids received on time will be opened publicly and will be read aloud, and an abstract of the amounts of the Base Bids and Alternates or Bid items, if any, will be made available to the Bidders. Each Bid shall be open to public inspection. The Owner shall have the right to waive any informalities or irregularities in any Bid or Bids received and to accept the Bid or Bids which are in the Owner's best interest.

#### **5.3 BID EVALUATION AND AWARD**

5.3.1 It is the intent of the Owner to award a Contract to the responsible Bidder submitting the lowest base bid provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available and is in the best interest of the City. The unreasonable failure of a Bidder to promptly supply information in connection with an inquiry with respect to responsibility is grounds for a determination that the Bidder is not a responsible Bidder.

5.3.2 Discrepancies in the Bid Form between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

5.3.3 Acceptance of Alternates: Owner reserves the right to accept any alternate in any order.

#### **5.4 NOTICE OF AWARD**

A written Notice of Award shall be issued by the Owner after review and approval of the Bid and related documents by the Governing Authority, "as defined in the Supplementary Conditions", with reasonable promptness.

#### **5.5 IDENTICAL BIDS**

5.5.1 When two or more of the Bids submitted are identical in price and are the low Bid, the City Purchasing Agent or the Owner may:

- (A) Award pursuant to the identical low bid provisions of the City Purchasing Manual;
- (B) Award to a resident local business if the identical low Bids are submitted by a resident or local business and a non-resident business;
- (C) Award to resident or local manufacturer if the identical low Bids are submitted by a resident or local manufacturer and a resident business;
- (D) Award by lottery to one of the identical low Bidders; or
- (E) Reject all Bids and re-solicit Bids or proposals for the required services, construction, or items of tangible personal property.

#### **5.6 CANCELLATION OF AWARD**

5.6.1 When in the best interest of the public, the Owner may cancel the award of any Contract at any time before the execution of said contracts by all parties without any liability against the Owner.

#### **6.1 POST-BID INFORMATION**

## **6.2 RETURN OF BID SECURITY**

All Bid security in the form of checks, except those of the two lowest Bidders, will be returned immediately following the opening and checking of the Bids. The retained Bid security of the unsuccessful of the two lowest Bidders, if in the form of a check, will be returned within fifteen (15) days following the award of contract. The retained Bid security of the successful Bidder, if in the form of a check, will be returned after a satisfactory Contract bond has been furnished and the Contract has been executed. Bid securities in the form of Bid bonds will be returned only upon the request of the unsuccessful Bidder, but will be released by the City Purchasing Agent after the Notice of Award is sent by the Owner.

## **6.3 NOTICE TO PROCEED**

The Owner will issue a written Notice to Proceed to the Contractor stipulating the date from which Contract Time will be charged and the date Contract Time is to expire, subject to valid modifications of the Contract authorized by Change Order.

## **6.4 FAILURE TO EXECUTE CONTRACT**

Failure to return the signed Contract with acceptable Contract Bonds and Certificate of Insurance within fifteen (15) calendar days after the date of the Notice of Award shall be just cause for the cancellation of the award and the forfeiture of the Bid security, which shall become damages sustained. Award may then be made to the next lowest responsible Bidder, or the work may be re-advertised and constructed under Contract or otherwise, as the Owner may decide.

## **6.5 CONTRACTOR'S QUALIFICATION STATEMENT**

## **6.6 CONTRACT BONDS REQUIREMENTS**

6.6.1 The successful Bidder, where the Contract price exceeds twenty five thousand dollars (\$25,000), shall post a one hundred percent (100%) Performance Bond and one hundred percent (100%) Labor and Material Payment Bond. Bonds shall be executed on Performance Bond and Labor and Material Bond forms attached hereto, with amount payable conforming to the terms of the Contract. Surety shall be a company licensed to do business in the State of New Mexico and acceptable to the Owner.

## **6.7 INSURANCE REQUIREMENTS**

6.7.1 The selected Bidder shall purchase and maintain, with a company or companies licensed to do business in the State of New Mexico, Liability and Property Insurance as required by law.

6.7.2 The insurance shall be in limits not less than those stated in the insurance for, enclosed in the Bid package, or greater if required by law.

6.7.3 The insurance coverage shall include worker's compensation, employers liability, comprehensive general liability (Premises Operations, independent contractual liability, explosion and collapse hazard, underground hazard, personal injury), Comprehensive automobile liability (owned and hired), excess liability (umbrella form), and all-risk builder's risk. For more specific insurance requirements refer to page 8 of the AIA agreement.

6.7.4 All insurance coverage must be maintained for the entire life of the project. Products and completed operations coverage shall be maintained for a minimum period of one (1) year after final payment.

6.7.5 A valid certificate of insurance must be submitted to the Owner prior to issuance of a Notice-to-Proceed.

## **7.0 MINIMUM WAGE RATES**

7.1 Pursuant to the requirements of any Contract entered into in excess of sixty thousand dollars (\$60,000) for construction, alteration, demolition, or repair, or any combination of these, including painting and decorating of public buildings or public works, is subject to the minimum wage rate determination issued by the Office of the Labor Commissioner for this project. This project is subject to **SF-16-0377-B**.

7.2 The Bidder shall ensure that, in submitting his Bid, the minimum wage rate determination, include herein, has been utilized in preparing his Bid.

- 7.3 A summary of the City of Santa Fe Ordinance No. 2003-8, passed by the Santa Fe City Council on February 26, 2003 is attached. The proponent or bidder will be required to submit the proposal or bid such that it complies with the ordinance to the extent applicable. The recommended Contractor will be required to comply with the ordinance to the extent applicable, as well as any subsequent changes to the Ordinance throughout the term of this contract.

**8.0 OTHER INSTRUCTIONS TO BIDDERS**

- 8.1 The Owner will make copies of such reports available to any Bidder requesting them. These reports are not guaranteed as to accuracy or completeness, nor are they part of the bidding documents. Before submitting his Bid, each Bidder shall, at his own expense, make such additional investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the work in accordance with the time, price, and other terms and conditions of the Bidding Documents.
- 8.2 It shall be the responsibility of the successful Bidder to secure from the New Mexico Regulations & Licensing Department, Construction Industries Division (CID) such permits or licenses required to carry out the construction.

**9.0 NEW MEXICO LABOR AND INDUSTRIAL DIVISION OF THE LABOR DEPARTMENT CONTRACTOR AND SUBCONTRACTOR REGISTRATION**

- 9.1 Registration with the Labor and Industrial Division of the Labor Department. A contractor or subcontractor that submits a bid valued at more than fifty thousand dollars (\$50,000) for a city project that is subject to the Public Works Minimum Wage Act (13-4-10 NMSA 1978) shall be registered with the labor and industrial division of the labor department. The registration number shall be provided in the bid submitted for the contractor in the space provided and for subcontractors with work proposed over \$50,000 on the subcontractor form. After the bid opening, the registration number(s) will be verified by the City and the bid will be determined to be non-responsive and disqualified if the registration number(s) appear to be not valid and the contractor does not provide proof of the required registration for itself or its subcontractors with work proposed over fifty thousand dollars (\$50,000). It is the responsibility of the contractor and the subcontractors to ensure the registration is completed prior to the bid opening.

**PROCUREMENT SCOPE  
(00 2400)**

**(00 2413) SCOPE OF BIDS**

The scope for this project is the renovation of the HVAC system at the Ft. Marcy Recreation Complex in Santa Fe, NM. See attached plans for the project.

**INFORMATION AVAILABLE TO BIDDERS**  
**(00 3000)**

**(00 3100) EXISTING CONDITIONS**

It is the Contractor's responsibility to verify existing conditions prior to bidding. A walk-through of each facility will be scheduled on a case by case period by the City of Santa Fe Facilities Division (505)955-5933.

**(00 3101) EXISTING FACILITY RECORD PLANS**

Current record documents are available for review upon request through the City of Santa Fe Facilities Division, Robert Montoya, (505) 955-5933.

**BID FORMS**  
**(00 4100)**

**(00 4113) BID FORM - STIPULATED SUM (Single-Prime Contract)**

Invitation No: RFB 16/33/B  
Project: CIP 518B Fort Marcy HVAC Replacement  
Contractor:

Date: June 7, 2016

This Bid is submitted to:  
CITY OF SANTA FE  
PURCHASING DIRECTOR  
2651 SIRINGO ROAD, BUILDING H  
SANTA FE, NEW MEXICO 87505

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the Owner in the form included in the Bidding Documents to perform and furnish all work as specified or indicated in the Bidding Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. The Bidder accepts all of the terms and conditions of the Invitation for Bid and Instructions to Bidders, including, without limitation, those dealing with the disposition of Bid security and other Bidding Documents. This Bid will remain subject to acceptance for \*60 days after the day of Bid opening. The Bidder shall sign and submit the Agreement between Owner and Contractor (hereinafter called Agreement) with the bonds and other documents required by the Bidding Requirements within fifteen (15) calendar days after the date of the Owner's Notice to Award.
3. In submitting this Bid, the Bidder represents, as more fully set forth in the Agreement, that:
  - A. The Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all of which is hereby acknowledged):

No. _____	Date _____
  - B. The Bidder has familiarized himself with the nature and extent of the Bidding Documents, work, site, locality, and all local condition, laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of the work.
  - C. The Bidder has carefully studied all reports and drawings of subsurface conditions which are identified in the Information Available to Bidders and accepts the determination set forth in the Information Available to Bidders of the extent of the technical data contained in such reports and drawings upon which the Bidder is entitled to rely.
  - D. The Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Bidding Documents.
  - E. The Bidder has given the City of Santa Fe written notice of all conflicts, errors, or discrepancies that he has discovered in the Bidding Documents, and the written resolution thereof by the City of Santa Fe is acceptable to the Bidder.
  - F. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or

corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporations, the Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; the Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and the Bidder has not sought by collusion to obtain for himself any advantage over any other Bidder or over the Owner. It is understood that the Owner reserves the right to reject any or all Bids and to waive any technical irregularities in the bidding.

- G. It is the intent of the City to award a Contract to the responsible Bidder submitting the lowest total, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and is in the best interest of the City.

4. The Bidder agrees that:

- A. The work to be performed under the Contract shall commence not later than ten (10) consecutive calendar days after the date of written Notice to Proceed, and that completion of the Base Bid shall be achieved not later than 365 calendar days after the date of written "Notice to Proceed", except as hereafter extended by valid written "Change Order" by the Owner.
- B. Should the Contractor neglect, refuse, or otherwise fail to complete the work within the time specified, the Contractor agrees, in partial consideration for the award of this Contract, to pay the Owner the amount of Two Hundred Fifty Dollars (\$250) per consecutive calendar days, not as a penalty, but as liquidated damages for such breach of the Contract.
- C. The above process shall include all labor, profit, insurance, taxes, etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the Contract Documents.
- D. It is understood that the Owner reserves the right to reject any or all Bids and to waive any technical irregularities in the bidding.

<b>Total Base Bid Amount</b>	(\$)
(use words)	
<b>Gross Receipt Tax (8.3125%)</b>	(\$)
(use words)	
<b>Total Base Bid Amount Plus Tax</b>	(\$)
(use words)	

5. The following documents are attached to and made a condition of this Bid:

- A. Bid-Name the Bidder and the Number of Bidder's New Mexico Contractors license with a Check for proper signatures
- B. Bid Bond only for the Highest option bid
- C. Non-Collusion Affidavit of Prime Bidder
- D. Submittal, acknowledgement of Addenda, if any
- E. Properly executed Bid Form
- F. Equal Employment Opportunity
- G. Certification of Non-segregated Facilities
- H. The state or any political subdivision of the state shall not accept a bid on a public works project subject to the Public Works Minimum Wage Act from a prime contractor that does not provide proof of required registration for itself.

If any of the above requirements have not been met, the bid shall not be read.

6. The terms used in this Bid and the Bidding and Contract Documents which are defined in the Conditions of the Construction Contract (General, Supplementary, and Other Conditions)

7. If the Bidder is:

A. AN INDIVIDUAL:

By: \_\_\_\_\_  
(Individual's Name)

doing business as:

\_\_\_\_\_

Business address

\_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

(SEAL)

B. A PARTNERSHIP:

By: \_\_\_\_\_  
(Firm Name)

\_\_\_\_\_  
(General Partner)

Business Address:

\_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

(SEAL)

C. A CORPORATION

By: \_\_\_\_\_  
(Corporation Name)

\_\_\_\_\_  
(State of Incorporation)

By: \_\_\_\_\_  
(Name of person authorized to sign)

\_\_\_\_\_  
(Title)

If a New Mexico  
Corporation: \_\_\_\_\_  
Certificate of Incorporation No. \_\_\_\_\_

If a Foreign Corporation: \_\_\_\_\_  
Certificate of Authority No.

Attest: \_\_\_\_\_  
(Secretary)

Business address: \_\_\_\_\_

Telephone: \_\_\_\_\_

D. A JOINT VENTURE

By: \_\_\_\_\_  
(Name)

Address: \_\_\_\_\_

By: \_\_\_\_\_  
(Name)

Address: \_\_\_\_\_

Each joint venture must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated in the appropriate category.

-----  
Bidder must fill in the following: (If none, write none)

NM License No.: \_\_\_\_\_ Classification: \_\_\_\_\_

NM Taxation and Revenue CRS No.: \_\_\_\_

City of Santa Fe Business Registration No.: \_\_\_\_

NM Resident Preference Number (if applicable): \_\_\_\_\_

**One Original and one copy of the Bid Submittal is required**

**SUPPLEMENT TO BID FORMS  
(00 4300-4500)**

**(00 4313) BID SECURITY FORM**

Review and Approval: This Bond has been executed by a Surety 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, United States Treasury Department.

Approved:

\_\_\_\_\_

DATE:

\_\_\_\_\_  
Owner’s Representative or Governing Authority

**THIS FORM MUST ACCOMPANY THE BID BOND**





**(00 4519) NON-COLLUSION AFFIDAVIT OF PRIME BIDDER**

STATE OF \_\_\_\_\_ )  
 )ss.  
COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_, being first duly sworn, deposes and says that:

- 1) He is the \_\_\_\_\_ of \_\_\_\_\_, the Bidder that has submitted and attached Bid;
- 2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
- 3) Such Bid is genuine and is not a collusive or sham Bid;
- 4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with the Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract or has in any manner directly or indirectly, sought by agreement or collusion or communications or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Santa Fe, or any person interested in the proposed Contract; and
- 5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

By: \_\_\_\_\_  
Title: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission expires: \_\_\_\_\_

**(00 4533) CERTIFICATION OF NONSEGREGATED FACILITIES**

(Applicable to construction contracts and related subcontracts exceeding \$10,000 which are not exempt from the Equal Opportunity Clause.)

The construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "segregated facilities" means: any waiting room, work areas, rest rooms and wash rooms, restaurants and other eating areas; time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin because of habit, local custom, or otherwise. The construction contractor agrees that (except where he has obtained identical certifications from proposed Subcontractors for specific time periods) he will obtain identical certifications from proposed SUBCONTRACTORS prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provision of the Equal Opportunity Clause and that he will retain such certifications in his files.

By: \_\_\_\_\_  
Title: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission expires: \_\_\_\_\_

## **(00 4534) INSTRUCTIONS RELATING TO LOCAL PREFERENCE CERTIFICATION FORM**

1. All information must be provided. A 10% local preference may be available for this procurement. To qualify for this preference, an offeror must complete and submit the local preference certification form with its offer. If an offer is received without the form attached, completed, notarized, and signed or if the form is received without the required information, the preference will not be applied. The local preference form or a corrected form will not be accepted after the deadline for receipt of bids or proposals.
2. Local Preference precedence over State Preference: The Local Preference takes precedence over the State Resident Preference and only one such preference will be applied to any one bid or proposal. If it is determined that the local preference applies to one or more offerors in any solicitation, the State Resident Preference will not be applied to any offers.
3. Principal Office and location must be stated: To qualify for the local preference, the principal place of business of the enterprise must be physically located within the Santa Fe County Geographic Boundaries. The business location inserted on the Form must be a physical location, street address or such. DO NOT use a post office box or other postal address. Principal place of business must have been established no less than six months preceding application for certification.
4. Subcontractors do not qualify: Only the business, or if joint venture, one of the parties of the joint venture, which will actually be performing the services or providing the goods solicited by this request and will be responsible under any resulting contract will qualify for this preference. A subcontractor may not qualify on behalf of a prime contractor.
5. Definition: The following definition applies to this preference.

A local business is an entity with its Principal office and place of business located in Santa Fe County.

A Principal office is defined as: The main or home office of the business as identified in tax returns, business licenses and other official business documents. A Principal office is the primary location where the business conducts its daily operations, for the general public, if applicable. A temporary location or movable property, or one that is established to oversee a City of Santa Fe project does not qualify as a Principal office.

Additional Documentation: If requested a business will be required to provide, within 3 working days of the request, documentation to substantiate the information provided on the form. Any business which must be registered under state law must be able to show that it is a business entity in good standing if so requested.

**(00 4534.1) LOCAL PREFERENCE CERTIFICATION FORM**

Business Name: \_\_\_\_\_

Principal Office: \_\_\_\_\_  
Street Address City State Zip Code

City of Santa Fe Business License # \_\_\_\_\_ (Attach Copy to this Form)

Date Principal Office was established: \_\_\_\_\_ (Established date must be six months before date of Publication of this RFP or RFB).

**CERTIFICATION**

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the City of Santa Fe, will provide within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Subscribed and sworn before me by \_\_\_\_\_ this \_\_\_\_\_, day of \_\_\_\_\_

My commission expires \_\_\_\_\_  
Notary Public

SEAL

**THIS FORM MUST ACCOMPANY THE BID**



**(00 4545) STATEMENT OF INTENT TO PAY PREVAILING WAGES**

**(00 4546) CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY**

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F.R. 12319-25). The implementing rules and regulations provide that any Bidder or prospective contractor, or any of their proposed Subcontractors, shall state as an initial part of the Bid or negotiations of the Contract whether he has participated in any previous Contract or subcontract subject to the equal opportunity clause; and, if so, whether he has filed all compliance reports due under applicable instructions.

Where the certification indicates that the Bidder has not filed a compliance report due under applicable instructions, such Bidder shall be required to submit a compliance report within seven calendar days after Bid opening. No Contract shall be awarded unless such report is submitted.

---

CERTIFICATION BY BIDDER

Bidder's Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

1. Bidder has participated in a previous Contract or subcontract subject to the equal Opportunity Clause.

\_\_\_\_\_ Yes                      \_\_\_\_\_ No

2. Compliance reports were required to be filed in connection with such Contract or subcontract.

\_\_\_\_\_ Yes                      \_\_\_\_\_ No

---

Certification - The information above is true and complete to the best of my knowledge and belief.

\_\_\_\_\_  
Name and Title of Signer (please type)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**AGREEMENT FORMS**  
**(00 5200)**

**(00 5213) AGREEMENT** (AIA A101 – 2007 Standard Form of Agreement Between Owner and Contractor (Stipulated Sum))

**(00 5214) AIA GENERAL CONDITIONS** (AIA A201 – 2007 General Conditions of the Contract for Construction)



**AIA**<sup>®</sup>

# Document A101<sup>™</sup> – 2007

## *Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum*

AGREEMENT made as of the      day of      in the year

**FOR BIDDING PURPOSES ONLY**

**BETWEEN** the Owner:

City of Santa Fe  
200 Lincoln Ave.  
Santa Fe, New Mexico 87501

and the Contractor:

TO BE DETERMINED

for the following Project:

The scope for this project is the renovation of the HVAC system at the Ft. Marcy Recreation Complex in Santa Fe, NM.

The Engineer:

M&E Engineerin  
1222 Lisa Street  
Santa Fe, New Mexico 87505  
office phone 505-983-2389

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201<sup>™</sup>-2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.

## TABLE OF ARTICLES

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### ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

### ARTICLE 2 THE WORK OF THIS CONTRACT

§ 2.1 The Contractor shall fully execute the Work described in the Fort Marcy Recreation Complex HVAC Replacement, Construction Documents

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

*(Paragraph deleted)*

The date of commencement of the Work will be the date on the Notice To Proceed from the Owner.

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

N/A

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than One hundred eighty ( 180 ) calendar days from the date of commencement,

*(Paragraphs deleted)*

, subject to adjustments of this Contract Time as provided in the Contract Documents. Liquidated damages of one thousand dollars (\$1,000.00) per calendar day will apply for work not completed by the Substantial Completion date.

Init.

## ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$ ), plus tax at the rate of 0.083125 in the amount of (\$), for a total Contract Sum of (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

*(Paragraph deleted)*

### § 4.3

*(Paragraphs deleted)*

The Contract Sum is also based on the deleted work described in section 2.1.(3) and the changes in the scope of work described in section 2.2, for an additional cost reduction of \$.

*(Table deleted)*

§ 4.4 Allowances included in the Contract Sum, if any:

Item	Price
------	-------

## ARTICLE 5 PAYMENTS

### § 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the Engineer by the Contractor and Certificates for Payment issued by the Engineer, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

§ 5.1.3 Provided that an Application for Payment is received by the Engineer not later than the 1st day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the 21st day of the month. If an Application for Payment is received by the Engineer after the application date fixed above, payment shall be made by the Owner not later than twenty one (21) days after the Engineer receives the Application for Payment.

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Engineer may require. This schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™-2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing..
- 3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Engineer has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201-2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Engineer shall determine for incomplete Work, and
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

**§ 5.1.8**

*(Paragraphs deleted)*

Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

*(Paragraph deleted)*

**§ 5.2 FINAL PAYMENT**

**§ 5.2.1** Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Engineer.

**§ 5.2.2** The Owner’s final payment to the Contractor shall be made no later than 21 days after the issuance of the Engineer’s final Certificate for Payment, or as follows:

Within fifteen days of the Contractor’s request for final payment has been submitted to the City, provided the Owner has received the Consent of Surety and Waivers and Releases of Liens from the Contractor.

**ARTICLE 6 DISPUTE RESOLUTION**

**§ 6.1 INITIAL DECISION MAKER**

The City will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

*(Paragraphs deleted)*

**§ 6.2 BINDING DISPUTE RESOLUTION**

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:

- Arbitration pursuant to Section 15.4 of AIA Document A201–2007
- Litigation in a court of competent jurisdiction
- Other *In accordance with New Mexico Public Works Mediation Act 13-4C-1 through 13-4C-11, NMSA 1978*

**ARTICLE 7 TERMINATION OR SUSPENSION**

**§ 7.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

**§ 7.2** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** The Owner’s representative:

Robert Montoya

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Project Administrator  
Facilities Division, Public Works Department  
City of Santa Fe  
2651 Siringo Rd., Bldg. "E"  
Santa Fe, New Mexico 87505  
Office phone (505) 955-5933

§ 8.3 The Contractor's representative:

TO BE DETERMINED

§ 8.4

*(Paragraphs deleted)*

Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.5 Other provisions:

§ 8.5.1 INDEMNIFICATION

The Contractor shall indemnify, hold harmless and defend the City from all losses, damages, claims or judgements, including payments of all attorneys' fees and costs on account of any suit, judgment, execution, claim, action or demand whatsoever arising from Contractor's performance under this Agreement as well as the performance of Contractor's employees, agents, representatives and subcontractors.

*(Paragraphs deleted)*

§ 8.5.2 APPROPRIATIONS

The terms of this Agreement are contingent upon sufficient appropriations and authorization being made by the City for the performance of this Agreement. If sufficient appropriations and authorization are not made by the City, this Agreement shall terminate upon written notice being given by the City to the Contractor. The City's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.

§ 8.5.3 THIRD PARTY BENEFICIARIES

By entering into this Agreement, the parties do not intend to create any right, title or interest in or for the benefit of any person other than the City and the Contractor. No person shall claim any right, title or interest under this Agreement or seek to enforce this Agreement as a third party beneficiary of this Agreement.

§ 8.5.4 STATUS OF CONTRACTOR; RESPONSIBILITY FOR PAYMENT OF EMPLOYEES AND SUBCONTRACTORS

A. The Contractor and its agents and employees are independent contractors performing professional services for the City and are not employees of the City. The Contractor, and its agents and employees, shall not accrue leave, retirement, insurance, bonding, use of City vehicles, or any other benefits afforded to employees of the City as a result of this Agreement.

B. Contractor shall be solely responsible for payment of wages, salaries and benefits to any and all employees or subcontractors retained by Contractor in the performance of the services under this Agreement.

Init.

C. The Contractor shall comply with City of Santa Fe Minimum Wage, Article 28-1-SFCC 1987, as well as any subsequent changes to such article throughout the term of this Agreement.

**§ 8.5.5 CONFLICT OF INTEREST**

The Contractor warrants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under this Agreement. Contractor further agrees that in the performance of this Agreement no persons having any such interests shall be employed.

**§ 8.5.6 ASSIGNMENT: SUBCONTRACTING**

The Contractor shall not assign or transfer any rights, privileges, obligations or other interest under this Agreement, including any claims for money due, without the prior written consent of the City. The Contractor shall not subcontract any portion of the services to be performed under this Agreement without the prior written approval of the City.

**§ 8.5.7 RELEASE**

The Contractor, upon acceptance of final payment of the amount due under this Agreement, releases the City, its officers and employees, from all liabilities, claims and obligations whatsoever arising from or under this Agreement. The Contractor agrees not to purport to bind the City to any obligation not assumed herein by the City unless the Contractor has express written authority to do so, and then only within the strict limits of that authority.

**§ 8.5.8 INSURANCE**

A. The contractor, at its own cost and expense, shall carry and maintain in full force and effect during the term of this Agreement, comprehensive general liability insurance covering bodily injury and property damage liability, in a form and with an insurance company acceptable to the City, with limits of coverage in the maximum amount which the City could be held liable under the New Mexico Tort Claims Act for each person injured and for each accident resulting in damage to property. Such insurance shall provide that the City is named as an additional insured and that the City is notified no less than 30 days in advance of cancellation for any reason. The Contractor shall furnish the City with a copy of a Certificate of Insurance as a condition prior to performing services under this Agreement.

B. Contractor shall also obtain and maintain Workers' compensation insurance, required by law, to provide coverage for Contractor's employees throughout the term of this Agreement. Contractor shall provide the City with evidence of its compliance with such requirement.

**§ 8.5.9 RECORDS AND AUDIT**

The contractor shall maintain, throughout the term of this Agreement and for a period of three years thereafter, detailed records that indicate the date, time and nature of services rendered. These records shall be subject to inspection by the City, the Department of Finance and Administration, and the State Auditor. The City shall have the right to audit the billing both before and after payment. Payment under this Agreement shall not foreclose the right of the City to recover excessive or illegal payments.

**§ 8.5.10 APPLICABLE LAW: CHOICE OF LAW: VENUE**

Contractor shall abide by all applicable federal and state laws and regulations, and all ordinances, rules and

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regulations of the City of Santa Fe. In any action, suit or legal dispute arising from this Agreement, the Contractor agrees that the laws of the State of New Mexico shall govern. The parties agree that any action or suit arising from this Agreement shall be commenced in a federal or state court of competent jurisdiction in New Mexico. Any action or suit commenced in the courts of the State of New Mexico shall be brought in the First Judicial District Court.

**§ 8.5.11 AMENDMENT**

This Agreement shall not be altered, changed or modified except by an amendment in writing executed by the parties hereto.

**§ 8.5.12 NON-DISCRIMINATION**

During the term of this Agreement, Contractor shall not discriminate against any employee or applicant for an employment position to be used in the performance of services by Contractor hereunder, on the basis of ethnicity, race, age, religion, creed, color, national origin, ancestry, sex, gender, sexual orientation, physical or mental disability, medical condition, or citizenship status.

**§ 8.5.13 SEVERABILITY**

In case any one or more of the provisions contained in this Agreement or any application thereof shall be invalid, illegal or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein and any other application thereof shall not in any way be affected or impaired thereby.

**8.5.14 NOTICES**

Any and all notices provided for hereunder shall be in writing and shall be deemed delivered, given and received when (i) personally delivered, or (ii) five (5) days after the same are deposited in the United States Postal Service mail, postage prepaid, certified mail, return receipt requested, addressed to the applicable party at the address indicated below for each party, or at such other address as may be designated by either party in a written notice to the other party:

OWNER: Facilities Division, Public Works Department  
City of Santa Fe  
PO Box 909  
Santa Fe, NM 87504-0909

CONTRACTOR: TO BE DETERMINED

**8.5.15 NEW MEXICO TORT CLAIMS ACT**

Any liability incurred by the City of Santa Fe in connection with this agreement is subject to the immunities and limitations of the New Mexico Tort Claims Act, Section 41-4-1, et. seq. NMSA 1978, as amended. The City and its "public employees" as defined in the New Mexico Tort Claims Act, do not waive any limitation of liability pursuant to law. No provision in this Agreement modifies or waives any provision of the New Mexico Tort Claims Act.

**8.5.16 TERM AND EFFECTIVE DATE**

This Agreement shall be effective when signed by the City and the Contractor, whichever occurs last, and terminate on TO BE DETERMINED, unless sooner pursuant to section 7, infra.

**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
<i>(Row deleted)</i>			
§ 9.1.4 The Specifications:			
<i>(Paragraph deleted)</i>			
The specifications are included in the Drawings			

§ 9.1.5 The Drawings:  
*(Paragraphs deleted)*  
 Fort Marcy Recreation Complex HVAC Replacement  
*(Table deleted)*

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

*(Paragraphs deleted)*  
 None

**ARTICLE 10 INSURANCE AND BONDS**

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

*(Paragraph deleted)*

Type of insurance or bond	Limit of liability or bond amount (\$0.00)
Performance and Payment Bonds	100% of the Contract amount
Commercial General Liability	\$1,000,000 per occurrence, \$2,000,000 general aggregate
Automobile Liability	\$500,000 combined single limit
Workers Compensation	\$100,000 each accident, \$100,000 disease, each employee
Workers Compensation	\$500,000 disease, policy limit

IN WITNESS WHEREOF, the parties have executed this Agreement on the date set forth below.

CITY OF SANTA FE:

\_\_\_\_\_  
JAVIER M. GONZALES, MAYOR

DATE: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
YOLANDA Y. VIGIL  
CITY CLERK

APPROVED AS TO FORM:

 3/1/12  
\_\_\_\_\_  
KELLEY A. BRENNAN,  
CITY ATTORNEY

CONTRACTOR:  
TO BE DETERMINED

\_\_\_\_\_  
BY:  
NM LICENSE #:  
CRS #:  
CITY BUSINESS REGISTRATION #:

APPROVED:

\_\_\_\_\_  
OSCAR RODRIGUEZ  
FINANCE DIRECTOR

Business Unit/Line Item

Init.

**BONDS, CERTIFICATES AND NOTICES**  
**(006100-6200)**

**(00 6101) BID BOND**

(Insert AIA Document A310 with bid.)

**(00 6113.13) PERFORMANCE BOND**

(Insert copy of executed Performance Bond later.)

**(00 6113.16) LABOR AND MATERIAL BOND**

(Insert copy of executed Labor and Material Payment Bond later.)

**(00 6216) CERTIFICATE OF LIABILITY INSURANCE**

(Insert copy of project-specified Certificate of Liability Insurance later.)

**(00 6217) WORKERS' COMPENSATION INSURANCE**

(Insert copy of project-specified Workers' Compensation Insurance later.)

**(00 6218) NOTICE TO PROCEED**

**SAMPLE**

DATE  
NAME  
ADDRESS  
CITY/STATE/ZIP

RE:

Dear:

**“OFFICIAL NOTICE-TO-PROCEED”**

On \_\_\_\_\_, the City Council awarded a Construction Contract to your firm for the above noted project.

This letter shall serve as official Notice-to-Proceed with the work described for this project in the Contract Documents and \_\_\_\_\_.

The award of the Contract is based on your Bid proposal dated \_\_\_\_\_, in the amount of \$ \_\_\_\_\_.

Based on the date of issuance of this notice, as starting date, \_\_\_\_\_, and the ( ) calendar day time limit, the entire work under this Contract shall be substantially completed by \_\_\_\_\_, after which time liquidated damages as outlined in the project specifications will apply.

At the Pre-Construction conference on \_\_\_\_\_, the City Contract Compliance Officer provided you with a Wage Rate Poster which you are to display on the job site. Please comply with the requirements for filing payroll statements with the State Labor Commission and the City Contract Compliance Officer.

Please acknowledge receipt of this notice and return signed copies to the Owner (City of Santa Fe, Public Works Department, Facilities Division).

Sincerely,

xc: Project/Book File

RECEIPT ACKNOWLEDGED:

\_\_\_\_\_  
By:

\_\_\_\_\_  
Date

**GENERAL CONDITIONS OF THE CONTRACT  
(00 7200)**

***In the case of conflicting requirements between the AIA General Conditions and these General Conditions, the most stringent requirement will apply.***

**(00 7213) GENERAL CONDITIONS**

NOTICE

This document has been prepared by the Capital Improvements Program (CIP) and Contract Compliance staff of the City of Santa Fe for use in construction projects.

DOCUMENT - DIVISION 00 7213

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

(THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES;  
CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH  
RESPECT TO ITS COMPLETION OR MODIFICATION.)

TABLE OF ARTICLES

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## **ARTICLE 1**

### **CONTRACT DOCUMENTS**

#### **1.1 DEFINITIONS**

##### **1.1.1 THE CONTRACT DOCUMENTS**

The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary, and Other Conditions), the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) written interpretation issued by the City of Santa Fe pursuant to Subparagraph 2.2.6, or (4) a written order for a minor change in the work issued by the City of Santa Fe pursuant to Paragraph 12.4. The Contract Documents do not include Bidding Documents such as the Advertisement or Invitation to Bid, the Instructions to Bidders, sample forms, the Contractor's Bid, or portions of Addenda relating to any of these, or any other documents, unless specifically enumerated in the Owner-Contractor Agreement.

##### **1.1.2 THE CONTRACT**

The Contract Documents form the Contract for Construction. This 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 only by a Modification as defined in Subparagraph 1.1.1. The Contract Documents shall not be construed to create any contractual relationship of any kind between the City of Santa Fe and the Contractor, but the City of Santa Fe shall be entitled to performance of obligations intended for his benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the City of Santa Fe and any Subcontractor or Sub-subcontractor.

##### **1.1.3 THE WORK**

The work comprises the design and completed construction required by the Contract Documents, and includes design specifications, and all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

##### **1.1.4 THE PROJECT**

The Project is the total design and construction of which the work performed under the Contract Documents may be the whole or a part.

#### **1.2 EXECUTION, CORRELATION AND INTENT**

**1.2.1** No fewer than two (2) copies of the Contract Documents shall be signed by the Owner and the Contractor. If either the Owner or the Contractor or both do not sign the Conditions of the Contract, Drawings, Specifications, or any of the other Contract Documents, the City of Santa Fe shall identify such Documents.

**1.2.2** By executing the Contract, the Contractor represents that he 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.

**1.2.3** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings. In the event of a conflict between the Contract Documents, the more stringent requirements shall govern.

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

#### **1.3 OWNERSHIP AND USE OF DOCUMENTS**

**1.3.1** All designs, drawings, specifications, notes, and other work developed in the performance of this Contract shall be and remain the sole property of the Owner and may be used on any other work without additional compensation to the City of Santa Fe. With respect thereto, the City of Santa Fe agrees not to assert any rights and not to establish any claims under the design patent or copyright laws.

## ARTICLE 2

### CITY OF SANTA FE

#### 2.1 DEFINITION

2.1.1 The City of Santa Fe is the person lawfully license to practice City of Santa Fe, or an entity lawfully practicing City of Santa Fe identified as such in the Owner-Contractor Agreement, and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term “City of Santa Fe” means the City of Santa Fe or his authorized representative.

#### 2.2 ADMINISTRATION OF THE CONTRACT – FACILITIES DIVISION

2.2.1 The City of Santa Fe will provide administration of the Contract as hereinafter described.

2.2.2 The City of Santa Fe will be the Owner’s Agent during construction and until final payment is due. The City of Santa Fe will advise and consult with the Owner. The Owner’s instructions to the Contractor shall be forwarded through the City of Santa Fe t. City of Santa Fe shall have the authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with Subparagraph 2.2.17.

2.2.3 The City of Santa Fe shall submit to the Owner, for approval, a list of critical inspection points based upon the construction schedule furnished by the Contract (Paragraph 4.11.1). The City of Santa Fe and his staff (including the on-site representative, if agreed upon) shall make at least three (3) weekly visits to the site at those critical points and at other times as the City of Santa Fe deems appropriate during the progress of the work. Additionally, the City of Santa Fe shall familiarize himself with the progress and quality of the work and determine if the work is proceeding in accordance with the Contract Documents. On the basis of on-site observations, as the City of Santa Fe, he shall guard the Owner against defects and deficiencies in the construction. Should the City of Santa Fe determine that any portion of the work varies from the intent of the Contract Documents he shall immediately notify the Contractor and the Owner of the non-compliance and the nature of the work required to correct such non-compliance. The City of Santa Fe shall recommend to the Owner, in writing, to issue a “stop work order” for any portion of the work that does not substantially comply with the intent of the Contract Documents, except as follows.

2.2.4 The City of Santa Fe shall not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work. Additionally, the City of Santa Fe shall not be responsible for the Contractor’s failure to carry out the work in accordance with the Contract Documents. The City of Santa Fe shall reject work, which does not meet or exceed the standards established by the Contract Documents. Whenever, in his reasonable opinion, he considers it necessary or advisable to ensure the proper implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of any work in accordance with the provisions of the Contract Documents whether or not such work is then fabricated, installed or completed.

2.2.5 The City of Santa Fe shall at all times have access to the work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the City of Santa Fe may perform his functions under the Contract Documents.

2.2.6 Based on the City of Santa Fe’s observations and an evaluation of the Contractor’s Application for Payment, the City of Santa Fe will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in Paragraph 9.4.

2.2.7 The City of Santa Fe will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and the Contractor.

2.2.8 The City of Santa Fe will render interpretations necessary for the proper execution or progress of the work, with reasonable promptness and in accordance with any time limit agreed upon. Either party to the Contract may make written request to the City of Santa Fe for such interpretations.

2.2.9 Claims, disputes, and other matters in question between the Contractor and the Owner relating to the execution or progress of the work or the interpretation of the Contract Documents shall be referred to the City of Santa Fe for decision which he will render in writing within a reasonable time.

2.2.10 All interpretations and decisions of the City of Santa Fe shall be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. In his capacity as interpreter and judge, he will endeavor to secure faithful performance by both the Owner and the Contractor, will not show partiality to either, and will not be liable for the result of any interpretation or decision rendered in good faith in such capacity.

2.2.11 The City of Santa Fe’s decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

- 2.2.12 The City of Santa Fe will have authority to reject work which does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the work in accordance with Subparagraph 7.7.2 whether or not such work is then fabricated, installed or completed. However, neither the City of Santa Fe's authority to act under this Subparagraph 2.2.12, nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the City of Santa Fe to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the work.
- 2.2.13 The City of Santa Fe will review and approve or take other appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and samples, but only for conformance with the design concept of the work and with the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The City of Santa Fe's approval of a specific item shall not indicate approval of an assembly of which the time is a component.
- 2.2.14 The City of Santa Fe will prepare Change Orders in accordance will Article 12 and will have authority to order minor changes in the work as provided in Subparagraph 12.4.1.
- 2.2.15 The City of Santa Fe will conduct inspections to determine the dates of Substantial Completion and Final Completion, will receive and forward to the Owner for the Owner's review of written warranties and related documents required by the Contract and assembled by the Contractor and will issue a final Certificate of payment upon compliance with the requirements of Paragraph 9.9
- 2.2.16 If the Owner and City of Santa Fe agree, the City of Santa Fe will provide one or more Project Representatives to assist the City of Santa Fe in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of any such Project Representative shall be as set forth in an exhibit to be incorporated in the Contract Documents.
- 2.2.17 The duties, responsibilities and limitations of authority of the City of Santa Fe as the Owner's representative during construction as set for in the Contract Documents will not be modified or extended without written consent of the Owner, the Contractor and the City of Santa Fe .
- 2.2.18 In case of the termination of the employment of the City of Santa Fe, the Owner shall appoint a City of Santa Fe whose status under the Contract Documents shall be that of the former City of Santa Fe.

**ARTICLE 3**

**OWNER**

**3.1 DEFINITION**

- 3.1.1 The Owner is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term "Owner" means the Owner or his authorized representative.

**3.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER**

- 3.2.1 The Owner shall, at the request of the Contractor, at the time of execution of the Owner-Contractor Agreement, furnish to the Contractor reasonable evidence that he had made financial arrangements to fulfill his obligations under the Contract. Unless such reasonable evidence is furnished, the Contractor is not required to execute the Owner-Contractor Agreement or to commence the work.
- 3.2.2 (Not used)
- 3.2.3 Except as provided in Subparagraph 4.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments, and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- 3.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the work.
- 3.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, all copies of Drawings and Specifications reasonable necessary for the execution of the work.
- 3.2.6 The Owner shall forward all instructions to the Contractor through the City of Santa Fe.

