REQUEST FOR COMPETITIVE SEALED PROPOSALS

FOR

HEATING, VENTILATION, AND AIR CONDITIONING UPGRADES AT TEMPORARY STATION

DATE ISSUED: THURSDAY, MAY 9, 2024

DATE AND TIME DUE: THURSDAY, MAY 23, 2024 3:00 PM, CST

DELIVER TO:

REEVES COUNTY
EMERGENCY SERVICES
DISTRICT NOS. 1 & 2
2269 OCOTILLO DRIVE
PECOS, TX 79772

PROJECT TITLE PAGE
HVAC UPGRADES AT TEMPORARY STATION

Reeves County Emergency Services District Nos. 1 & 2
April 24, 2024

DBR Engineering Consultants, Inc.

9601 McAllister Freeway, Suite 410
San Antonio, Texas 78216

Telephone:(210)546-0200
Fax: (210) 546-0201

Martinez Architects, LP
900 Rockmead, Suite 250
Houston, Texas 77339

Telephone: (281) 346-7371

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1. Project Title:

Heating, Ventilation, And Air Conditioning ("HVAC") Upgrades at the Temporary Station

2. Description of Work:

The Project will consist of provision of HVAC upgrades at the Temporary Station. The Work shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning system in all of its various phases, all as shown on the accompanying drawings and/or described in the attached Specifications. The address of the Project is 2269 Ocotillo Drive, Pecos, Texas 79722. Full Scope of Work is described within the drawings and specifications, available by request from Martinez Architects.

4. Architect: Martinez Architects, LP
5. Engineer: DBR Engineering Consultants, Inc
6. Date Solicitation Issued: May 9, 2024
7. List of Contract Documents or Forms

(1)	Table of Contents	CSP Table of Contents
(2)	Instruction to Proposers	Request for Competitive Sealed Proposals
(3)	RFP-CSP Proposal and Info	Proposal Form (includes Proposer Information)
(4)	CSP Bond & CB Bid Bond	Proposal/Bid Bond
(5)	Form CIQ	Conflict of Interest Questionnaire
(6)	Affidavit of Non-Collusion	Affidavit of Non-Collusion
(7)	Notice Pwr (DOL Rates)	Notice of Prevailing Wage Rates
(8)	Notice of Provider Workforce Screening	Notice of Provider of Workforce Screening Services
(9)	Construct Insur Certif	Certificate of Insurance
(10)	PaB	Payment Bond
(11)	PeB	Performance Bond
(12)	WCN	Required Worker's Compensation Notice (Post at Job Site)
(13)	Impt Info	Important Information (regarding prevailing wage rates)
(14)	Con Certif	Covered Employees Contractor Certification

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8. Drawings: The Drawings are as follows, and are dated December 12, 20 23 unless a different date is shown below.
Drawing List:

MEP2.01	MEP PLAN
M0.01	MECHANICAL SYMBOL LEGEND
M7.01	MECHANICAL SPECIFICATIONS
E0.01	ELECTRICAL SYMBOL LEGEND
E7.01	ELECTRICAL SPECIFICATIONS
E7.02	ELECTRICAL SPECIFICATIONS

9. Specifications: The Specifications are as follows:
List of Specifications:

DIVISION 23 – MECHANICAL

230000	PART I: GENERAL-MECHANICAL
	PART II: DUCTWORK-MECHANICAL
	PART III: EQUIPMENT - MECHANICAL

DIVISION 26 – ELECTRICAL

260000	PART I: GENERAL-ELECTRICAL
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	GENERAL ELECTRICAL SPECIFICATIONS

REQUEST FOR COMPETITIVE SEALED PROPOSALS

Project Title: Heating, Ventilation and Air Conditioning ("HVAC") Upgrades at Temporary Station

List of Trades: Electrical
Mechanical

Scope of work includes:

The Project will consist of the provision of HVAC upgrades at the Temporary Station. The Work shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning system in all of its various phases, all as shown on the accompanying drawings and/or described in the specifications. The address of the project is 2269 Ocotillo Drive, Pecos, Texas 79722. The full Scope of Work is described within the drawings and specifications attached to this document.

100% Performance and Payment Bonds are required for this Project.