3.2.7 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to work by Owner or by Separate Contractors, Payments and Completion, and Insurance in Articles 6, 9 and 11 respectively.

### **3.3 OWNER'S RIGHT TO STOP THE WORK**

3.3.1 If the Contractor fails to correct defective work as required by Paragraph 13.2 or persistently fails to carry out the work in accordance with the Contract Documents, the Owner, by a written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the work, or any portion thereof, until the cause of such order has been eliminated; however, this right of the Owner to stop the work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

### **3.4 OWNER'S RIGHT TO CARRY OUT THE WORK**

3.4.1 If the Contractor defaults or neglects to carry out the work in accordance with the Contract Documents and fails within seven days after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after seven days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy he may have, make good such deficiencies. In such case, an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the City of Santa Fe's additional services made necessary by such default, neglect or failure. Such action by the Owner and the amount charged to the Contractor are both subject to the prior approval of the City of Santa Fe. If the payments then or thereafter due to the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

## **ARTICLE 4**

### **CONTRACTOR**

#### **4.1 DEFINITION**

4.1.1 The Contractor is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term "Contractor" means the Contractor or his authorized representative.

#### **1.2 REVIEW OF CONTRACT DOCUMENTS**

4.1.2 The Contractor shall carefully study and compare the Contract Documents and shall at once report to the City of Santa Fe and the Owner any error, inconsistency or omission he may discover. The Contractor shall not be liable to the Owner or the City of Santa Fe for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall perform no portion of the work at any time without Contract Documents or, where required, approved Shop Drawings, Product Data or Samples for such portion of the work.

#### **4.3 SUPERVISION AND CONSTRUCTION PROCEDURES**

4.3.1 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.

4.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the work under a contract with the Contractor.

4.3.3 The Contractor shall not be relieved from his obligations to perform the work in accordance with the Contract Documents either by the activities or duties of the City of Santa Fe in his administration of the Contract, or by inspections, tests or approvals required or performed under Paragraph 7.8 by persons other than the Contractor.

#### **4.4 LABOR AND MATERIALS**

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

4.4.2 The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the task assigned to him.

#### **4.5 WARRANTY**

4.5.1 The Contractor warrants to the Owner and City of Santa Fe 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 conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the City of Santa Fe, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions in Paragraph 13.2.

4.5.2 The Contractor shall and hereby does warrant and guarantee all workmanship, labor, and materials performed and supplied by him or his Subcontractors for a period of one (1) year from the date of completion as evidenced by the date of the Owner's Certificate of Final Completion of this Contract. This also includes all labor required for replacing materials or equipment found to be defective with the one (1) year period. All guarantees for a longer period of time required by the work sections of these Specifications shall be secured by the Contractor from Subcontractors and delivered to the City of Santa Fe and are hereby warranted by the Contractor as much as if countersigned by him.

#### **4.6 TAXES**

4.6.1 The Contractor shall pay all sales, consumer gross receipts tax, use and other similar taxes for the work or portions thereof provided by the Contractor which are legally enacted at the time Bids are received, whether or not yet effective.

#### **4.7 PERMITS, FEES AND NOTICES**

4.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the construction permit and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the work which are customarily secured after execution of the Contract and which are legally required at the time the Bids are received.

4.7.2 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the work.

4.7.3 It is not the responsibility of the Contractor to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the City of Santa Fe in writing, and any necessary changes shall be accomplished by appropriate Modification.

4.7.4 If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the City of Santa Fe, he shall assume full responsibility therefore and shall in turn notify the Owner's Representative of such action.

#### **4.8 ALLOWANCES**

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

4.8.2 Unless otherwise provided in the Contract Documents:

- A. These allowances shall cover the cost to the Contractor, less any applicable trade, discount of the materials and equipment required by the allowance delivered at the site, and all applicable taxes.
- B. The Contractor's costs for unloading and handling on the site, labor, installations costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in this allowance;
- C. Whenever the cost is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses.

#### 4.9 SUPERINTENDENT

- 4.9.1 The Contractor shall employ a competent Superintendent and necessary assistants who shall be in attendance at the project site during the progress of the work. The Superintendent shall represent the Contractor, and all communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

#### 4.10 PROGRESS SCHEDULES

- 4.10.1 The Contractor shall, within ten (10) days after the effective date of Notice to Proceed, furnish five copies of a preliminary progress schedule covering his operations for the first thirty (30) days. The preliminary progress schedule shall be a bar graph or an arrow diagram showing the items the Contractor intends to commence and complete the various work stages, operations, and contract means planned to be started during the first thirty (30) days.
- 4.10.2 Unless otherwise specified in the Special Provisions, the Contractor shall submit for approval by the City of Santa Fe, within thirty (30) days after the effective date of Notice to Proceed, five copies of a critical-path-type analysis. The critical-path-type analysis shall include as a minimum; a graphic network diagram; a computer printout or list of activities; and a brief written explanation of the proposed schedule.
- 4.10.3 The graphic network diagram shall consist of an arrow diagram or a geometric figure and connector diagram which clearly depicts the major subdivisions of the work, the order and interdependencies of activities planned by the Contractor, as well as, activities by others which affect the Contractor's planning. The intended time for starting and completing each activity, the associated float time and the quantity and kinds of major equipment to be used shall be shown for each construction operation. For those activities lasting more than 30 days, either the estimated time for 25-50 and 75 percent completion or other significant milestones in the course of the activity, shall be shown. In addition to the actual construction operations, the network diagram shall show such items as submittal of samples and Shop Drawings, delivery of materials and equipment, construction in the area by other forces, traffic detour controls, and other significant items related to the progress of construction. The graphic network diagram shall be printed or neatly and legibly drawn to a linear scale.
- 4.10.4 Activities shown shall be coordinated insofar as possible with the Contract Bid items, types of work and maximum number of activities of each type.
- 4.10.5 The computer printout or list of activities shall show for each activity the estimated duration, the earliest starting and finishing dates, the latest starting and finishing dates, and float or slack time. Activities which constitute the critical sequence shall be identified, showing a total job duration equal to the Contract Time.
- 4.10.6 The written explanation shall contain sufficient information to describe the construction methods to be used and to enable the City of Santa Fe to evaluate the schedule and supporting analysis for validity and practicability. If the schedule or written explanation is not accepted by the City of Santa Fe, the Contractor shall resubmit the rejected items within ten (10) days after rejection.
- 4.10.7 The analysis may employ the use of an electric computer or may consist of a non-computer analysis if the latter is suitable to analyze the number of activities required. The adequacy of the system selected shall be acceptable to the City of Santa Fe.
- 4.10.8 The Contractor shall submit to the City of Santa Fe monthly progress status reports on dates directed by the City of Santa Fe. Such reports shall list those uncompleted activities which have less than 30 days float and which are either in progress or scheduled to be started within the next reporting period. For each of the listed activities, the following shall be shown:
- A. Starting date scheduled in last critical-path-analysis.
  - B. Actual or intended starting date.
  - C. Revised activity duration, if any.
- If the noted starting dates or duration delay the scheduled project completion date, the delay shall be named. Reasons for the delay shall be given with an explanation of the Contractor's proposed corrective action. The Contract shall also note each activity completed during the report period.
- 4.10.9 A revised critical-path-type analysis shall be submitted when one or more of the following conditions occur:
- A. When an approved change Order significantly affects the contract completion date, or the sequence of activities.
  - B. When progress of any critical activity falls significantly behind the scheduled progress.
  - C. When delay on a non-critical activity is of such magnitude as to change the course of the critical path.
  - D. At any time the Contractor elects to change any sequence of activities affecting the critical path.

The revised analysis shall be made in the same form and detail as the original submittal and shall be accompanied by an explanation of the reasons for the revisions.

- 4.10.10 The Contractor shall prosecute the work in accordance with the latest critical path type analysis. Deviations therefrom shall be submitted to the City of Santa Fe for review. In the event that the progress of items along the critical path is delayed, the Contractor shall revise his planning to include additional forces, equipment, shifts or hours necessary to meet the contract completion date. All additional cost resulting therefrom will not be borne by the Owner.

#### **4.11 DOCUMENTS AND SAMPLES AT THE SITE**

- 4.11.1 The Contractor shall maintain at the site, for the Owner, one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be available to the City of Santa Fe and shall be delivered to him for the Owner upon completion of the work.

#### **4.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

- 4.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the work by the Contractor or any Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the work.
- 4.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the work.
- 4.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the work will be judged.
- 4.12.4 The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the work or in the work of the Owner of any separate Contractor, all Shop Drawings, Product Data and Sample required by the Contract Documents.
- 4.12.5 By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the work and of the Contract Documents.
- 4.12.6 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the City of Santa Fe's approval of Shop Drawings, Product Data or Samples under Subparagraph 2.2.13 unless the Contractor has specifically informed the City of Santa Fe in writing of such deviation at the time of submission and the City of Santa Fe has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the City of Santa Fe's approval thereof.
- 4.12.7 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the City of Santa Fe on previous submittals.
- 4.12.8 No portion of the work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the City of Santa Fe as provided in Subparagraph 2.2.13. All such portions of the work shall be in accordance with approved submittals.

#### **4.13 USE OF SITE**

- 4.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not reasonably encumber the site with any materials or equipment.
- 4.13.2 The Contractor shall hold and save the Owner free and harmless from liability of any nature or kind arising from use, trespass or damage occasioned by third persons.

#### **4.14 CUTTING AND PATCHING OF WORK**

- 4.14.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the work or to make its several parts fit together properly.
- 4.14.2 The Contractor shall not damage or endanger any portion of the work or the work of the Owner or any separate contracts by

cutting, patching or otherwise altering any work, or by excavation. The Contractor shall not cut or otherwise alter the work of the Owner or any separate Contractor except with the written consent of the Owner and of such separate Contractor. The Contractor shall not unreasonably withhold from the Owner any separate Contractor his consent to cutting or otherwise altering the work.

#### **4.15 CLEANING UP**

- 4.15.1 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 the 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.
- 4.15.2 If the Contractor fails to clean up a the completion of the work, the Owner may do so as provide in Paragraph 3.4, and the cost thereof shall be charged to the Contractor.
- 4.15.3 The Contractor shall be solely responsible for performance of the following clean up:
1. Debris: Regardless of the nature of the debris, it shall be immediately cleared form the work area. Each trade shall cooperate with other trades in the removal of debris and in keeping a clean job throughout.
  2. Cleaning of All Glazes: The Contractor shall remove sealant and caulking stains and paint from all glass and shall wash and polish same. Care shall be taken not to scratch glass.
  3. Cleaning of All Painted, Decorated, and Stained Work: The Contractor shall remove all marks, stains, finger prints, and other soil or dirt from all painted, decorated, and stained work.
  4. Removal of all Temporary Protections: The Contractor shall remove all temporary protections and shall clean all floors at completion.
  5. Cleaning and polishing of all Hardware: The Contractor shall clean and polish all hardware for all trades, this shall include removal of all stains, dust dirt, paint, etc., upon completion, without scratching or otherwise marring the hardware.
  6. Removal of all Spot, Soil, and Paint from all Tile Work: The Contractor shall remove all spots, soil and paint from all tile work and shall wash the same upon completion.
  7. Cleaning of all Fixtures and Equipment: The Contractor shall clean all fixtures and equipment, removing all stains, paint, dirt, and dust.

#### **4.16 COMMUNICATIONS**

- 4.16.1 The Contractor shall communicate directly with the City of Santa Fe for design clarifications. Any fabrication or installation issues that may result in a change order or may result in a delay to the project schedule shall be communicated to both the Owner and the City of Santa Fe at the same time, and documented in writing within two business days. All oral directions from the City of Santa Fe to the Contractor shall be documented in writing to the Contractor and the Owner within one business day.

#### **4.17 ROYALTIES AND PATENTS**

- 4.17.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified; but if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the City of Santa Fe .

#### **4.18 INDEMNIFICATION**

- 4.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and the City of Santa Fe and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission on the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts an of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such negligent shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnify which would otherwise exist as to

any party or person described in this Paragraph 4.18.

- 4.18.2 In any and all claims against the Owner or the City of Santa Fe or any of their agents or employees by an employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.18 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.
- 4.18.3 The obligation of the Contractor under this Paragraph 4.18 shall not extend to the liability of the City of Santa Fe, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications, or (2) the giving of or the failure to give directions by the City of Santa Fe, his agents or employees, provided such giving or failure to give is the primary cause of the injury or damage.

## **ARTICLE 5**

### **SUBCONTRACTOR**

#### **5.1 DEFINITION**

- 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term "Subcontractor" does not include any separate Contractor or his Subcontractors.
- 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the work at the Site.

#### **5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

- 5.2.1 Unless otherwise required by the Contract Documents of the Bidding Documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner and the City of Santa Fe in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the work. The City of Santa Fe will promptly reply to the Contractor in writing stating whether or not the Owner or the City of Santa Fe, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or the City of Santa Fe to reply promptly shall constitute notice of no reasonable objection.
- 5.2.2 The Contractor shall not contract with any such proposed person or entity to whom the Owner or the City of Santa Fe has made reasonable objection under the provisions of Subparagraph 5.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

#### **5.3 SUBCONTRACTUAL RELATION**

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

**ARTICLE 6**

**WORK BY OWNER OR BY SEPARATE CONTRACTORS**

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

- 6.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar Conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, he shall make such claim as provided elsewhere in the Contract Documents.
- 6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- 6.1.3 The Owner will provide for the coordination of the work of his own forces and of each separate Contractor with the work of the Contractor, who shall cooperate therewith as provided in paragraph 6.2.

**6.2 MUTUAL RESPONSIBILITY**

- 6.2.1 The Contractor shall afford the Owner and the Separate Contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate his work with theirs as required by the Contract Documents.
- 6.2.2 If any part of the Contractor's work depends for proper execution or results upon the work of the Owner or any separate Contractor, the Contractor shall, prior to proceeding with the work, promptly report to the City of Santa Fe any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acceptance of the Owner's or the separate Contractor's work as fit and proper to receive his work, except as to defects which may subsequently become apparent in such work by others.
- 6.2.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible thereof.
- 6.2.4 Should the Contractor wrongfully cause damage to the work or property of the Owner, or to other work on the promptly remedy such damage as provided in Subparagraph 10.2.5.
- 6.2.5 Should the Contractor wrongfully cause damage to the work or property of any separate Contractor, the Contractor shall upon due notice promptly attempt to settle with such other Contractor by agreement, or otherwise to resolve the dispute. If such separate Contractor sues or initiates an arbitration proceeding against the Owner on account of any damage alleged to have been cause by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Owner's expense, and if any judgment or award against the Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys' fees and court or arbitration costs which the Owner has incurred.

**6.3 OWNER'S RIGHT TO CLEAN UP**

- 6.3.1 If a dispute arises between the Contractor and separate Contractors as to their responsibility for cleaning up as required by Paragraph 4.15, the Owner may clean up and charge the cost thereof to the Contractors responsible therefor as the City of Santa Fe shall determine to be just.

**ARTICLE 7**

**MISCELLANEOUS PROVISIONS**

**7.1 GOVERNING LAW**

- 7.1.1 The Contract shall be governed by the law of the State of New Mexico.
- 7.1.2 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements, and obligations contained in the Contract Documents. Neither part to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him thereunder, without the previous written consent of the Owner.

**7.2 WRITTEN NOTICE**

7.2.1 Written notice shall be deemed to have dully served if delivered in person to the individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice.

**7.3 CLAIMS FOR DAMAGES**

7.3.1 Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party or of any of his employees, agents or others for whose acts he is legally liable, claim shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

**7.4 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND**

7.4.1 The Contractor to whom the Contract is awarded shall furnish and pay for reputable and approved Performance and Labor and Material Payment Bonds, each for the full amount of the Contract Sum. Bonds shall be executed on standard AIA forms.

**7.5 RIGHTS AND REMEDIES**

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

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

**7.6 TESTS**

7.6.1 If the Contract Document, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the work to be inspected, tested or approved, the Contractor shall give the City of Santa Fe timely notice of its readiness so the City of Santa Fe may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals. Tests specifically called for by specifications shall be made by an independent, certified, professional testing laboratory acceptable to the City of Santa Fe, and the Contractor shall employ same and pay all charges in connection therewith. Records of tests shall be delivered to the City of Santa Fe in duplicate on acceptable forms.

7.6.2 If the City of Santa Fe determines that any work requires special inspection, testing, or approval which Subparagraph 7.6.1 does not include, he will, upon written authorization from the Owner, instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph 7.6.1. If such special inspection or testing reveals a failure of the work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the City of Santa Fe 's additional services made necessary by such failure; otherwise the Owner shall bear such costs, and an appropriate Change Order shall be issued.

**7.7 INTEREST**

7.7.1 The Owner will not pay interest on payments due and unpaid under the Contract Document.

**ARTICLE 8**

**TIME**

**8.1 DEFINITIONS**

8.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Substantial Completion of the work as defined in Subparagraph 8.1.3, including authorized adjustments thereto.

8.1.2 The date of commencement of the work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein.

8.1.3 The Date of Substantial Completion of the work or designated portion thereof is the Date certified by the City of Santa Fe and approved by the Owner when construction is deficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the work or designated portion thereof for the use for which it is intended.

8.1.4 The term "day" as used in the Contract Document shall mean "calendar" day unless otherwise specifically designated.

## **8.2 PROGRESS AND COMPLETION**

- 8.2.1 All time limits stated in the Contract Documents are the essence of the Contract.
- 8.2.2 The Contractor shall begin the work on the date of commencement as defined in Subparagraph 8.1.2. He shall carry the work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

## **8.3 DELAYS AND EXTENSIONS OF TIME**

- 8.3.1 If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner or the City of Santa Fe or by any employees of either, or by any separate Contractor employed by the Owner or by changes ordered in the work, or by labor disputes, fire, unusual delay in unavoidable casualties, or any causes beyond the Contractor's control or by delay authorized by the Owner pending arbitration, or by any other cause which the City of Santa Fe determines may justify the delay, then the Contract Time shall be extended by Change Order for such reasonable time as the City of Santa Fe may determine.
- 8.3.2 Any claim for extension of time shall be made in writing to the City of Santa Fe not more than twenty days after the commencement of the delay; otherwise it shall be waived. In the case of a continuing delay, only one claim is necessary. The Contractor shall provide an estimate of the probable effect of such delay on the progress of the work.
- 8.3.3 If written agreement is made stating the dates upon which interpretations as provided in Subparagraph 2.28 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until fifteen days after written request is made for them, and not then unless such claim is reasonable.
- 8.3.4 This Paragraph 8.3 does not exclude the recovery of damages for delay by either party under other provisions of the Contract Documents.

## **ARTICLE 9**

### **PAYMENTS AND COMPLETION**

#### **9.1 CONTRACT SUM**

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

#### **9.2 SCHEDULE OF VALUES**

- 9.2.1 Before the first Application for Payment, the Contractor shall submit to the Owner and City of Santa Fe a schedule of values allocated to the various portion of the work, prepared in such form and supported by such data to substantiate its accuracy as the Owner or City of Santa Fe may require. This schedule, unless objected to by the Owner or City of Santa Fe, shall be used only as a basis for the Contractor's Applications for payment.

#### **9.3 APPLICATIONS FOR PAYMENT**

- 9.3.1 At least ten days before the date for each progress payment established in the Owner-Contractor Agreement, the Contractor shall submit to the City of Santa Fe an itemized Application for Payment, notarized if required, supported by such data substantiating the Contractor's right to payment as the Owner or the City of Santa Fe may require, as provided elsewhere in the Contract Documents.
- 9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or the Owner payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance and transportation to the site for those materials and equipment stored off the site.
- 9.3.3 The Contractor warrants that title to all work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interest or encumbrances hereinafter referred to in this Article 9 as "liens"; and that no work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other

person performing work at the site or furnishing materials or equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

#### **9.4 CERTIFICATES FOR PAYMENT**

- 9.4.1 The City of Santa Fe will within three days after the receipt of the Contract's Application for Payment, approve the Application for Payment to the Owner with a copy to the Contractor for such amount as the City of Santa Fe determines is properly due, or notify the Contractor in writing of his reasons for withholding his approval as provided in Subparagraph 9.6.1.
- 9.4.2 The issuance of an approval of the Application for Payment will constitute a representation by the City of Santa Fe to the Owner, based on his observations at the site as provided in Subparagraph 2.2.3 and the data comprising the Application for Payment, that the work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the work is in accordance with the Contract Documents (subject to an evaluation of the work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by or performed under the Contract Documents correctable prior to completion, and that the Contractor is entitled to payment in the amount certified. However, by issuing an approval of the Application for Payment, the City of Santa Fe shall not thereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality or quantity of the work or that he has reviewed the construction means, methods, techniques, sequences procedures, or that he has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum.

#### **9.5 PROGRESS PAYMENTS**

- 9.5.1 After the City of Santa Fe has issued an approval of the Application for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.
- 9.5.2 The Contractor shall promptly pay each Subcontractor upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's work. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payment to his Subcontractors in similar manner.
- 9.5.3 The City of Santa Fe may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the City of Santa Fe on account of work done by such Subcontractor.
- 9.5.4 Neither the Owner nor the City of Santa Fe shall have any obligation to pay or to see to the payment of any moneys to any Subcontractor except as may otherwise be required by law.
- 9.5.5 No Certificate for progress payment, no progress payment, nor any partial or entire use of occupancy of the Project by the Owner shall constitute an acceptance of any work not in accordance with the Contract Documents.

#### **9.6 PAYMENT WITHHELD**

- 9.6.1 The City of Santa Fe may decline to certify payment and may withhold his Certificate in whole or in part, to the extent necessary to reasonably protect the Owner, if in his opinion he is unable to make representations to the Owner as provided in Subparagraph 9.4.2.
- 9.6.2 If the City of Santa Fe is unable to make representations to the Owner, as provided in Subparagraph 9.4.2 and to certify payment in the amount of the Application, he will notify the Contractor as provided in Subparagraph 9.4.1. If the Contractor and City of Santa Fe cannot agree on a revised amount, the City of Santa Fe will promptly issue a Certificate for Payment for the amount for which he is able to make such representations to the Owner. The City of Santa Fe may also decline to certify payment, or because of subsequently discovered evidence or subsequent observations, he may nullify the whole or any part of any Certificate for Payment previously issued, to such extent as may be necessary in his opinion to protect the Owner from loss because of:
- A) Defective work not remedied;
  - B) Third party claims filed or reasonable evidence indicating probable filing of such claims;
  - C) Failure of the Contractor or make payments properly to Subcontractors or for labor, materials or equipment;
  - D) Reasonable evidence that the work cannot be completed for the unpaid balance of the Contract Sum.

- E) Damage to the work of another Contractor;
- F) Reasonable evidence that the work will not be completed within the Contract Time; or,
- G) Failure to carry out the work in accordance with the Contract Documents.

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

## **9.7 FAILURE OF PAYMENT**

9.7.1 If the City of Santa Fe does not issue a Certificate for Payment, through no fault of the Contractor, within three days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents any amount certified by the City of Santa Fe, then the Contractor may, upon seven additional days' written notice to the Owner and the City of Santa Fe, stop the work until payment of the amount owing has been received. The Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be effected by appropriate Change Order in accordance with Paragraph 12.3.

## **9.8 SUBSTANTIAL COMPLETION**

9.8.1 When the Contractor considers that the work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in Subparagraph 8.1.3, the Contractor shall prepare for submission to the City of Santa Fe a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. When the City of Santa Fe, with the Owner, on the basis of an inspection determines that the work or designated portion thereof is substantially complete, he will then prepare a Certificate of Substantial Completion Form, AIA Document G704-1978, which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance within which the Contractor shall complete the items listed therein. Warranties required by the Contract Document shall commence on the date of Final Completion of the work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Contractor and the Owner for their written acceptance of the responsibilities assigned to them in such Certificate.

9.8.2 Upon Substantial Completion of the work or designated portion thereof and upon application by the Contractor and certification by the City of Santa Fe, the Owner shall make payment, reflecting adjustment in retainage, if any, for such work or portion thereof, as provided in the Contract Documents.

## **9.9 FINAL COMPLETION AND FINAL PAYMENT**

9.9.1 Upon receipt of written notice that the work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the City of Santa Fe will promptly make such inspection and, if he finds the work acceptable under the Contract Documents and the Contract fully performed, he will promptly issue final Certificate for Payment stating that, to the best of his observations and inspections, the work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Certificate, is due and payable. The City of Santa Fe's Final Certificate of payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in Subparagraph 9.9.2 have been fulfilled.

9.9.2 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the City of Santa Fe (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the Owner or his property might in any way be responsible have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment, and (3) if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designed by the Owner. If any Subcontractor refuses to furnish a release or waiver required by the Owner the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.9.3 If, after Substantial Completion of the work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting final completion, and the City of Santa Fe so confirms, the Owner shall, upon application by the Contractor and certification by the City of Santa Fe and without terminating the Contract, make payment of the balance for that portion of the work fully completed and accepted. If the remaining balance for work not fully completed or corrected is less than the retainage stipulated in the Contract Document, and if bonds have been furnished as provided in Paragraph 7.5, the written consent of the surety to the payment of the balance due for that portion of the work fully completed and accepted shall be submitted by the Contractor to the City of Santa Fe prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

- 9.9.4 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:
- A) Unsettled liens;
  - B) Faulty or defective work appearing after Substantial Completion;
  - C) Failure of the work to comply with the requirements of the Contract Documents; and
  - D) Terms of any special warranties required by the Contract Documents.
- 9.9.5 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.

## ARTICLE 10

### PROTECTION OF PERSONS AND PROPERTY

#### 10.1 SAFETY PRECAUTIONS AND PROGRAMS

- 10.1.1 The Contractor shall be responsible in initiating, maintaining and supervising all safety precautions and programs in connection with the work.

#### 10.2. SAFETY OF PERSONS AND PROPERTY

- 10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:
- A) All employees on the work and all other persons who may be affected thereby;
  - B) All the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and
  - C) Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities no designated for removal, relocation or replacement in the course of construction.
- 10.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.
- 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying Owners and users of adjacent utilities.
- 10.2.4 When the use of storage of explosives or other hazardous materials or equipment is necessary for the execution of the work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- 10.2.5 The Contractor shall promptly remedy all damage or loss (other than damage of loss insured under paragraph 11.3) to any property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to the acts or omissions of the Owner or the City of Santa Fe or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and no attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to his obligations under Paragraph 4.18.
- 10.2.6 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent unless otherwise designated by the Contractor in writing to the Owner and the City of Santa Fe.
- 10.2.7 The Contractor shall not load or permit any part of the work to be loaded so as to endanger its safety.

#### 10.3 EMERGENCIES

- 10.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his reasonable discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall; be determined as provided in Article 12 for Changes in the work.

## ARTICLE 11

### INSURANCE

#### 11.1 CONTRACTOR'S LIABILITY INSURANCE

- 11.1.1 The Contractor shall maintain in effect, and shall require all Subcontractors and others performing any portion of this Contract to maintain in effect, insurance of the types and respective minimum limits required. Such insurance shall cover all operations under this Contract. Maintenance of such insurance in at least the specified minimum amounts shall not relieve the Contractor or liability for loss in excess of the limits of liability specified herein or otherwise not covered by the coverage's required herein. The Contractor shall bear the cost of such insurance and include its costs in the Bid. The limits of insurance to be maintained are specified in the Agreement Between Owner and Contractor.
- 11.1.2 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the work. These Certificates shall contain a provision that coverage afforded under the policies will not be canceled until at least thirty days; prior written notice has been given to the Owner.

#### 11.2 OWNER'S LIABILITY INSURANCE

- 11.2.1 The Owner shall be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against all claims which may arise from operations under the Contract.

#### 11.3 PROPERTY INSURANCE

- 11.3.1 The Contractor shall maintain builder's risk property insurance or self-insurance, or a combination of insurance and self-insurance, upon the work at the site for at least the actual cash value thereof. The builder's risk insurance shall cover the interests of the Owner, the Contractor, Subcontractors, and Sub-subcontractors in the work. The insurance shall insure against at least the following perils: fire extended coverage, vandalism, and malicious mischief. The Contractor shall bear the cost of such insurance and include its cost in the Bid.
- 11.3.2 Any loss insured or self-insured under Subparagraph 11.3.1 is to be adjusted with the Owner and made payable to the Owner as trustee for the insured, as their interests may appear subject to the requirements of any applicable mortgage clause. The Owner shall deposit the proceeds in a separate account and shall distribute them in accordance with such agreement as the parties in interest, including the Owner, may reach. The Contractor shall pay each Subcontractor a just share of any insurance proceeds which the Contractor receives and shall require by written agreement signed by the Subcontractor that the Subcontractor will make payments to his Sub-subcontractors in a similar manner. If after such loss no other special agreement is made, replacement of damaged work shall be covered by an appropriate order.
- 11.3.3 To the extent permitted under their respective property insurance policies, the Owner and the Contractor hereby waive all rights, each against the other, for damages caused by fire or other perils to the extent covered by Insurance obtained pursuant to this Article 11 or any other property insurance applicable to the work, except such rights as they may have to the proceeds of such Insurance held by the Owner as trustee. The Owner or the Contractor, as appropriate, shall require the City of Santa Fe, other Contractors, Subcontractors, and Sub-subcontractors to similarly waive rights of subrogation or property insurers.
- 11.3.4 If the Owner finds it necessary to occupy use of any portion of the work prior to Substantial Completion, such occupancy or use shall not commence prior to the time mutually agreed to by the Owner and the Contractor and, if required by the applicable insurance or self-insurance coverage not prior to the time the builder's risk property insurer has consented to such occupancy or use. The Contractor's consent to such occupancy or use shall not be unreasonably withheld.

#### 11.4 LOSS OF USE INSURANCE

- 11.4.1 The Owner, at his option, may purchase and maintain such insurance as will insure him against loss of use of his property due to fire or other hazards, however caused.

## ARTICLE 12

## CHANGES IN THE WORK

### 12.1 CHANGE ORDERS

- 12.1.1 A Change Order is a written order to the Contractor signed by the City of Santa Fe and the Contractor and approved in writing by the Owner. A Change Order may be issued only after the execution of the Contract and shall be the only means used to order changes in the work for which the Contractor requires additional compensation, changes to the Contract Time, or changes to the Contract Sum. Minor changes in the work for which the Contractor requires no additional compensation or time shall be executed in accordance with the provision of Subparagraph 12.4.1.
- 12.1.2 The Owner, without invalidating the Contract, may order changes in the work within the general scope of the Contractor consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the work shall be authorized by Change Order and shall be performed under the applicable conditions of the Contract Documents.
- 12.1.3 The cost or credit to the Owner resulting from a change in the work shall be determined in one or more of the following ways:
- A) By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
  - B) By unit prices stated in the Contract Documents or subsequently agreed upon;
  - C) By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
  - D) By the method provided in Subparagraph 12.1.4.
- 12.1.4 If none of the methods set forth in Clauses 12.1.2., 12.1.3. or 12.1.3. is agreed upon, the Contractor, provided he receives a written order signed by the Owner, shall promptly proceed with the work involved. The cost of such work shall be determined by the City of Santa Fe on the basis of the reasonable expenditures and savings of those performing the work attributable to the change, including, in the case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, the Contractor shall keep and present, in such form as the City of Santa Fe may prescribe, an itemized accounting together with appropriate supporting data for inclusion in a Change Order. Unless otherwise provided in the Contract Documents, cost shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits, required by agreement or custom, workers' or workmen's compensation insurance; bond premiums; rental value of equipment and machinery; and the additional costs of supervision and field office personnel directly attributable to the change. Pending final determination of cost to the Owner payments on account shall be made on the City of Santa Fe's Certificate for payment. The amount of credit to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in the Contract Sum will be the amount of the actual net cost as confirmed by the City of Santa Fe. When both additions and credits covering related work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.
- 12.1.5 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted.
- 12.1.6 By submission of a Bid, the Contractor agrees and binds himself to the following method of calculating Change Order costs. The Owner also agrees to the following method of calculating the cost of any changes to the Contract. With each proposal for a change in the amount of the Contract, the Contractor shall submit an itemized breakdown of all increases or decreases in the cost of the Contractor's and all Subcontractor's and Sub-subcontractor's work to include at least the following detail in the general order listed:
- A) Material quantities and unit costs;
  - B) Labor amounts and hourly rates (identified with specific items of material to be placed or operation to be performed);
  - C) Costs inherent in use of Contractor/Sub-subcontractor owned equipment;
  - D) Equipment rental, if any;
  - E) Workmen's compensation and public liability insurance;

F) General administration, overhead, supervision, project insurance and profit, based on the following schedule:

Subtotal before Applying <u>the Percentage Shown</u>	<u>\$500 &amp; Less</u>	<u>Over \$500</u>
Contractor for work performed by his own forces	22%	19%
Contractor for work performed by Subcontractor	10%	8%
Subcontractor for work performed by his own forces	18%	15%
Subcontractor for work performed by Sub-subcontractor	10%	8%
Sub-subcontractor for work performed by his own forces	18%	15%

G) Employment taxes under FICA and FUTA; and

H) State gross receipts tax (Contractor only).

12.1.7 The quotation for work under a Change Order shall be binding for sixty (60) days from the date submitted by the Contractor.

## **12.2 CONCEALED CONDITIONS**

12.2.1 Should concealed conditions encountered in the performance of the work below the surface of the ground or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or should concealed or unknown conditions in an existing structure of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the Character provided for in this Contract, be encountered, the Contract Sum shall be equitably adjusted by change Order upon verified claim by either party made within twenty days after the first observance of the conditions.

12.2.2 If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the City of Santa Fe and Owner written notice thereof within twenty days 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 proceed in accordance with Paragraph 10.3. No such claim shall be valid unless so made. If such claims are justified and the Owner authorizes an increase in the Contract Sum, the Owner and the Contractor shall proceed to negotiate the amount of the adjustment in the Contract Sum. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the City of Santa Fe. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

12.2.3 If the Contractor claims that additional cost is involved because of, but not limited to, (1) any written interpretation pursuant to Subparagraph 2.2.8, (2) any order by the Owner to stop the work pursuant to Paragraph 3.3 where the Contractor was not at fault, (3) any written order for a minor change in the work issued pursuant to Paragraph 12.4, or (4) failure of payment by the Owner pursuant to Paragraph 9.7, the Contractor shall make such claims provided in Subparagraph 12.3.1.

## **12.3 MINOR CHANGES IN THE WORK**

12.3.1 The City of Santa Fe will 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. Such changes shall be effected by written order and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

## **ARTICLE 13**

### **UNCOVERING AND CORRECTION OF WORK**

#### **13.1 UNCOVERING OF WORK**

13.1.1 If any portion of the work should be covered contrary to the request of the City of Santa Fe or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the City of Santa Fe, be uncovered for his observation and shall be replaced at the Contractor's expense.

13.1.2 If any portion of the work has been covered which the City of Santa Fe has not specifically requested to observe prior to begin covered, the City of Santa Fe may request to see such work and it shall be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged

to the Owner. If such work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate Contractor as provided in Article 6, in which even the Owner shall be responsible for the payment of such costs.

## **13.2 CORRECTION OF WORK**

- 13.2.1 The Contractor shall promptly correct all work rejected by the City of Santa Fe 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 completed. The Contractor shall bear all costs of correcting such rejected work, including compensation for the City of Santa Fe's additional services made necessary thereby.
- 13.2.2 If, within one year after the Date of Substantial Completion of the work or designated portion thereof or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the work is found to be defective or not in accordance with the Contract Documents, 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 specific written acceptance of such condition. This obligation shall survive termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.
- 13.2.3 The Contractor shall remove from the site all portions of the work which are defective or non-conforming and which have not been corrected under Subparagraphs 4.5, 13.2.1 and 13.2.2, unless removal is specifically waived in writing by the Owner.
- 13.2.4 If the Contractor fails to correct defective or non-conforming work as provided in Subparagraph 4.5.1, 13.2.1 and 13.2.2, the Owner may correct it in accordance with Paragraph 3.4.
- 13.2.5 If the Contractor does not proceed with the correction of such defective or non-conforming work within a reasonable time fixed by written notice from the City of Santa Fe, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten days thereafter, the Owner may upon ten additional days' written notice sell such work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor including compensation for the City of Santa Fe's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.
- 13.2.6 The Contractor shall bear the cost of making good all work of the Owner or separate Contractors destroyed or damaged by such correction or removal.
- 13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 4.5 hereof. The establishment of the time period of one year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the Contractor to correct the work and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations other than specifically to correct the work.

## **13.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK**

- 13.3.1 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 a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 14**

### **TERMINATION OF THE CONTRACT**

#### **14.1 TERMINATION BY THE CONTRACTOR**

- 14.1.1 If the work is stopped for a period of thirty days under an order of court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Sub-contractor or their agents or employees or any other persons performing any of the work under a contract with the Contractor because the City of Santa Fe has not issued a Certificate for payment as provided in Paragraph 9.7 or because the Owner has not made payment thereon as provided in paragraph 9.7, then the Contractor may, upon seven additional days' written notice to the Owner and the City of Santa Fe, terminate the Contract and recover from the Owner payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment

and machinery, including reasonable profit and damages.

## 14.2 TERMINATION BY THE OWNER

- 14.2.1 If the Contractor is adjudged bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or if he persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he fails to make prompt payment to Subcontractors for material of labor, or persistently disregards laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contract Documents, then the Owner, upon certification by the City of Santa Fe that sufficient cause exists to justify such action, may without prejudice to any right or remedy and after giving the Contractor and his surety, if any, seven days written notice, terminate the employment of the Contractor and take possession of the site and of all material, tools, construction equipment and machinery thereon owned by the Contractor and may finish the work by whatever method he may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished.
- 14.2.2 If the unpaid balance of the Contract Sum exceeds the costs of finishing the work, including compensation for the City of Santa Fe's additional services made necessary thereby, and any damages sustained by the Owner as a result of the Contractor's breach, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the City of Santa Fe upon application, in the manner provided in paragraph 9.4 and this obligation or to the Owner, as the case may be, shall be certified by the City of Santa Fe upon application, in the manner provided in Paragraph 9.4 and this obligation for payment shall survive the termination of the Contract.
- 14.2.3 In the event that the Project is abandoned by the Owner, the Owner may terminate this contract at any time by giving at least seven (7) day notice to the Contractor. In the event of termination, all work completed shall become the property of the Owner. The Contractor shall be entitled to receive compensation for actual work satisfactorily completed hereunder, including reimbursable expenses authorized by the Owner which are then due.
- 14.2.4 In the event the Contractor fails to perform the work in accordance with the Contract Documents, the Owner may terminate the Contract after giving the Contractor five (5) working days notice.

## ARTICLE 15

### EQUAL OPPORTUNITY

15.1 The Contractor shall maintain policies of employment as follows:

- 15.1.1 The Contractor, all Subcontractors, and all Sub-subcontractors shall not discriminate against any employee or Applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous place, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.
- 15.1.2 The Contract, all Subcontractors, and all Sub-subcontractors shall, in all solicitation or advertisements for employees placed by them or on their behalf, state that all qualified applicant will receive consideration for employment without regard to race, religion, color, sex, or national origin.

## ARTICLE 16

### MINIMUM WAGE RATES

16.1 The Contractor warrants and agrees that he and all Subcontractors and Sub-subcontractors shall comply with all applicable provisions of the New Mexico Public Works Minimum Wage Act as outlined in the Contract Documents. Wage rates are not applicable to projects costing less than \$60,000.00. Both the State of New Mexico Wage Rate Decision and the applicable Federal wage rates are included in this document.

## **SUPPLEMENTARY CONDITIONS (00 7300)**

### **(00 7301) CITY OF SANTA FE REQUIREMENTS**

Document is intended to be used in conjunction with the General Conditions of the Contract.

#### **ADDITIONAL CONDITIONS**

- 1.1 **DEFINITIONS** - The following definitions shall apply through the Bidding Documents or Contract Documents unless otherwise specified.
- 1.2 **ADDENDUM**: Written or graphic instrument issued prior to the execution of the Contract which modifies or interprets the Bidding Documents, including Drawings and Specifications, by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed. Plural: ADDENDA
- 1.3 **ADDITIVE OR DEDUCTIVE ALTERNATE BID**: Amount stated in the Bid to be added or deducted from the amount of the Base Bid if the corresponding change in project scope or alternate materials and/or methods of construction is accepted.
- 1.4 **BASE BID**: Amount of money stated in the Bid as the sum for which the Bidder offers to perform the work, not including that work for which Alternate Bids are also submitted.
- 1.5 **BID**: A complete and properly signed proposal to do the work or designated portion thereof for the sums stipulated therein, supported by data called for by the Bidding Documents.
- 1.6 **BID LOT**: A major item of work for which a separate quotation or proposal is requested.
- 1.7 **BIDDER**: One who submits a Bid for a Prime contract with the Owner, as distinct from a Subcontractor, who submits a Bid to a Bidder. Technically, a Bidder is not a Contractor on a specific project until a contract exists between him and the Owner.
- 1.8 **BIDDING DOCUMENT**: Documents that include the Invitation for Bid, Instructions to Bidders, the Bid Form, other sample bidding and contract forms, and the proposed Contract Documents, including any Addenda issued prior to receipt of Bids. The Contract Documents proposed for the work consist of the Owner-Contractor Agreement, the Conditions of the Construction Contract (General, Supplementary, and Other Conditions), the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract.
- 1.9 **DAY**: Calendar day, which is every day shown on the calendar, beginning and ending at midnight.
- 1.10 **CENTRAL PURCHASING OFFICE**: The Central Purchasing Office is the City of Santa Fe Purchasing Department.
- 1.11 **GOVERNING AUTHORITY**: The Governing Board of the City of Santa Fe for the execution of construction contracts is the Mayor and City Manager.
- 1.12 **INVITATION FOR BID**: The Bidding Documents utilized for soliciting sealed Bids. "Invitation to Bid" shall have the same meaning as "Invitation for Bid".
- 1.13 **OWNER**: The City of Santa Fe, New Mexico.
- 1.14 **PROCUREMENT OFFICER**: The Director of the Purchasing Division, or a designee authorized to enter into or administer contracts and make written determination with respect thereto.
- 1.15 **RESPONSIBLE BIDDER**: A Bidder who submits a responsive Bid and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation, and experience are adequate to make satisfactory delivery of the services, construction, or items of tangible personal property described in the Bidding Documents (13-1-82, NMSA 1978).
- 1.16 **SUCCESSFUL BIDDER**: The lowest qualified and responsible Bidder to whom the Owner, on the basis of the Owner's evaluation, makes an award.

- 1.17 UNIT PRICES: Amounts stated in the Contract as prices per unit of measurement for materials or services as described in the Contract Documents.
- 1.18 USER: The City of Santa Fe or agencies or designated entity for whose use the Project is being constructed.

## **2.0 CONTRACT AUDIT**

The Owner shall be entitled to audit the books and records of a Contractor or any Subcontractor under any negotiated contract or subcontract other than a firm fixed-price contract to the extent that such books and records relate to the performance of such contract or subcontract. Such books and records shall be maintained by the Contractor for a period of three years from the date of final payment under the prime contract and by the Subcontractor for a period of three years from the date of final payment under the subcontract unless a shorter period is otherwise authorized in writing (13-1-161, NMSA 1978).

## **3.0 DEBARRED OR SUSPENDED CONTRACTORS**

A business (Contractor, Subcontractor, or Supplier) that has either been debarred or suspended pursuant to the requirements of Sections 13-1-177 through 13-1-180, and 13-4-11 through 13-4-17, NMSA 1978, shall not be permitted to do business with the State and shall not be considered for award of contract during the period for which it is debarred or suspended.

## **4.0 BRIBES, GRATUITIES, AND KICK-BACKS**

- 4.1 It is illegal in the State of New Mexico for any public employee to solicit or accept anything of value in connection with award of this Bid and for any person to offer or pay anything of value to any such public employee (30-24-1 through 30-24-2, NMSA 1978).
- 4.2 Pursuant to Section 13-1-191, NMSA 1978, reference is hereby made to the Criminal Laws of New Mexico (including 30-24-1, 30-23-2, and 30-41-1 through 3-41-3, NMSA 1978), which prohibit bribes, kick-backs, and gratuities and violation of which constitutes a felon. Further, the Procurement Code (13-1-28 through 13-1-199, NMSA 1978), imposes civil and criminal penalties for its violation

## **5.0 PROTESTS**

- 5.1 Any Contractor who is aggrieved in connection with a procurement may protest to the City Purchasing Agent and the Owner. The protest should be made in writing within twenty-four (24) hours after the facts or occurrences; giving rise thereto, but in no case, less than within fifteen (15) calendar days after the facts or occurrences giving rise thereto (13-1-173, NMSA 1978).
- 5.2 In the event of a timely protest under Section 5.1 (13-1-172 of the Procurement Code, NMSA 1978), the City Purchasing Agent and the Owner shall not proceed further with the procurement unless the State Purchasing Agent or the Owner makes a determination that the award of contract is necessary to protect substantial interests of the Owner (13-1-173, NMSA 1978).
- 5.3 The City Purchasing Agent or his designee shall have the authority to take any action reasonably necessary to resolve a protest of an aggrieved Contractor concerning a procurement.
- 5.4 This authority shall be exercised in accordance with adopted regulations, but shall not include the authority to award money damages or attorneys' fees (13-1-174, NMSA 1978).
- 5.5 The City Purchasing Agent or his designee shall promptly issue a determination relating to the protest. The determination shall:
- A) State the reasons for the action taken; and,
  - B) Inform the protestant of the right to judicial review of the determination pursuant to Section 13-1-183, NMSA 1978 (13-1-175, NMSA 1978).
- 5.6 A copy of the determination issued under Section 13-1-175, NMSA 1978, shall be mailed immediately to the protestant (13-1-176, NMSA 1978).

## **6.0 CONTRACT BOND REQUIREMENTS**

- 6.1 The Successful Bidder, where the Contract Price exceeds twenty five thousand dollars (\$25,000), shall post a one hundred percent (100%) Performance Bond and a one hundred percent (100%) Labor and Material Payment Bond. Bonds shall be executed on Performance Bond and Labor and Material Payment Bond forms attached hereto, with amount payable conforming to the terms of the contract. Surety shall be a company licensed to do business in the State of New Mexico and acceptable to the Owner.

6.2 Personal sureties may be accepted if the Owner so determines in advance, but in such case the amount of the Bond shall be the full Contract Price, and the sureties shall justify under oath in amounts above liabilities and exemptions aggregating double the amount of the Bond.

6.3 Special attention of Bidders is called to the requirements of Section 13-4-18 through 13-4-20, NMSA 1978 regarding a Contractor who does not have his principal place of business in the State of New Mexico for all taxes due arising out of construction services rendered under the Contract.

6.3.1 The right to sue on this Bond accrues only to the Owner and the parties to whom Sections 13-4-18 through 13-4-20, NMSA 1978 grant such right; and any such right shall be exercised only in accordance with the provisions and limitations of said statutes.

**7.0 NON-RESIDENT CONTRACTOR'S REQUIREMENTS REGARDING GROSS RECEIPTS TAX SURETY BOND**

7.1 Section 7-1-55A, NMSA 1978 provides that any person (as defined in Section 7-1-3, NMSA 1978) engaged in the construction business who does not have his principal place of business in New Mexico and enters into a prime construction contract to be performed in this State shall, at the time such contract is entered into, furnish the Director of the Revenue Division, Taxation and Revenue Department, or his delegate with a surety bond or other acceptable security in a sum equivalent to the gross receipts to be paid under the contract multiplied by the applicable rate of the gross receipts tax imposed by Section 7-9-4, NMSA 1978 to secure payment of the tax imposed on the gross receipts from the contract, and shall obtain a certificate from the Director of the Revenue Division, Taxation and Revenue Department, or his delegate that the requirements of this paragraph have been met.

7.2 If the total sum to be paid under the contract is changed by ten percent or more after the date the surety bond or other acceptable security is furnished, to the Director or his delegate, such person shall increase or decrease, as the case may be, the amount of the bond or security within fourteen days after the change (7-1-55B, NMSA 1978).

7.3 In addition to the above requirements, the Contractor will be subject to all the requirements of the City Procurement Code.

**8.0 CONTRACTOR'S GROSS RECEIPTS TAX REGISTRATION**

8.1 Section 7-10-4, NMSA 1978 provides that any person (as defined in Section 7-10-3, NMSA 1978) performing services for the City of Santa Fe, as those terms are used in the Gross Receipts and Compensating Tax Act (Section 7-10-1 to 7-10-5, NMSA 1978), must be registered and be issued an identification number with the Revenue Division of the Taxation and Revenue Department to pay the gross receipts tax.

8.2 The identification number is needed to properly complete the approval process of the contract; therefore, so as to cause no delay in the processing, the Contractor must register with the State of New Mexico, Taxation and Revenue Department. For information contact:

Revenue Division  
Taxation and Revenue Department  
1100 South St. Francis Drive  
Santa Fe, New Mexico 87504  
(505)827-0700

8.3 If any person who performs services for the City of Santa Fe is not registered to pay the gross receipts tax, the City shall withhold payment of the amount due until the person has presented evidence of registration with the Revenue Department to pay the gross receipts tax.

**9.0 CONTRACT WITH NONRESIDENT PERSON OR PARTNERSHIPS OR UNADMITTED FOREIGN CORPORATIONS; AGENT FOR SERVICE OF PROCESS**

9.1 Special attention of Bidders is called to requirements of Sections 13-4-21 through 13-4-24, NMSA 1978, whereby a public works contract with a nonresident person or partnership or foreign corporation not authorized to do business in the State shall contain a specific provision designating an agent resident within the State, and his address, upon whom process and writs in any action or proceeding against such business may be served in any action arising out of such contract.

**11.0 STATE ALLOWANCES**

11.1 The Contractor shall purchase the "Allowed Materials" as directed by the Owner through the Landscape City of Santa Fe on the basis of the lowest and the best Bid of at least three competitive Bids. If the actual price for purchasing the "Allowed materials" is more or less than the "Cash Allowance", the Contract Price shall be adjusted accordingly. The adjustment in Contract Price made on the basis of the purchase price without additional charges for overhead, profit, insurance, or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable section of the Specifications covering the work.

**12.0 MINIMUM WAGE RATES**

12.1 The Minimum Wage Rate Determinations for this Project are shown in this section. If the amount of the base bid is equal to or greater than \$60,000.

**13.0 FORM OF CHANGE ORDER AND CHANGE ORDER NOTICE TO PROCEED**

13.1 The forms issued by the Owner are to be utilized by the Contractor, Landscape City of Santa Fe, and the Owner pursuant to the requirements of the General Conditions.

**14.0 STATE OF NEW MEXICO STATE INDUSTRIES DIVISION**

14.1 The Contractor, at his own expense, shall secure the required building permits from the State CID as required for this Project. Contractor shall adhere to the requirements established for inspections.

**15.0 CITY OF SANTA FE REQUIREMENTS**

15.1 The General Contractor shall include in the Bid the cost of all landfill dumping fees; additionally, the General Contractor shall be responsible that all rubble, excess materials, etc., are disposed of at an approved, legal dumping site.

**(00 7343) MINIMUM WAGE RATES & CITY LIVING WAGE**



# City of Santa Fe Living Wage Ordinance

PURSUANT TO THE CITY OF SANTA FE  
LIVING WAGE ORDINANCE, SECTION 28-1 SFCC 1987  
EFFECTIVE MARCH 1, 2016 ALL WORKERS WITHIN THE  
CITY OF SANTA FE  
SHALL BE PAID A LIVING WAGE OF

**\$10.91**  
**PER HOUR**

## **Santa Fe's Living Wage**

-  The Santa Fe Living Wage Ordinance establishes minimum hourly wages.
-  The March Living Wage increase corresponds to the increase in the Consumer Price Index (CPI).
-  All employers required to have a business license or registration from the City of Santa Fe ("City") must pay at least the adjusted Living Wage to employees for all hours worked within the Santa Fe city limits.

## **Who is Required to Pay the Living Wage?**

-  The City to all full-time permanent workers employed by the City;
-  Contractors for the City, that have a contract requiring the performance of a service but excluding purchases of goods;
-  Businesses receiving assistance relating to economic development in the form of grants, subsidies, loan guarantees or industrial revenue bonds in excess of twenty-five thousand dollars (\$25,000) for the duration of the City grant or subsidy;
-  Businesses required to have a business license or registration from the City; and
-  Nonprofit organizations, except for those whose primary source of funds is from Medicaid waivers.
-  For workers who customarily receive more than one hundred dollars (\$100) per month in tips or commissions, any tips or commissions received and retained by a worker shall be counted as wages and credited towards satisfaction of the Living Wage provided that, for tipped workers, all tips received by such workers are retained by the workers, except that the pooling of tips among workers shall be permitted.



### Wage Decision Approval Summary

1) Project Title: HVAC Replacement  
 Requested Date: 02/26/2016  
 Approved Date: 02/29/2016  
 Approved Wage Decision Number: SF-16-0377-B

#### Wage Decision Expiration Date for Bids: 06/28/2016

2) Physical Location of Jobsite for Project:  
 Job Site Address: 490 Bishops Lodge Rd  
 Job Site City: Santa Fe  
 Job Site County: Santa Fe

3) Contracting Agency Name (Department or Bureau): CITY OF SANTA FE  
 Contracting Agency Contact's Name: Robert Montoya  
 Contracting Agency Contact's Phone: (505) 955-5933 Ext.

4) Estimated Contract Award Date: 05/01/2016

5) Estimated total project cost: \$350,000.00  
 a. Are any federal funds involved?: No  
 b. Does this project involve a building?: Yes - Recreation Center getting a new HVAC System  
 c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: No  
 d. Are there any other Public Works Wage Decisions related to this project?: No  
 e. What is the ultimate purpose or functional use of the construction once it is completed?: HVAC Needed

6) Classifications of Construction:

Classification Type and Cost Total	Description
General Building (B) Cost: \$350,000.00	HVAC

**TYPE "B" - GENERAL BUILDING**

Effective January 1, 2016

<b>Trade Classification</b>	<b>Base Rate</b>	<b>Fringe Rate</b>	<b>Apprenticeship</b>
Asbestos Worker - Heat & Frost Insulator	31.26	11.11	0.50
Boilermaker	21.77	3.98	0.50
Bricklayer/Blocklayer/Stonemason	23.32	7.30	0.50
Carpenter/Lather	23.40	8.18	0.50
Cement Mason	19.61	9.57	0.50
<b>Electricians</b>			
<b>Outside Classifications</b>			
Groundman	21.28	10.32	0.50
Equipment Operator	30.54	12.64	0.50
Lineman/Tech	35.93	13.98	0.50
Cable Splicer	39.52	14.88	0.50
<b>Inside Classifications</b>			
Wireman/Technician	29.90	9.75	0.50
Cable Splicer	32.89	9.84	0.50
<b>Sound Classifications</b>			
Installer	23.39	8.31	0.50
Technician	28.95	7.52	0.50
Soundman	27.01	8.31	0.50
Elevator Constructor	38.37	28.08	0.50
Elevator Constructor Helper	26.86	28.08	0.50
Glazier	20.15	3.65	0.50
Ironworker	26.50	13.68	0.50
Painter (Brush/Roller/Spray)	16.00	5.18	0.50
Paper Hanger	16.00	5.18	0.50
Drywall Finisher/Taper	23.40	8.18	0.50
Plasterer	21.39	7.66	0.50
Plumber/Pipefitter	31.14	11.55	0.50
Roofer	15.18	0.50	0.50
Sheetmetal Worker	28.28	15.37	0.50
Soft Floor Layer	23.40	8.18	0.50
Sprinkler Fitter	27.95	17.87	0.50
Tile Setter	14.80	1.20	0.50
Tile Setter Helper	13.00	1.02	0.50
<b>Laborers</b>			
Group I	15.68	5.40	0.50
Group II	16.33	5.40	0.50
Group III	17.30	5.40	0.50
Group IV	19.53	5.40	0.50
Group V	17.60	5.40	0.50
Group VI	17.75	5.40	0.50
<b>Operators</b>			
Group I	19.57	6.00	0.50
Group II	21.53	6.00	0.50
Group III	21.95	6.00	0.50
Group IV	22.35	6.00	0.50
Group V	22.52	6.00	0.50
Group VI	22.71	6.00	0.50
Group VII	22.82	6.00	0.50
Group VIII	25.56	6.00	0.50
<b>Truck Drivers</b>			
Group I	14.76	6.25	0.50
Group II	15.00	6.25	0.50
Group III	15.50	6.25	0.50
Group IV	15.51	6.25	0.50
Group V	15.60	6.25	0.50
Group VI	15.75	6.25	0.50
Group VII	15.90	6.25	0.50
Group VIII	16.11	6.25	0.50
Group IX	16.32	6.25	0.50

**NOTE: SUBSISTENCE, ZONE AND INCENTIVE PAY APPLY ACCORDING TO THE PARTICULAR TRADES COLLECTIVE BARGAINING AGREEMENT. DETAILS ARE LOCATED AT WWW.DWS.STATE.NM.US.**

# Technical Specifications

Basic Mechanical Materials and Methods	23 05 00
Mechanical Demolition for Remodeling	23 05 01
Testing, Adjusting, and Balancing for HVAC	23 05 93
Mechanical Insulation	23 07 00
Duct Insulation	23 07 13
Direct-Digital Control System for HVAC	23 09 23
HVAC Ducts and Casings	23 31 00
Air Duct Accessories	23 33 00
Axial HVAC Fans	23 34 13
Centrifugal HVAC Fans	23 34 16
Air Terminal Units	23 36 00
Air Outlets and Inlets	23 37 00
HVAC Air Cleaning Devices	23 40 00
Packaged Air-Cooled Refrigerant Compressor and Condenser Units	23 62 13
Packaged Rooftop Units	23 74 13
Common Work Results for Electrical	26 05 00
Electrical Demolition for Remodeling	26 05 01
Wiring Methods Low Voltage Electrical Power Conductors and Cables	26 05 10

**SECTION 23 05 00**  
**BASIC MECHANICAL MATERIALS AND METHODS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Mechanical Basic Requirements specifically applicable to Divisions 21, 22, and 23 in addition to the requirements of Division 1 - General Requirements and the General Conditions of the Contract.
  - 2. Electric motors.
  - 3. Mechanical Identification.
  - 4. Sleeves
  - 5. Mechanical sleeve seals.
  - 6. Altitude rating.

**1.2 RELATED SECTIONS**

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 27, and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda, any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

**1.3 SYSTEM DESCRIPTION**

- A. Provide complete and fully operational systems with facilities and services to meet requirements indicated and in accordance with applicable codes and ordinances.

**1.4 REGULATORY REQUIREMENTS**

- A. All mechanical work shall be performed in strict accordance with the New Mexico Building Codes, IBC, UPC, UMC, NFPA, National Gas Code, Model Energy Code, and all applicable provisions of the local authorities having jurisdiction. All materials and labor necessary to comply with rules, regulations, and ordinances shall be provided. Where the drawings and/or specifications indicate material or construction in excess of code requirements or visa-versa, the more stringent application shall govern.
- B. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made, or certificate of final payment issued, until certificates of satisfactory inspection from the inspection authorities are delivered.

**1.5 SUBMITTALS**

- A. Submit all data as a single package, as the Engineer will commence review only when all data has been received.
- B. Submittal form to identify project, contractor, sub-contractor, supplier, and pertinent contract document references.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- D. The Contractor shall determine and verify field measurements and field construction criteria for conformance with drawings and specifications and for conflicts with other items of construction, past or present. He shall coordinate each submittal with the requirements of the work and of the

contract documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the work and contract documents.

1. No fabrication or work, which requires submittals, shall begin until submittals are returned with the Engineer's approval.
- E. Identify variations for contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the work and contract documents, nor shall it constitute approval for any deviation from the contract documents, unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- H. The Engineer will review a submittal and, if necessary, a resubmittal of the same item. Subsequent resubmittals shall be accompanied by Contractor's purchase order to Engineer for Engineer's review time and costs at Engineer's standard hourly billing rates. These reviews will be performed at the convenience of the Engineer.
- I. Provide eight (8) copies of materials for submittal review. If Contractor intends to utilize electronic submittals, one (1) hard copy must still be delivered to Engineer, hard copy will be dated when received and will be the official copy. Engineer will return submittal electronically.

#### **1.6 SUBSTITUTIONS**

- A. Prior approval of materials and equipment will not be considered. Contract documents indicate specified equipment and acceptable alternatives. Any other equipment/material proposed must meet or exceed that specified. Equipment/material will be reviewed for compliance during submittal review process per Paragraph 1.5.
- B. Engineer will consider requests for substitutions only at submittal review. Clearly identify substitution.
- C. Document each request with complete data substantiating compliance of proposed substitution with contract documents.
- D. A request for substitution constitutes a representation that the Contractor:
  1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
  2. Will provide the same warranty for the substitution as for the specified product.
  3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to Owner.
  4. Waives claims for additional costs or time extensions which may, subsequently, become apparent.
  5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

#### **1.7 OPERATIONS AND MAINTENANCE DATA**

- A. Submit three (3) sets prior to final inspection, in 8-1/2" x 11" text pages, bound in three (3) D-side ring binders with durable plastic covers. Provide one (1) set of original O&M Materials to Project Commissioning Authority no later than 30 days after submittals are approved. O&M package shall not be bound.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally sub-divide the binder contents with permanent page dividers, logically organized with tab titling clearly printed under reinforced, laminated plastic tabs.
- D. Contents:

1. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Sub-contractors, and major equipment suppliers.
2. Operation and maintenance instructions arranged by system.
3. Project documents and certificates.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. In accordance with the requirements of Division 1.

#### **1.9 RECORD AS-BUILT DRAWINGS**

- A. Maintain on site one set of record documents exclusively for the purpose of Record As-Built Drawings.
- B. Record into Record Drawings, Project Manual and Product Data, the actual "as-built" Work including all revisions. Include actual location of all work.
- C. Record information concurrent with the construction progress.
- D. Ensure entries are complete and accurate, enabling future references by Owner.
- E. Modify reproducible drawings and two (2) sets of the project manual, delineating recorded as-built conditions of the project or Record Documents compiled from the job records. The Contractor may obtain reproducible drawings from the office of the Architect or Engineer.
- F. Provide electronic (.DWG or .PDF) files of "as-built" conditions. Contractor may obtain electronic drawings from the office of the Architect or Engineer and must modify the electronic record documents. The Contractor shall submit the as-built drawings in electronic format and printed drawings on the medium specified. The Contractor may request Engineer to complete modifications to drawings. Such request must be accompanied by Contractor's purchase order to Engineer for drafting services.
- G. Completion of Record As-Built Drawings is a condition of final inspection and consideration of final payment.

#### **1.10 CLOSEOUT PROCEDURES**

- A. See Division 1 for additional closeout procedures.
- B. See Paragraph 3.7 for Substantial Completion and Final Inspection Requirements.

#### **1.11 FINAL INSPECTIONS**

- A. One final inspection for completion of project will be performed by the Engineer. Any and all additional inspections requested by the Contractor or required because of Contractor's failure to complete scope of work, shall be paid for by the Contractor. Costs for additional inspections shall be assessed at the Engineer's hourly rates.

### **PART 2 PRODUCTS**

#### **2.1 ELECTRIC MOTORS**

- A. Motors shall be of sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity under the most severe conditions likely to be encountered.
- B. Each motor shall be of the horsepower specified and suitable for operation at the elevation of the job site as scheduled on the drawings.
- C. Motors shall conform to NEMA standards, applicable to IEEE Standards and ASA C50 Standards, and shall be suitable for direct coupling mounting or V-belt mounting in accordance with the drawings.
- D. Motors controlled by variable frequency drives/adjustable frequency drives, "VFD/AFD", shall be rated for use on "VFD/AFD" controllers.

#### **2.2 MECHANICAL IDENTIFICATION**

- A. Equipment Nameplates: Laminated three-layer plastic with engraved black letters on light background color.

- B. Valve Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Piping:
  1. Conform to ASME A13.1.
  2. Minimum information indicating flow direction arrow and identification of fluid being conveyed.
  3. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
  4. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
  5. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

### **2.3 SLEEVES**

- A. Sleeves for pipes through non-fire rated floors: 18 gage thick galvanized steel.
- B. Sleeves for pipes through non-fire rated beams, walls, footings, and potentially wet floors: steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for round ductwork: galvanized steel.
- D. Sleeves for rectangular ductwork: galvanized steel or wood.
- E. Sealant: acrylic

### **2.4 MECHANICAL SLEEVE SEALS**

- A. Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

### **2.5 ALTITUDE RATINGS**

- A. Unless otherwise noted, all specified equipment capacities, air quantities, etc., are for the altitude of the job site, as scheduled on the drawings, and adjustments to manufacturer's ratings must be made accordingly.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION - IDENTIFICATION**

- A. Install materials in accordance with manufacturer's instructions.
- B. Degrease and clean surfaces to receive adhesive for identification materials.
- C. Install plastic nameplates with adhesive.
- D. Install plastic tags with corrosion-resistant metal chain.
- E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- F. Label piping at all changes in direction and at a minimum of every 20 feet of straight runs of pipe.
- G. Record actual location of valves on Project Record Documents.

### **3.2 INSTALLATION - CONDENSATE AND OVERFLOW DRAINS**

- A. Install condensate and overflow drain piping from all mechanical equipment drain points. Extend and terminate per UPC/UMC.

### **3.3 INSTALLATION - SLEEVES**

- A. Verify openings are ready to receive sleeves.
- B. Exterior watertight entries: Seal with mechanical sleeve seals.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.

- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- F. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install chrome plated steel or, if allowed by the authority having jurisdiction, plastic escutcheons at finished surfaces.

### **3.4 EXISTING SERVICES**

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, be fully informed as to all existing conditions, dimensions, and limitations before starting work.
- B. If existing active or non-active services, which are not shown on plans, are encountered which require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.

### **3.5 EXCAVATION AND BACKFILL OF TRENCHES**

- A. All excavation, trenching, and backfilling, as required for the mechanical installation, shall be provided by the Contractor.
- B. All piping laid in trenches shall be bedded evenly and firmly. The trench bed shall consist of undisturbed native soil or shall be compacted to an equally firm bedding. Recesses shall be formed below the trench bed to receive the flange or hub off each section of pipe or fitting.
- C. Where firm bedding is not obtainable, sand or gravel fill, compacted with water or low strength concrete fill around the bottom half of the pipe, shall be used.
- D. Backfill all trenches as soon as possible after inspection. Spread backfill in layers, not to exceed 8 inches, and compact each layer to ninety-five percent (95%) of maximum density based on Modified Proctor Density, in such areas as streets, driveways, alleys, or walks to prevent settling. Backfill shall be neither excessively wet or dry. Puddling or flooding shall not be used, except in sand or gravel-bearing soil, and as specifically approved. Street cuts shall be made 8 inches wider than required trenches and shall be repaired to match the finish surface of the street and be flush with existing grades.
- E. Use plastic underground pipe markers for all buried piping.

### **3.6 PAINTING**

- A. Surfaces of all equipment and material shall be thoroughly cleaned and left ready for painting.
- B. Painting shall be performed by others, unless otherwise specified in the contract documents.

### **3.7 ELECTRICAL WIRING AND CONTROL EQUIPMENT**

- A. All motor starters, disconnects overload protection equipment, and low voltage control equipment and wiring specified under this Division will be the responsibility of this Contractor. Installation of line voltage components and wiring specified under this Division will be the responsibility of the electrical contractor. Purchase and installation of low voltage components and wiring specified under this Division will be this Contractor's responsibility.
- B. The mechanical contractor must coordinate with the electrical contractor on the division of responsibility pertaining to the purchase and installation of electrical control components. Any changes or additions required due to the specific nature of equipment furnished shall be the complete responsibility of the Contractor furnishing the equipment.
- C. All electrical work performed under this Division will be in compliance with the NEC and all applicable city and state ordinances. All controllers furnished with mechanical equipment shall have overload protection on all phases.

- D. The mechanical contractor must coordinate with the electrical contractor to ensure that all required components of control work are included and fully understood. No additional costs shall accrue to the Owner as a result of lack of such coordination.

### **3.8 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS**

- A. Before substantial completion can be granted, the following items must be completed and submitted to the Owner/Engineer:
  - 1. An approved Test and Balance Report.
  - 2. Operation test demonstrating proper operation of all equipment.
  - 3. Control diagrams, wiring diagrams, control sequences, and engineering data on components.
- B. Prior to the final inspection or consideration of final payment, the Contractor shall:
  - 1. Provide copies of permits, operating permits, and/or inspection certificates.
  - 2. Provide a check-out report.
- C. Provide operating and maintenance manual(s).
  - 1. Provide record as-built drawings.
  - 2. Return keys to the Owner.
  - 3. Deliver all spare parts.
  - 4. Touch up any damaged finishes.
  - 5. Provide a copy of attendance roster for equipment training sessions.
  - 6. Provide all warranty certificates and documentation.

**END OF SECTION**

**SECTION 23 05 01**  
**MECHANICAL DEMOLITION FOR REMODELING**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes mechanical and plumbing demolition.

**1.2 RELATED SECTIONS**

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 25, 26, 27, and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

**PART 2 PRODUCTS**

**2.1 MATERIALS AND EQUIPMENT**

- A. Materials and equipment for patching and extending work: As specified in individual Sections.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify that field measurements and routing arrangements are as shown on Drawings.
- B. Verify that abandoned piping, ductwork, and equipment serve only abandoned facilities. If abandoned piping serves systems which will remain active at completion of work, install valve on gas and water and cap other piping for future reactivation.
- C. Existing project conditions indicated on Drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

**3.2 PREPARATION**

- A. Disconnect plumbing and mechanical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate utility service outages with Utility Company and Owner.
- C. Provide temporary connections to maintain existing systems in service during construction.
- D. Existing Water and Gas Service:
  - 1. Maintain existing system in service until new system is complete and ready for service.
  - 2. Disable system only to make switchovers and connections.
  - 3. Obtain permission from Owner at least 24 hours before partially or completely disabling system. Minimize outage duration.
  - 4. Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing HVAC System:
  - 1. Maintain existing system in service until new system is accepted.
  - 2. Disable system only to make switchovers and connections.
  - 3. Obtain permission from Owner at least 24 hours before partially or completely disabling system. Minimize outage duration.
  - 4. Make temporary connections to maintain service in areas adjacent to work area.

### **3.3 DEMOLITION AND EXTENSION OF EXISTING PLUMBING AND MECHANICAL WORK**

- A. Demolish and extend existing plumbing and mechanical work under provisions of this Division and related Divisions.
- B. Piping includes all piping at the facility, including but not limited to gas, fuel oil, domestic water, recirculating water, heating/chilled water, condensate, steam/condensate, compressed air, vacuum, medical gases, waste, vent, rainwater, and stormwater
- C. Remove, relocate, and extend existing installations to accommodate new construction.
- D. Remove abandoned piping and ductwork to source of supply. Cap ductwork at boundary of demolition work. Provide and install valves for gas, fuel oil, domestic water, recirculating water, heating/chilled water, condensate, steam/condensate, compressed air, vacuum, and medical gases. Cap waste, vent, rainwater, and stormwater
- E. Remove exposed abandoned piping and ductwork, including abandoned piping and ductwork above accessible ceiling finishes. Cut piping and ductwork flush with walls and floors, and patch surfaces.
- F. Remove abandoned plumbing fixtures, equipment, and HVAC equipment when connecting piping is abandoned and removed. Patch and repair finish, matching finish of adjacent surface.
- G. Remove abandoned grilles and diffusers when connecting ductwork is abandoned and removed. Patch and repair finish, matching finish of adjacent surface.
- H. Maintain access to existing piping, ductwork and equipment remaining active and requiring access. Modify installation or install access panel.
- I. Extend existing piping and ductwork using materials and methods compatible with existing installations, or as specified.
- J. Clean and repair existing ductwork, piping and equipment to remain or to be reinstalled.
- K. Repair adjacent construction and finishes damaged during demolition and extension work.
- L. Controls: Remove exposed abandoned controls and wiring or tubing, including abandoned wiring or tubing above accessible ceiling finishes. Cut flush with walls and floors, and patch surfaces.
  - 1. Disconnect and remove abandoned control devices.
  - 2. Maintain continuity and access to existing devices and other installations remaining active and requiring access. Modify installation or provide access panel.
  - 3. Extend existing control installations using materials and methods compatible with existing installations, or as specified.

### **3.4 CLEANING AND REPAIR**

- A. Clean and repair existing materials and equipment which remain or are to be reused.

### **3.5 INSTALLATION**

- A. Install relocated materials and equipment under the provisions of Division 1.

**END OF SECTION**

**SECTION 23 05 93**  
**TESTING, ADJUSTING, AND BALANCING FOR HVAC**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of air systems.
- B. Testing, adjustment, and balancing of refrigerating systems.
- C. Measurement of final operating condition of HVAC systems.
- D. Commissioning activities.

**1.2 REFERENCE STANDARDS**

- A. AABC MN-1 - AABC National Standards for Total System Balance; Associated Air Balance Council.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc..
- C. NEBB (TAB) - Procedural Standard for Testing Adjusting and Balancing of Environmental Systems; National Environmental Balancing Bureau.
- D. SMACNA (TAB) - HVAC Systems Testing, Adjusting, and Balancing; Sheet Metal and Air Conditioning Contractors' National Association.

**1.3 SUBMITTALS**

- A. See Section 23 05 00, Basic Mechanical Materials and Methods, for submittal procedures.
- B. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.
- C. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
  - 1. Submit to Engineer.
  - 2. Submit six weeks prior to starting the testing, adjusting, and balancing work.
  - 3. Include certification that the plan developer has reviewed the contract documents, the equipment and systems, and the control system with the Engineer and other installers to sufficiently understand the design intent for each system.
  - 4. Include at least the following in the plan:
    - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
    - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
    - c. Identification and types of measurement instruments to be used and their most recent calibration date.
    - d. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
    - e. Final test report forms to be used.
    - f. Details of how TOTAL flow will be determined; for example:
      - 1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
      - 2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
    - g. Procedures for formal deficiency reports, including scope, frequency and distribution.
- D. Field Logs: Submit at least twice a week to the Commissioning Authority.
- E. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB that affect, or could affect, the control system setup and operation.

- F. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
  - 1. Submit to the the Commissioning Authority within two weeks after completion of testing, adjusting, and balancing.
  - 2. Revise TAB plan to reflect actual procedures and submit as part of final report.
  - 3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Engineer and for inclusion in operating and maintenance manuals.
  - 4. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
  - 5. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
  - 6. Units of Measure: Report data in I-P (inch-pound) units only.
  - 7. Include the following on the title page of each report:
    - a. Name of Testing, Adjusting, and Balancing Agency.
    - b. Address of Testing, Adjusting, and Balancing Agency.
    - c. Telephone number of Testing, Adjusting, and Balancing Agency.
    - d. Project name.
    - e. Project location.
    - f. Project Engineer.
    - g. Project Engineer.
    - h. Project Contractor.
    - i. Project altitude.
    - j. Report date.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.1 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
  - 1. AABC MN-1, AABC National Standards for Total System Balance.
  - 2. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
  - 3. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
- D. TAB Agency Qualifications:
  - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
  - 2. Having minimum of three years documented experience.
  - 3. Certified by one of the following:
    - a. AABC, Associated Air Balance Council: [www.aabchq.com](http://www.aabchq.com); upon completion submit AABC National Performance Guaranty.
    - b. NEBB, National Environmental Balancing Bureau: [www.nebb.org](http://www.nebb.org).
    - c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: [www.tabbcertified.org](http://www.tabbcertified.org).
- E. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

### **3.2 EXAMINATION**

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
  - 1. Systems are started and operating in a safe and normal condition.
  - 2. Temperature control systems are installed complete and operable.

3. Proper thermal overload protection is in place for electrical equipment.
  4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
  5. Duct systems are clean of debris.
  6. Fans are rotating correctly.
  7. Fire and volume dampers are in place and open.
  8. Air coil fins are cleaned and combed.
  9. Access doors are closed and duct end caps are in place.
  10. Air outlets are installed and connected.
  11. Duct system leakage is minimized.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
- C. Beginning of work means acceptance of existing conditions.

### **3.3 PREPARATION**

- A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
1. Require attendance by all installers whose work will be tested, adjusted, or balanced.
- B. Provide additional balancing devices as required.

### **3.4 ADJUSTMENT TOLERANCES**

- A. Air Handling Systems: Adjust to within plus or minus 10 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

### **3.5 RECORDING AND ADJUSTING**

- A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
  2. Discrepancies, deficient or uncompleted work by others.
  3. Contract interpretation requests.
  4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. Mark on the drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.
- E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

### **3.6 AIR SYSTEM PROCEDURE**

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

- F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
- I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.
- L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.
- M. Check multi-zone units for motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.
- N. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

### **3.7 COMMISSIONING**

- A. See Sections 01 91 13 and 23 08 00 for additional requirements.
- B. Perform prerequisites prior to starting commissioning activities.
- C. Fill out Prefunctional Checklists for:
  - 1. Air side systems.
  - 2. Water side systems.
- D. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.

### **3.8 SCOPE**

- A. Test, adjust, and balance the following:
  - 1. Packaged Roof Top Heating/Cooling Units
  - 2. Packaged Terminal Air Conditioning Units
  - 3. Fans
  - 4. Air Terminal Units

### **3.9 MINIMUM DATA TO BE REPORTED**

- A. Electric Motors:
  - 1. Manufacturer
  - 2. Model/Frame
  - 3. HP/BHP
  - 4. Phase, voltage, amperage; nameplate, actual, no load
  - 5. RPM
- B. V-Belt Drives:
  - 1. Identification/location
  - 2. Required driven RPM
  - 3. Driven sheave, diameter and RPM
  - 4. Belt, size and quantity
- C. Air Moving Equipment:
  - 1. Location

2. Manufacturer
  3. Model number
  4. Serial number
  5. Arrangement/Class/Discharge
  6. Air flow, specified and actual
  7. Return air flow, specified and actual
  8. Outside air flow, specified and actual
  9. Total static pressure (total external), specified and actual
  10. Inlet pressure
  11. Discharge pressure
- D. Exhaust Fans:
1. Location
  2. Manufacturer
  3. Model number
  4. Serial number
  5. Air flow, specified and actual
  6. Total static pressure (total external), specified and actual
  7. Inlet pressure

**END OF SECTION**

**SECTION 23 07 00**  
**MECHANICAL INSULATION**

**PART 1 GENERAL**

**1.1 GENERAL**

- A. This specification section defines the minimum quality, labor and supervision, tools and equipment, methods and procedures, materials, and assemblies for furnishing, fabricating, assembling, and installing complete permanently-installed, commercial insulation systems as shown on the drawings, design data sheets, lists and schedules, and other instructions included in these technical specifications.
- B. Modifications, alterations, exceptions, or additions to these specifications shall be as detailed on the mechanical drawing(s), in special instructions, or published in numbered addenda described in these specifications. Changes to the work shall be made only by change order procedure as described in these specifications.
- C. By submission of bid, Contractor assures the Owner/Engineer that he/she fully understands the work and has included all items and costs for a complete system as described above.

**1.2 DESIGN CRITERIA**

- A. The Contractor shall review and consider the project design criteria in the selection of materials and accessories in the insulation system.

**1.3 DEFINITIONS**

- A. Insulation terminology within this specification shall be that included in the "Glossary" of MICA.

**1.4 SUBMITTALS**

- A. Procedures for submittals: See Section 23 05 00.
- B. Insulation Schedule: Product Data — Submit product description, list of materials and thickness for each service or equipment scheduled and locations.
- C. Manufacturer's Installation Instructions: Submit manufacturer's installation instructions for each product type.
- D. Samples: If insulation schedule submitted outlining the method of the installation and the material to be used is in compliance with this specification, submission of samples or data is not required. If the Contractor proposes material or methods not exactly as specified, but is intended to be of equal or higher quality and performance, then catalog data sheets, samples, and other supporting information shall be submitted.

**1.5 CLARITY OF INFORMATION**

- A. It shall be noted that the drawings, specifications, and standards are complementary to each other, meaning that what is called for in one is called for in all. Where conflicts occur between drawings, specifications, and standards, specifications shall govern.

**1.6 SCOPE OF WORK**

- A. Installation shall mean, but is not limited to, purchasing, receiving, transporting, storing, fabricating, applying, inspecting, and proving complete insulation systems in accordance with MICA national standards, addenda, and those technical specifications for the individual insulation systems under the contract.

**1.7 EQUIPMENT**

- A. Contractor shall provide all tools, ladders, staging, platforms, scaffolding, and other devices required for a complete installation of the complete insulation systems, and shall maintain these items in a safe and operating condition.

**1.8 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

- B. Maintain temperature during and after installation for minimum period of twenty-four (24) hours. Monitoring will be required at intervals and tolerances recommended by manufacturer. Materials exposed to conditions outside manufacturer's recommendations will be subject to reinstallation.