PROPOSAL DEADLINE: 3:00 P.M. CST time, on Thursday, May 23, 2024, at the Districts' Administration Office, 2269 Ocotillo Drive, Pecos, TX 79772 (a pdf submitted via email will suffice as an electronic copy). Proposals will thereafter be publicly opened, and the names of the proposers and the proposal amounts will be read aloud.

Proposal instructions, copies of drawings, specifications and contract documents, addenda (if any) and other documents related to this Request for Proposals ("RFP") are available at the location indicated below.

Download documents at: The Districts' website: https://reevescounty-esd.com/rfp/

Questions or concerns regarding this RFP must be directed to: Laura Torres, Project Manager, by phone at: (832) 712-1826, or by email at: ltorres@agcm.com. Carbon Copy: Elizabeth Heisey (eheisey@rcesd.org); Justin Myers (justinm@martinez-architects.com); Luke Malish (lmalish@agcm.com); John Nuche (jnuche@agcm.com).

The Districts reserve the right to reject any and all Proposals.

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REQUEST FOR COMPETITIVE SEALED PROPOSALS
INSTRUCTIONS TO PROPOSERS
(Chapter 2269, Subchapter D, Texas Government Code)

Reeves County Emergency Services District Nos. 1 & 2 (the "Districts") request competitive sealed proposals for a Contractor to perform the construction of the Work described below in connection with the Districts' **HVAC Upgrades at the Temporary Station** Project (the "Project"). The Districts are interested in receiving proposals from General Contractors with experience in successfully completing projects that are similar in scope, size and complexity to the Work and meeting any specialized requirements set forth below.

1. PROJECT

1.1. **Scope of Work. The selected Offeror must furnish all labor, materials and equipment required for the construction of the following improvements (the "Work"):**

The Project will consist of provision of HVAC upgrades at the Temporary Station. The Work shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning system in all of its various phases, all as shown on the accompanying drawings and/or described in the attached Specifications. The address of the project is 2269 Ocotillo Drive, Pecos, Texas 79722. Full Scope of Work is described within the drawings and specifications, available by request from Martinez Architects.

To be constructed at the following location ("Project Site"):

2269 Ocotillo Drive, Pecos, TX 79772

1.2. **Estimated Project Budget: $125,000.00 dlls**

1.3. **Minimum Qualifications.** Because of the nature of the Work, the selected Proposer must meet the following qualifications and/or must have any licenses or certifications specified below (collectively, the "Minimum Qualifications"):

As specified in the Project Specifications.

2. REQUEST FOR PROPOSALS

2.1. This Request for Competitive Sealed Proposals ("RFP") consists of the following documents:

- Advertisement for RFP;
- Instructions to Proposers;
- Proposal Form;
- Any Contract Documents referenced in this RFP;
- Any addenda to this RFP issued by the Districts;
- Attached forms; and
- Proposal/Bid Bond Form.

3. DRAWINGS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ADDENDA

3.1. Drawings, Specifications, Contract Documents, and Addenda (if any) can also be downloaded at Reeves County Emergency Services District Nos. 1&2 website https://reevescounty-esd.com/rfp/.

4. FORMAT FOR PROPOSALS

4.1. Each proposal ("Proposal") submitted by a proposer ("Proposer") must contain the following:

- The completed Proposal Form (including the Proposer information in Section D thereof);
- The Proposal Guaranty described in Section 13;
- The completed Suspension and Debarment Certification;
- The completed Affidavit of Non-Collusion
- The completed Conflict of Interest Questionnaire
- A completed Form 1295

4.2. The Proposal information must be typed on the Proposal Form.

4.3. The Proposer information in Section D of the Proposal Form must be typed on Section D of the Proposal Form or on letter-size ("8½ x 11") paper if additional sheets are used. If preprinted materials, flyers or other information about the Proposer is used, it should be referenced in the submittal and included as labeled attachments.

4.4. If turned in physical/printed form, the Proposal Form and other forms included in the Proposal should be stapled or bound together in a binder, so that that the pages can be easily opened and laid flat for copying.