## **1.9 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience, approved by manufacturer.

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Materials furnished under this specification shall be standard, cataloged products, new and commercially available, suitable for service, requiring high performance and reliability with low maintenance, and free of all defects.
- B. Materials include, but are not limited to, insulation materials, accessories (staples, bands, mesh, wire, clips, pins, tape, anchors, corner angles, and similar recommended accessories), and compounds (cements, adhesives, coatings, sealers, protective finishes, and similar other recommended items for the systems).
- C. All adhesives, sealants and sealant primers VOC limits shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168.
- D. The Contractor, unless clearly stated otherwise, shall supply materials, which meet the Engineer's requirements with respect to the design criteria, thermal conductivity, and standards.
- E. The Contractor shall warrant the materials in accordance with these specifications.
- F. Specified components of the insulation system, including accessories and compounds as listed above, shall have a fire hazard rating not to exceed:
  - 1. Flame spread:25
  - 2. Smoke developed:50
- G. All accessories and materials are to be shipped to the job site in marked, unopened containers as received from the manufacturer.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

- A. All insulation work shall be performed by skilled mechanics regularly engaged in the insulation trade.
- B. The Contractor shall be responsible for coordination and cooperation with the Owner/Engineer and all other trades, so that the installation is performed with minimum interference and conflict. Verify that ductwork has been tested before applying insulation materials.
- C. Final appearance: Neat, workmanlike, and attractive.
- D. Progressive testing: Shall be completed and approved by Engineer or designate before insulation is applied.
- E. Cleaning: Prior to applications of insulation, all surfaces shall be cleaned, dry, and free of dust, dirt, grease, frost, moisture, and other imperfections.
- F. Applications temperature and conditions: Contractor shall assure that all conditions are met for the application of the insulation systems and that the recommended durations are met.
- G. Moisture protection: All insulation shall be protected from moisture and weather during storage, installation, and until Owner/Engineer has taken beneficial occupancy of facility. Applied insulation which has become wet, shall be thoroughly dried before sealing or jacketing is applied.

- H. Protection from damage: Insulation, fabric, jacketing, and all accessories and compounds shall be protected from damage by the Contractor. All damage shall be repaired prior to the final inspections of the project.
- I. Storage: Contractor is responsible for proper material storage at site.
- J. Work starting: No work shall commence until Contractor has received approved submittals for all insulation systems required in the project.
- K. Clearances and accesses: The installation of insulation systems shall, in no way, reduce or interfere with the access and adequate clearances for control mechanisms, dampers, sleeves, columns, walls, vibrations isolation, flexibility components, and other job features. Maintain service clearances to strainers so that drain port is clear of all obstructions.
- L. Finishing: All insulation at handholes, access doors, or other openings and adjacent to flanges and valves shall be neatly finished where exposed to view.
- M. Sleeves: Where insulated pipes or ducts pass through sleeves or openings, the full specified thickness of insulation shall pass through the sleeve or openings.
- N. Vapor barriers: Vapor barriers shall be continuous through sleeves, hangers, etc. If pierced, vapor barriers shall be covered and suitably resealed.

### **3.2 OWNER/ENGINEER ACCEPTANCE**

- A. All materials, accessories, compounds, and methods of installation and fabrication are subject to the Owner's/Engineer's inspections and approval at any phase of the work.

**END OF SECTION**

**SECTION 23 07 13**  
**DUCT INSULATION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Duct insulation.
- B. Duct Liner.
- C. Insulation jackets.

**1.2 REFERENCE STANDARDS**

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric].
- C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- F. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation.
- G. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material).
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- K. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.
- L. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.
- M. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc..

**1.3 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.
- D. Maintain one copy of each document on site.

**1.4 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of experience and approved by manufacturer.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

## 1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

## PART 2 PRODUCTS

### 2.1 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

- A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

### 2.2 INSULATION SYSTEM DESCRIPTIONS

- A. The thickness schedules and the following descriptions specify the type of insulation, accessories, etc., and the thicknesses of insulation and the method of installation to be employed for each insulation system.
- B. Ductwork, indoor:
  - 1. Ductwork: By others, rectangular.
  - 2. Blanket insulation: Glass fiber, K factor 0.24 @ 40 degrees F. with factory-applied vapor barrier jacket.
  - 3. Securement: Factory lap, sealed with adhesive and/or staples.
  - 4. Mechanical fasteners: Use on underside to support insulation whenever duct width exceeds 24 inches. Install no closer than 3 inches from the joints.
  - 5. Vapor barrier tape: Install over all tears and penetrations of the vapor barrier.
- C. Ductwork, outdoor:
  - 1. Ductwork: By others, rectangular.
  - 2. Fibrous board insulation: Glass fiber board, K factor 0.28 @ 200 degrees F. with factory-applied vapor barrier jacket.
  - 3. Securement: Factory lap, sealed with adhesive and/or staples.
  - 4. Mechanical fasteners: As required to support insulation wherever. Install no closer than 3 inches from the joints.
  - 5. Vapor barrier tape: Install over all tears and penetrations of the vapor barrier.
  - 6. Weather barrier: Mastic reinforced with mesh and thoroughly sealed for weather tightness.

### 2.3 GLASS FIBER, FLEXIBLE

- A. Manufacturer:
  - 1. Or equal performance.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
  - 1. 'K' value: 0.36 at 75 degrees F, when tested in accordance with ASTM C518.
  - 2. Maximum Service Temperature: 1200 degrees F.
  - 3. Maximum Water Vapor Sorption: 5.0 percent by weight.
- C. Vapor Barrier Jacket:
  - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
  - 2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
  - 3. Secure with pressure sensitive tape.
- D. Vapor Barrier Tape:
  - 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
- E. Tie Wire: Annealed steel, 16 gage, 0.0508 inch diameter.

### 2.4 GLASS FIBER, RIGID

- A. Insulation: ASTM C612; rigid, noncombustible blanket.

1. 'K' value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.
  2. Maximum service temperature: 450 degrees F.
  3. Maximum Water Vapor Sorption: 5.0 percent.
  4. Maximum Density: 8.0 lb/cu ft.
- B. Vapor Barrier Jacket:
1. Kraft paper with glass fiber yarn and bonded to aluminized film.
  2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
  3. Secure with pressure sensitive tape.
- C. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

## 2.5 JACKETS

- A. Aluminum Jacket: ASTM B209 (ASTM B209M).
1. Thickness: 0.016 inch sheet.
  2. Finish: Smooth.
  3. Joining: Longitudinal slip joints and 2 inch laps.
  4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
  5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

## 2.6 DUCT LINER

- A. Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.
1. Fungi Resistance: ASTM G21.
  2. Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.
  3. Service Temperature: Up to 250 degrees F.
  4. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.
  5. Minimum Noise Reduction Coefficients:
    - a. 1/2 inch Thickness: 0.30.
    - b. 1 inch Thickness: 0.45.
    - c. 1-1/2 inches Thickness: 0.60.
    - d. 2 inch Thickness: 0.70.
- B. Adhesive: Waterproof, fire-retardant type, ASTM C916.
- C. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that ducts have been tested before applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Insulated ducts conveying air below ambient temperature:
  1. Provide insulation with vapor barrier jackets.
  2. Finish with tape and vapor barrier jacket.
  3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
  4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- D. Insulated ducts conveying air above ambient temperature:
  1. Provide with or without standard vapor barrier jacket.

2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces (below 10 feet above finished floor): Finish with canvas jacket sized for finish painting.
  - F. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section.
  - G. External Duct Insulation Application:
    1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
    2. Secure insulation without vapor barrier with staples, tape, or wires.
    3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
    4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
    5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
  - H. Duct and Plenum Liner Application:
    1. Adhere insulation with adhesive for 90 percent coverage.
    2. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
    3. Seal and smooth joints. Seal and coat transverse joints.
    4. Seal liner surface penetrations with adhesive.
    5. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

### 3.3 SCHEDULES

- A. Combustion Air Duct:
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- B. Exhaust Ducts Within 10 ft of Exterior Openings:
  1. Flexible Glass Fiber Duct Insulation: 1 inches thick.
- C. Ducts Within 10 ft of Exterior Openings:
- D. Exhaust Ducts Exposed to Outdoor Air:
  1. Flexible Glass Fiber Duct Insulation: 1 inches thick with aluminum jacket.
- E. Outside Air Intake Ducts:
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- F. Plenums:
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- G. Plenums (Cooling System):
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- H. Ventilation Equipment Casings:
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- I. Supply Ducts:
  1. Flexible Glass Fiber Duct Insulation: 1-1/2 inches thick.
- J. Return Ducts in Unconditioned Spaces:
  1. Flexible Glass Fiber Duct Insulation: 2 inches thick.
- K. Return and Relief Ducts in Mechanical Rooms:
  1. Rigid Glass Fiber Duct Insulation: 1 inch thick.
- L. Ducts Exposed to Outdoors:
  1. Rigid Glass Fiber Duct Insulation: 2 inch thick

**END OF SECTION**

**SECTION 23 09 23**  
**DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. System Description
- B. Operator Interface
- C. Controllers
- D. Power Supplies and Line Filtering
- E. System Software
- F. Controller Software
- G. HVAC Control Programs
- H. Chiller Control Programs

**1.2 REFERENCE STANDARDS**

- A. ASHRAE Std 135 - BACnet - A Data Communication Protocol for Building Automation and Control Networks.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

**1.4 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data for each system component and software module.
- C. Shop Drawings:
  - 1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.
  - 2. List connected data points, including connected control unit and input device.
  - 3. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration diskette containing graphics.
  - 4. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
  - 5. Indicate description and sequence of operation of operating, user, and application software.
- D. Manufacturer's Instructions: Indicate manufacturer's installation instructions for all manufactured components.
- E. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.
  - 1. Revise shop drawings to reflect actual installation and operating sequences.
  - 2. Include submittals data in final "Record Documents" form.
- F. Operation and Maintenance Data:
  - 1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
  - 2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
  - 3. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.

- G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
- H. Maintain one copy of each document on site.

### **1.5 QUALITY ASSURANCE**

- A. Perform work in accordance with NFPA 70.
- B. Design system software under direct supervision of a Professional Engineer experienced in design of this Work and licensed at New Mexico.
- C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years experience approved by manufacturer.
- E. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

### **1.6 WARRANTY**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional warranty requirements.
- B. Correct defective Work within a 1 year period after Substantial Completion.
- C. Provide five year manufacturer's warranty for field programmable micro-processor based units.
- D. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional provisions.

### **1.7 PROTECTION OF SOFTWARE RIGHTS**

- A. Prior to delivery of software, the Owner and the party providing the software will enter into a software license agreement with provisions for the following:
  - 1. Limiting use of software to equipment provided under these specifications.
  - 2. Limiting copying.
  - 3. Preserving confidentiality.
  - 4. Prohibiting transfer to a third party.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

### **2.2 SYSTEM DESCRIPTION**

- A. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.
- B. Include computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.
- C. Controls for variable air volume terminals, radiation, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 23 09 13.
- D. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.
- E. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

### **2.3 OPERATOR INTERFACE**

- A. PC Based Work Station:
  - 1. Resides on high speed network with building controllers.
  - 2. Connected to server for full access to all system information.

- B. Workstation, controllers, and control backbone to communicate using BACnet protocol and addressing.
- C. BACnet protocol to comply with ASHRAE Std 135.
- D. Hardware:

## 2.4 CONTROLLERS

### A. BUILDING CONTROLLERS

1. General:
  - a. Manage global strategies by one or more, independent, standalone, microprocessor based controllers.
  - b. Provide sufficient memory to support controller's operating system, database, and programming requirements.
  - c. Share data between networked controllers.
  - d. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.
  - e. Utilize real-time clock for scheduling.
  - f. Continuously check processor status and memory circuits for abnormal operation.
  - g. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation.
  - h. Communication with other network devices to be based on assigned protocol.
2. Communication:
  - a. Controller to reside on a BACnet network using ISO 8802-3 (ETHERNET) Data Link/Physical layer protocol.
  - b. Perform routing when connected to a network of custom application and application specific controllers.
  - c. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
3. Anticipated Environmental Ambient Conditions:
  - a. Outdoors and/or in Wet Ambient Conditions:
    - 1) Mount within waterproof enclosures.
    - 2) Rated for operation at 40 to 150 degrees F.
  - b. Conditioned Space:
    - 1) Mount within dustproof enclosures.
    - 2) Rated for operation at 32 to 120 degrees F.
4. Provisions for Serviceability:
  - a. Diagnostic LEDs for power, communication, and processor.
  - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
6. Power and Noise Immunity:
  - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
  - b. Perform orderly shutdown below 80 percent of nominal voltage.
  - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W . at 3 feet.

### B. CUSTOM APPLICATION CONTROLLERS

1. General:
  - a. Provide sufficient memory to support controller's operating system, database, and programming requirements.
  - b. Share data between networked, microprocessor based controllers.
  - c. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.

- d. Utilize real-time clock for scheduling.
- e. Continuously check processor status and memory circuits for abnormal operation.
- f. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation.
- g. Communication with other network devices to be based on assigned protocol.
- 2. Communication:
  - a. Controller to reside on a BACnet network using MS/TP Data Link/Physical layer protocol.
  - b. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
- 3. Anticipated Environmental Ambient Conditions:
  - a. Outdoors and/or in Wet Ambient Conditions:
    - 1) Mount within waterproof enclosures.
    - 2) Rated for operation at 40 to 150 degrees F.
  - b. Conditioned Space:
    - 1) Mount within dustproof enclosures.
    - 2) Rated for operation at 32 to 120 degrees F.
- 4. Provisions for Serviceability:
  - a. Diagnostic LEDs for power, communication, and processor.
  - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
- 5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
- 6. Power and Noise Immunity:
  - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
  - b. Perform orderly shutdown below 80 percent of nominal voltage.
  - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet.

#### C. APPLICATION SPECIFIC CONTROLLERS

- 1. General:
  - a. Not fully user programmable, microprocessor based controllers dedicated to control specific equipment.
  - b. Customized for operation within the confines of equipment served.
  - c. Communication with other network devices to be based on assigned protocol.
- 2. Communication:
  - a. Controller to reside on a BACnet network using MS/TP Data Link/Physical layer protocol.
  - b. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
- 3. Anticipated Environmental Ambient Conditions:
  - a. Outdoors and/or in Wet Ambient Conditions:
    - 1) Mount within waterproof enclosures.
    - 2) Rated for operation at 40 to 150 degrees F.
  - b. Conditioned Space:
    - 1) Mount within dustproof enclosures.
    - 2) Rated for operation at 32 to 120 degrees F.
- 4. Provisions for Serviceability:
  - a. Diagnostic LEDs for power, communication, and processor.
  - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
- 5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
- 6. Power and Noise Immunity:
  - a. Maintain operation at 90 to 110 percent of nominal voltage rating.

- b. Perform orderly shutdown below 80 percent of nominal voltage.
  - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet.
- D. INPUT/OUTPUT INTERFACE
1. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.
  2. All Input/Output Points:
    - a. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
    - b. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.
  3. Binary Inputs:
    - a. Allow monitoring of On/Off signals from remote devices.
    - b. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.
    - c. Sense dry contact closure with power provided only by the controller.
  4. Pulse Accumulation Input Objects: Conform to all requirements of binary input objects and accept up to 10 pulses per second.
  5. Analog Inputs:
    - a. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
    - b. Compatible with and field configurable to commonly available sensing devices.
  6. Binary Outputs:
    - a. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.
    - b. Outputs provided with three position (On/Off/Auto) override switches.
    - c. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.
  7. Analog Outputs:
    - a. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
    - b. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.
    - c. Drift to not exceed 0.4 percent of range per year.
  8. Tri State Outputs:
    - a. Coordinate two binary outputs to control three point, floating type, electronic actuators without feedback.
    - b. Limit the use of three point, floating devices to the following zone and terminal unit control applications:
    - c. Control algorithms run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.
  9. System Object Capacity:
    - a. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
    - b. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

## 2.5 POWER SUPPLIES AND LINE FILTERING

- A. Power Supplies:
1. Provide UL listed control transformers with Class 2 current limiting type or over-current protection in both primary and secondary circuits for Class 2 service as required by the NEC.
  2. Limit connected loads to 80 percent of rated capacity.

3. Match DC power supply to current output and voltage requirements.
  4. Unit to be full wave rectifier type with output ripple of 5.0 mV maximum peak to peak.
  5. Regulation to be 1 percent combined line and load with 100 microsecond response time for 50 percent load changes.
  6. Provide over-voltage and over-current protection to withstand a 150 percent current overload for 3 seconds minimum without trip-out or failure.
  7. Operational Ambient Conditions: 32 to 120 degrees F.
  8. EM/RF meets FCC Class B and VDE 0871 for Class B and MIL-STD 810 for shock and vibration.
  9. Line voltage units UL recognized and CSA approved.
- B. Power Line Filtering:
1. Provide external or internal transient voltage and surge suppression component for all workstations and controllers.
  2. Minimum surge protection attributes:
    - a. Dielectric strength of 1000 volts minimum.
    - b. Response time of 10 nanoseconds or less.
    - c. Transverse mode noise attenuation of 65 dB or greater.
    - d. Common mode noise attenuation of 150 dB or greater at 40 to 100 Hz.
- C. Portable Operator's Terminal:
1. Manufacturers:
    - a. Dell Corporation
    - b. Compaq Corporation
    - c. Or equal performance.
  2. Furnish device capable of accessing system data and capable of being connected to any point on system network or connected directly to any controller for programming, set-up, and troubleshooting.
  3. Portable Operators Terminal uses Read (Initiate) and Write (Execute) Services as defined in Clauses 15.5 and 15.8, respectively, of ASHRAE Standard 135, to communicate with BACnet objects in internetwork.
  4. Objects supported include: analog input, analog output, analog value, binary input, binary output, binary value, and device.
  5. Furnish IBM compatible notebook-style PC including software and hardware required with:
    - a. Processor: 1.50 GHz Pentium M 715.
    - b. Hard Drive: 60 Gigabyte.
    - c. Memory: 256 Megabyte DDR SDRAM.
    - d. Drive 1: 8x DVD-ROM.
    - e. Wireless Card: internal 2100 (802.11 b).
    - f. Ports: Required serial, parallel, network communications, USB, and cables for proper system operation.
    - g. Expansion Slots: 1 used for LAN card, 1 available.
    - h. LAN Card: Single Coax Input (Ethernet).
    - i. Mouse: two-button optical type wireless.
    - j. Keyboard: integral to PC.
    - k. Screen: 15.4 inch UXGA TFT display, color.
    - l. Operating System: Windows 10.
    - m. Battery: 12 cell lithium ion.

## 2.6 LOCAL AREA NETWORK (LAN)

- A. Provide communication between control units over local area network (LAN).
- B. LAN Capacity: Not less than 60 stations or nodes.
- C. Break in Communication Path: Alarm and automatically initiate LAN reconfiguration.
- D. LAN Data Speed: Minimum 19.2 Kb.

- E. Communication Techniques: Allow interface into network by multiple operation stations and by auto-answer/auto-dial modems. Support communication over telephone lines utilizing modems.
- F. Transmission Median: Fiber optic or single pair of solid 24 gauge twisted, shielded copper cable.
- G. Network Support: Time for global point to be received by any station, shall be less than 3 seconds. Provide automatic reconfiguration if any station is added or lost. If transmission cable is cut, reconfigure two sections with no disruption to system's operation, without operator intervention.

## 2.7 SYSTEM SOFTWARE

- A. Operating System:
  - 1. Concurrent, multi-tasking capability.
    - a. Common Software Applications Supported: Microsoft Excel.
    - b. Acceptable Operating Systems: Windows 7.
  - 2. System Graphics:
    - a. Allow up to 10 graphic screens, simultaneously displayed for comparison and monitoring of system status.
    - b. Animation displayed by shifting image files based on object status.
    - c. Provide method for operator with password to perform the following:
      - 1) Move between, change size, and change location of graphic displays.
      - 2) Modify on-line.
      - 3) Add, delete, or change dynamic objects consisting of:
        - (a) Analog and binary values.
        - (b) Dynamic text.
        - (c) Static text.
        - (d) Animation files.
  - 3. Custom Graphics Generation Package:
    - a. Create, modify, and save graphic files and visio format graphics in PCX formats.
    - b. HTML graphics to support web browser compatible formats.
    - c. Capture or convert graphics from AutoCAD.
    - 4. Standard HVAC Graphics Library:
      - a. HVAC Equipment:
        - 1) Chillers.
        - 2) Boilers.
        - 3) Air Handlers.
        - 4) Terminal HVAC Units.
        - 5) Fan Coil Units.
        - 6) Unit Ventilators.
      - b. Ancillary Equipment:
        - 1) Fans.
        - 2) Pumps.
        - 3) Coils.
        - 4) Valves.
        - 5) Piping.
        - 6) Dampers.
- B. Workstation System Applications:
  - 1. Automatic System Database Save and Restore Functions:
    - a. Current database copy of each Building Controller is automatically stored on hard disk.
    - b. Automatic update occurs upon change in any system panel.
    - c. In the event of database loss in any system panel, the first workstation to detect the loss automatically restores the database for that panel unless disabled by the operator.

2. Manual System Database Save and Restore Functions by Operator with Password Clearance:
  - a. Save database from any system panel.
  - b. Clear a panel database.
  - c. Initiate a download of a specified database to any system panel.
3. Software provided allows system configuration and future changes or additions by operators under proper password protection.
4. On-line Help:
  - a. Context-sensitive system assists operator in operation and editing.
  - b. Available for all applications.
  - c. Relevant screen data provided for particular screen display.
  - d. Additional help available via hypertext.
5. Security:
  - a. Operator log-on requires user name and password to view, edit, add, or delete data.
  - b. System security selectable for each operator.
  - c. System supervisor sets passwords and security levels for all other operators.
  - d. Operator passwords to restrict functions accessible to viewing and/or changing system applications, editor, and object.
  - e. Automatic, operator log-off results from keyboard or mouse inactivity during user-adjustable, time period.
  - f. All system security data stored in encrypted format.
6. System Diagnostics:
  - a. Operations Automatically Monitored:
    - 1) Workstations.
    - 2) Printers.
    - 3) Modems.
    - 4) Network connections.
    - 5) Building management panels.
    - 6) Controllers.
  - b. Device failure is annunciated to the operator.
7. Alarm Processing:
  - a. All system objects are configurable to "alarm in" and "alarm out" of normal state.
  - b. Configurable Objects:
    - 1) Alarm limits.
    - 2) Alarm limit differentials.
    - 3) States.
    - 4) Reactions for each object.
8. Alarm Messages:
  - a. Descriptor: English language.
  - b. Recognizable Features:
    - 1) Source.
    - 2) Location.
    - 3) Nature.
9. Configurable Alarm Reactions by Workstation and Time of Day:
  - a. Logging.
  - b. Printing.
  - c. Starting programs.
  - d. Displaying messages.
  - e. Dialing out to remote locations.
  - f. Paging.
  - g. Providing audible annunciation.
  - h. Displaying specific system graphics.
10. Custom Trend Logs:

- a. Definable for any data object in the system including interval, start time, and stop time.
  - b. Trend Data:
    - 1) Sampled and stored on the building controller panel.
    - 2) Archivable on hard disk.
    - 3) Retrievable for use in reports, spreadsheets and standard database programs.
    - 4) Archival on LAN accessible storage media including hard disk, tape, Raid array drive, and virtual cloud environment.
    - 5) Protected and encrypted format to prevent manipulation, or editing of historical data and event logs.
11. Alarm and Event Log:
- a. View all system alarms and change of states from any system location.
  - b. Events listed chronologically.
  - c. Operator with proper security acknowledges and clears alarms.
  - d. Alarms not cleared by operator are archived to the workstation hard disk.
12. Object, Property Status and Control:
- a. Provide a method to view, edit if applicable, the status of any object and property in the system.
  - b. Status Available by the Following Methods:
    - 1) Menu.
    - 2) Graphics.
    - 3) Custom Programs.
13. Reports and Logs:
- a. Reporting Package:
    - 1) Allows operator to select, modify, or create reports.
    - 2) Definable as to data content, format, interval, and date.
    - 3) Archivable to hard disk.
  - b. Real-time logs available by type or status such as alarm, lockout, normal, etc.
  - c. Stored on hard disk and readily accessible by standard software applications, including spreadsheets and word processing.
  - d. Set to be printed on operator command or specific time(s).
14. Reports:
- a. Standard:
    - 1) Objects with current values.
    - 2) Current alarms not locked out.
    - 3) Disabled and overridden objects, points and SNVTs.
    - 4) Objects in manual or automatic alarm lockout.
    - 5) Objects in alarm lockout currently in alarm.
    - 6) Logs:
      - (a) Alarm History.
      - (b) System messages.
      - (c) System events.
      - (d) Trends.
  - b. Custom:
    - 1) Daily.
    - 2) Weekly.
    - 3) Monthly.
    - 4) Annual.
    - 5) Time and date stamped.
    - 6) Title.
    - 7) Facility name.
  - c. Tenant Override:
    - 1) Monthly report showing total, requested, after-hours HVAC and lighting services on a daily basis for each tenant.

- 2) Annual report showing override usage on a monthly basis.
  - d. Electrical, Fuel, and Weather:
    - 1) Electrical Meter(s):
      - (a) Monthly showing daily electrical consumption and peak electrical demand with time and date stamp for each meter.
      - (b) Annual summary showing monthly electrical consumption and peak demand with time and date stamp for each meter.
    - 2) Fuel Meter(s):
      - (a) Monthly showing daily natural gas consumption for each meter.
      - (b) Annual summary showing monthly consumption for each meter.
    - 3) Weather:
      - (a) Monthly showing minimum, maximum, average outdoor air temperature and heating/cooling degree-days for the month.
  - e. Daily Operating Condition of Chiller(s) Based on ASHRAE Std. 147:
    - 1) Chilled water inlet and outlet temperature.
    - 2) Chilled water flow.
    - 3) Chilled water inlet and outlet pressure.
    - 4) Evaporator refrigerant pressure and temperature.
    - 5) Condenser refrigerant pressure and temperature.
    - 6) Condenser refrigerant pressure and liquid temperature.
    - 7) Refrigerant levels.
    - 8) Oil pressure and temperature.
    - 9) Oil level.
    - 10) Compressor refrigerant discharge temperature.
    - 11) Refrigerant suction temperature.
    - 12) Addition of refrigerant.
    - 13) Addition of oil.
    - 14) Motor amperes per phase.
    - 15) Motor volts per phase.
    - 16) Ambient temperature (dry-bulb and wet-bulb).
    - 17) Date and time logged.
- C. Workstation Applications Editors:
- 1. Provide editing software for all system applications at the PC workstation.
  - 2. Downloaded application is executed at controller panel.
  - 3. Full screen editor for each application allows operator to view and change:
    - a. Configuration.
    - b. Name.
    - c. Control parameters.
    - d. Set-points.
  - 4. Scheduling:
    - a. Monthly calendar indicates schedules, holidays, and exceptions.
    - b. Allows several related objects to be scheduled and copied to other objects or dates.
    - c. Start and stop times adjustable from master schedule.
  - 5. Custom Application Programming:
    - a. Create, modify, debug, edit, compile, and download custom application programming during operation and without disruption of all other system applications.
    - b. Programming Features:
      - 1) English oriented language, based on BASIC, FORTRAN, C, or PASCAL syntax allowing for free form programming.
      - 2) Alternative language graphically based using appropriate function blocks suitable for all required functions and amenable to customizing or compounding.
      - 3) Insert, add, modify, and delete custom programming code that incorporates word processing features such as cut/paste and find/replace.

- 4) Allows the development of independently, executing, program modules designed to enable and disable other modules.
- 5) Debugging/simulation capability that displays intermediate values and/or results including syntax/execution error messages.
- 6) Support for conditional statements (IF/THEN/ELSE/ELSE-F) using compound Boolean (AND, OR, and NOT) and/or relations (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.
- 7) Support for floating-point arithmetic utilizing plus, minus, divide, times, square root operators; including absolute value; minimum/maximum value from a list of values for mathematical functions.
- 8) Language consisting of resettable, predefined, variables representing time of day, day of the week, month of the year, date; and elapsed time in seconds, minutes, hours, and days where the variable values can be used in IF/THEN comparisons, calculations, programming statement logic, etc.
- 9) Language having predefined variables representing status and results of the system software enables, disables, and changes the set points of the controller software.

## 2.8 CONTROLLER SOFTWARE

- A. All applications reside and operate in the system controllers and editing of all applications occurs at the operator workstation.
- B. System Security:
  1. User access secured via user passwords and user names.
  2. Passwords restrict user to the objects, applications, and system functions as assigned by the system manager.
  3. User Log On/Log Off attempts are recorded.
  4. Automatic Log Off occurs following the last keystroke after a user defined delay time.
- C. Object or Object Group Scheduling:
  1. Weekly Schedules Based on Separate, Daily Schedules:
    - a. Include start, stop, optimal stop, and night economizer.
    - b. 10 events maximum per schedule.
    - c. Start/stop times adjustable for each group object.
- D. Provide standard application for equipment coordination and grouping based on function and location to be used for scheduling and other applications.
- E. Alarms:
  1. Binary object is set to alarm based on the operator specified state.
  2. Analog object to have high/low alarm limits.
  3. All alarming is capable of being automatically and manually disabled.
  4. Alarm Reporting:
    - a. Operator determines action to be taken for alarm event.
    - b. Alarms to be routed to appropriate workstation.
    - c. Reporting Options:
- F. Maintenance Management: System monitors equipment status and generates maintenance messages based upon user-designated run-time limits.
- G. Sequencing: Application software based upon specified sequences of operation in Section 23 09 93.
- H. PID Control Characteristics:
  1. Direct or reverse action.
  2. Anti-windup.
  3. Calculated, time-varying, analog value, positions an output or stages a series of outputs.
  4. User selectable controlled variable, set-point, and PED gains.
- I. Staggered Start Application:

1. Prevents all controlled equipment from simultaneously restarting after power outage.
  2. Order of equipment startup is user selectable.
- J. Energy Calculations:
1. Accumulated instantaneous power or flow rates are converted to energy use data.
  2. Algorithm calculates a rolling average and allows window of time to be user specified in minute intervals.
  3. Algorithm calculates a fixed window average with a digital input signal from a utility meter defining the start of the window period that in turn synchronizes the fixed-window average with that used by the power company.
- K. Anti-Short Cycling:
1. All binary output objects protected from short-cycling.
  2. Allows minimum on-time and off-time to be selected.
- L. On-Off Control with Differential:
1. Algorithm allows binary output to be cycled based on a controlled variable and set-point.
  2. Algorithm to be direct-acting or reverse-acting incorporating an adjustable differential.
- M. Run-Time Totalization:
1. Totalize run-times for all binary input objects.
  2. Provides operator with capability to assign high run-time alarm.

## 2.9 HVAC CONTROL PROGRAMS

- A. General:
1. Support Inch-pounds and SI (metric) units of measurement.
  2. Identify each HVAC Control system.
- B. Optimal Run Time:
1. Control start-up and shutdown times of HVAC equipment for both heating and cooling.
  2. Base on occupancy schedules, outside air temperature, seasonal requirements, and interior room mass temperature.
  3. Start-up systems by using outside air temperature, room mass temperatures, and adaptive model prediction for how long building takes to warm up or cool down under different conditions.
  4. Use outside air temperature to determine early shut down with ventilation override.
  5. Operator commands:
    - a. Define term schedule
    - b. Add/delete fan status point.
    - c. Add/delete outside air temperature point.
    - d. Add/delete mass temperature point.
    - e. Define heating/cooling parameters.
    - f. Define mass sensor heating/cooling parameters.
    - g. Lock/unlock program.
    - h. Request optimal run time control summary.
    - i. Request optimal run time mass temperature summary.
    - j. Request HVAC point summary.
    - k. Request HVAC saving profile summary.
  6. Control Summary:
    - a. HVAC Control system begin/end status.
    - b. Optimal run time lock/unlock control status.
    - c. Heating/cooling mode status.
    - d. Optimal run time schedule.
    - e. Start/Stop times.
    - f. Selected mass temperature point ID.
    - g. Optimal run time system normal start times.
    - h. Occupancy and vacancy times.
    - i. Optimal run time system heating/cooling mode parameters.

7. Mass temperature summary:
  - a. Mass temperature point type and ID.
  - b. Desired and current mass temperature values.
  - c. Calculated warm-up/cool-down time for each mass temperature.
  - d. Heating/cooling season limits.
  - e. Break point temperature for cooling mode analysis.
  8. HVAC point summary:
    - a. Control system identifier and status.
    - b. Point ID and status.
    - c. Outside air temperature point ID and status.
    - d. Mass temperature point ID and point.
    - e. Calculated optimal start and stop times.
    - f. Period start.
- C. Supply Air Reset:
  1. Adjust discharge temperatures to most energy efficient levels satisfying measured load by:
    - a. Raising cooling temperatures to highest possible value.
    - b. Reducing heating temperatures to lowest possible level.
  2. Operator commands:
    - a. Add/delete fan status point.
    - b. Lock/unlock program.
    - c. Request HVAC point summary.
    - d. Add/Delete discharge controller point.
    - e. Define discharge controller parameters.
    - f. Add/delete air flow rate.
    - g. Define space load and load parameters.
    - h. Request space load summary.
  3. Control summary:
    - a. HVAC control system status (begin/end).
    - b. Supply air reset system status.
    - c. Optimal run time system status.
    - d. Heating and cooling loop.
    - e. High/low limits.
    - f. Deadband.
    - g. Response timer.
    - h. Reset times.
  4. Space load summary:
    - a. HVAC system status.
    - b. Optimal run time status.
    - c. Heating/cooling loop status.
    - d. Space load point ID.
    - e. Current space load point value.
    - f. Control heat/cool limited.
    - g. Gain factor.
    - h. Calculated reset values.
    - i. Fan status point ID and status.
    - j. Control discharge temperature point ID and status.
    - k. Space load point ID and status.
    - l. Air flow rate point ID and status.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify existing conditions before starting work.

- B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

### **3.2 INSTALLATION**

- A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.
- B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 23 09 93.
- C. Provide conduit and electrical wiring in accordance with Section 26 27 17. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

### **3.3 MANUFACTURER'S FIELD SERVICES**

- A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.
- B. Provide service engineer to instruct Owner's representative in operation of systems plant and equipment for 3 day period.
- C. Provide basic operator training for 4 persons on data display, alarm and status descriptors, requesting data, execution of commands and request of logs. Include a minimum of 8 hours dedicated instructor time. Provide training on site.

### **3.4 DEMONSTRATION AND INSTRUCTIONS**

- A. Demonstrate complete and operating system to Owner.

### **3.5 MAINTENANCE SERVICE**

- A. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.
- B. Provide two complete inspections per year, one in each season, to inspect, calibrate, and adjust controls as required, and submit written reports.
- C. Provide complete service of systems, including call backs. Make minimum of 4 complete normal inspections of approximately 2 hours duration in addition to normal service calls to inspect, calibrate, and adjust controls, and submit written reports.

**END OF SECTION**

**SECTION 23 31 00**  
**HVAC DUCTS AND CASINGS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Metal ductwork.
- B. Duct cleaning.

**1.2 REFERENCE STANDARDS**

- A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- D. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- G. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements.
- H. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry Elements.
- I. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements.
- J. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.
- K. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association.
- L. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.
- M. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; Sheet Metal and Air Conditioning Contractors' National Association.

**1.3 SUBMITTALS**

- A. See Section 23 05 00, Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data for duct materials.
- C. Manufacturer's Certificate: Certify that installation of glass fiber ductwork meet or exceed specified requirements.
- D. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK).
- E. Manufacturer's Installation Instructions: Indicate special procedures for glass fiber ducts.
- F. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

**1.4 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of documented experience.

## 1.5 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

## PART 2 PRODUCTS

### 2.1 DUCT ASSEMBLIES

- A. Regulatory Requirements: Construct ductwork to NFPA 90A standards.
- B. Ducts: Galvanized steel, unless otherwise indicated.

### 2.2 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
  - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
  - 2. VOC Content: Not more than 250 g/L, excluding water.
  - 3. Surface Burning Characteristics: Flame spread of zero, smoke developed of zero, when tested in accordance with ASTM E84.
- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
  - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
  - 2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
  - 3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
  - 4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
  - 5. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
  - 6. Other Types: As required.

### 2.3 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide air foil turning vanes of perforated metal with glass fiber insulation.
- D. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
- E. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- F. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

### 2.4 MANUFACTURED DUCTWORK AND FITTINGS

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

- E. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

### **3.2 CLEANING**

- A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

**END OF SECTION**

**SECTION 23 33 00**  
**AIR DUCT ACCESSORIES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Air turning devices/extractors.
- B. Backdraft dampers - metal.
- C. Backdraft dampers - fabric.
- D. Combination fire and smoke dampers.
- E. Duct access doors.
- F. Duct test holes.
- G. Flexible duct connections.
- H. Smoke dampers.
- I. Volume control dampers.

**1.2 RELATED REQUIREMENTS**

- A. Section 23 05 00 - Basic Mechanical Materials and Methods.
- B. Section 23 31 00 - HVAC Ducts and Casings.

**1.3 REFERENCE STANDARDS**

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association.
- B. NFPA 92 - Standard for Smoke-Control Systems.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.
- D. UL 555 - Standard for Fire Dampers; Underwriters Laboratories Inc..
- E. UL 555S - Standard for Smoke Dampers; Underwriters Laboratories Inc..

**1.4 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.
- D. Manufacturer's Installation Instructions: Provide instructions for fire dampers.
- E. Project Record Drawings: Record actual locations of access doors and test holes.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional provisions.
  - 2. Extra Fusible Links: One of each type and size.
- G. Maintain one copy of each document on site.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect dampers from damage to operating linkages and blades.

## **PART 2 PRODUCTS**

### **2.1 AIR TURNING DEVICES/EXTRACTORS**

- A. Manufacturers:
  - 1. Carlisle HVAC Products; Dynair Hollow Vane and Rail (Double Wall Vane): [www.carlislehvac.com](http://www.carlislehvac.com).
  - 2. Elgen Manufacturing: [www.elgenmfg.com](http://www.elgenmfg.com).
  - 3. Krueger: [www.krueger-hvac.com](http://www.krueger-hvac.com).
  - 4. Ruskin Company: [www.ruskin.com](http://www.ruskin.com).
  - 5. Titus [www.titus-hvac.com](http://www.titus-hvac.com).
  - 6. Ward Industries by Commercial Products Group of Hart & Cooley, Inc.: [www.wardind.com](http://www.wardind.com).
  - 7. Or equal performance.
- B. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.

### **2.2 BACKDRAFT DAMPERS - METAL**

- A. Manufacturers:
  - 1. Louvers & Dampers, Inc.: [www.louvers-dampers.com](http://www.louvers-dampers.com).
  - 2. Nailor Industries Inc.: [www.nailor.com](http://www.nailor.com).
  - 3. Ruskin Company: [www.ruskin.com](http://www.ruskin.com).
  - 4. Or equal performance.
- B. Gravity Backdraft Dampers, Size 18 x 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

### **2.3 BACKDRAFT DAMPERS - FABRIC**

- A. Manufacturers:
- B. Fabric Backdraft Dampers: Factory-fabricated.
  - 1. Blades: Neoprene coated fabric material.
  - 2. Birdscreen: 1/2 inch nominal mesh of galvanized steel or aluminum.
  - 3. Maximum Velocity: 1000 fpm (5 m/sec) face velocity.

### **2.4 COMBINATION FIRE AND SMOKE DAMPERS**

- A. Manufacturers:
  - 1. Louvers & Dampers, Inc.: [www.louvers-dampers.com](http://www.louvers-dampers.com).
  - 2. Nailor Industries Inc.: [www.nailor.com](http://www.nailor.com).
  - 3. Ruskin Company: [www.ruskin.com](http://www.ruskin.com).
  - 4. Or equal performance.
- B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

### **2.5 DUCT ACCESS DOORS**

### **2.6 DUCT TEST HOLES**

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
- B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

### **2.7 FIRE DAMPERS**

### **2.8 FLEXIBLE DUCT CONNECTIONS**

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.

### **2.9 SMOKE DAMPERS**

- A. Manufacturers:

1. Louvers & Dampers, Inc.: [www.louvers-dampers.com](http://www.louvers-dampers.com).
2. Nailor Industries Inc.: [www.nailor.com](http://www.nailor.com).
3. Ruskin Company: [www.ruskin.com](http://www.ruskin.com).
4. Or equal performance.

## **2.10 VOLUME CONTROL DAMPERS**

- A. Manufacturers:
  1. Louvers & Dampers, Inc.: [www.louvers-dampers.com](http://www.louvers-dampers.com).
  2. Nailor Industries Inc.: [www.nailor.com](http://www.nailor.com).
  3. Ruskin Company: [www.ruskin.com](http://www.ruskin.com).
  4. Or equal performance.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Splitter Dampers:
  1. Material: Same gage as duct to 24 inches size in either direction, and two gages heavier for sizes over 24 inches.
  2. Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
  3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw .
- D. Single Blade Dampers: Fabricate for duct sizes up to 12 x 30 inch.
  1. Manufacturers:
- E. Quadrants:
  1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.
  2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.
  3. Where rod lengths exceed 30 inches provide regulator at both ends.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Verify that electric power is available and of the correct characteristics.

### **3.2 INSTALLATION**

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide duct test holes where indicated and required for testing and balancing purposes.
- D. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- E. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
- F. Demonstrate re-setting of fire dampers to Owner's representative.
- G. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- H. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
- I. Use splitter dampers only where indicated.

**END OF SECTION**

**SECTION 23 34 13**  
**AXIAL HVAC FANS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Propeller fans.
- B. Motors and drives.
- C. Accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 23 05 00 - Basic Mechanical Materials and Methods.

**1.3 REFERENCE STANDARDS**

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; American Bearing Manufacturers Association, Inc..
- B. AMCA (DIR) - [Directory of] Products Licensed Under AMCA International Certified Ratings Program; Air Movement and Control Association International, Inc..
- C. AMCA 99 - Standards Handbook; Air Movement and Control Association International, Inc..
- D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; Air Movement and Control Association International, Inc. (ANSI/AMCA 210, same as ANSI/ASHRAE 51).
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; Air Movement and Control Association International, Inc..
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; Air Movement and Control Association International, Inc..
- G. SMACNA (DCS) - HVAC Duct Construction Standards; Sheet Metal and Air Conditioning Contractors' National Association.

**1.4 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Maintain one copy of each document on site.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect motors, shafts, and bearings from weather and construction dust.

**1.7 FIELD CONDITIONS**

**PART 2 PRODUCTS**

**2.1 AXIAL FANS**

- A. Product Requirements:
  - 1. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
  - 2. Sound Ratings: AMCA 301, tested to AMCA 300, and bearing the AMCA Certified Sound Rating Seal.
  - 3. Fabrication: Conform to AMCA 99.
  - 4. Performance Base: Sea level conditions.
  - 5. Temperature Limit: Maximum 300 degrees F.
- B. Hub and Impeller:
  - 1. Airfoil Impeller Blades: Adjustable die cast aluminum alloy glass reinforced polyester resin or welded steel die formed blades with belt drive.

2. Hub: Die cast aluminum alloy or cast iron hub or with belt drive of spun, welded steel, bored and keyed to shaft; to facilitate indexing of blade angle with automatic adjustment stops.
  3. Controllable Pitch Assemblies: Incorporate ball bearing counterbalanced blade and variable pitch assembly into hub with mechanical link to casing exterior mounted actuator, or pneumatic or electric actuator incorporated within hub.
  4. Cast Components: X-ray components after fabrication and statically and dynamically balance assembly before attachment to motor or shaft.
- C. Casing:
1. Fabricate casing of 1/4 inch steel for fans 40 inch in diameter and smaller and 3/8 inch steel for larger fans.
  2. Continuously weld, with inlet and outlet flange connections, and motor or shaft supports. Incorporate flow straightening guide vanes for fans specified for static pressures greater than one inch wg.
  3. Finish with one coat enamel applied to interior and exterior.
- D. Bearings and Drives:
1. Bearings: Heavy duty pillow block type, self-aligning, grease-lubricated ball bearings, with ABMA STD 9, L-10 life at 50,000 hours.
  2. Shafts: Hot rolled steel, ground and polished, with keyway; protectively coated with lubricating oil.
  3. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, keyed. Variable and adjustable pitch sheaves for motors 15 hp and under selected so required rpm is obtained with sheaves set at mid-position; fixed sheave for 20 hp and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.
  4. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.
  5. Lubrication: Extend lubrication fittings to outside of casing.
- E. Accessories:

## **2.2 PROPELLER FANS**

- A. Performance:
- B. Impeller: Shaped steel or steel reinforced aluminum blade with heavy hubs, statically and dynamically balanced, keyed and locked to shaft, directly connected to motor or provided with V-belt drive.
- C. Frame: One piece, square steel with die formed venturi orifice, mounting flanges and supports, with baked enamel finish.
- D. Accessories:

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.

**END OF SECTION**

**SECTION 23 34 16**  
**CENTRIFUGAL HVAC FANS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Backward inclined centrifugal fans.
- B. Airfoil centrifugal fans.
- C. Motors and drives.
- D. Fan accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 23 05 00 - Basic Mechanical Materials and Methods.
- B. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.
- C. Section 23 33 00 - Air Duct Accessories: Backdraft dampers.

**1.3 REFERENCE STANDARDS**

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; American Bearing Manufacturers Association, Inc..
- B. AMCA 99 - Standards Handbook; Air Movement and Control Association International, Inc..
- C. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; Air Movement and Control Association International, Inc.; 2007 (ANSI/AMCA 210, same as ANSI/ASHRAE 51).
- D. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; Air Movement and Control Association International, Inc..
- E. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; Air Movement and Control Association International, Inc..
- F. SMACNA (DCS) - HVAC Duct Construction Standards.

**1.4 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data on centrifugal fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate assembly of centrifugal fans and accessories including fan curves with specified operating point clearly plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional provisions.
  - 2. Extra Fan Belts: One set for each individual fan.
- F. Maintain one copy of each document on site.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect motors, shafts, and bearings from weather and construction dust.

## **1.7 FIELD CONDITIONS**

- A. Permanent fans may be used for ventilation during construction only after ductwork is clean, filters are in place, bearings have been lubricated, and fan has been test run under observation.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. ACME Engineering and Manufacturing Corporation: [www.acmefan.com](http://www.acmefan.com).
- B. Loren Cook Company: [www.lorencook.com](http://www.lorencook.com).
- C. PennBarry: [www.pennbarry.com](http://www.pennbarry.com).
- D. Or equal performance.

### **2.2 WHEEL AND INLET**

- A. Backward Inclined: Steel or aluminum construction with smooth curved inlet flange, heavy back plate, backwardly curved blades welded or riveted to flange and back plate; cast iron or cast steel hub riveted to back plate and keyed to shaft with set screws.
- B. Airfoil Wheel: Steel construction with smooth curved inlet flange, heavy back plate die formed hollow airfoil shaped blades continuously welded at tip flange, and back plate; cast iron or cast steel hub riveted to back plate and keyed to shaft with set screws.

### **2.3 HOUSING**

- A. Factory finish before assembly to manufacturer's standard. For fans handling air downstream of humidifiers, provide two additional coats of paint. Prime coating on aluminum parts is not required.

### **2.4 BEARINGS AND DRIVES**

- A. Bearings: Heavy duty pillow block type, selfgreasing ball bearings, with ABMA STD 9 life at 50,000 hours.
- B. Shafts: Hot rolled steel, ground and polished, with keyway, protectively coated with lubricating oil, and shaft guard.
- C. Drive: Cast iron or steel sheaves, dynamically balanced, keyed. Variable and adjustable pitch sheaves for motors 15 hp and under, selected so required rpm is obtained with sheaves set at mid Fixed sheave for 20 hp and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.
- D. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

### **2.5 PERFORMANCE REQUIREMENTS**

- A. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
- B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.
- C. Static and Dynamic Balance: Eliminate vibration or noise transmission to occupied areas.

### **2.6 ACCESSORIES**

- A. Fixed Inlet Vanes: Steel construction with fixed cantilevered inlet guide vanes welded to inlet bell.
- B. Discharge Dampers: Parallel blade heavy duty steel damper assembly with blades constructed of two plates formed around and welded to shaft, channel frame, sealed ball bearings, with blades linked out of air stream to single control lever.
- C. Inlet/Outlet Screens: Galvanized steel welded grid.
- D. Access Doors: Shaped to conform to scroll, with quick opening latches and gaskets.

- E. Scroll Drain: 1/2 inch steel pipe coupling welded to low point of fan scroll.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install fans with resilient mountings and flexible electrical leads. Refer to Section 22 05 48.
- C. Install flexible connections between fan inlet and discharge ductwork; refer to Section 23 33 00. Ensure metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

**END OF SECTION**

**SECTION 23 36 00**  
**AIR TERMINAL UNITS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Single-duct bypass air units.
- B. Single-duct variable volume units.
- C. Fan-powered units.

**1.2 RELATED REQUIREMENTS**

- A. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.
- B. Section 23 09 13 - Instrumentation and Control Devices for HVAC: Thermostats and actuators.
- C. Section 23 09 23 - Direct-Digital Control System for HVAC.
- D. Section 23 09 93 - Sequence of Operations for HVAC Controls.
- E. Section 23 31 00 - HVAC Ducts and Casings.

**1.3 REFERENCE STANDARDS**

- A. AHRI 880 - Performance Rating of Air Terminals.
- B. ASTM A492 - Standard Specification for Stainless Steel Rope Wire.
- C. ASTM A603 - Standard Specification for Zinc-Coated Steel Structural Wire Rope.
- D. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material).
- E. NFPA 70 - National Electrical Code.
- F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association.
- G. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems; Sheet Metal and Air Conditioning Contractors' National Association.
- H. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; Underwriters Laboratories Inc..

**1.4 ADMINISTRATIVE REQUIREMENTS**

**1.5 SUBMITTALS**

- A. See Section 23 05 00, Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate air flow, static pressure, and NC designation. Include electrical characteristics and connection requirements.
- C. Project Record Documents: Record actual locations of units and locations of access doors required for access of valving.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists. Include directions for resetting constant volume regulators.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.6 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for air terminal units.

## PART 2 PRODUCTS

### 2.1 SINGLE-DUCT BYPASS UNITS

- A. General:
  - 1. Factory assembled, variable air volume control bypass units, rated in accordance with AHRI 880.
  - 2. Clearly label each unit indicating maximum/minimum cfm, tag/mark number, model number, and manufacturer's order number.
- B. Construction:
  - 1. Casing: Minimum 22 gage, 0.0299 inch galvanized steel, acoustically and thermally lined with minimum 0.50 inch, dual density insulation, meeting the requirements of NFPA 90A, UL 181, and ASTM C1071.
  - 2. Air volume control assemblies to consist of galvanized steel damper.
  - 3. Acceptable air balancing assemblies include field adjustable, inlet and bypass dampers with static pressure taps for field balancing or sliding balancing door.
- C. Electrical Requirements:
  - 1. Single point power connection.
  - 2. Equipment wiring to comply with requirements of NFPA 70.
- D. Controls:
  - 1. Electronic:
    - a. Wall mounted thermostat, with integral control of room temperature, time-proportional with reheat-coil control feature and temperature set-point display in Celsius and Fahrenheit.
    - b. Damper Actuator: 24 volt, powered open/closed.
    - c. See Section 23 09 13.
  - 2. Control Sequence: See Section 23 09 93.

### 2.2 SINGLE DUCT VARIABLE VOLUME UNITS

- A. Manufacturers:
  - 1. Carrier, a part of UTC Building and Industrial Systems, a unit of United Technologies Corp.: [www.commercial.carrier.com](http://www.commercial.carrier.com).
  - 2. Johnson Controls, Inc: [www.johnsoncontrols.com](http://www.johnsoncontrols.com).
  - 3. Trane, a brand of Ingersoll Rand: [www.trane.com](http://www.trane.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. General:
  - 1. Factory assembled, AHRI 880 rated, variable air volume control terminal with damper assembly, flow sensor, externally mounted volume controller, duct collars, and all required features.
  - 2. Control box bearing identification, including but not necessarily limited to nominal cfm, maximum and minimum factory-set airflow limits, coil type and coil (right or left hand) connection, where applicable.
- C. Unit Casing:
  - 1. Minimum 22 gage, 0.0299 inch galvanized steel.
  - 2. Air Inlet Collar: Provide round, suitable for standard flexible duct sizes.
  - 3. Unit Discharge: Rectangular, with slip and drive connections.
  - 4. Acceptable Liners:
    - a. 1/2 inch thick, coated, fibrous-glass complying with ASTM C1071.
      - 1) Secure with adhesive.
      - 2) Coat edges exposed to airstream with NFPA 90A approved sealant.
      - 3) Cover liner with non-porous foil.

- D. Damper Assembly:
  1. Heavy gage, galvanized steel or extruded aluminum construction with solid shaft rotating in bearings.
  2. Provide indicator on damper shaft or alternative method for indicating damper position over full range of 90 degrees.
  3. Incorporate low leak damper blades for tight airflow shutoff.
- E. Electrical Requirements:
  1. Single point power connection.
  2. Equipment wiring to comply with requirements of NFPA 70.
- F. Control Transformers: Factory supplied and mounted for electric and electronic control applications.
- G. Controls:
  1. DDC:
    - a. Bi-directional Damper Actuator: 24 volt, powered closed, spring return open.
    - b. Microprocessor-based Controller: Air volume controller, pressure independent with electronic airflow transducers, factory calibrated maximum and minimum CFM's.
      - 1) Occupied and unoccupied operating mode.
      - 2) Remote reset of temperature or CFM set points.
      - 3) Proportional, plus integral control of room temperature.
      - 4) Monitoring and adjusting with portable terminal.
    - c. Room Sensor:
      - 1) Compatible with temperature controls specified.
      - 2) Wall mounted, system powered, with temperature set-point adjustment including connection access for portable operator terminal.
    - d. See Section 23 09 23.
  2. Control Sequence:
    - a. Suitable for operation with duct pressures between 0.25 and 3.0 inch wg inlet static pressure.
    - b. Include factory mounted and piped, 5-micron filter; and adjustable, velocity-resetting, high-limit control with amplifying relay.
    - c. See Section 23 09 93.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

### **3.2 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Provide ceiling access doors or locate units above easily removable ceiling components.
- C. Support units individually from structure with wire rope complying with ASTM A492 and ASTM A603 in accordance with SMACNA (SRM). See Section 22 05 48.
- D. Do not support from ductwork.
- E. Connect to ductwork in accordance with Section 23 31 00.

### **3.3 ADJUSTING**

### **3.4 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Provide manufacturer's field representative to test, inspect, instruct, and observe field-assembled components and equipment installation, including connections and to assist in field testing. Report results in writing.
  1. Operational Test:
    - a. After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
    - b. Test and adjust controls and safeties.

- c. Replace damaged and malfunctioning controls and other equipment.
- d. Remove and replace malfunctioning units and retest as specified above.

### **3.5 CLEANING**

- A. Vacuum clean coils and inside of units.
- B. Install new filters.

**END OF SECTION**

**SECTION 23 37 00**  
**AIR OUTLETS AND INLETS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Diffusers.
- B. Registers/grilles.
- C. Roof hoods.
- D. Goosenecks.

**1.2 REFERENCE STANDARDS**

- A. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; Air Movement and Control Association International, Inc..
- B. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Inlets; American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc..
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.

**1.3 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- C. Project Record Documents: Record actual locations of air outlets and inlets.
- D. Maintain one copy of each document on site.

**1.4 QUALITY ASSURANCE**

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

**PART 2 PRODUCTS**

**2.1 MANUFACTURERS**

- A. American Louver Company; ALC Grilles and Registers: [www.americanlouver.com](http://www.americanlouver.com).
- B. Carnes, a division of Carnes Company Inc.: [www.carnes.com](http://www.carnes.com).
- C. Hart & Cooley, Inc.: [www.hartandcooley.com](http://www.hartandcooley.com).
- D. Krueger: [www.krueger-hvac.com](http://www.krueger-hvac.com).
- E. Titus: [www.titus-hvac.com](http://www.titus-hvac.com).
- F. Or approved substitution.

**2.2 RECTANGULAR CEILING DIFFUSERS**

- A. Type: Provide square, stamped, multi-core, square, adjustable pattern, stamped, multi-core, square and rectangular, multi-louvered, square and rectangular, adjustable pattern, multi-louvered, and square diffuser to discharge air in 360 degree, four way.
- B. Connections: Round.

- C. Frame: Provide surface mount, snap-in, inverted T-bar, spline. In plaster ceilings, provide plaster frame and ceiling frame.
- D. Fabrication: Steel with baked enamel finish.
- E. Color: As selected by Engineer from manufacturer's standard range.
- F. Accessories: Provide radial opposed blade volume control damper; removable core and sectorizing baffle with damper adjustable from diffuser face.

### **2.3 PERFORATED FACE CEILING DIFFUSERS**

- A. Type: Perforated face with fully adjustable pattern and removable face.
- B. Frame: Surface mount type. In plaster ceilings, provide plaster frame and ceiling frame.
- C. Fabrication: Steel with steel frame and baked enamel finish.
- D. Color: As selected by Engineer from manufacturer's standard range.
- E. Accessories: Radial opposed blade damper and multi-louvered equalizing grid with damper adjustable from diffuser face.

### **2.4 CEILING SLOT DIFFUSERS**

- A. Type: Continuous 1/2 inch wide slot, 1 slots wide, with adjustable vanes for left, right, or vertical discharge; integral ceiling fire damper.
- B. Fabrication: Aluminum extrusions with factory clear lacquer finish.
- C. Color: To be selected by Engineer from manufacturer's standard range.
- D. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket, mitered end border.
- E. Plenum: Integral, galvanized steel, insulated.

### **2.5 CEILING SUPPLY REGISTERS/GRILLES**

- A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Construction: Made of aluminum extrusions with factory enamel finish.
- D. Color: As selected by Engineer from manufacturer's standard range.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

### **2.6 CEILING EXHAUST AND RETURN REGISTERS/GRILLES**

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

### **2.7 CEILING LINEAR EXHAUST AND RETURN GRILLES**

- A. Type: Streamlined blades with 90 degree one-way deflection, 1/8 x 3/4 inch on 1/4 inch centers.
- B. Frame: 1-1/4 inch margin, extra heavy for floor mounting, with countersunk screw mounting.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

D. Color: To be selected by Engineer from manufacturer's standard range.

## **2.8 CEILING EGG CRATE EXHAUST AND RETURN GRILLES**

- A. Type: Egg crate style face consisting of 1/2 x 1/2 x 1/2 inch grid core.
- B. Fabrication: Grid core consists of aluminum with mill aluminum finish.
- C. Color: To be selected by Engineer from manufacturer's standard range.
- D. Frame: 1-1/4 inch margin with countersunk screw mounting.
- E. Frame: Channel lay-in frame for suspended grid ceilings.
- F. Accessories: Provide plaster frame

## **2.9 WALL SUPPLY REGISTERS/GRILLES**

- A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, vertical face, single deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.
- F. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

## **2.10 WALL SUPPLY REGISTERS/GRILLES**

- A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille with one-way deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Aluminum extrusions with factory clear lacquer finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

## **2.11 WALL EXHAUST AND RETURN REGISTERS/GRILLES**

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

## **2.12 LINEAR WALL REGISTERS/GRILLES**

- A. Type: Streamlined blades with 0 degree deflection, 1/8 x 3/4 inch on 1/4 inch centers.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Damper: Integral gang-operated opposed blade damper with removable key operator, operable from face.

### **2.13 LINEAR FLOOR SUPPLY REGISTERS/GRILLES**

- A. Type: Streamlined blades with 0 degree deflection, 1/8 x 3/4 inch on 1/4 inch centers, assembled on expanded tubes mandrel construction.
- B. Frame: 1-1/4 inch heavy margin frame with countersunk screw mounting, and mounting frame.
- C. Fabrication: Aluminum extrusions with factory baked enamel finish.
- D. Color: To be selected by Engineer from manufacturer's standard range.
- E. Damper: Integral gang-operated opposed blade damper with removable key operator, operable from face.

### **2.14 FLOOR SUPPLY REGISTERS/GRILLES**

- A. Individually adjustable blades, wide stamped border, single or double blade damper with set screw adjustment.
- B. Fabricate of steel, welded construction, with factory baked enamel finish.

### **2.15 ROOF HOODS**

### **2.16 GOOSENECKS**

- A. Fabricate in accordance with SMACNA (DCS) of minimum 18 gage, 0.0598 inch galvanized steel.
- B. Mount on minimum 12 inch high curb base where size exceeds 9 x 9 inch.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- E. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09 91 23.

**END OF SECTION**

**SECTION 23 40 00**  
**HVAC AIR CLEANING DEVICES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Disposable, extended area panel filters.
- B. Disposable panel filters.
- C. Filter frames.

**1.2 REFERENCE STANDARDS**

- A. AHRI 850 - Performance Rating of Commercial and Industrial Air Filter Equipment; Air-Conditioning, Heating, and Refrigeration Institute.
- B. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc..
- C. UL 900 - Standard for Air Filter Units; Underwriters Laboratories Inc..

**1.3 PERFORMANCE REQUIREMENTS**

- A. Conform to AHRI 850 Section 7.4.

**1.4 SUBMITTALS**

- A. See Section 23 05 00, Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data on filter media, filter performance data, filter assembly and filter frames, dimensions, motor locations and electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate filter assembly and filter frames, dimensions, motor locations, and electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions: Indicate assembly and change-out procedures.
- E. Operation and Maintenance Data: Include instructions for operation, changing, and periodic cleaning.

**PART 2 PRODUCTS**

**2.1 FILTER MANUFACTURERS**

- A. American Filtration Inc.: [www.americanfiltration.com](http://www.americanfiltration.com).
- B. AAF International/American Air Filter: [www.aafintl.com](http://www.aafintl.com).
- C. Camfil Farr Company: [www.camfilfarr.com](http://www.camfilfarr.com).

**2.2 DISPOSABLE, EXTENDED AREA PANEL FILTERS**

- A. Media: UL 900 Class 1, pleated, lofted, non-woven, reinforced cotton fabric; supported and bonded to welded wire grid by corrugated aluminum separators.
  - 1. Nominal thickness: 2 inches.
- B. Minimum Efficiency Reporting Value (MERV): 8, when tested in accordance with ASHRAE 52.2.
- C. Rating, per ASHRAE Std 52.2:
  - 1. Initial resistance at 500 FPM face velocity: 0.20 inch WG.

**2.3 FILTER FRAMES AND HOUSINGS**

- A. General: Fabricate filter frames and supporting structures of 16 gage, 0.0598 inch galvanized steel or extruded aluminum T-section construction with necessary gasketing between frames and walls.
- B. Standard Sizes: Provide for interchangeability of filter media of other manufacturers; for panel filters, size for 24 x 24 inches filter media, minimum 2 inches thick; for extended surface and high efficiency particulate air filters, provide for upstream mounting of panel filters.

- C. Side Servicing Housings: Flanged for insertion into ductwork, of reinforced 16 gage, 0.0598 inch galvanized steel; access doors with continuous gasketing and positive locking devices on both sides; extruded aluminum tracks or channels for primary secondary filters with positive sealing gaskets.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install air cleaning devices in accordance with manufacturer's instructions.
- B. Prevent passage of unfiltered air around filters with felt, rubber, or neoprene gaskets.
- C. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with clean set.
- D. Provide filter gages on filter banks, installed with separate static pressure tips upstream and downstream of filters.

**END OF SECTION**

## SECTION 23 62 13

### PACKAGED AIR-COOLED REFRIGERANT COMPRESSOR AND CONDENSER UNITS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Condensing unit package.
- B. Charge of refrigerant and oil.
- C. Controls and control connections.
- D. Refrigerant piping connections.
- E. Motor starters.
- F. Electrical power connections.

##### 1.2 REFERENCE STANDARDS

- A. AHRI 210/240 - Standard for Performance Rating of Unitary Air Conditioning and Air-Source Heat Pump Equipment; Air-Conditioning, Heating, and Refrigeration Institute.
- B. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 2013 (ANSI/ASHRAE Std 15).
- C. ASHRAE Std 23.1 - Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc..
- D. ASHRAE Std 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 2013 (ANSI/ASHRAE/IESNA Std 90).
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association.

##### 1.3 SUBMITTALS

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.
- C. Shop Drawings: Indicate components, assembly, dimensions, weights and loadings, required clearances, and location and size of field connections. Include schematic layouts showing condensing units, cooling coils, refrigerant piping, and accessories required for complete system.
- D. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional provisions.
  - 2. Extra Lubricating Oil: One complete change.
- F. Maintain one copy of each document on site.

##### 1.4 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

##### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

## **1.6 WARRANTY**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional warranty requirements.
- B. Provide a five year warranty to include coverage for refrigerant compressors.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Carrier Corporation: [www.carrier.com](http://www.carrier.com).
- B. Trane Inc.: [www.trane.com](http://www.trane.com).
- C. York International Corporation / Johnson Controls: [www.york.com](http://www.york.com).
- D. Or equal performance.

### **2.2 MANUFACTURED UNITS**

- A. Units: Self-contained, packaged, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressors, condensing coil and fans, integral sub-cooling coil, controls, liquid receiver, wind deflector, and screens.
- B. Construction and Ratings: In accordance with AHRI 210/240. Test in accordance with ASHRAE Std 23.
- C. Performance Ratings: Energy Efficiency Rating (EER) and Coefficient of Performance (COP) not less than prescribed by ASHRAE Std 90.1.

### **2.3 CASING**

- A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.
- B. Mount starters, disconnects, and controls in weatherproof panel provided with full opening access doors. Provide mechanical interlock to disconnect power when door is opened.
- C. Provide removable access doors or panels with quick fasteners and piano hinges.

### **2.4 CONDENSER COILS**

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Provide sub-cooling circuits. Air test under water to 425 psig, and vacuum dehydrate. Seal with holding charge of nitrogen.
- B. Coil Guard: Expanded metal with lint screens.

### **2.5 FANS AND MOTORS**

- A. Vertical discharge direct driven propeller type condenser fans with fan guard on discharge. Equip with roller or ball bearings with grease fittings extended to outside of casing.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built in current and thermal overload protection. Refer to Section 23 05 13.

### **2.6 COMPRESSORS**

- A. Compressor: Semi-hermetic reciprocating type.
- B. Mounting: Statically and dynamically balance rotating parts and mount on spring vibration isolators. Internally isolate hermetic units on springs.
- C. Lubrication System: Reversible, positive displacement oil pump with oil charging valve, oil level sight glass, and magnetic plug or strainer.
- D. Motor: Constant speed 1800 rpm suction gas cooled with electronic sensor and winding over temperature protection, designed for across-the-line starting. Furnish with starter.
- E. Capacity Reduction Equipment: Suction valve unloaders, with lifting mechanism operated by electrically actuated solenoid valve, with unloaded compressor start; controlled from suction pressure.

- F. Sump Oil Heater: Evaporates refrigerant returning to sump during shut down. Energize heater continuously when compressor is not operating.

## **2.7 REFRIGERANT CIRCUIT**

- A. Provide each unit with one refrigerant circuit, factory supplied and piped. Refer to Section 23 23 00.
- B. For each refrigerant circuit, provide:
  - 1. Filter dryer replaceable core type.
  - 2. Liquid line sight glass and moisture indicator.
  - 3. Thermal expansion valve for maximum operating pressure.
  - 4. Insulated suction line.
  - 5. Suction and liquid line service valves and gage ports.
  - 6. Liquid line solenoid valve.
  - 7. Charging valve.
  - 8. Discharge line check valve.
  - 9. Compressor discharge service valve.
  - 10. Condenser pressure relief valve.
- C. For heat pump units, provide reversing valve, suction line accumulator, discharge muffler, flow control check valve, and solid-state defrost control utilizing thermistors.

## **2.8 CONTROLS**

- A. On unit, mount weatherproof steel control panel, NEMA 250, containing power and control wiring, molded case disconnect switch, factory wired with single point power connection. Factory mount disconnect switch on unit under provisions of Section 26 27 17.
- B. For each compressor, provide across-the-line starter, non-recycling compressor overload, starter relay, and control power transformer or terminal for controls power. Provide manual reset current overload protection. For each condenser fan, provide across-the-line starter with starter relay.
- C. Provide safety controls arranged so any one will shut down machine:
  - 1. High discharge pressure switch (manual reset) for each compressor.
  - 2. Low suction pressure switch ( automatic reset) for each compressor.
  - 3. Oil Pressure switch (manual reset).
- D. Provide the following operating controls:
  - 1. Thermostat located in room cycles compressors activates cylinder unloaders.
  - 2. One minute off timer prevents compressor from short cycling.
  - 3. Low ambient temperature controls.
  - 4. Hot gas bypass sized for minimum compressor loading on one compressor only, bypasses hot refrigerant gas to evaporator.
  - 5. Lead-lag switch to alternate compressor operation.
  - 6. Low ambient thermostat to lock out compressor at low ambient temperatures.
- E. Gages: Prepiped for suction and discharge refrigerant pressures and oil pressure for each compressor.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's installation instructions.
- B. Complete structural, mechanical, and electrical connections in accordance with manufacturer's installation instructions.
- C. Provide for connection to electrical service. Refer to Section 26 27 17.
- D. Install units on vibration isolation. Refer to Section 22 05 48.
- E. Provide connection to refrigeration piping system and evaporators. Refer to Section 23 23 00. Comply with ASHRAE Std 15.

### **3.2 SYSTEM STARTUP**

- A. Supply initial charge of refrigerant and oil for each refrigeration system. Replace losses of oil or refrigerant prior to end of correction period.
- B. Charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.
- C. Shut-down system if initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.
- D. Provide cooling season start-up, and winter season shut-down for first year of operation.
- E. Inspect and test for refrigerant leaks every 90 days during first year of operation.

**END OF SECTION**

**SECTION 23 74 13**  
**PACKAGED ROOFTOP UNITS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Packaged roof top unit.
- B. Unit controls.
- C. Roof mounting curb and base.

**1.2 REFERENCE STANDARDS**

- A. AHRI 210/240 - Standard for Performance Rating of Unitary Air Conditioning and Air-Source Heat Pump Equipment; Air-Conditioning, Heating, and Refrigeration Institute.
- B. AHRI 270 - Sound Rating of Outdoor Unitary Equipment; Air-Conditioning, Heating, and Refrigeration Institute.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilation Systems; National Fire Protection Association.

**1.3 SUBMITTALS**

- A. See Section 23 05 00 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- C. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- D. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.
- E. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
- F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 23 05 00 - Basic Mechanical Materials and Methods, for additional provisions.
  - 2. Extra Filters: One set for each unit.
- H. Maintain one copy of each document on site.

**1.4 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect units from physical damage by storing off site until roof mounting curbs are in place, ready for immediate installation of units.

**1.6 WARRANTY**

- A. See Section 00 7200, General Conditions of the Contract, for additional warranty requirements.
- B. Provide a one year warranty to include coverage for refrigeration compressors.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Carrier Corporation: [www.carrier.com](http://www.carrier.com).
- B. Trane, Inc.: [www.trane.com](http://www.trane.com).
- C. York by Johnson Controls Inc.: [www.johnsoncontrols.com](http://www.johnsoncontrols.com).
- D. Or approved substitution.

### **2.2 MANUFACTURED UNITS**

- A. General: Roof mounted units having gas burner and electric refrigeration.
- B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, return fan, heat exchanger and burner, heat recovery coil, controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.
- C. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Section 26 27 17.

### **2.3 FABRICATION**

- A. Cabinet: Steel with baked enamel finish, including access panels with screwdriver operated flush cam type fasteners. Structural members shall be minimum 18 gage, 0.0478 inch, with access doors or panels of minimum 20 gage, 0.0359 inch.
- B. Insulation: 1/2 inch thick neoprene coated glass fiber with edges protected from erosion.
- C. Heat Exchangers: Aluminized steel, of welded construction.
- D. Supply and Return Fan: Forward curved centrifugal type, resiliently mounted with V-belt drive, adjustable variable pitch motor pulley, and rubber isolated hinge mounted high efficiency motor or direct drive as indicated. Isolate complete fan assembly. Refer to Section 22 05 48.
- E. Air Filters: 2 inch thick glass fiber disposable media in metal frames. Refer to Section 23 40 00.
- F. Roof Mounting Curb: 14 inches high galvanized steel, channel frame with gaskets, nailer strips.

### **2.4 BURNER**

- A. Gas Burner: Atmospheric type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shut-off, intermittent spark or glow coil ignition, flame sensing device, and automatic 100 percent shut-off pilot.
- B. Gas Burner Safety Controls: Energize ignition, limit time for establishment of flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, energize blower motor, and after air flow proven and slight delay, allow gas valve to open.
- C. High Limit Control: Temperature sensor with fixed stop at maximum permissible setting, de-energize burner on excessive bonnet temperature and energize burner when temperature drops to lower safe value.
- D. Supply Fan Control: Temperature sensor sensing bonnet temperatures and independent of burner controls, with provisions for continuous fan operation.

### **2.5 EVAPORATOR COIL**

- A. Provide copper tube aluminum fin coil assembly with galvanized drain pan and connection.
- B. Provide capillary tubes or thermostatic expansion valves for units of 6 tons capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons cooling capacity and larger.

### **2.6 COMPRESSOR**

- A. Provide hermetic compressors, 3600 rpm maximum, resiliently mounted with positive lubrication, crankcase heater, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gage ports, and filter drier.

## **2.7 CONDENSER COIL**

- A. Provide copper tube aluminum fin coil assembly with subcooling rows and coil guard.
- B. Provide direct drive propeller fans, resiliently mounted with fan guard, motor overload protection, wired to operate with compressor. Provide high efficiency fan motors.
- C. Provide refrigerant pressure switches to cycle condenser fans.

## **2.8 MIXED AIR CASING**

- A. Dampers: Provide outside, return, and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fall to closed position. Relief dampers may be gravity balanced.
- B. Gaskets: Provide tight fitting dampers with edge gaskets.
- C. Damper Operator: 24 volt with gear train sealed in oil.
- D. Mixed Air Controls: Maintain selected supply air temperature and return dampers to minimum position on call for heating and above 75 degrees F ambient, or when ambient air temperature exceeds return air temperature.

## **2.9 OPERATING CONTROLS**

- A. Provide low voltage, adjustable room thermostat to control burner operation, compressor and condenser fan, and supply fan to maintain temperature setting.
  - 1. Include system selector switch (heat-off-cool) and fan control switch (auto-on).
  - 2. Locate thermostat in room as shown.

## **2.10 OPERATING CONTROLS - VARIABLE VOLUME UNITS**

- A. Temperature transmitter located in supply air shall signal electronic logic panel to control mixing dampers and cooling in sequence. Mixing section shall operate as first stage of cooling and revert to minimum outside air above approximately 75 degrees F as determined by enthalpy of return and outdoor air.
- B. Control cooling by cycling compressors, cylinder unloading, and hot gas bypass.
- C. Control logic shall allow supply air reset under low load or airflow conditions.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that proper power supply is available.

### **3.2 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

### **3.3 SYSTEM STARTUP**

- A. Prepare and start equipment. Adjust for proper operation.

### **3.4 CLOSEOUT ACTIVITIES**

- A. Demonstrate operation to Owner's maintenance personnel.

### **3.5 MAINTENANCE**

- A. Provide service and maintenance of packaged roof top units for one year year from Date of Substantial Completion.
- B. Provide routine maintenance service with a two month interval as maximum time period between calls.

- C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.
- D. Provide 24-hour emergency service on breakdowns and malfunctions.
- E. After each service call, submit copy of service call work order or report that includes description of work performed.

**END OF SECTION**

## SECTION 26 05 00

### COMMON WORK RESULTS FOR ELECTRICAL

#### 1PART GENERAL

##### .1 SUMMARY

- A. Section includes
  - 1. Electrical Basic Requirements specifically applicable to Divisions 25, 26, 27 and 28 in addition to the requirements of Division 01 - General Requirements and the General Conditions of the Contract.
  - 2. Conduit and equipment supports
  - 3. Anchors and fasteners
  - 4. Nameplates and wire markers.

##### .2 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 25, 26, 27 and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

##### .3 SYSTEM DESCRIPTION

- A. Select materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and raceway, including weight of wire and cable in raceway. Anchor and fasten electrical products to building elements and finishes as follows:
  - 1. Concrete Structural Elements: Expansion anchors and preset inserts.
  - 2. Steel Structural Elements: Beam clamps, spring steel clips, steel ramset fasteners, and welded fasteners.
  - 3. Concrete Surfaces: Self-drilling anchors and expansion anchors.
  - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
  - 5. Solid Masonry Walls: Expansion anchors and preset inserts.
  - 6. Sheet Metal: Sheet metal screws.
  - 7. Wood Elements: Wood screws.
- B. Identify Electrical components as follows:
  - 1. Nameplate for each electrical distribution and control equipment enclosure.
  - 2. Wire marker for each conductor at panelboard gutters, pull boxes, and outlet and junction boxes.

##### .4 REGULATORY REQUIREMENTS

- A. All electrical work shall be performed in strict accordance with the New Mexico Building codes, IBC, ANSI, NEC, NFPA, Model Energy Code, and all applicable provisions of the local authorities having jurisdiction. All materials and labor necessary to comply with rules,

regulations, and ordinances shall be provided. Where the drawings and/or specifications

indicate material or construction in excess of code requirements or visa-versa, the more stringent application shall govern.

- B. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made, or certificate of final payment issued, until certificates of satisfactory inspection from the inspection authorities are delivered.

## .5 SUBMITTALS

- A. All data should be submitted as a single package, as the Engineer will commence review only when all data has been received.
- B. Submittal form to identify project, contractor, sub-contractor, supplier, and pertinent contract document references.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- D. The Contractor shall determine and verify field measurements and field construction criteria for conformance with drawings and specifications and for conflicts with other items of construction, past or present. He shall coordinate each submittal with the requirements of the work and of the contract documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the work and contract documents.

No fabrication or work, which requires submittals, shall begin until submittals are returned with the Engineer's approval.

- E. Identify variations for contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the work and contract documents, nor shall it constitute approval for any deviation from the contract documents, unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- H. The Engineer will review a submittal and, if necessary, a resubmittal of the same item. Subsequent resubmittals shall be accompanied by Contractor's purchase order to Engineer for all Engineer's review time and costs at Engineer's standard hourly billing rates. These reviews will be performed at the convenience of the Engineer.
- I. See Division 01 for number of copies to be submitted.
- J. Product Data - Basic Materials and Methods: Submit manufacturer's catalog data for grounding electrodes and connections; for fastening components; and nameplates, labels, and markers.

## .6 SUBSTITUTIONS

- A. Prior approvals will not be considered. Contract documents indicate specified equipment and acceptable alternatives. Any other equipment/material proposed must meet or exceed that specified. Equipment/material will be reviewed for compliance during submittal review process per Paragraph 1.5.
- B. Engineer will consider requests for substitutions only at submittal review. Clearly identify substitution.
- C. Document each request with complete data, substantiating compliance of proposed substitution with contract documents.
- D. A request for substitution constitutes a representation that the Contractor:
  - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
  - 2. Will provide the same warranty for the substitution as for the specified product.
  - 3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension which may, subsequently, become apparent.
  - 5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

## .7 PROJECT CONDITIONS

- A. Existing project conditions indicated on Drawings are based on casual field observation and existing record documents.
- B. Verify filed measurements and circuiting arrangements are as shown on Drawings.
- C. Verify removal of existing electric work.
- D. Report discrepancies to Architect/Engineer before disturbing existing installation.

## .8 COORDINATION

- A. Obtain and review shop drawings, product data, and manufacturer's instructions for equipment furnished under other Sections to determine connection locations and requirements.
- B. Sequence rough-in of electrical connections to coordinate with installation and start-up of equipment furnished under other Sections.

## .9 OPERATIONS AND MAINTENANCE MANUALS

- A. Submit three (3) sets prior to final inspection, bound in 8-1/2" x 11" text pages, three (3) D-side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally sub-divide the binder contents with permanent page dividers, logically organized with tab titling clearly printed under reinforced, laminated plastic tabs.
- D. Contents:

1. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Sub-contractors, and major equipment suppliers.
2. Operation and maintenance instructions arranged by system.
3. Project documents and certificates.

#### .10 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with the requirements of Division 01.

#### .11 RECORD AS-BUILT DRAWINGS

- A. The Contractor shall record into Record Drawings, Project Manual and Product Data, the actual "as-built" Work including all revisions. Record information concurrent with the construction progress legibly marked to record actual construction.
- B. Contractor shall modify original reproducible drawings and two (2) sets of the project manual, delineating recorded as-built conditions of the project or record documents compiled from the job records. The Contractor may obtain reproducible drawings from the office of the Architect or Engineer. This set of documents shall show all changes in the work, including actual location of all work.
- C. Owner will require electronic (.DWG or .PDF) files of "as-built" conditions. The Contractor may obtain electronic drawings from the office of the Architect or Engineer and must modify the electronic record documents. The Contractor shall submit the as-built drawings in electronic format and/or printed drawings on the medium specified. The Contractor may request Engineer to complete modifications to drawings. Such request must be accompanied by Contractor's purchase order to Engineer for drafting services.
- D. Completion of record as-built drawings is a condition of final inspection and consideration of final payment.

#### 1.12 FINAL INSPECTIONS

- A. One final inspection for completion of project will be performed by the Engineer. Any and all additional inspections requested by the Contractor or required because of Contractor's failure to complete scope of work shall be paid for by the Contractor. Costs for additional inspections shall be assessed at the Engineer's hourly rates.