4.5. The Proposal should be containing the original signature of a person authorized to sign on behalf of the Proposer. Submit one (1) digital PDF copy of complete Proposal submitted via e-mail; the Districts will accept electronic-only submissions as follows:

4.5.1. Email to Laura Torres with AG|CM (ltorres@agcm.com)

a. CC: eheisey@rcesd.org; justinm@martinez-architects.com

b. Emailed submissions must be time/stamped as received not later than 3:00 pm on May 23, 2024.

4.6. The Proposal must be submitted in an email containing the following information:

- "Competitive Sealed Proposal for HVAC Upgrades at the Temporary Station Project"
- Name and mailing address of the Proposer should be included in the body of the email.

4.7. If turned in physical/printed form, the Proposal must be submitted in a sealed envelope which states on the outside the following information:

- "Competitive Sealed Proposal for HVAC Upgrades at the Temporary Station Project"
- Proposal Deadline: **Thursday, May 23, 2024.**
- Name and mailing address of the Proposer

5. PLACE FOR SUBMITTING PROPOSALS

5.1. Proposals must be submitted by mail or hand delivery to:

Reeves County Emergency Services District Nos. 1 & 2
2269 Ocotillo Drive
Pecos, TX 79772
Attention: Elizabeth Heisey, CFO

5.2. Proposals sent by Fax or submitted to any other address other than the Place for Submitting Proposals described in Section 5.1 above will **NOT** be accepted.

6. DEADLINE FOR RECEIVING PROPOSALS

6.1. Proposals must be received at the Place for Submitting Proposals described in Section 5 above, **no later than 3:00 p.m., CST time, on Thursday, May 23, 2024** ("Proposal Deadline"). The clock used at the Place for Submitting Proposals shall conclusively determine the time that proposals are received.

6.2. Proposals received after the Proposal Deadline will be returned unopened.

6.3. The Proposal Deadline may be extended by Addendum to this RFP.

7. PRE-PROPOSAL CONFERENCE

7.1. The Districts will not be scheduling a pre-proposal conference.

8. TIME AND PLACE OF OPENING OF PROPOSALS

8.1. Proposals which have been timely received will be publicly opened at the Place for Submitting Proposals immediately after the Proposal Deadline, and the names of the Proposers and any monetary proposals made by the Proposers will be read aloud.

9. METHOD OF SELECTING CONTRACTOR

9.1. The Districts will evaluate and rank each Proposal submitted in relation to the Selection Criteria set out below. The Districts will select the Proposer that, in the opinion of The Districts, submits the Proposal that offers the best value for The Districts based on the Selection Criteria and the weighted value for each Selection Criteria and on The Districts' ranking evaluation. The Proposer that offers the best value may or may not be the Proposer that submits the lowest proposal for the cost of construction.

9.2. The Districts Project Management Team will make a recommendation to the Boards of Commissioners as to the selection ranking of the Proposers. The Boards of Commissioners will select the Proposer that submits the Proposal that offers the best value for the Districts and will authorize the negotiation and execution of the contract. If the Districts are unable to negotiate a satisfactory contract with the selected Proposer, the Districts shall, formally and in writing, end negotiations with that Proposer and proceed to the next Proposer in the order of the selection ranking until a contract is reached or all proposals are rejected. The Districts reserve the right to reject any and all proposals.

10. SELECTION CRITERIA

10.1. Proposers will be evaluated based on the following selection criteria and weighted value for each criterion (collectively, "Selection Criteria"):

Selection Criteria	Weighted Value
Construction Cost as Proposed	40%
Relevant Experience and Past Performance	15%
Proposed Personnel/Resources	15%
Whether the proposer's financial capability is appropriate to the size and scope of the project	10%
Safety Record	5%
Approach and Understanding	5%
Proposed Project Schedule	10%

11. QUESTIONS REGARDING THIS RFP

11.1. Any questions or concerns regarding this RFP must be directed to the "Contact Person" as follows:

- Email to Laura Torres with AG|CM (ltorres@agcm.com)

CC: Elizabeth Heisey (eheisey@rcesd.org); Justin Myers (justinm@martinez-architects.com); Luke Malish (lmalish@agcm.com)

The Districts specifically requests that Proposers restrict all contact and questions regarding this RFP to the Contact Person.