### **PART 2 PRODUCTS**

#### 2.1 NAMEPLATES

- A. Product Description: Engraved three-layer laminated plastic nameplate, black letters on white background.
- B. Letter Size:
  1. 1/8 inch letters for identifying individual equipment and loads.
  2. 1/4 inch letters for identifying grouped equipment and loads.

#### 2.2 WIRE MARKERS

- A. Product Description: Cloth tape, split sleeve, or tubing type wire markers with circuit or control wire number permanently stamped or printed.

### **PART 3 EXECUTION**

### 3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Make electrical connections to utilization equipment in accordance with equipment manufacturer's instructions.
  - 1. Verify that wiring and outlet rough-in work is complete and that utilization equipment is ready for electrical connection, wiring, and energization.
  - 2. Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring where indicated.
  - 3. Install and connect disconnect switches, controllers, control stations, and control devices as indicated.
  - 4. Make conduit connections to equipment, using flexible conduit. Use liquid-tight flexible conduit in damp or wet locations.
  - 5. Install pre-fabricated cord set where connection with attachment plug is indicated or specified, or use attachment plug with suitable strain-relief clamps.
  - 6. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.
- C. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.
  - 1. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, and spring steel clips.
  - 2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
  - 3. Do not fasten supports to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.
  - 4. Do not use powder-actuated anchors.
  - 5. Do not drill structural steel members.
  - 6. Fabricate supports from structural steel or formed steel members.
  - 7. Install free-standing electrical equipment on concrete pads.
  - 8. Install surface-mounted cabinets and panelboards with minimum of four (4) anchors.
  - 9. Install steel channel supports to stand cabinets 1 inch off wall in wet locations.
  - 10. Install sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- D. Identify electrical distribution and control equipment and loads served to meet regulatory requirements.
  - 1. Degrease and clean surfaces to receive nameplates and tape labels.
  - 2. Install nameplate parallel to equipment lines. Secure nameplate to equipment front using screws or rivets. Secure nameplate to inside face of recessed panelboard doors in finished locations.
- E. Install wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connections.
  - 1. Use branch circuit or feeder number to identify power and lighting circuits.

### 3.2 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS

- A. Before substantial completion can be granted, the following items must be completed and/or

submitted to the Owner/Engineer.

1. Test, adjust, and calibrate all systems.
  2. Provide typed panel directories installed in each panelboard.
  3. Label all electrical equipment properly.
- B. Prior to the final inspection or consideration of final payment, the Contractor shall:
1. Provide copies of permits and/or inspection certificates.
  2. Provide a check-out report.
  3. Provide Operation and Maintenance Manual(s).
  4. Provide Record As-built Drawings.
  5. Return keys to the Owner.
  6. Deliver all spare parts.
  7. Touch up any damaged finishes.

END OF SECTION

## SECTION 26 05 01

### ELECTRICAL DEMOLITION FOR REMODELING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes electrical demolition.

##### 1.2 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 13, 15, and 16 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual Sections.

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on Drawings.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Existing project conditions indicated on Drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

##### 3.2 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate utility service outages with Utility Company and Owner.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When performing work on energized equipment or circuits, use personnel experienced and trained in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service.
  - 1. Disable system only to make switchovers and connections.

- 
2. Obtain permission from Owner at least 1 week (7 days) before partially or

- 3. completely disabling system. Minimize outage duration.
    - 3. Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted.
  - 1. Disable system only to make switchovers and connections.
  - 2. Obtain permission from Owner at least 1 week (7 days) before partially or completely disabling system. Minimize outage duration.
  - 3. Make temporary connections to maintain service in areas adjacent to work area.
- F. Existing Telephone System: Maintain existing system in service.
  - 1. Disable system only to make switchovers and connections if required. No new work is expected.
  - 2. Obtain permission from Owner at least 1 week (7 days) before partially or completely disabling system. Minimize outage duration.
  - 3. [Make temporary connections to maintain service in areas adjacent to work area.]

### 3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of this Division and related Divisions.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- E. Remove exposed abandoned raceway, boxes, wire, and cable[,including abandoned raceway and cable above accessible ceiling finishes].
- F. Disconnect abandoned circuits and remove raceway, wire, and cable. Remove abandoned boxes when connecting wire and cable is abandoned and removed. Install blank cover for remaining abandoned boxes.
- G. Maintain access to existing boxes and wiring connections remaining active and requiring access. Modify installation or install access panel.
- H. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.
- I. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- J. Disconnect abandoned panelboards and distribution equipment. Install blank cover for abandoned enclosures and boxes.
- K. Maintain access to existing distribution equipment remaining active and requiring access. Modify installation or provide access panel.
- L. Clean and repair existing distribution equipment to remain or to be reinstalled.
- M. Disconnect and remove abandoned luminaires, lamps, and poles. Remove brackets, stems, hangers, and other accessories.
- N. Clean and repair existing luminaires to remain or to be reinstalled.

- O. Repair adjacent construction and finishes damaged during demolition and extension work.
- P. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- Q. Extend existing installations using materials and methods compatible with existing electrical installations.
- R. Telephone: Remove exposed abandoned telephone cables and pathways, including abandoned cables and pathways above accessible ceiling finishes. Cut flush with walls and floors, and patch surfaces.
  - 1. Disconnect and remove abandoned telephone equipment.
  - 2. Maintain access to existing telephone equipment, cabling, and terminations and other installations remaining active and requiring access. Modify installation or provide access panel.
  - 3. Extend existing telephone installations using materials and methods compatible with existing installations. No new work is designed.

#### 3.4 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts, and broken electrical parts.

#### 3.5 INSTALLATION

- A. Install relocated materials and equipment under the provisions of Division 1.

**END OF SECTION**

## SECTION 26 05 10

### LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

#### 1PART GENERAL

##### .1 SUMMARY

- A. Section includes:
  - 1. Building wire and cable.
  - 2. Conduit and tubing
  - 3. Surface raceway.
  - 4. Boxes
  - 5. Wiring devices
  - 6. Wiring connectors
  - 7. Connections.

##### .2 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 13, 15, and 16 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

##### .3 SYSTEM DESCRIPTION

- A. Wiring Products:
  - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
  - 2. Stranded conductors for control circuits.
  - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
  - 4. Conductor not smaller than 16 AWG for control circuits.
  - 5. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- B. Wiring Methods:
  - 1. Concealed Dry Interior Locations: Building wire, Type THW - THHN insulation, in raceway.
  - 2. Exposed Dry Interior Locations: Building wire, Type THW - THHN insulation, in raceway.
  - 3. Above Accessible Ceilings: Building wire, Type THW - THHN insulation, in raceway.
- C. Conductor sizes are based on copper unless indicated as aluminum or "AL". When aluminum conductor is substituted for copper conductor, size to match circuit requirements for conductor ampacity and voltage drop.
- D. Raceway and boxes are located as indicated on Drawings, and at other locations where required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
- E. Raceway Products:
  - 1. Wet and Damp Locations: Use rigid steel conduit. Use cast metal or nonmetallic outlet,

junction, and pull boxes. Use flush mounting outlet box in finished areas.

2. Concealed Dry Locations: Use rigid steel conduit. Use sheet-metal boxes. Use flush mounting outlet box in finished areas. Use hinged enclosure for large pull boxes.
3. Exposed Dry Locations: Use rigid steel. Use sheet-metal boxes. Use flush mounting outlet box in finished areas. Use hinged enclosure for large pull boxes.

F. Minimum Raceway Size: 3/4 inch unless otherwise specified.

#### .4 SUBMITTALS

A. Procedures for submittals: See Section 16050.

B. Product Data:

1. Provide wiring device configurations, ratings, dimensions, and color selections.
2. Provide service fitting configurations, dimensions, finish, and color selections.

#### .5 CLOSEOUT SUBMITTALS

A. Operations and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, cleaning procedures, replacements parts list, and maintenance and repair data. Submit recommended maintenance schedule.

B. Project Record Documents: See Section 16050

1. Accurately record routing of conduits larger than 2 inches.

#### .6 QUALITY ASSURANCE

A. Perform work in accordance with NECA Standard of Installation.

#### .7 REGULATORY REQUIREMENTS

A. Conform to requirement of NFPA 70.

B. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.

### 2PART PRODUCTS

#### .1 CONDUIT AND FITTINGS

A. Conduit:

1. Metal conduit and tubing: Galvanized steel.
2. Flexible conduit: Steel, aluminum, and PVC plastic.
3. Liquid-tight flexible conduit: Flexible conduit with PCV jacket.
4. Plastic conduit and tubing: NEMA TC 2; PVC. Use Schedule 40 conduit.
5. RGS or IMC, 90 degree bends. PVC is not acceptable.

B. Conduit fittings:

1. Metal fittings and conduit bodies: NEMA FB 1.
2. Plastic fittings and conduit bodies: NEMA TC 3.

#### .2 SURFACE METAL RACEWAY

A. Manufacturers:

1. Wiremold
2. Square D.
3. Or equal performance.

- B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway, with manufacturer's standard enamel finish. Furnish manufacturer's standard accessories; match finish on raceway.

### .3 ELECTRICAL BOXES

- A. Boxes:
  - 1. Sheet Metal: NEMA OS 1; Galvanized steel.
  - 2. Cast Metal: Aluminum, deep type, gasket cover, threaded hubs.

### .4 WIREWAY

- A. Manufacturers:
  - 1. Square D
  - 2. Siemens
  - 3. Hoffman
  - 4. Or equal performance.

## 3PART EXECUTION

### .1 EXAMINATION AND PREPARATION

- A. Verify that supporting surfaces are ready to receive work.
- B. Verify that interior of building is physically protected from weather.
- C. Verify that mechanical work, which is likely to injure conductors, has been completed.
- D. Completely and thoroughly swab raceway system before installing conductors.
- E. Electrical boxes are shown on drawings in approximate locations unless dimensioned.
  - 1. Obtain verification from Architect and/or Owner of floor box locations, and locations of outlets in offices and work areas prior to rough-in.
  - 2. Elevator system: Determine location of outlets for lights, cab circuits, machines, and equipment installed in elevator pit, shaft, and machine rooms with elevator system installer prior to rough-in.

### .2 INSTALLATION

- A. Route raceway and cable to meet Project conditions.
- B. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- C. Adjust box location up to 10 feet prior to rough-in when required to accommodate intended purpose.
- D. Arrange conduit to maintain headroom and to present neat appearance.
  - 1. Route exposed raceway parallel and perpendicular to walls and adjacent piping.
  - 2. Maintain minimum 6 inch clearance to piping and 12 inch clearance to heat surfaces, such as flues, steam pipes, and heating appliances.
  - 3. Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings.
  - 4. Route conduit through roof openings for piping and ductwork where possible. Otherwise, route through roof jack with pitch pocket.
  - 5. Group in parallel runs where practical. Use rack constructed of steel channel. Maintain spacing between raceways or derate circuit ampacities to NFPA 70

requirements.

6. Use conduit hangers and clamps. Do not fasten with wire or perforated pipe straps.
  7. Use conduit bodies to make sharp changes in direction.
  8. Terminate conduit stubs with insulated bushings.
  9. Use suitable caps to protect installed raceway against entrance of dirt and moisture.
  10. Provide No. 12 AWG insulated conductor or suitable pull string in empty raceways, except sleeves and nipples.
  11. Install expansion joints where raceway crosses building expansion joints.
  12. Install plastic conduit and tubing in accordance with manufacturer's instructions.
- E. Install surface metal raceway and multi-outlet assemblies in accordance with manufacturer's instructions.
1. Use flat-head screws or clips and straps suitable for the purpose to fasten channel to surfaces. Mount plumb and level.
  2. Use suitable insulated bushings and inserts at connections to outlets and corner fittings in metal raceway.
  3. Use fittings and accessories designed for use with raceway system.
- F. Install auxiliary gutter and wireway in accordance with manufacturer's instructions.
- G. Install electrical boxes as shown on the drawings and as required for splices, taps, wire pulling, equipment connections, and regulatory requirements.
1. Use cast outlet box in exterior locations exposed to weather and wet locations.
  2. Use hinged cover enclosure for interior pull and junction box larger than 12 inches in any dimension.
  3. Locate and install electrical boxes to allow access. Provide access panels if required.
  4. Locate and install electrical boxes to maintain headroom and to present neat mechanical appearance.
  5. Install pull boxes and junction boxes above accessible ceilings or in unfinished areas.
  6. Provide knockout closures for unused openings.
  7. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.
  8. Coordinate mounting heights and locations of outlets above counters, benches, and backsplashes.
  9. Install lighting outlets to locate luminaries as shown on reflected ceiling plan.
- H. Use recessed outlet boxes in finished areas and where indicated.
1. Secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness.
  2. Use stamped steel stud bridges for flush outlets in hollow stud wall and adjustable steel channel fasteners for flush ceiling outlet boxes.
  3. Locate boxes in masonry walls to require cutting corner only. Coordinate masonry cutting to achieve neat openings for boxes.
  4. Do not install boxes back-to-back in walls; install boxes with minimum 24 inches separation.
  5. Do not damage insulation.
- I. Install floor boxes in accordance with manufacturer's instructions.
1. Set boxes level and flush with finish flooring material.
  2. Use cast floor boxes for installations in slab on grade.
- J. Install service fittings in accordance with manufacturer's instructions.
- K. Drill floor opening and install poke-through fittings in accordance with manufacturer's instructions.
- L. Interface outlet box, service fitting, and floor box installation with furniture locations.

M. Neatly train and secure wiring inside boxes, equipment, and panel boards.

- N. Use wire-pulling lubricant for pulling 4 AWG and larger wires.
- O. Support cables above accessible ceilings to keep them from resting on ceiling tiles.
- P. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- Q. Terminate spare conductors with electrical tape.
- R. Install wiring devices in accordance with manufacturer's instructions.
  - 1. Install wall switches 48 inches above floor, "**OFF**" position down.
  - 2. Install wall dimmers 48 inches above floor. Derate ganged dimmers as instructed by manufacturer. Do not use common neutral.
  - 3. Install convenience receptacles 18 inches above floor, 4 inches above counters, backsplash, grounding pole on bottom.
  - 4. Install specific purpose receptacles at heights shown on drawings.
  - 5. Install cord and attachment plug caps on equipment. Size cord for connected load and rating of branch circuit overcurrent protection.
- S. Install wall plates flush and level.
  - 1. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
  - 2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

END OF SECTION

# FORT MARCY RECREATION COMPLEX HVAC REPLACEMENT SANTA FE, NM

**100% CONSTRUCTION DOCUMENTS  
NOVEMBER 16, 2015**

## ENGINEER

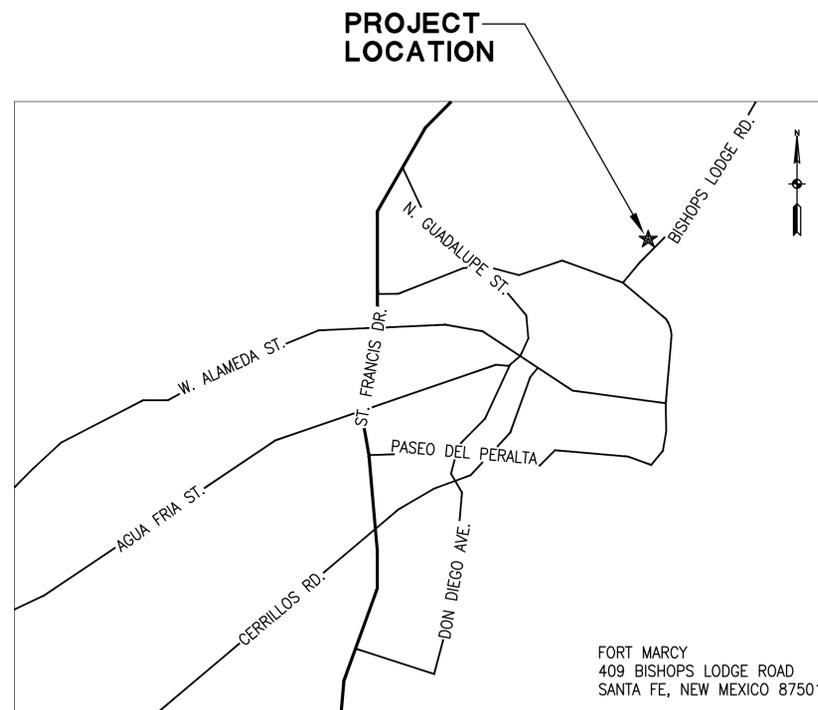
**M & E ENGINEERING, INC.**

### SANTA FE OFFICE:

1222 LUISA ST., SUITE B  
SANTA FE, NEW MEXICO 87505  
TELE. # (505)-983-2389  
FAX # (505)-989-8776

### ALBUQUERQUE OFFICE:

8417 WASHINGTON PL., N.E.  
ALBUQUERQUE, N.M. 87113  
TELE. # (505)-856-1699  
FAX # (505)-856-6099



FORT MARCY  
409 BISHOPS LODGE ROAD  
SANTA FE, NEW MEXICO 87501

## CODE CRITERIA:

PROJECT: FORT MARCY

FORT MARCY RECREATION COMPLEX  
490 BISHOPS LODGE RD.  
SANTA FE, NEW MEXICO 87501

### APPLICABLE CODES:

2009 NEW MEXICO EXISTING BUILDING CODE  
(INTERNATIONAL EXISTING BUILDING CODE 2009 EDITION)  
2012 NEW MEXICO MECHANICAL CODE (UNIFORM MECHANICAL CODE)  
2012 NEW MEXICO PLUMBING CODE (UNIFORM PLUMBING CODE)  
2014 NATIONAL ELECTRIC CODE,

SCOPE OF WORK: CHAPTER 4 SECTION 404 ALTERATION - LEVEL 2  
MECHANICAL UPGRADES

USE AND OCCUPANCY TYPE: GROUP A-3

SQUARE FOOTAGE: 14,207 SF

CONSTRUCTION TYPE: EXISTING, CONCRETE BLOCK WALLS, AND METAL JOIST CEILING

## INDEX OF DRAWINGS

DRAWING	TITLE
M-0	MECHANICAL LEGEND & GENERAL NOTES
MD-1	MECHANICAL DEMOLITION FLOOR PLAN
MD-2	ENLARGED MECHANICAL DEMOLITION FLOOR PLAN
M-1	MECHANICAL FLOOR PLAN
M-2	ENLARGED MECHANICAL FLOOR PLAN & PARTIAL ROOF PLAN
M-3	MECHANICAL DETAILS
M-4	MECHANICAL SCHEDULE
P-0	PLUMBING GENERAL NOTES, LEGEND AND DETAILS
P-1	PLUMBING - NATURAL GAS AND CONDENSATE DRAIN PIPING
E-0	ELECTRICAL NOTES & LEGEND
ED-1	ELECTRICAL DEMOLITION
E-1	ELECTRICAL PLAN

REV. NO.	DATE	DESCRIPTION	CHK'G BY

**MECHANICAL & ELECTRICAL  
ENGINEERING, INC.**

SANTA FE: 1222 Luisa St., Suite B  
Santa Fe, New Mexico 87505 505/983-2389

ALBUQUERQUE: 8417 WASHINGTON PL., NE  
ALBUQUERQUE, NM 87113 505/856-1699

**FORT MARCY  
COMMUNITY BUILDING  
CONSTRUCTION DOCUMENTS**

**SANTA FE**      **NEW MEXICO**

ENGINEER'S PROJECT NO. 16009

SCALE - NONE  
DATE: 11/16/15  
DRAWN BY:  
PROJECT MGR. 15009  
CHECKED BY: KG  
P:    FP:    M:    E:

SHEET NO.  
**TITLE**  
OF

MECHANICAL LEGEND			
HVAC		VALVES	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DOUBLE	SINGLE	SYMBOL	DESCRIPTION
			GATE VALVE
			CHECK VALVE
			BALL VALVE
			PRESSURE REDUCING VALVE
			OUTSIDE STEM AND YOKE
			GLOBE VALVE
			THREE WAY VALVE
			AUTOMATIC TEMPERATURE CONTROL VALVE
			PLUG VALVE
			BUTTERFLY VALVE
			TWO WAY CONTROL VALVE
			THREE WAY CONTROL VALVE
			DRAIN VALVE
			SOLENOID VALVE
			RELIEF VALVE
			AIR RELIEF VALVE
			STRAINER
			STEM VALVE
			CIRCUIT SETTER OR BALANCING VALVE
			BALANCING, GAS COCK OR GAUGE COCK
			STEAM TRAP
			VALVE IN RISER
			AUTO FLOW CONTROL VALVE

TEXT SYMBOLS	
SYMBOL	DESCRIPTION
	MECHANICAL KEYED NOTES
	PIPE LEADER LINE FOR SIZES
	POINT OF CONNECTION
	POINT OF DISCONNECTION
	EQUIPMENT DESIGNATION
	AIR DEVICE DESIGNATION
	REVISION DELTA
	SECTION NUMBER
	SHEET NUMBER
	DETAIL DESIGNATION
	BASEBOARD DESIGNATION
	RECTANGULAR DUCTWORK SIZING
	ROUND DUCTWORK SIZING
	ARROW INDICATES DIRECTION OF FLOW
	RISE IN DIRECTION OF FLOW
	DROP IN DIRECTION OF FLOW
	RETURN AIR FLOW
	SUPPLY AIR FLOW
	EXHAUST AND RETURN AIR FLOW
	THERMOSTAT
	SPACE HUMIDISTAT
	SPACE HUMIDITY SENSOR
	SPACE PRESSURE SENSOR
	CARBON DIOXIDE SENSOR
	CARBON MONOXIDE SENSOR
	DUCT MOUNTED SMOKE DETECTOR

- GENERAL NOTES:**
- MECHANICAL CONTRACTOR SHALL:
- PROVIDE AND INSTALL ALL MATERIAL AND EQUIPMENT AS REQUIRED BY UPC, UMC, NFPA, LIFE SAFETY CODE, GAS CODE, AND ALL OTHER LOCAL CODES AND ORDINANCES THAT APPLY WHETHER SHOWN ON THE DRAWINGS OR NOT. WHERE THERE IS A DISCREPANCY BETWEEN THE CODES OR ORDINANCES AND THE DRAWINGS, THE MORE STRINGENT APPLICATION SHALL APPLY.
  - LAYOUT AND INSTALL COMPLETE AND FUNCTIONAL MECHANICAL SYSTEMS, INCLUDING TEMPORARY CUTOFF OF EXISTING UTILITIES, AND ALL CUTTING, PATCHING, AND REPAIR ASSOCIATED WITH INSTALLING THE SYSTEMS.
  - VIBRATIONALLY ISOLATE FROM THE BUILDING STRUCTURE ALL EQUIPMENT AND PIPING, INCLUDING GAS, AIR INTAKE, EXHAUST, ETC. COORDINATE TO ASSURE THAT AS QUIET AN OPERATING SYSTEM AS POSSIBLE IS INSTALLED.
  - INSTALL FREE AREA OF THE DUCT WORK AS SHOWN ON THE DRAWINGS.
  - PROVIDE ALL DUCT WORK CONNECTIONS AND TRANSITIONS AT GRILLES, DIFFUSERS, REGISTERS, FILTERS, COILS, AND OTHER LOCATIONS WHERE REQUIRED. CONSTRUCT ALL TRANSITIONS AND CONNECTIONS ACCORDING TO SMACNA STANDARDS.
  - PROVIDE A TESTING AND BALANCING (T&B) AGENCY. THE T&B AGENCY SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING SHEAVES, BALANCING DAMPERS, AND ALL EQUIPMENT NECESSARY TO PROVIDE PLUS OR MINUS 5% OF THE GPM AND/OR 10% OF CFM REQUIRED AT EACH TERMINAL UNIT. NO CHANGE ORDERS WILL BE ALLOWED AS A RESULT OF THE CONTRACTOR'S FAILURE TO PROVIDE EQUIPMENT NECESSARY FOR TEST AND BALANCE WHETHER SHOWN ON THE DRAWINGS OR NOT.
  - COORDINATE WORK WITH THE GENERAL CONTRACTOR TO HAVE THE ROOFTOP EQUIPMENT, DUCT WORK, AND INSULATION JACKETS PAINTED TO THE OWNERS REQUIREMENTS.
  - PROVIDE AND INSTALL ALL MECHANICAL EQUIPMENT, TRANSFORMERS, RELAYS, AND OTHER ELEMENTS NECESSARY FOR A COMPLETE OPERATING SYSTEM. COMPLETE ALL 24 VOLT CONTROL WIRING AND EQUIPMENT TO THE ABOVE. ALL LINE VOLTAGE WIRING TO THE ABOVE SHALL BE COMPLETED BY THE ELECTRICAL CONTRACTOR.
  - ALTER DIMENSIONS OF THE DUCT WORK IN THE CEILING SPACE FROM SIZES INDICATED ON THE DRAWINGS ONLY AT SPECIFIC LOCATIONS WHEN NECESSARY TO FIT THE DUCT WORK IN THE SPACE AVAILABLE. REROUTE DUCT WORK IN CEILING SPACE TO AVOID OTHER MECHANICAL EQUIPMENT, LIGHT FIXTURES, ETC. MAINTAIN THE SAME FREE AREA AND SUBMIT PROPOSED CHANGES TO THE ENGINEER FOR APPROVAL. BE RESPONSIBLE FOR VERIFYING SPACE LIMITATIONS BEFORE DUCT WORK FABRICATION AND SHALL MAKE CHANGES ACCORDINGLY. PROVIDE ALL NECESSARY TRANSITIONS.
  - VERIFY EQUIPMENT SPECIFIED IS CORRECT FOR FIELD APPLICATION INCLUDING BUT NOT LIMITED TO SIZES, LOCATIONS, CLEARANCES, STRUCTURAL CONSISTENCY, ETC. BEFORE ORDERING OR INSTALLING AND SHALL MAKE CHANGES, DELETIONS, OR ADDITIONS TO ANY AND ALL APPLICATIONS THAT APPLY BEFORE ORDERING EQUIPMENT. SUBMIT CHANGES, ADDITIONS AND/OR MODIFICATIONS REQUIRED TO ENGINEER FOR APPROVAL. NO CHANGE ORDERS OR PASSAGE OF LIABILITY BY THE CONTRACTOR(S) WILL BE ALLOWED AS A RESULT OF THE CONTRACTOR(S) FAILURE TO VERIFY EQUIPMENT.
  - COORDINATE ALL PROPOSED ROOF PENETRATIONS WITH GENERAL CONTRACTOR AND ARCHITECT AND RELOCATE IF NECESSARY. COORDINATE WITH GENERAL CONTRACTOR/ARCHITECT/OWNER.
  - PROVIDE ONE UNION AT ALL VALVES.
  - INSTALL CONDENSATE AND OVERFLOW PIPING FROM ALL MECHANICAL EQUIPMENT DRAIN POINTS. EXTEND AND TERMINATE PER UMC/UPC. ALL INTERIOR CONDENSATE AND OVERFLOW PIPING SHALL BE INSULATED PER SPECIFICATIONS FOR APPROPRIATE TEMPERATURE RANGE.
  - CONTRACTOR TO PROVIDE VAV CONTROL DIAGRAM WITH EQUIPMENT SUBMITTAL.
  - ALL CONTROLS TO BE FACTORY INSTALLED PACKAGE SYSTEM. THIRD-PARTY, FIELD INSTALLED, CONTROLS WILL NOT BE ACCEPTED.
  - FIELD COORDINATE VAV SYSTEM CENTRAL CONTROLLER LOCATION WITH OWNER/ENGINEER PRIOR TO INSTALL.
- GENERAL DEMOLITION NOTES:**
- BECOME FAMILIAR WITH THE EXISTING CONDITIONS PRIOR SUBMITTING A COMPLETE BID WITHIN THE SCOPE OF THE PLANS AND SPECIFICATIONS. WHEN UNCLEAR, VERIFY THE EXTENT OF REMOVALS PRIOR TO BID. PRIOR TO THE CONCLUSION OF THE ADDENDUM PERIOD IN THE BIDDING TIME FRAME, BRING TO THE ATTENTION OF THE ENGINEER ANY QUESTIONS IN REGARD TO THE EXTENT OF WORK OR ANY OTHER ISSUE RELATING TO THIS PROJECT. WITHOUT ANY CLARIFICATION BEYOND THESE AND THE BID DOCUMENTS, THE SUBMITTAL OF A BID WARRANTS THAT THE BIDDER FULLY UNDERSTANDS THE SCOPE.
  - REMOVE ALL EXISTING MATERIAL AND EQUIPMENT INDICATED AND SALVAGE TO THE OWNER. THE OWNER SHALL HAVE FIRST RIGHTS TO ALL EQUIPMENT TO BE REMOVED. DISPOSE OF ALL EQUIPMENT AND MATERIAL THAT IS NOT WANTED BY OWNER IN AN APPROVED MANNER PER THE LOCAL DICTATING AUTHORITY.
  - WHEN THE EXTENT OF REMOVAL IS UNCLEAR, REQUEST CLARIFICATION FROM ENGINEER PRIOR TO COMMENCING WORK.
  - WHEN MECHANICAL SYSTEMS ARE BEING REMODELED, COVER AND SEAL OPENINGS IN DUCTWORK, PIPING, OR MECHANICAL EQUIPMENT TO REMAIN IN OPERATION THROUGH REMAINDER OF PROJECT.
  - WHEN NOTES CALL FOR "DISCONNECT AND REMOVE" MECHANICAL EQUIPMENT, COORDINATE WITH ELECTRICAL SUBCONTRACTOR TO REMOVE ALL ASSOCIATED WIRE AND EXPOSED CONDUIT TO SOURCE. COORDINATE WITH ELECTRICAL SUBCONTRACTOR FOR THE RE-USE OF EXISTING CONDUITS AND/OR CONDUCTORS WHERE FEASIBLE PROVIDING THAT THEY ARE IN GOOD CONDITION AND COMPLY WITH CURRENT CODES AND STANDARDS.
  - REPAIR ALL DAMAGE TO WALLS, CEILING, ETC. IN A WORKMANLIKE MANNER. SEAL ALL WALL AND CEILING OPENINGS WITH MATCHING MATERIAL.
  - THE LOCATIONS OF EQUIPMENT SHOWN ON THE DRAWINGS IS BASED ON SITE OBSERVATIONS AND THE BEST AVAILABLE INFORMATION AT THE TIME OF DRAWING PREPARATION AND SOME DISCREPANCIES MAY EXIST. VERIFY THE EXACT LOCATIONS OF EQUIPMENT TO BE REMOVED IN THE FIELD AND REQUEST CLARIFICATION FROM ENGINEER WHEN EQUIPMENT LOCATION OR EXISTENCE DIFFERS FROM PLANS.

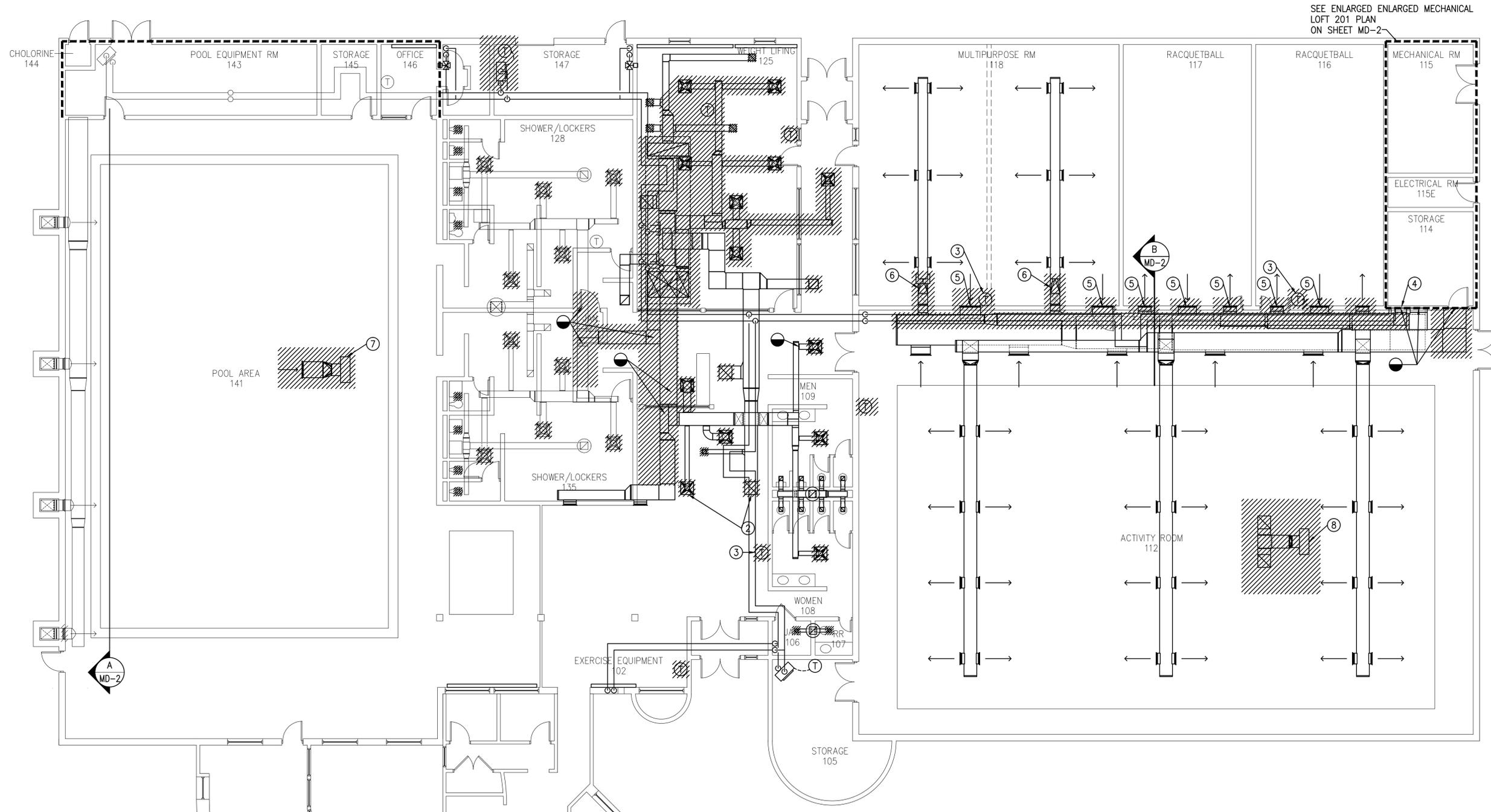
CREG BY	OWN BY	DESCRIPTION	REV. DATE	REV. NO.
<b>MECHANICAL &amp; ELECTRICAL ENGINEERING, INC.</b> ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/856-1699 SANTA FE: 1222 Lugo St., Suite B Santa Fe, New Mexico 87505 505/983-2389				
<b>FORT MARY RECREATION COMPLEX</b> <b>CITY OF SANTA FE</b> <b>MECHANICAL LEGEND</b> <b>AND GENERAL NOTES</b> SANTA FE NEW MEXICO ENGINEER'S PROJECT NO. 16009				
SCALE - AS NOTED				
DATE: 11/16/2015				
DRAWN BY: MEP				
CHECKED BY: KT				
P:	FP:	M:	E:	
SHEET NO.				
M-0				

**KEYED NOTES: ○**

8. DISCONNECT AND REMOVE EXHAUST FAN ON GYM. PERMANENTLY CAP DUCT ON ROOF AT ROOF CURB

**KEYED NOTES: ○**

1. IN ACTIVITY ROOM 112 KEEP RETURN AIR GRILLE AND DIFFUSERS TO REMAIN.
2. REMOVE EXISTING DIFFUSERS AND GRILLES. SEE M-1 FOR NEW WORK.
3. DISCONNECT AND REMOVE EXISTING THERMOSTATS.
4. PERMANENTLY CAP DUCT WORK IN SOFFIT SERVING MULTI PURPOSE ROOM 118
5. REMOVE SUPPLY & RETURN WALL GRILLES TEMPORARY CAP.
6. REMOVE AND DISCONNECT DUCT WORK IN MULTI- PURPOSE ROOM 118 FOR CONNECTION TO NEW UNIT SEE M-1.
7. REMOVE EXHAUST FAN ON ROOF SEE M-1 FOR NEW EXHAUST FAN. SEE M-1 FOR NEW WORK.



REV. NO.	DATE	DESCRIPTION	OWN. BY	CHK. BY

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**

ALBUQUERQUE: 8417 WASHINGTON PL., NE  
ALBUQUERQUE, NM 87113 505/856-1689

Santa Fe, New Mexico 87505 505/983-2389

SANTA FE: 1222 Lugo St., Suite B  
Santa Fe, New Mexico 87505 505/983-2389

**FORT MARCY RECREATION COMPLEX  
CITY OF SANTA FE  
MECHANICAL DEMOLITION  
FLOOR PLAN**

SANTA FE NEW MEXICO  
ENGINEER'S PROJECT NO. 16009

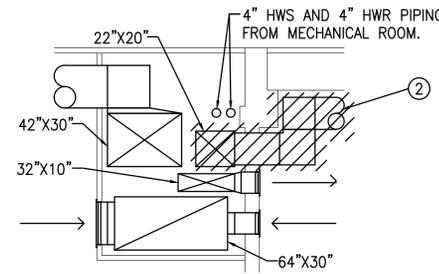


SCALE - AS NOTED  
DATE: 11/16/2015  
DRAWN BY: MEP  
CHECKED BY: KT  
P:    FP:    M:    E:

SHEET NO.  
**MD-1**

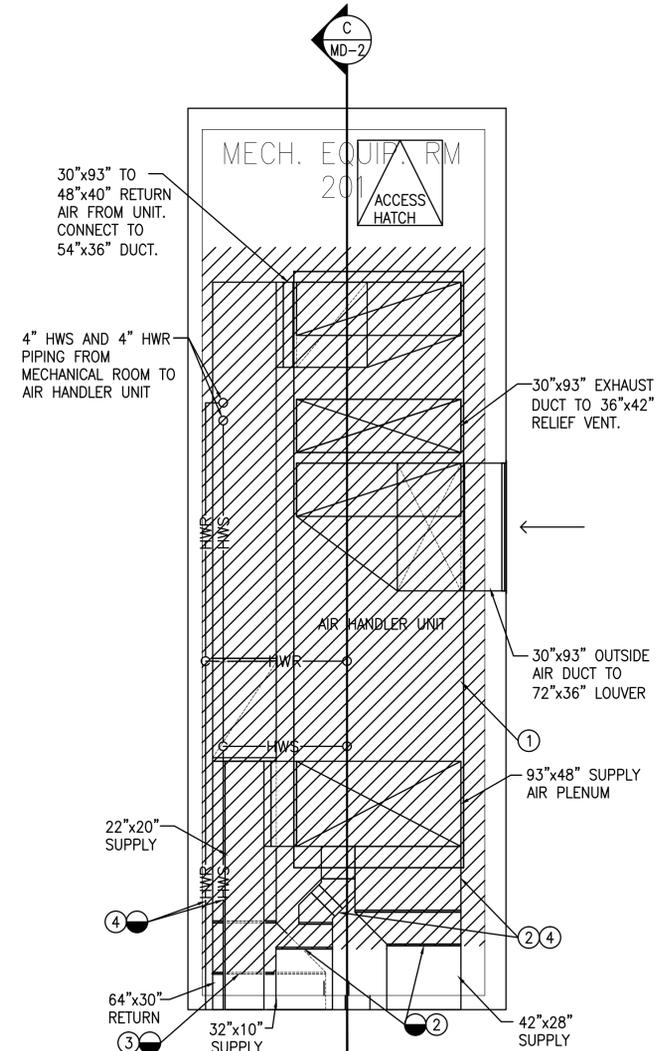
**DEMOLITION KEYED NOTES: ○**

1. DISCONNECT AND REMOVE AIR HANDLING UNIT AND ALL CONNECTIONS.
2. REMOVE EXISTING SUPPLY DUCTWORK AS SHOWN. TEMPORALLY CAP FOR FUTURE RECONNECTION.
3. REMOVE EXISTING RETURN AIR DUCTWORK FROM AHU AS SHOWN.
4. DISCONNECT AND REMOVE EXISTING HOT AND COLD WATER PIPING TO EXISTING AIR HANDLING UNIT AND CAP PERMANENTLY.