11.2. Questions must be received by the Contact Person no later than 2:00 PM CST, Tuesday, May 21, 2024.

11.3. If the Contact Person determines that a response is required to any question received by the Contact Person, an answer will be provided through an Addendum to this RFP.

An effort will be made to provide a copy of all Addenda issued to each Proposer who is on the list of having received a RFP. However, it is the obligation of each Proposer to make sure prior to submitting a Proposal, that it has received all Addenda in connection with this RFP. Copies of Addenda issued to this RFP can be obtained from the Contact Person as provided in Section 11.1.

11.4. Only those responses to inquiries which are made by formal written Addenda shall be binding. Oral and other interpretations or clarifications will be without legal effect, and shall not be binding on the Districts. The Proposer must acknowledge receipt of all Addenda in its Proposal. However, each Proposer will be bound by the terms of all Addenda, and its Proposal will be construed to include the information contained in the Addenda, whether or not Proposer has received them or acknowledged receipt.

12. WITHDRAWAL OF PROPOSALS

12.1. Prior to the Proposal Deadline, an Proposer may withdraw its Proposal, and may, if it chooses, submit a new Proposal, if the new Proposal is submitted before the expiration of Proposal Deadline. The request for withdrawal of a Proposal must be in writing and signed by an authorized representative of the Proposer.

12.2. After the Proposal Deadline, an Proposer may not withdraw its Proposal for a period of 90 days after Proposal opening, unless withdrawal is required by applicable law or permitted by the Districts in accordance with Districts' Policy.

12.3. Each Proposal received will be presumed to be accurate and free from error, unless clear and convincing evidence to the contrary is presented.

13. SUBSTITUTION OF MATERIALS

13.1. Proposers may request a substitution of materials or equipment specified in the Contract Documents. However, any such request must be submitted in writing to the Contact Person by 2:00 p.m. on May 21, 2024. If the Districts approve the substitution, they will respond by Addendum as described in Section 11. A failure to respond will constitute a denial of the request. Sufficient information should accompany the request to enable the Districts to promptly render a decision on a proposed substitution of materials or equipment.

14. POST-PROPOSAL INFORMATION

14.1. By submitting a Proposal, the Proposer agrees to provide evidence upon request of the Districts that the Proposer satisfies the Minimum Qualifications set out in Section 1.3 above.

14.2. By submitting a Proposal, the Proposer agrees to promptly furnish any additional information required by the Districts in order to evaluate the Proposals.

15. REJECTION OF PROPOSALS

15.1. Proposals may be rejected if they do not contain the information required by this RFP or if they do not contain the information stated in Section 4.1 hereof (subject to Section 4.7).

15.2. Proposals may be rejected if the Minimum Qualifications specified in Section 1.3 above are not

met.

15.3. Proposals may be rejected if they contain qualifications, conditions to performance, or if they are incomplete, or for any other reason authorized by law.

15.4. The Districts reserve the right to waive any minor informality or irregularity in the Proposal or Proposal process, and to reject any and all Proposals.

16. BOND AND INSURANCE REQUIREMENTS

16.1. Certificate(s) of Insurance meeting the requirements set out in the General Conditions must be furnished by the selected Proposer within five (5) days after the Contract is signed by the Proposer.

16.2. If the Contract amount is over $100,000, the selected Proposer must provide performance bonds in the amount of 100% of the Contract Price within five (5) days after the Contract is signed by the Proposer. If the Contract amount is over $25,000, the selected Proposer must provide payment bonds in the amount of 100% of the Contract Price within five (5) days after the Contract is signed by the Proposer. Bonds must be provided by a Treasury-listed corporate Surety authorized to do business in the State of Texas.

The Proposer's attention is directed to Subsection 10.4 of the General Conditions which expressly sets out the Worker's Compensation Insurance requirements for the Project. The Contractor and each subcontractor must maintain Worker's Compensation Insurance coverage as required in Subsection 10.4 and the Contractor is required to provide a certificate of coverage for each subcontractor prior to that subcontractor beginning Work on the Project Site, showing that coverage is being provided for all of its employees for the duration of the Work. Subsection10.4 is incorporated herein for all purposes.