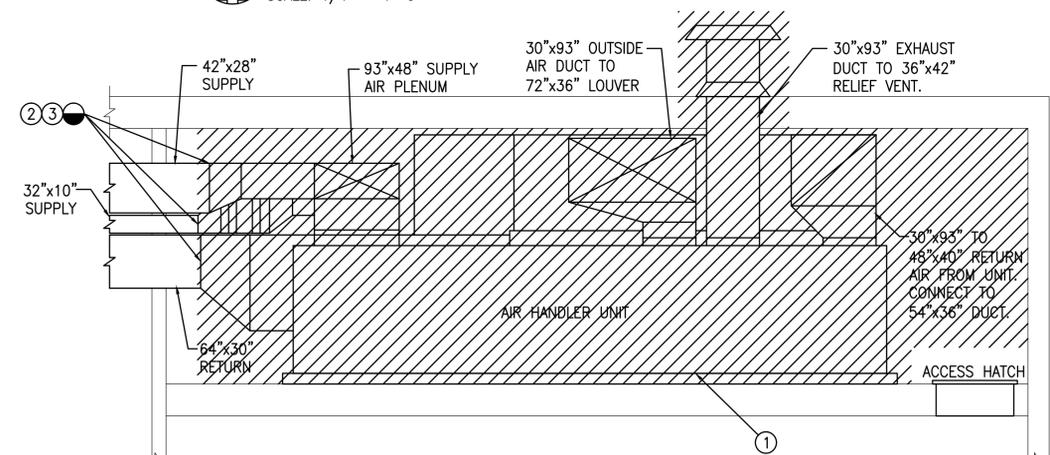
**SECTION VIEW "B"**

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



**ENLARGED MECHANICAL LOFT 201 DEMOLITION PLAN**

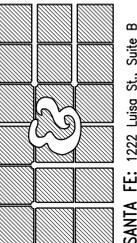
SCALE: 1/4" = 1'-0"



**SECTION "C" MECHANICAL LOFT 201 PLAN**

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

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**



ALBUQUERQUE: 8417 WASHINGTON PL., NE  
ALBUQUERQUE, NM 87113 505/856-1699  
SANTA FE: 1222 Lugo St., Suite B  
Santa Fe, New Mexico 87505 505/983-2389

**FORT MARYC RECREATION COMPLEX  
CITY OF SANTA FE  
ENLARGED MECHANICAL DEMOLITION  
FLOOR PLAN  
SANTA FE  
NEW MEXICO**

ENGINEER'S PROJECT NO. 16009



SCALE - AS NOTED

DATE: 11/16/2015

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P: FP: M: E:

SHEET NO.

**MD-2**

REVISIONS

REV. NO.

DATE

DESCRIPTION

OWN. BY

CRG. BY

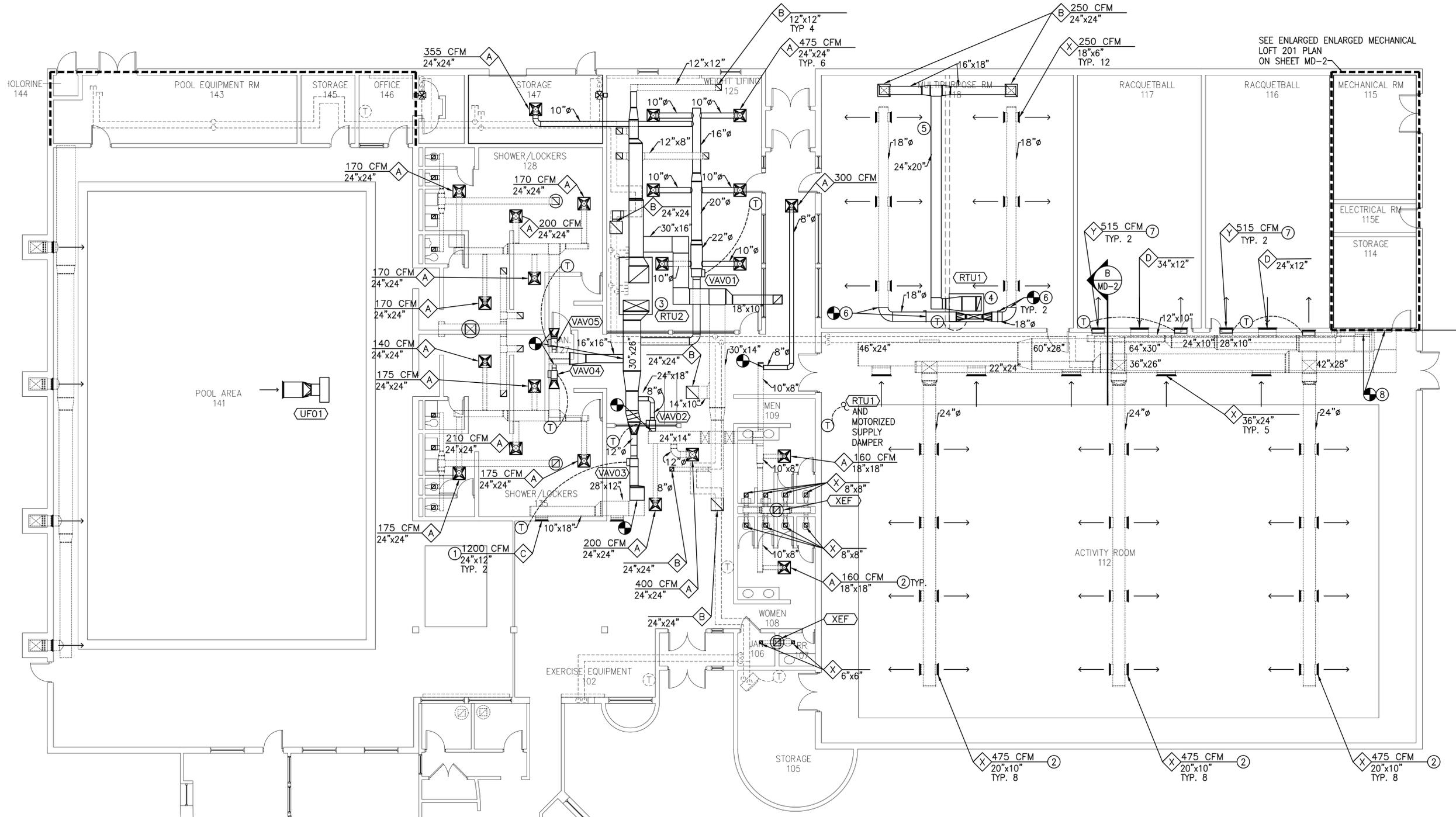
**KEY NOTES:**

- CONNECT NEW SUPPLY DUCT TO EXISTING SUPPLY DUCT. INSTALL BALANCING DAMPER IN SUPPLY DUCTS.
- INSTALL VAV WALL DIFFUSER IN WALL CONNECT TO EXISTING SUPPLY DUCT. INSTALL 1/2 #16 FLATTED EXPANDED METAL FRAME OVER DIFFUSER. MATCH EXISTING.
- RECONNECT EXISTING DUCT TO NEW UNIT IN LOFT. INSTALL MOTORIZED DAMPER IN GYM SUPPLY DUCT IN LOFT.

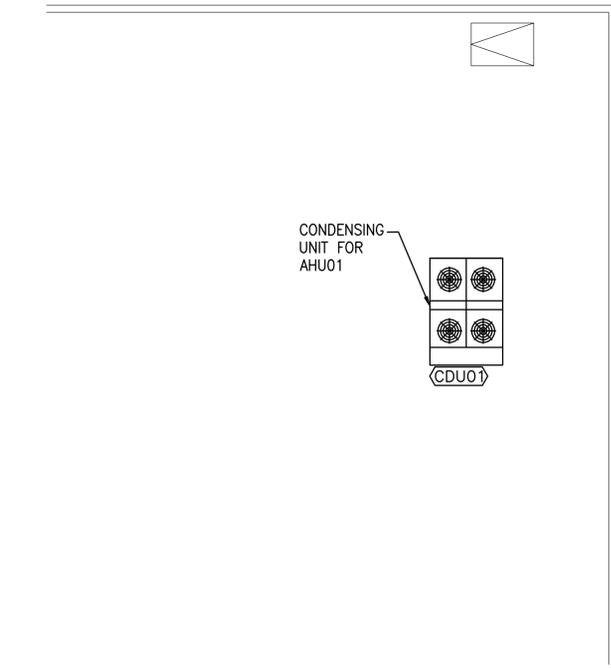
- INSTALL NEW DIFFUSERS AND GRILLES. RECONNECT TO EXISTING DUCTWORK.
- CLEAN DIFFUSER: TEST AND BALANCE.
- INSTALL ROOF TOP UNIT IN PLACE OF FORMER UNIT AND RECONNECT TO SUPPLY AND RETURN DUCT.
- INSTALL UNIT ON ROOF. ROUTE SUPPLY & RETURN TO BELOW CEILING AND CONNECT TO EXISTING DUCTWORK IN SPACE.
- ROUTE NEW RETURN DUCT BELOW AND TIGHT AGAINST DECK.

**GENERAL NOTES:**

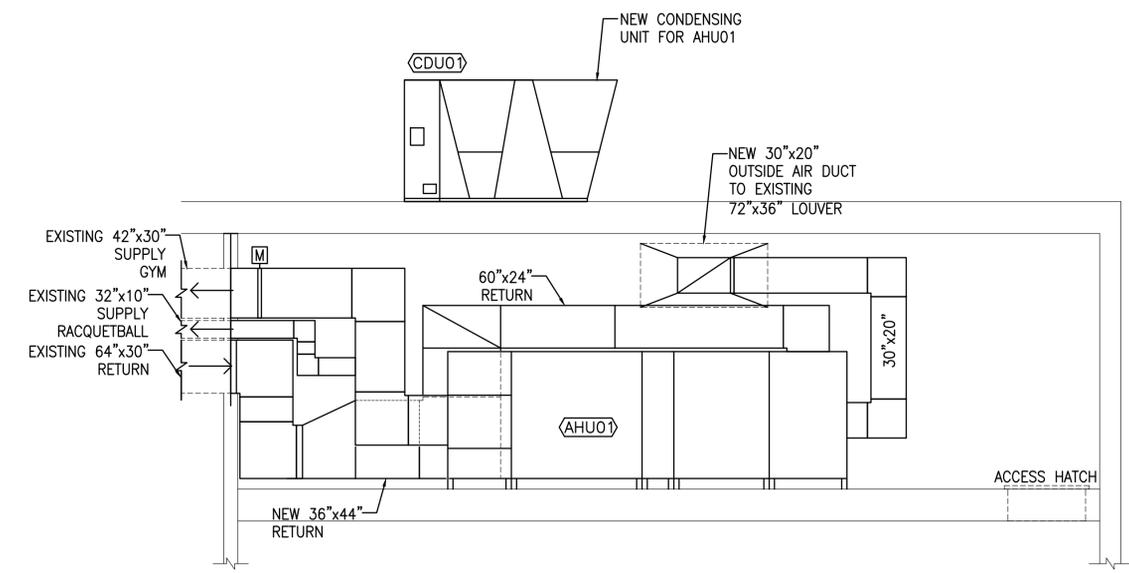
- FIELD COORDINATE ALL DUCTWORK ROUTES IN CEILING SPACE PRIOR TO INSTALL.
- ALL EXHAUST AIR AND OUTDOOR AIR ROOF PENETRATIONS TO BE A MIN. OF 10 FT. APART.



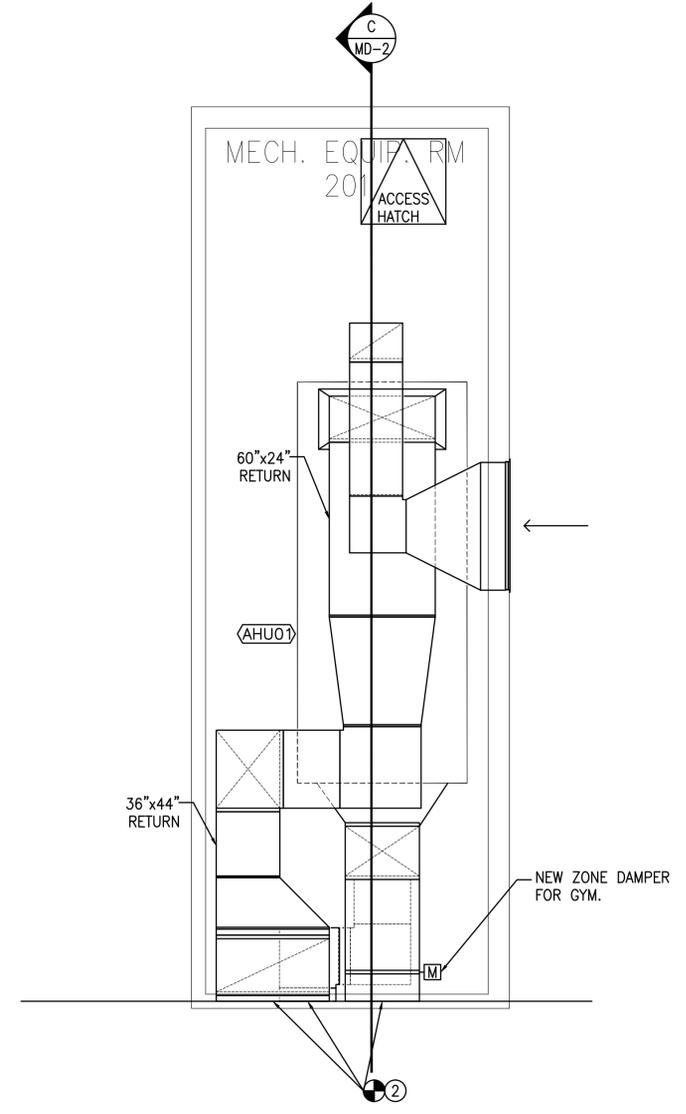
REV. NO.	DATE	DESCRIPTION	OWN. BY	CHK. BY
<b>MECHANICAL &amp; ELECTRICAL ENGINEERING, INC.</b> ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/856-1699 SANTA FE: 1222 Lugo St., Suite B Santa Fe, New Mexico 87505 505/983-2389				
<b>FORT MARYC RECREATION COMPLEX</b> <b>CITY OF SANTA FE</b> <b>MECHANICAL FLOOR PLAN</b> SANTA FE NEW MEXICO ENGINEER'S PROJECT NO. 16009				
SCALE - AS NOTED				
DATE: 11/16/2015				
DRAWN BY: MEP				
CHECKED BY: KT				
P:	FP:	M:	E:	
SHEET NO.				
<b>M-1</b>				



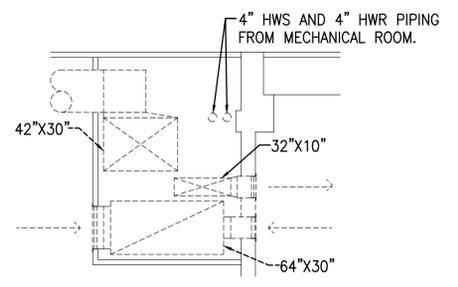
**PARTIAL MECHANICAL ROOF PLAN**  
SCALE: 1/8" = 1'-0"



**SECTION "C" MECHANICAL LOFT 201 PLAN**  
SCALE: 1/4" = 1'-0"



**ENLARGED MECHANICAL LOFT 201 PLAN**  
SCALE: 1/4" = 1'-0"



**SECTION VIEW "B"**  
SCALE: 1/4" = 1'-0"

REV. NO.	DATE	DESCRIPTION	OWN. BY	CHK. BY

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**

ALBUQUERQUE: 8417 WASHINGTON PL., NE  
ALBUQUERQUE, NM 87113 505/856-1699

SANTA FE: 1222 LINDA ST., SUITE B  
SANTA FE, NEW MEXICO 87505 505/983-2389

**FORT MARCY RECREATION COMPLEX  
CITY OF SANTA FE  
ENLARGED MECHANICAL  
FLOOR PLANS & PARTIAL ROOF PLAN  
SANTA FE  
NEW MEXICO**

ENGINEER'S PROJECT NO. 16009



SCALE - AS NOTED  
DATE: 11/16/2015  
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SHEET NO.  
**M-2**

REV. NO.	DATE	DESCRIPTION	OWN. BY	CHK. BY

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**

ALBUQUERQUE: 8417 WASHINGTON PL., NE  
ALBUQUERQUE, NM 87113 505/856-1699

Santa Fe, New Mexico 87505 505/983-2389

SANTA FE: 1222 Lugo St., Suite B  
Santa Fe, New Mexico 87505 505/983-2389

**FORT MARCY RECREATION COMPLEX  
CITY OF SANTA FE  
MECHANICAL DETAILS**

**SANTA FE NEW MEXICO**

ENGINEER'S PROJECT NO. 16009

11/16/15  
KARE M. TIPON  
NEW MEXICO  
21200  
PROFESSIONAL ENGINEER

SCALE - AS NOTED

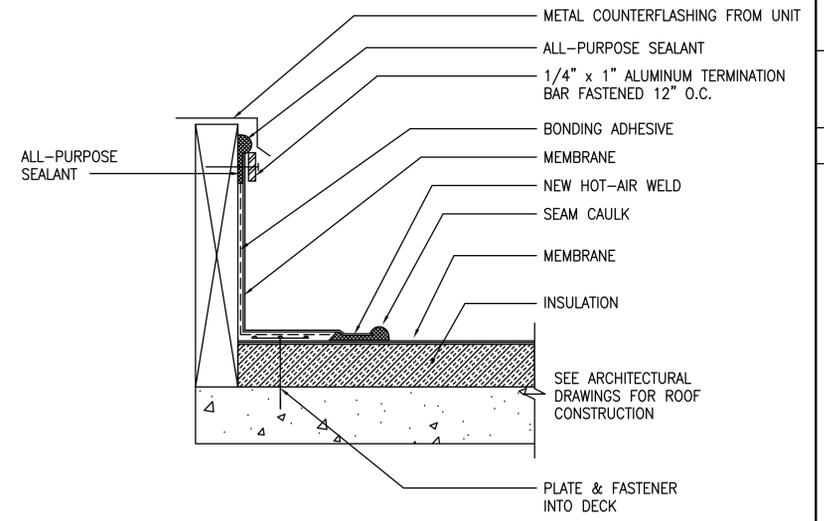
DATE: 11/16/2015

DRAWN BY: MEP

CHECKED BY: KT

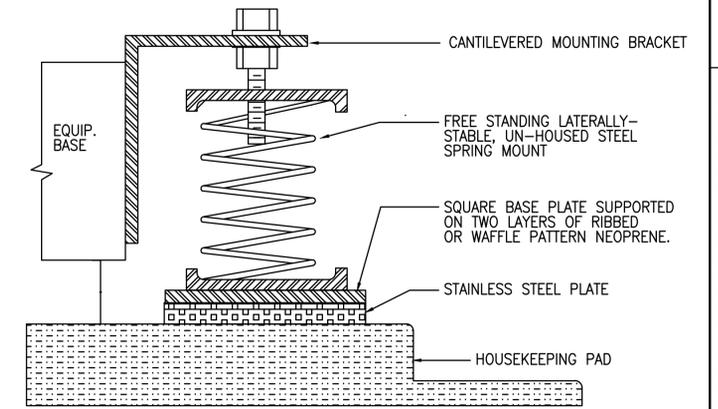
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SHEET NO.  
**M-3**

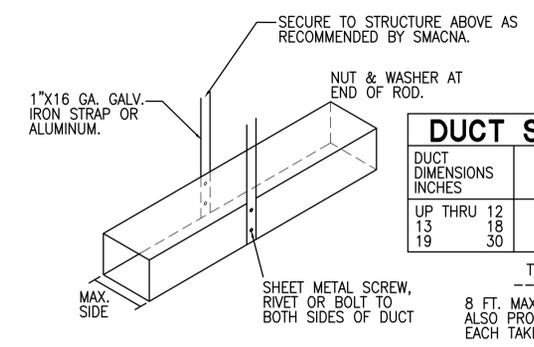


- FLASHING MINIMUM 6" HIGH WHENEVER POSSIBLE AND MUST BE ABOVE ROOF FLOOD LEVEL.
- TOP OF FLASHING BUTTS INTO EXISTING IMMOVABLE UNIT FLASHING OR IS MOUNTED ON FULLY WELDED NON-DETERIORATING CURB STRUCTURE.
- DO NOT COVER WEEP HOLES ON UNIT.

**EQUIPMENT CURB FLASHING DETAIL**  
NOT TO SCALE

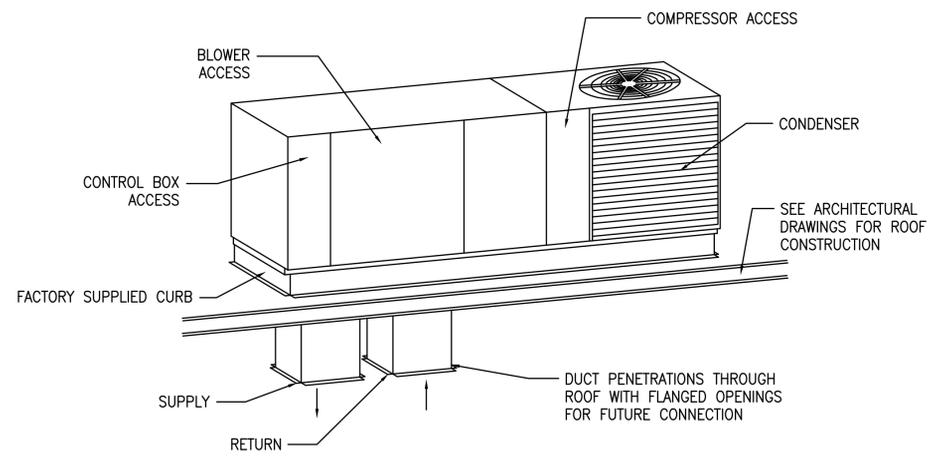


**OPEN VIBRATION ISOLATION STEEL SPRING FLOOR MOUNT AHU-1**  
NOT TO SCALE

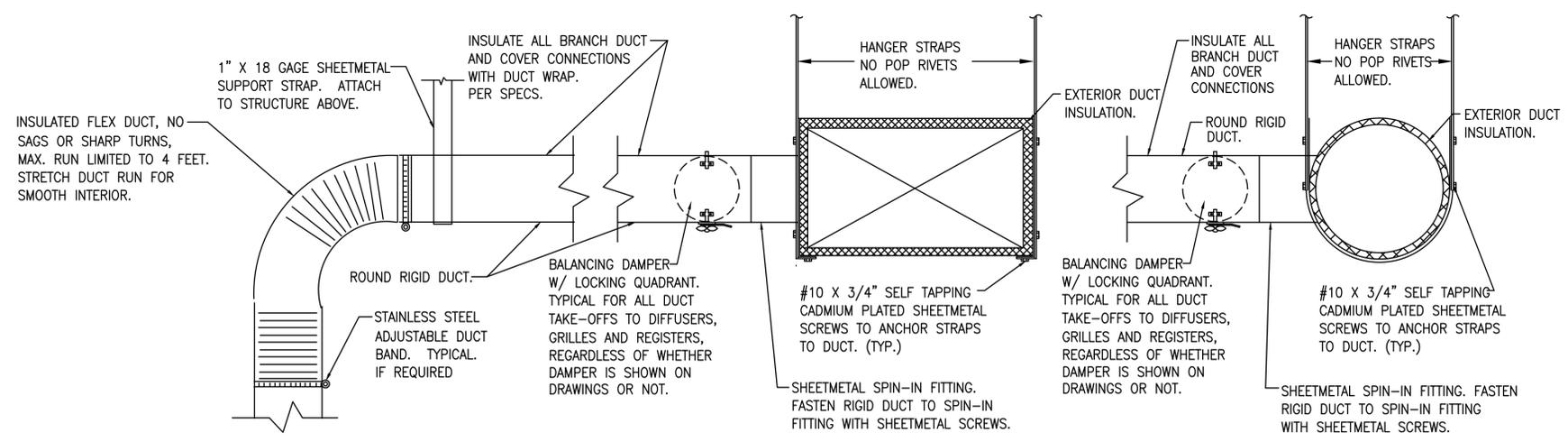


DUCT SCHEDULE	
DUCT DIMENSIONS INCHES	TYPE HANGER
UP THRU 12	A
13 18	A
19 30	A

**DUCT HANGERS**  
NOT TO SCALE



**ROOF TOP UNIT ROOF DETAIL**  
NOT TO SCALE



**RECTANGULAR AND ROUND DUCT DIFFUSER CONNECTION DETAIL**

**DIFFUSER, REGISTER, AND GRILLE SCHEDULE: ◇**

- A SUPPLY AIR DIFFUSER: 24 IN.X 24 IN. PANEL SIZE, ALUMINUM MATERIAL, SQUARE CEILING MOUNTED SUPPLY AIR DIFFUSER WITH TRUE 360 DEG. PATTERN. INCLUDE OBD AND DAMPER IN DUCT. DUCT SIZE AS SHOWN ON DRAWINGS. "TITUS" TMS-AA.
- B RETURN AIR GRILLE: FABRICATED ALUMINUM GRILLE WITH 1/2 IN.X 1/2 IN.X 1/2 IN. SQUARES. INCLUDE FRAME FOR CORRECT CEILING INSTALLATION. COORDINATE WITH SITE CONDITIONS FOR CEILING APPLICATION. SIZE AS SHOWN ON DRAWINGS. "TITUS" MODEL 50F.
- C SINGLE DEFLECTION RETURN GRILLE: 35 DEGREE DEFLECTION, 3/4 INCH SPACING, ALUMINUM CONSTRUCTION, AND HORIZONTAL BLADES. STANDARD WHITE FINISH. GRILLE SIZE AS SHOWN ON DRAWINGS. "TITUS" MODEL 350FL.
- D RETURN/EXHAUST AIR GRILLES: HEAVY DUTY BAR TYPE ALUMINUM GRILLES, 3/8 IN. SPACING, 0 DEG. DEFLECTION, 16 GAUGE BORDER, 14 GAUGE BARS, ENVIRO-THANE FINISH, AND FRAME FOR CEILING TYPE INDICATED IN ARCHITECTURAL DRAWINGS. SIZE AS SHOWN ON DRAWINGS. "TITUS" MODEL 30R.
- X EXITING DIFFUSER, REGISTER, OR GRILL: CONTRACTOR TO CLEAN DIFFUSER OR GRILL AND ADJUST BLADES T&B REQUIRED FOR ALL EXISTING GRILLES AND DIFFUSERS.
- Y SIDEWALL LINEAR SLOT THERMA-FUSER DIFFUSER: SIDEWALL LINEAR FOUR SLOT VAV DIFFUSER WITH BLADE DAMPER RECTANGULAR DUCT OPENING. RECESS DIFFUSER AND INSTALL 18 GAUGE MESH COVER WITH FRAME, 24". "ACUTHERM" MODEL TLW-R

**MECHANICAL EQUIPMENT SCHEDULE: ◻**

AHU01  
MODULAR INDOOR AIR HANDLING UNIT: NATURAL GAS HEATING, ELECTRIC COOLING R410A. DOUBLE WALL CABINETS WITH CLOSED-CELL POLYURETHANE FOAM WITH DOUBLE WALL DOORS (CLOSED-CELL POLYURETHANE FOAM), DOORS SHALL HAVE CHROME PLATED STEEL HINGES AND QUARTER TURN, ZINC CAST, HANDLES. ALUMINIZED STEEL HEAT EXCHANGER, COOLING COIL 4 ROW/ 8FPI/INTER., STAINLESS STEEL DRAIN PAN, VFD DRIVE INDOOR FAN MOTOR(S) WITH PHASE FAILURE MONITOR, DDC ACTUATOR DAMPERS, REDUNDANT GAS VALVE, MODULATING 5:1 BURNER SECTION, ORIFICE FOR 7,000 FT. ASL, SEALED COMBUSTION, COMBUSTION SECTION VIEW PORT, AAOAIRE ENERGY RECOVERY ECONOMIZER PACKAGE, PLEATED FILTERS AND FILTER RACK, FLEXIBLE DUCT CONNECTIONS, VIBRATION ISOLATORS FOR MOTOR, FACTORY SUPPLIED 6 INCH BASE RAIL, FAN CONTROL, MOTOR, MOTOR STARTER, AND STAGED HEATING AND COOLING, ROOF TOP CONDENSER UNIT, CONDENSER COIL HAIL GUARD ASSEMBLY. INCLUDE AND ALL RELAYS, SWITCHES, TRANSFORMERS, FUSES, UNIT MOUNTED DISCONNECT, AND CONTROL EQUIPMENT REQUIRED FOR COMPLETE AND PROPER OPERATION. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT. SUMMER OUTDOOR AIR TEMPERATURE ENTERING CONDENSER = 88 DEG. F. DB. AND 72 DEG. F. WB. ROOM AIR TEMP.= 75 DEG. F. SUMMER AND 68 DEG. F. WINTER. ELEC.: 208V/3PH/60HZ. "DAIKIN" MODEL NO. M2-H

SYM	INPUT HTNG MBH	TOTAL CLNG MBH	CFM	OA CFM	FAN HP	ESP	INDOOR WT. LBS.	INDOOR UNIT MCA
AHU01	400	535	12500	5000	7.5 X 2	0.6	4963	70

CDU01 - FOR AHU01:  
ELEC. MCA  
208V/3PH/60HZ 83

RTU1 - MULTI PURPOSE ROOM  
PACKAGED ROOFTOP UNIT: CONSTANT VOLUME, NATURAL GAS HEATING, ELECTRIC COOLING, STAINLESS STEEL HEAT EXCHANGER, ECM FAN MOTOR WITH PHASE FAILURE MONITOR, SOLID-STATE ELECTRONIC DIRECT SPARK IGNITION, INDOOR FAN TIME-DELAY RELAY, REDUNDANT GAS VALVE, ORIFICE FOR 7,000 FT. ASL, HEATING SAFETY CONTROLS (LIMIT SWITCHES, CENTRIFUGAL SWITCH, ROLL OUT SWITCH), STAGGERED COPPER TUBE WITH BONDED ALUMINUM FIN COOLING COILS, RECYCLE TIMER TO PREVENT SHORT CYCLING, ECONOMIZER PACKAGE, BAROMETRIC RELIEF, MOD CONTROL WITH INVERTER COMPRESSORS, INCLUDE CONDENSER COIL HAIL GUARD ASSEMBLY, 2 IN. THROW-AWAY FILTERS, FILTER RACK, UNIT MOUNTED DISCONNECT, FACTORY MOUNTED TERMINAL BOARD, FLEXIBLE DUCT CONNECTIONS, VIBRATION ISOLATORS FOR MOTOR, FACTORY SUPPLIED ROOF CURB, FAN CONTROL, MOTOR, MOTOR STARTER, 5:1 STAGED HEATING AND COOLING, POWERED CONVENIENCE OUTLET, AND ALL RELAYS, SWITCHES, TRANSFORMERS, FUSES, AND EQUIPMENT REQUIRED FOR COMPLETE OPERATION. SUMMER OUTDOOR AIR TEMPERATURE ENTERING CONDENSER =90 DEG. F. DB. AND 64 DEG. F. WB. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT. ELEC.: 208V/3PH/60 HZ. "DAIKIN" MODEL: RN-020-2-0-EA09

SYM	INPUT HTNG MBH	TOTAL CLNG MBH	CFM	OA CFM	FAN HP	ESP	WT. LBS.	UNIT MCA
RTU1	160	63.4	3000	500	1.6	0.5	1500	27.8

RTU2 - WEIGHT/ GENERAL ROOM  
PACKAGED ROOFTOP UNIT: VARIABLE VOLUME, NATURAL GAS HEATING, ELECTRIC COOLING, STAINLESS STEEL HEAT EXCHANGER, ECM FAN MOTOR WITH PHASE FAILURE MONITOR, SOLID-STATE ELECTRONIC DIRECT SPARK IGNITION, INDOOR FAN TIME-DELAY RELAY, REDUNDANT GAS VALVE, ORIFICE FOR 7,000 FT. ASL, HEATING SAFETY CONTROLS (LIMIT SWITCHES, CENTRIFUGAL SWITCH, ROLL OUT SWITCH), STAGGERED COPPER TUBE WITH BONDED ALUMINUM FIN COOLING COILS, RECYCLE TIMER TO PREVENT SHORT CYCLING, ECONOMIZER PACKAGE, BAROMETRIC RELIEF, MOD CONTROL WITH INVERTER COMPRESSORS, INCLUDE CONDENSER COIL HAIL GUARD ASSEMBLY, 2 IN. THROW-AWAY FILTERS, FILTER RACK, UNIT MOUNTED DISCONNECT, FACTORY MOUNTED TERMINAL BOARD, FLEXIBLE DUCT CONNECTIONS, VIBRATION ISOLATORS FOR MOTOR, FACTORY SUPPLIED ROOF CURB, FAN CONTROL, MOTOR, MOTOR STARTER, 5:1 STAGED HEATING AND COOLING, POWERED CONVENIENCE OUTLET, AND ALL RELAYS, SWITCHES, TRANSFORMERS, FUSES, AND EQUIPMENT REQUIRED FOR COMPLETE OPERATION. SUMMER OUTDOOR AIR TEMPERATURE ENTERING CONDENSER =90 DEG. F. DB. AND 64 DEG. F. WB. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT. ELEC.: 208V/3PH/60 HZ. "AAON" MODEL: REBEL DPS010A, SEER 18

SYM	INPUT HTNG MBH	TOTAL CLNG MBH	CFM	OA CFM	FAN HP	ESP	WT. LBS.	UNIT MCA
RTU2	208.3	228.67	8580	2100	5	0.5	2703	95

VAV01 - VAV03 WEIGHT/ GENERAL ROOM  
SINGLE DUCT VARIABLE AIR VOLUME TERMINAL: COMPLETE FACTORY ASSEMBLED VARIABLE AIR VOLUME CONTROL TERMINAL, INTERNALLY INSULATED CABINET WITH 1/2 IN. FIBERGLASS INSULATION, DUCT COLLARS, MULTI-POINT AIR FLOW SENSOR, COMPLETE 24V DAMPER ASSEMBLY WITH MODULATING DAMPER ACTUATOR ("DAIKEN" DDC CONTROLLER), MOUNTING BRACKETS, 120V TO 24V TRANSFORMER, FUSES, DISCONNECT SWITCH AND ALL EQUIPMENT FOR COMPLETE INSTALLATION. "DAIKIN" MODEL: MQTHIS, SERIES 5

SYM	INLET SIZE (IN.)	OUTLET SIZE (IN.)	MIN CFM	MAX CFM	UNIT SP.
VAV01	14 DIA.	20X18	1500	2850	0.002
VAV02	8 DIA.	12X10	100	620	0.069
VAV03	14 DIA.	20X18	1500	2400	0.002
VAV04	8 DIA.	12X10	190	1100	0.069
VAV05	8 DIA.	12X10	190	1100	0.069

UF  
NATATORIUM UTILITY FAN: BACKWARD INCLINED ROOF MOUNTED CENTRIFUGAL FAN WITH ADJUSTABLE BELT DRIVEN FAN, MOTORS AND DRIVES ISOLATED FROM EXHAUST AIR STREAM, HEAVY DUTY MOTOR WITH PERMANENTLY SEALED BALL BEARINGS, GALVANIZED STEEL HOUSING, ALUMINUM FAN, VIBRATION ISOLATORS, DISCONNECT SWITCH, WEATHER HOOD, AND AMCA CERTIFIED. INCLUDE VENTED ROOF CURB, GREASE TRAP KIT, BIRD SCREEN, DAMPERS, MOTOR STARTERS, RELAYS, SWITCHES, AND ALL EQUIPMENT NECESSARY FOR COMPLETE INSTALLATION AND OPERATION WITH EXISTING POOL AREA CONTROLS. ELEC.: 208V/1PH/60HZ "GREENHECK" MODEL

SYM	CFM	ESP	RPM	HP	NEC FLA	WGT. LBS.
UF	4500	0.375	997	1	8.8	450

T  
TEMPERATURE SENSOR: "DAIKIN" MODEL 2508032. SIX WIRE RJ-11 CONNECTOR TO UNITS AND TO DAIKEN MICROTECH DDC CONTROLLER. HMI PORT FOR COMMUNICATING TO CONTROLLER AND TROUBLE SHOOTING.

DDC CONTROLS: DAIKIN SYSTEM MANAGER: WEB-BASED USER INTERFACE WEB-LIKE PAGES ACCESSIBLE WITH INTERNET EXPLORER) ALLOWS THE USER TO EDIT CONTROL PARAMETERS REQUIRED FOR CONTROL OF THE MICROTECH INTEGRATED SYSTEM CONTROLLED DEVICES. COORDINATE LOCATION IN ADMIN OFFICE DURING CONSTRUCTION.

**MECHANICAL/ELECTRICAL RESPONSIBILITY TABLE**

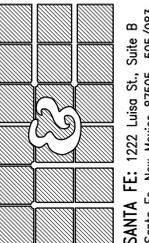
UNIT #	UNIT		DISCONNECT		STARTER/CONTACTOR		CONTROL WIRE		CONTROL CONDUIT		AUTO SHUT-OFF	
	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED
AHU01	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
CDU01	MC	MC	EC	EC	MC	MC	EC	EC	EC	EC	N/A	N/A
RTU1	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
RTU2	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
VAV01	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV02	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV03	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV04	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV05	MC	MC	EC	EC	EC	EC	EC	EC	EC	EC	N/A	N/A
UF	MC	MC	EC	EC	EC	EC	EC	EC	EC	EC	N/A	N/A
DUCT SMOKE DETECTOR						FIRE/SMOKE DAMPERS						
UNIT #	DUCT SMOKE DETECTOR		CONTROL WIRE		CONTROL CONDUIT		F/S DAMPER		WIRES & RELAYS		CONDUIT	
	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED
AHU01	MC	MC	MC	N/A	MC	N/A	EC	N/A	N/A	N/A	N/A	N/A
RTU1	MC	MC	MC	MC	EC	EC	N/A	N/A	N/A	N/A	N/A	N/A
RTU2	MC	MC	MC	MC	EC	EC	N/A	N/A	N/A	N/A	N/A	N/A

MC = Mechanical Contractor

EC = Electrical Contractor

CC = Controls Contractor

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**



ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/866-1699  
SANTA FE: 1222 Lugo St., Suite B Santa Fe, New Mexico 87505 505/983-2389

**FORT MARCY RECREATION COMPLEX CITY OF SANTA FE MECHANICAL SCHEDULE**

**SANTA FE NEW MEXICO ENGINEER'S PROJECT NO. 16009**



SCALE - AS NOTED

DATE: 11/16/2015

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CHECKED BY: KT

P: FP: M: E:

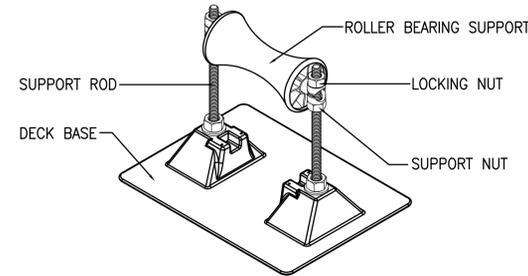
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**M-4**

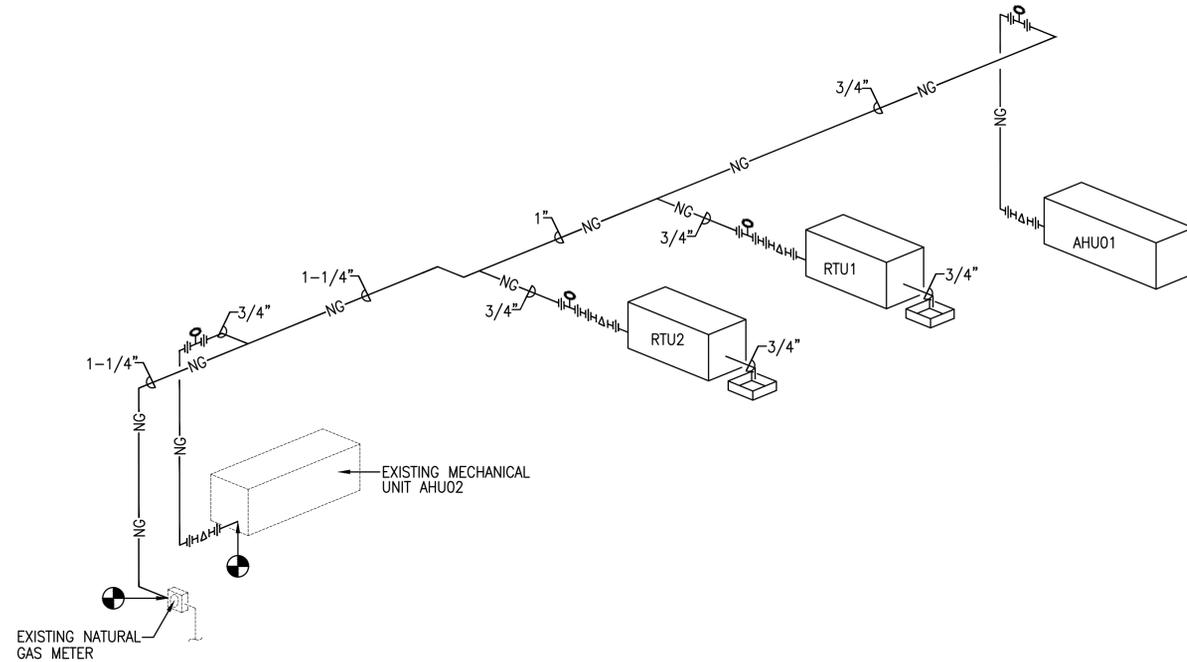
REVISIONS

**PLUMBING GENERAL NOTES:**

1. COMPLETE ALL WORK IN FULL COMPLIANCE WITH THE U.P.C., U.M.C., I.B.C., LIFE SAFETY CODE, N.F.P.A., ADA, AND ALL LOCAL CODES AND ORDINANCES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE LAYOUT AND INSTALLATION OF THE PLUMBING SYSTEMS INCLUDING ALL COORDINATION WITH NEW AND EXISTING SERVICES, MECHANICAL EQUIPMENT, ELECTRICAL EQUIPMENT, CONDUIT, CEILING, AND ANY OTHER EQUIPMENT THAT MAY REQUIRE COORDINATION EFFORTS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR COORDINATION OF TEMPORARY CUT-OFF OF WATER, SEWER AND NATURAL GAS WITH OWNER AND FOR ALL NECESSARY TRENCHING, BACKFILLING, CUTTING, PATCHING, REPAIRING, ETC., ASSOCIATED WITH THE INSTALLATION OF THE PLUMBING SYSTEM SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE INSTALLATION OF THE FIXTURES WITH THE LOCAL CODE REQUIREMENTS FOR HANDICAP ACCESSIBILITY.
3. VERIFY LOCATIONS BEFORE ROUTING ANY AND ALL PIPING. NO COMPENSATION WILL BE MADE FOR CONTRACTOR'S FAILURE TO COORDINATE WORK WITH GENERAL CONTRACTOR AND OWNER, AND TO TOTALLY FAMILIARIZE HIMSELF WITH ALL CONSTRAINTS AND LIMITATIONS OF THE WORK REQUIRED.
4. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL ABOVE GRADE AND SHALL BE SCHEDULE 40 BLACK STEEL WRAPPED WITH SCOTCHWRAP OR POLYETHYLENE PIPING WHEN BURIED. PIPING SHALL BE PAINTED WHEN EXPOSED.
5. ROUTE PIPING AS NEARLY AS POSSIBLE TO THE ROUTING INDICATED ON THE PLANS, BUT MAKE MINOR CHANGES IN ROUTING TO ACCOMMODATE THE CONDITIONS AT THE SITE. DO NOT UNDERTAKE MAJOR REROUTING OF PIPING WITHOUT WRITTEN APPROVAL FROM OWNER OR ENGINEER. BE RESPONSIBLE FOR ALL REQUIRED TRANSITIONS, OFFSETS, MINOR RELOCATIONS, AND ALL ASSOCIATED FITTINGS, PIPING, AND EQUIPMENT TO INSTALL A COMPLETE AND OPERATIONAL SYSTEM.
6. ALL CONTRACTORS BIDDING ON THIS PROJECT ARE CAUTIONED TO VISIT THE SITE AND MAKE ALL NECESSARY INQUIRIES TO DETERMINE THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BIDS. NO SUBSEQUENT ALLOWANCE WILL BE MADE TO COMPENSATE FOR LACK OF PRE-BID INSPECTIONS BY THE SUCCESSFUL CONTRACTOR. ANY LINES ENCOUNTERED WHICH MAY INTERFERE WITH NEW CONSTRUCTION SHALL BE RELOCATED IF ACTIVE AND ABANDONED IF INACTIVE BY THIS CONTRACTOR UNDER THIS CONTRACT BY FIRST CONTACTING THE ARCHITECT FOR A RULING AS TO THEIR REMOVAL, RELOCATION, ETC.
7. PROVIDE GAS COCKS AND FLEXIBLE CONNECTIONS AT EACH GAS OUTLET FOR ALL MECHANICAL EQUIPMENT.
8. INSTALL CONDENSATE AND OVERFLOW PIPING FROM ALL MECHANICAL EQUIPMENT DRAIN POINTS. EXTEND AND TERMINATE PER UMC/UPC.