17. PROJECT SAFETY PLAN REQUIREMENTS

17.1. The selected Proposer must submit its Project Safety Plan not later than five (5) days after the Proposer signs the Contract.

18. PREVAILING WAGE RATES

18.1. The Contractor and each Subcontractor who performs work under the Contract must pay, at a minimum, the applicable prevailing wage rates to a worker employed by it in the performance of the Work. The prevailing wage rates applicable to the Project, which shall be in effect for the duration of the Contract, are set forth in the Notice of Prevailing Wage Rates.

19. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

19.1. Each Proposer is required to visit the Project Site and to fully acquaint itself with the conditions and limitations as they exist at the Project Site, including the effect that weather conditions may have on the Project Site. Each Proposer shall also fully acquaint itself with the existing and anticipated sources and supplies of labor and materials and shall also thoroughly examine the Contract Documents. Failure of the Proposer to visit the Project Site and acquaint itself with the conditions of the Work and the Contract Documents shall in no way relieve the Proposer from any obligations with respect to its Proposal.

20. PUBLIC INFORMATION

20.1. The Districts consider all information, documentation and other materials requested to be submitted in response to this solicitation to be of a non-confidential and/or non-proprietary nature and therefore shall be subject to public disclosure under the Texas Public Information Act (Tex. Gov't Code, Chapter 552.001, *et seq*.) after submission to the Districts.

20.2. Proposers are hereby notified that the Districts strictly adhere to all statutes, court decisions, and opinions of the Texas Attorney General with respect to disclosure of public information.

21. DEADLINE FOR SIGNING CONTRACT AND THE DISTRICTS RIGHTS IF DELAY

21.1. The timely completion of this Project is essential. the Districts have the right to consider negotiations with the selected Proposer for the Contract incomplete until and unless the Contract is signed and the bonds, insurance, Project Safety Plan are submitted in accordance with the following deadlines. In order to avoid unnecessary delays in the Project, **the selected Proposer must**:

.1 provide its Safety Program Manual and the Safety Plan for the Project and provide all required bonds and insurance within five (5) days after the selected Proposer signs the Contract.

21.2. **If the selected Proposer fails to meet one or more of these deadlines, then in addition to any and all other rights and remedies to which the Districts are entitled, the Districts shall have the right to:**

.1 terminate its negotiations with the selected Proposer and begin negotiations with the next ranked Proposer; or

.2 proceed with the Contract with selected Proposer, but treat each day beyond the five (5)-day deadline in which the Contract is unsigned by the Proposer, and/or each day beyond the five (5) day deadline in which one or more of the required documents has not been submitted, as a day of unexcused delay under the Contract.

22. WAIVER OF CLAIMS

22.1. **EACH PROPOSER BY SUBMISSION OF A PROPOSAL TO THIS RFP WAIVES ANY CLAIMS IT HAS OR MAY HAVE AGAINST THE ARCHITECT, ITS CONSULTING ENGINEERS, OR ANY OTHER CONSULTANTS, AND THEIR RESPECTIVE EMPLOYEES, OFFICERS, MEMBERS, DIRECTORS AND PARTNERS, AND THE DISTRICTS, ITS EMPLOYEES, OFFICERS, AGENTS, REPRESENTATIVES, AND THE MEMBERS OF THE DISTRICTS GOVERNING BODY, CONNECTED WITH OR ARISING OUT OF THIS RFP, INCLUDING, THE ADMINISTRATION OF THE RFP, THE PROPOSAL EVALUATIONS, AND THE SELECTION OF THE PROPOSER. SUBMISSION OF A PROPOSAL INDICATES PROPOSER'S ACCEPTANCE OF THE EVALUATION TECHNIQUE AND PROPOSER'S RECOGNITION THAT SOME SUBJECTIVE JUDGMENTS MUST BE MADE BY THE DISTRICTS DURING THE SELECTION PROCESS. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EACH PROPOSER ACKNOWLEDGES THAT THE DISTRICTS SHALL DOCUMENT THE BASIS OF ITS SELECTION AND SHALL MAKE THE EVALUATIONS PUBLIC NOT LATER THAN THE SEVENTH (7TH) DAY AFTER THE DATE THE CONTRACT IS AWARDED, AND EACH PROPOSER WAIVES ANY CLAIM IT HAS OR MAY HAVE AGAINST THE ABOVE-NAMED PERSONS, DUE TO INFORMATION CONTAINED IN SUCH EVALUATIONS.**