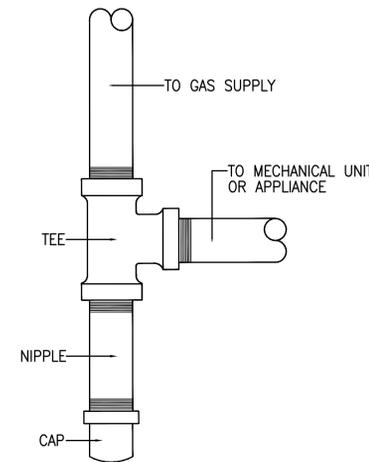


NOTE: PIPING SUPPORTS TO BE INSTALLED EVERY 8'-0"  
**PIPING SUPPORT DETAIL**  
 NOT TO SCALE



**PLUMBING RISER DIAGRAM- NATURAL GAS SUPPLY AND CONDENSATE DRAIN PIPING**

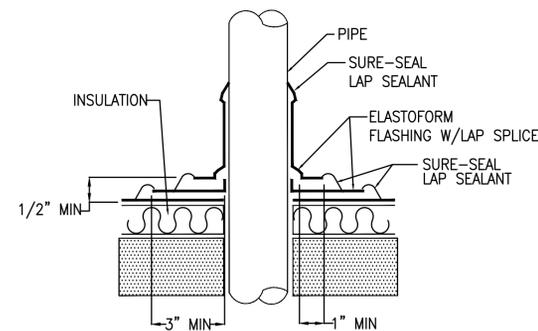
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**GAS SEDIMENT TRAP DETAIL**  
 NOT TO SCALE

PLUMBING LEGEND	
— C —	CONDENSATE DRAIN PIPING
— NG —	NATURAL GAS PIPING
--- ENG ---	EXISTING NATURAL GAS PIPING
Δ	BALANCING, GAS COCK OR GAUGE COCK
●	POINT OF CONNECTION
⊞	GAS METER
	UNION
⊞	NATURAL GAS REGULATOR

NOTE: THIS SYMBOLS LEGEND IS A GENERAL REPRESENTATION OF ITEMS USED. SOME PROJECTS MAY NOT UTILIZE ALL SYMBOLS REPRESENTED. COORDINATE ALL SYMBOLS FROM PLANS.



**PIPE PENETRATION THRU ROOF**  
 NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	OWN. BY	CHK. BY

**MECHANICAL & ELECTRICAL ENGINEERING, INC.**

ALBUQUERQUE: 8417 WASHINGTON PL., NE  
 ALBUQUERQUE, NM 87113 505/856-1699

SANTA FE: 1222 Lugo St., Suite B  
 Santa Fe, New Mexico 87505 505/983-2389

**FORT MARCY RECREATION COMPLEX  
 CITY OF SANTA FE  
 PLUMBING GENERAL NOTES  
 LEGEND AND DETAILS  
 SANTA FE NEW MEXICO**

ENGINEER'S PROJECT NO. 16009



SCALE - AS NOTED

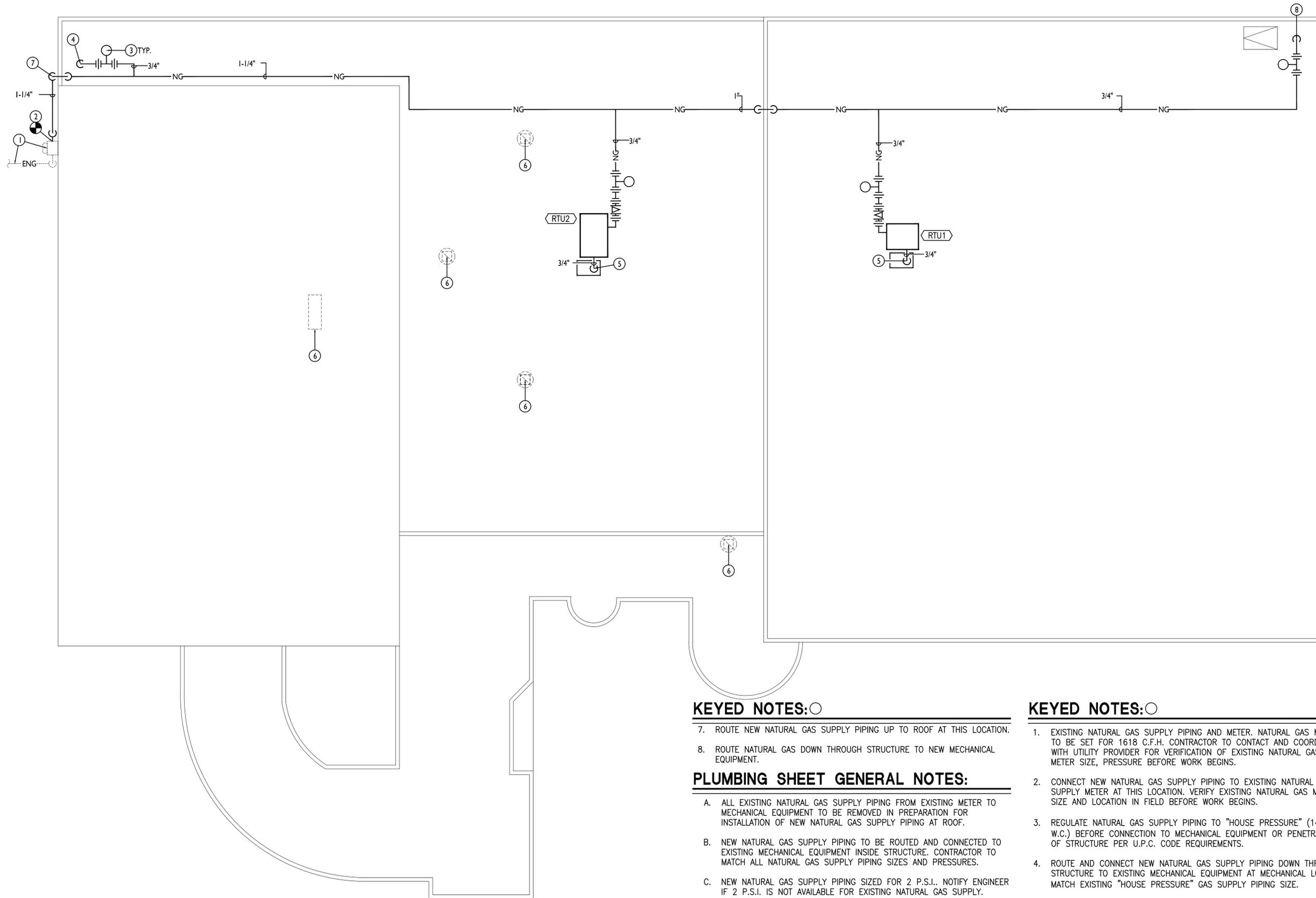
DATE: 11/16/2015

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**KEYED NOTES:** ○

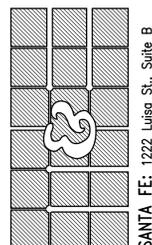
- 7. ROUTE NEW NATURAL GAS SUPPLY PIPING UP TO ROOF AT THIS LOCATION.
- 8. ROUTE NATURAL GAS DOWN THROUGH STRUCTURE TO NEW MECHANICAL EQUIPMENT.

**PLUMBING SHEET GENERAL NOTES:**

- A. ALL EXISTING NATURAL GAS SUPPLY PIPING FROM EXISTING METER TO MECHANICAL EQUIPMENT TO BE REMOVED IN PREPARATION FOR INSTALLATION OF NEW NATURAL GAS SUPPLY PIPING AT ROOF.
- B. NEW NATURAL GAS SUPPLY PIPING TO BE ROUTED AND CONNECTED TO EXISTING MECHANICAL EQUIPMENT INSIDE STRUCTURE. CONTRACTOR TO MATCH ALL NATURAL GAS SUPPLY PIPING SIZES AND PRESSURES.
- C. NEW NATURAL GAS SUPPLY PIPING SIZED FOR 2 P.S.I.. NOTIFY ENGINEER IF 2 P.S.I. IS NOT AVAILABLE FOR EXISTING NATURAL GAS SUPPLY.

**KEYED NOTES:** ○

- 1. EXISTING NATURAL GAS SUPPLY PIPING AND METER. NATURAL GAS METER TO BE SET FOR 1618 C.F.H. CONTRACTOR TO CONTACT AND COORDINATE WITH UTILITY PROVIDER FOR VERIFICATION OF EXISTING NATURAL GAS METER SIZE, PRESSURE BEFORE WORK BEGINS.
- 2. CONNECT NEW NATURAL GAS SUPPLY PIPING TO EXISTING NATURAL GAS SUPPLY METER AT THIS LOCATION. VERIFY EXISTING NATURAL GAS METER SIZE AND LOCATION IN FIELD BEFORE WORK BEGINS.
- 3. REGULATE NATURAL GAS SUPPLY PIPING TO "HOUSE PRESSURE" (14" W.C.) BEFORE CONNECTION TO MECHANICAL EQUIPMENT OR PENETRATION OF STRUCTURE PER U.P.C. CODE REQUIREMENTS.
- 4. ROUTE AND CONNECT NEW NATURAL GAS SUPPLY PIPING DOWN THROUGH STRUCTURE TO EXISTING MECHANICAL EQUIPMENT AT MECHANICAL LOFT. MATCH EXISTING "HOUSE PRESSURE" GAS SUPPLY PIPING SIZE.
- 5. INSTALL ROOF TOP CATCH BASIN AT THIS LOCATION FOR CONDENSATE DRAIN.
- 6. EXISTING MECHANICAL EQUIPMENT AT ROOF.

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REV. NO.	DATE				
<b>MECHANICAL &amp; ELECTRICAL ENGINEERING, INC.</b>  SANTA FE: 1222 Lugo St., Suite B Santa Fe, New Mexico 87505 505/983-2389 ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/856-1699					
<b>FORT MARCY RECREATION COMPLEX</b> <b>CITY OF SANTA FE</b> <b>PLUMBING - NATURAL GAS</b> <b>SUPPLY &amp; CONDENSATE PIPING</b> <b>SANTA FE NEW MEXICO</b> ENGINEER'S PROJECT NO. 16009					
					
SCALE - AS NOTED DATE: 11/16/2015 DRAWN BY: MEP CHECKED BY: KT P:    FP:    M:    E:					
<b>SHEET NO.</b> <span style="font-size: 2em; font-weight: bold;">P-1</span>					
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DESCRIPTION	REVISIONS				

ELECTRICAL SYMBOLS LEGEND					
LIGHTING		POWER		SPECIAL SYSTEMS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	LIGHT (SEE LIGHT FIXTURE SCHEDULE)		DUPLEX RECEPTACLE, 18" AFF		FIRE ALARM PULL BOX, 42" AFF
	EMERGENCY LIGHT		FOURPLEX RECEPTACLE, 18" AFF		FIRE ALARM STROBE, 90" AFF
	STRIP LIGHT		250V RECEPTACLE, 18" AFF		FIRE ALARM HORN/STROBE, 90" AFF
	WALL MOUNTED		DUPLEX RECEPT., 1/2 SWITCH, 18" AFF		FA MAGNETIC DOOR HOLDER
	UNDER CABINET		GND FLT INTERRUPT RECEPT., 18" AFF		FA FIRE/SMOKE DAMPER
	LIGHTING TRACK		WEATHER PROOF RECEPTACLE, 18" AFF		FA REMOTE INDICATOR
	OUTDOOR POLE MOUNTED		SPECIAL RECEPTACLE		FLOW SWITCH
	CEILING SURFACE MOUNTED		SINGLE SPECIAL		TAMPER SWITCH
	RECESSED DOWNLIGHT		DUPLEX SPECIAL		GAS DETECTOR
	WALL MOUNTED DOWNLIGHT		SIMPLEX RECEPTACLE		HEAT DETECTOR
	EMERGENCY EXIT		CEILING MOUNTED DUPLEX RECEPTACLE		SMOKE DETECTOR
	EMERGENCY EGRESS, 90" AFF		FLOOR MOUNTED DUPLEX RECEPTACLE		CEILING SPEAKER
	CEILING FAN		CLOCK OUTLET		WALL MOUNTED SPEAKER, 90" AFF
	SINGLE POLE SWITCH, 42" AFF		SURFACE MOUNTED PLUG RACEWAY		SPEAKER VOLUME CONTROL, 42" AFF
	THREE WAY SWITCH, 42" AFF		DISCONNECT SWITCH		TELEVISION OUTLET
	FOUR WAY SWITCH, 40" AFF		THERMAL OVERLOAD SWITCH		SECURITY DIGITAL KEY PAD
	WEATHER PROOF SWITCH, 42" AFF		MOTOR OR EXHAUST FAN		SECURITY INFRARED MOTION SENSOR
	DIMMER SWITCH, 42" AFF		PULL BOX		SECURITY DOOR CONTACTS
	MOTOR SWITCH, 42" AFF		CEILING MOUNTED JUNCTION BOX		SECURITY CAMERA
	PUSH BUTTON SWITCH		WALL MOUNTED JUNCTION BOX		COMMUNICATIONS/DATA OUTLET
	TIME SWITCH		DROP CORD		COMMUNICATIONS/DATA OUTLET, IN FLOOR
	LIGHTING CONTACTOR		THERMOSTAT OUTLET BOX		TELEPHONE OUTLET
	PHOTO CELL		ELECTRICAL PANEL, SURFACE MOUNTED		TELEPHONE OUTLET, IN FLOOR
	OCCUPANCY SENSOR		ELECTRICAL PANEL, RECESSED MOUNTED		PA CALL SWITCH
	EXISTING DEVICE SHOWN DASHED		PAD MOUNT TRANSFORMER		BUZZER
NOTE: THIS SYMBOLS LEGEND IS A GENERAL REPRESENTATION OF DEVICES USED. SOME PROJECTS MAY NOT UTILIZE ALL SYMBOLS REPRESENTED. COORDINATE ALL SYMBOLS FROM PLANS.			WALL MOUNT TRANSFORMER		BELL
			ELECTRICAL KEYED NOTE		MICROPHONE, WALL MOUNTED
			EQUIPMENT SYMBOL		MICROPHONE, FLOOR MOUNTED
			CONDUIT LEADER LINE FOR SIZES		TELEPHONE BACKBOARD
			BRANCH CIRCUIT HOMERUN		PANIC BUTTON
			GROUND		CARD READER
			GROUND ROD		AUTO DIALER
			LIGHTNING ARRESTOR		WIRELESS MICROPHONE TRANSMITTER
			AUDIO MICROPHONE INPUT		AUDIO MICROPHONE INPUT

### MECHANICAL/ELECTRICAL RESPONSIBILITY TABLE

UNIT #	UNIT		DISCONNECT		STARTER/CONTACTOR		CONTROL WIRE		CONTROL CONDUIT		AUTO SHUT-OFF	
	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED
AHU01	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
CDU01	MC	MC	EC	EC	MC	MC	EC	EC	EC	EC	N/A	N/A
RTU1	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
RTU2	MC	MC	M/C	M/C	MC	MC	EC	EC	EC	EC	N/A	N/A
VAV01	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV02	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV03	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV04	MC	MC	N/A	N/A	N/A	N/A	EC	EC	EC	EC	N/A	N/A
VAV05	MC	MC	EC	EC	EC	EC	EC	EC	EC	EC	N/A	N/A
UF	MC	MC	EC	EC	EC	EC	EC	EC	EC	EC	N/A	N/A

UNIT #	DUCT SMOKE DETECTOR		CONTROL WIRE		CONTROL CONDUIT		F/S DAMPER		WIRES & RELAYS		CONDUIT	
	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED	PROVIDED	INSTALLED
AHU01	MC	MC	MC	MC	EC	EC	N/A	N/A	N/A	N/A	N/A	N/A
RTU1	MC	MC	MC	MC	EC	EC	N/A	N/A	N/A	N/A	N/A	N/A
RTU2	MC	MC	MC	MC	EC	EC	N/A	N/A	N/A	N/A	N/A	N/A

MC = Mechanical Contractor      EC = Electrical Contractor      CC = Controls Contractor

### GENERAL ELECTRICAL DEMOLITION NOTES:

THESE NOTES SHALL APPLY TO DEMOLITION AREAS, RENOVATED NEW WORK AREAS AND ENTIRE PROJECT.

- BECOME FAMILIAR WITH THE EXISTING CONDITIONS PRIOR SUBMITTING A COMPLETE BID WITHIN THE SCOPE OF THE PLANS AND SPECIFICATIONS. VERIFY THE EXTENT OF DEMOLITION AND REMOVALS PRIOR TO BID AND INCLUDE ALL WORK REQUIRED TO COMPLETELY DISCONNECT ASSOCIATED EQUIPMENT AND TO COMPLETELY REMOVE ALL ASSOCIATED BRANCH CIRCUIT WIRING, WHERE REQUIRED. WHEN UNCLEAR, ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARD TO THE EXTENT OF WORK OR ANY OTHER ISSUE RELATING TO THIS PROJECT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, NOT AFTER THE PROJECT HAS BEEN AWARDED. PRIOR TO THE CONCLUSION OF THE ADDENDUM PERIOD IN THE BIDDING TIME FRAME, WITHOUT ANY CLARIFICATION BEYOND THESE AND THE BID DOCUMENTS, THE SUBMITTAL OF A BID WARRANTS THAT THE BIDDER FULLY UNDERSTANDS THE SCOPE.
- REMOVE ALL EXISTING MATERIAL AND EQUIPMENT INDICATED AND SHALL SALVAGE TO THE OWNER. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ELECTRICAL EQUIPMENT TO BE REMOVED. ALL EQUIPMENT REMOVED, NOT CLAIMED BY THE OWNER, SHALL BECOME THE PROPERTY OF PROPERLY DISPOSE OF ELECTRICAL EQUIPMENT REMOVED. DISPOSE OF ALL REMAINING EQUIPMENT THAT HAS BEEN REMOVED IN AN APPROVED MANNER PER THE LOCAL AUTHORITY HAVING JURISDICTION.
- DISCONNECT POWER TO ELECTRICAL CIRCUITS AND EQUIPMENT IN DEMOLITION AREAS, INCLUDING ALL ASSOCIATED WIRE AND EXPOSED CONDUIT, CABLE, CONTROLS, AND BOXES, ETC., FOR THIS DEMO, ENTIRELY BACK TO PANEL CIRCUIT BREAKER. THE ONLY EXCEPTION WILL BE FOR THE NEW WORK WHERE EXISTING AND UNDAMAGED BOXES/CONDUIT CAN BE UTILIZED, PROVIDING THAT THEY ARE IN GOOD CONDITION AND UP TO CURRENT CODES AND STANDARDS. REFER TO NEW WORK PLANS AND SPECIFICATIONS IN ALL DIVISIONS THAT RELATE TO ELECTRICAL WORK IN THIS PROJECT. COORDINATE DEMOLITION AND INSTALLATION WITH FIELD CONDITIONS AS THEY MAY APPLY. ALL EQUIPMENT SHALL BE MADE OPERATIONAL, NO EXCEPTIONS. COORDINATE WITH REPRESENTATIVES OF THE OWNER, ARCHITECT, AND ENGINEERS FOR CONDUIT LOCATION PENETRATIONS AND TERMINATION POINTS IF NOT SPECIFIED ON PLANS. NO EXCEPTIONS.
- DAMAGE TO WALLS, CEILING, FLOOR, ETC. SHALL BE REPAIRED IN A PROFESSIONAL MANNER WITH MATCHING FINISH MATERIAL. SEAL ALL WALL AND CEILING, ROOF, AND FOUNDATION OPENINGS.
- THE LOCATIONS OF EQUIPMENT SHOWN ON THE DRAWINGS IS BASED ON SITE VISITS AND THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN. SOME DISCREPANCIES MAY EXIST. NOT ALL BUILDING DETAILS AND BRANCH CIRCUIT CONDUIT/WIRING TO BE REMOVED ARE MAY NOT ALL BE SHOWN ON THE PLANS. VERIFY THE EXACT LOCATIONS OF EQUIPMENT TO BE REMOVED IN THE FIELD. THE CONTRACTOR MAY REVIEW EXISTING ELECTRICAL, MECHANICAL, AND ARCHITECTURAL PLANS, THAT ARE AVAILABLE AFTER BID IS AWARDED.
- DURING DEMOLITION OR WHEN ELECTRICAL SYSTEMS ARE BEING MODIFIED, COVER AND SEAL AND PROTECT EXISTING EQUIPMENT NOT BEING REMOVED FROM DAMAGE. THIS APPLIES TO ALL NEW EQUIPMENT AND SYSTEMS WHICH WILL CONTINUE TO BE OPERATED AT COMPLETION OF THE WORK.
- COORDINATE DEMOLITION FOR EXISTING ELECTRICAL EQUIPMENT BEING REMOVED. ALL ELECTRICAL EQUIPMENT DOWNSTREAM, WHICH REMAINS, AND OUT OF THE DEMOLITION AREA, SHALL REMAIN "ON" AT ALL TIMES. MAINTAIN THE EXISTING CIRCUIT CONTINUITY FOR ALL REMAINING ELECTRICAL DEVICES. COORDINATE GENERAL DEMOLITION WITH THE OWNER TO AVOID PROBLEMS WITH CIRCUIT BEING DISCONNECTED AND REMOVED WHICH MAY AFFECT OTHER AREAS OUTSIDE OF THE WORK AREA. COORDINATE IN FIELD.
- PROVIDE DISCONNECTION AND RECONNECTION OF BRANCH CIRCUITS AND REPLACEMENT OF ELECTRICAL MATERIALS AND LABOR TO RESTORE COMPLETE AND OPERATIONAL SYSTEMS. THIS INCLUDES THE CORRECTION OF ANY CODE DEFICIENCIES RELATED TO RENOVATIONS ON THIS PROJECT. ALL THIS WORK SHALL BE INCLUDED IN THE BID PRICE.
- PROVIDE NEW CIRCUIT BREAKERS OF THE SAME TYPE OR BLANK SPACE COVERS AS MAY BE NECESSARY TO FILL PANEL FOR SAFETY. FIELD SURVEY CIRCUITS THAT MAY BE ABANDONED. RELOCATE, IF NECESSARY, CIRCUIT RUNS EXPOSED BY DEMO WORK THAT SHALL BE KEPT OPERATIONAL.
- WHEN THE EXTENT OF REMOVAL IS UNCLEAR, REQUEST CLARIFICATION FROM ENGINEER PRIOR TO COMMENCING WORK.

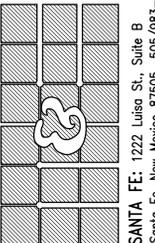
### GENERAL ELECTRICAL NOTES:

- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND PROVIDING ALL WORK INDICATED BY THESE DRAWINGS. THIS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS IN ADDITION TO PERFORMING ALL OPERATIONS INCLUDING CUTTING, CHANNELING NECESSARY FOR THE INSTALLATION OF COMPLETE POWER SYSTEMS AS SHOWN.
- PERFORM ALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER IN FULL COMPLIANCE WITH ALL APPLICABLE CODES AND THE NATIONAL ELECTRICAL CODE (NEC), ALL LOCAL AND STATE REQUIREMENTS WILL BE OBSERVED DURING THE PERFORMANCE OF THIS WORK.
- SHOULD THE CONTRACTOR DETECT ANY DISCREPANCIES BETWEEN CONTRACT DOCUMENTS AND LEGAL OR SAFETY REQUIREMENTS FOR THE PROJECT, HE SHALL PROMPTLY NOTIFY THE ENGINEER IN WRITING. ONCE NOTIFIED THE ENGINEER SHALL MODIFY THE CONTRACT DOCUMENTS ACCORDINGLY. IF THE CONTRACTOR PROCEEDS WITH ANY WORK WHICH IS IN VARIANCE OF KNOWN LEGAL OR SAFETY REQUIREMENTS, THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THIS WORK AND SHALL PROMPTLY CORRECT THE WORK WHEN NOTIFIED WITHOUT ADDITIONAL COST TO THE OWNER.
- FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH DEMOLITION. NO CLAIM FOR ADDITIONAL COST OR TIME EXTENSION WILL BE ALLOWED WITHOUT PROPER NOTICE PLUS PRIOR DETERMINATION OF TIME AND COST TO THE OWNER.
- ANY DAMAGE ON THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR OR A PARTY TO THE CONTRACTOR SHALL BE REPAIRED PRIOR TO CONTRACT DATE OF SUBSTANTIAL COMPLETION AT NO ADDITIONAL EXPENSE TO THE OWNER.
- EXTEND ALL CONDUIT AND CONDUCTORS, INSTALL ELECTRICAL EQUIPMENT AS NECESSARY, AND MAKE ALL FINAL CONNECTIONS TO MECHANICAL AND OWNER FURNISHED EQUIPMENT. LEAVE ALL EQUIPMENT IN OPERABLE CONDITION WITH APPROPRIATE OVERLOAD AND SERVICE DISCONNECT PROTECTION AS REQUIRED BY THE APPLICABLE CODES. FOLLOW MANUFACTURER INSTALLATION GUIDELINES WHERE APPLICABLE.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 VOLTS WITH TYPE THHN/THWN, 75 DEGREE INSULATION UNLESS OTHERWISE INDICATED. MINIMUM WIRE SIZE SHALL BE #12 AWG FOR POWER CIRCUITS UNDER 100FT AND #10 AWG FOR POWER CIRCUITS OVER 100FT. CONDUCTORS SHALL BE SOLID FOR #12 AWG AND STRANDED FOR #10 AWG OR LARGER. ALL WIRING SHALL BE RUN IN CONDUIT OR METAL CLAD (MC) INCLUDING LOW VOLTAGE CONTROL WIRING. SIGNAL WIRING MAY BE RUN IN PVC CONDUIT OR PVC FLEXIBLE TUBING.
- GENERALLY, CONDUIT SHALL BE EMT, 1/2 INCH MINIMUM. WHERE REQUIRED TO PROTECT FROM PHYSICAL DAMAGE, CONDUIT SHALL BE RIGID OR IMC TYPE. RUN CONDUIT CONCEALED UNLESS OTHERWISE SHOWN ON THE DRAWINGS. USE FLEXIBLE METALLIC CONDUIT OR SURFACE MOUNTED RACEWAY ONLY WHERE INDICATED. PROVIDE EXPANSION FITTINGS FOR CONDUIT CROSSING EXPANSION JOINTS.
- SUPPORT ALL CONDUIT INDEPENDENTLY FROM THE BUILDING STRUCTURE. DO NOT SUPPORT FROM VENTILATION DUCTS, MECHANICAL PIPING, SUSPENDED CEILING GRIDS, OR THEIR HANGERS. USE ACCEPTABLE METHODS OF SUPPORT.
- PROVIDE WIRING DEVICES RATED FOR THE GIVEN APPLICATION AS REQUIRED BY CODE. SPECIAL DEVICES SHALL BE PROVIDED AS INDICATED.
- MAKE ALL MAIN FEEDER CONNECTIONS WITH SOLDERLESS, BOLTED TYPE CONNECTORS AND MAKE SMALLER WIRE SPLICES WITH PRESSURE TYPE CONNECTORS.
- INSTALL EXTERIOR WIRING AND DEVICES IN CONDUIT WITH WEATHERPROOF FITTINGS AND IN WEATHERPROOF BOXES. EQUIPMENT SHALL BE RATED FOR EXTERIOR USE.
- MAINTAIN A MINIMUM OF 24 INCH SEPARATION BETWEEN POWER CONDUITS AND SIGNAL CONDUITS AS PRACTICAL. ROUTE CONDUITS TO NOT CROSS EACH OTHER.
- PROVIDE A 20 AMP, 120 VOLT, GFCI PROTECTED RECEPTACLE WITH CAST BOX AND WEATHERPROOF COVER PLATE MOUNTED ONTO A THREADED IMC CONDUIT WITHIN TWENTY-FIVE (25) FEET OF EACH ROOFTOP MECHANICAL UNIT.
- AFTER COMPLETION OF THE INSTALLATION, THE ENTIRE SYSTEM SHALL BE THOROUGHLY CLEANED. REMOVE ALL FOREIGN MATTER, PAINT, OIL, DIRT, GREASE, UNNEEDED LABELS OR STICKERS FROM FIXTURES AND EQUIPMENT. REMOVE ALL RUBBISH AND DEBRIS ACCUMULATED DURING INSTALLATION FROM THE PREMISES.
- COORDINATE FINAL LOCATION OF ALL CONDUIT/FEEDERS, PANELS, AND CONTROL PANELS WITH ENGINEER, OWNER, ARCHITECT, AND ALL TRADES PRIOR TO BEGINNING ANY ROUGH-IN WORK. PROVIDE WORKING CLEARANCES PER NEC. COORDINATE ROUTING OF FEEDERS WITHIN WALL CAVITIES OR CHASES. VERIFY CONDUIT ROUTING PRIOR TO ROUGH-IN.
- THE CONTRACTOR SHALL PREPARE A SEQUENCE OF CONSTRUCTION FOR DEMOLITION AND NEW WORK FOR COORDINATION WITH OWNER OF SCHEDULED OUTAGES AND TERMINATION TO EXISTING SERVICE(S). THIS SEQUENCE OF CONSTRUCTION WILL BE REVIEWED BY THE ENGINEER/OWNER AND BE ACCEPTED PRIOR TO COMMENCEMENT OF CONSTRUCTION. IT IS INTENDED FOR THE ELECTRICAL CONTRACTOR TO MINIMIZE SHUT-DOWNS AND PREPARE AS MUCH NEW WORK AS POSSIBLE PRIOR TO SWITCHOVER OF NEW INSTALLATIONS. THE CONTRACTOR SHALL PROVIDE A GENERATOR OF APPROPRIATE SIZE TO EXISTING SERVICES IF CONFLICTS OF SHUTDOWNS TO THE NEW SERVICE INSTALLATION ARISE.

### SERVICE LOAD CALCULATION:

EXISTING SERVICE DEMAND LOAD	=	197.2	AMPS
EXISTING SERVICE DEMAND LOAD AT 125% (PER 2014 NEC, 220.87)	=	246.5	AMPS
TOTAL NEW LOAD	=	286.0	AMPS
TOTAL LOAD (NEW + EXISTING)	=	532.5	AMPS

MECHANICAL & ELECTRICAL ENGINEERING, INC.



ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/856-1699

SANTA FE: 1222 Luisa St., Suite B Santa Fe, New Mexico 87505 505/983-2389

FORT MARYC RECREATION COMPLEX CITY OF SANTA FE ELECTRICAL NOTES & LEGEND

NEW MEXICO ENGINEER'S PROJECT NO. 15009



SCALE - AS NOTED

DATE: 11/16/2015

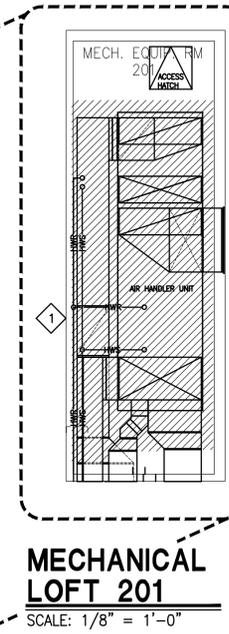
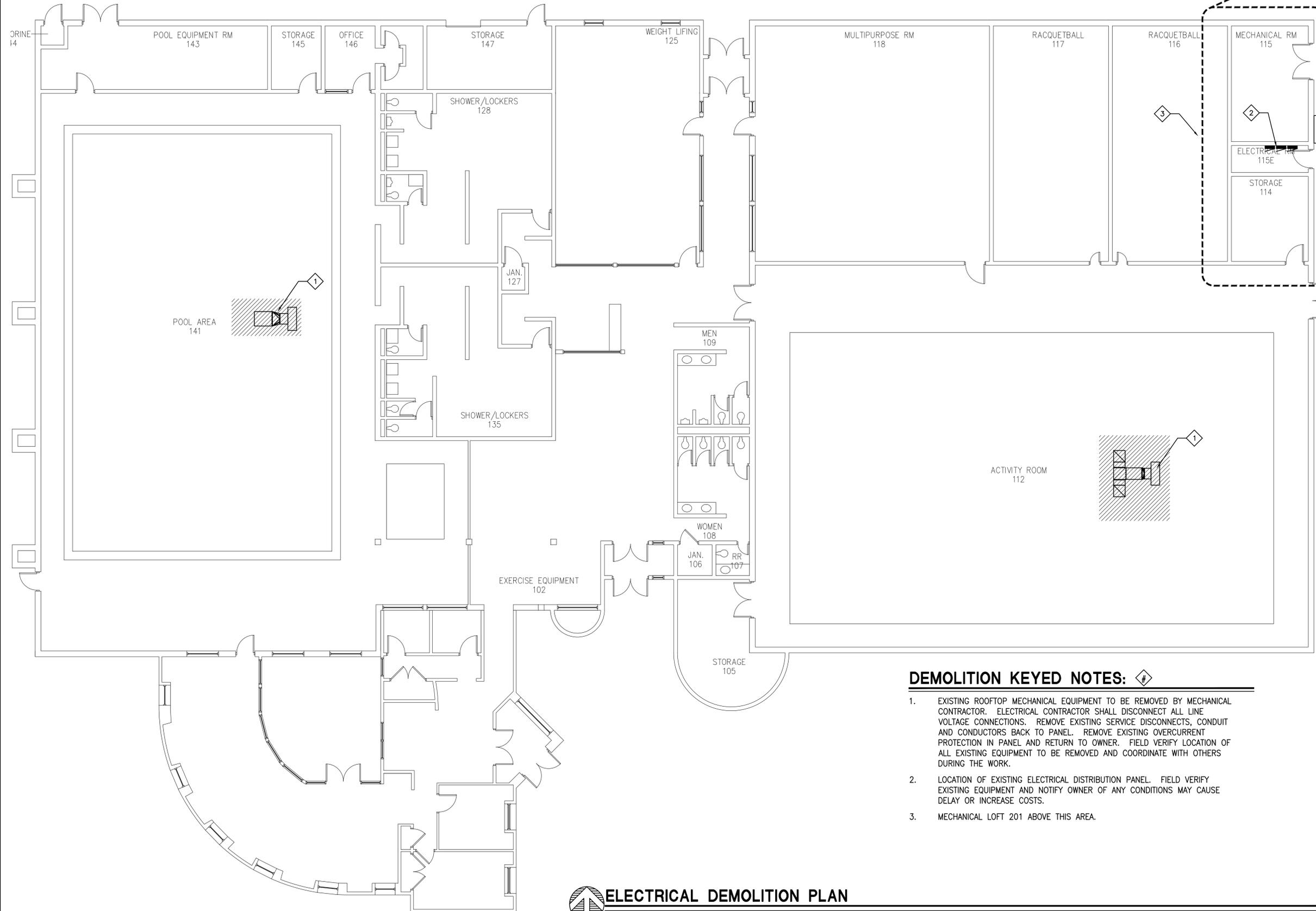
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SHEET NO.

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**MECHANICAL LOFT 201**  
SCALE: 1/8" = 1'-0"

**DEMOLITION KEYED NOTES:** ◆

1. EXISTING ROOFTOP MECHANICAL EQUIPMENT TO BE REMOVED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL LINE VOLTAGE CONNECTIONS. REMOVE EXISTING SERVICE DISCONNECTS, CONDUIT AND CONDUCTORS BACK TO PANEL. REMOVE EXISTING OVERCURRENT PROTECTION IN PANEL AND RETURN TO OWNER. FIELD VERIFY LOCATION OF ALL EXISTING EQUIPMENT TO BE REMOVED AND COORDINATE WITH OTHERS DURING THE WORK.
2. LOCATION OF EXISTING ELECTRICAL DISTRIBUTION PANEL. FIELD VERIFY EXISTING EQUIPMENT AND NOTIFY OWNER OF ANY CONDITIONS MAY CAUSE DELAY OR INCREASE COSTS.
3. MECHANICAL LOFT 201 ABOVE THIS AREA.

**ELECTRICAL DEMOLITION PLAN**  
SCALE: 1/8" = 1'-0"

OWN. BY	DKG
REV. DATE	NO.
DESCRIPTION	REVISIONS
<b>MECHANICAL &amp; ELECTRICAL ENGINEERING, INC.</b> ALBUQUERQUE: 8417 WASHINGTON PL., NE ALBUQUERQUE, NM 87113 505/856-1699 SANTA FE: 1222 LISON ST., Suite B Santa Fe, New Mexico 87505 505/983-2389	
<b>FORT MARCY RECREATION COMPLEX</b> <b>CITY OF SANTA FE</b> <b>ELECTRICAL DEMOLITION PLAN</b> SANTA FE NEW MEXICO ENGINEER'S PROJECT NO. 15009	
SCALE - AS NOTED	
DATE: 11/16/2015	
DRAWN BY: RD	
CHECKED BY: KT	
P:	FP: M: E:
<b>SHEET NO.</b> <b>ED-1</b>	