23. CONFLICT OF INTEREST QUESTIONNAIRE

23.1 Proposer shall file completed Conflict of Interest Questionnaires with each of the Districts.

24. DISCLOSURE OF INTERESTED PARTIES

24.1. In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Texas Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

24.2. After the Districts Boards of Commissioners selects the Proposer, the successful Proposer will be required to complete electronic Forms 1295 (“Form 1295”) on the Texas Ethics Commission website (https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm) (one for each District) and submit the completed and executed Forms 1295, including the certifications of filing, to the Districts prior to entering into a contract with the Districts in accordance with this

statute. Additional information is available on the Texas Ethics Commission website at www.ethics.state.tx.us. Submission of a response to this Request for Proposals indicates Proposer's acceptance and intended compliance with these requirements.

25. FEEDBACK TO SUBCONTRACTORS/SUPPLIERS

25.1. If requested by a subcontractor or material supplier who submitted a bid or proposal to Proposer in connection with this procurement but who is not listed as a proposed subcontractor or supplier on Proposer's completed Disclosure Statement, Proposer shall provide feedback to such subcontractor or supplier as to how its bid/proposal compared with the other bids/proposals received by Proposer for the same services or materials (e.g., bid was highest bid received, bid fell in the middle of bids received, etc.).

PROPOSAL FORM

To: Boards of Commissioners, Reeves County Emergency Services District Nos. 1 & 2
Pecos, Texas

Re: Districts RFP No. TBD

From: _____
(Full legal name of Proposer, including DBA, if applicable)

Project Number: _____

Project Title: _____

The undersigned proposer ("Proposer") submits this Proposal for the performance of the Work of construction, alteration or repair (the "Work") described as follows:

The Project will consist of provision of HVAC upgrades at the Temporary Station. The Work shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning system in all of its various phases, all as shown on the accompanying drawings and/or described in the attached Specifications. The address of the project is 2269 Ocotillo Drive, Pecos, Texas 79722. The full Scope of Work is described within the drawings and specifications, available by request from Martinez Architects.

The undersigned Proposer has carefully examined and considered the Project Site and relevant conditions and circumstances for the Work, information and requirements set out in the RFP, the Drawings and Specifications, and the requirements of the proposed Contract Documents, including the Agreement for Construction, the General Conditions and the Notice of Prevailing Wage Rates, in making this Proposal. Capitalized terms used but not otherwise defined in this Proposal Form shall have the same meanings as designated in the RFP.

A. Proposal Terms

Based on the foregoing, the undersigned Proposer hereby offers and proposes to perform the Work, in accordance with the Contract Documents, for the Contract Amount based on the Pricing Schedule set forth below, within the Substantial Completion Date required by the Districts.

A.1 Pricing Schedule (Express in words and numbers.)

Base Proposal _____

($)

*If applicable, indicate the amount of HAZMAT Abatement included in the Base Proposal.

___Any HAZMAT Abatement to be completed by owner prior_____
___to work commencing. _____

Scope of work analysis: *(fill by hand)*

SCOPE ANALYSIS

	Description	
	Permits	$
	Procurement of Equipment	$
	GC Mobilization	$
	Mechanical Scope	$
	RTU concrete pad or platform installation	$
	Installation of interior ductwork hangers	$
	Installation of ductwork Galvanized all thread rod	$
	Building Mechanical Penetration	$
	Testing and balancing	$
	Electrical Scope	$
	Conduit wall and ceiling installation	$
	Receptacles and outlets installation	$
	Electrical Equipment installation	$
	Building Electrical Penetration	$
	Testing	$
	Mechanical & Electrical Interior Finals	$
	Final Clean up	$
	Punchlist	$
	Final Inspections	$
	GC Demobilize	$
	Insurance / Builder's Risk	$
	Payment & Performance Bond	$
	General Conditions	$
	GC Fee	$
	Overhead	$

A.2 Substantial Completion Date

All of the Work must be substantially completed according to the equipment lead time (no more than four (4) weeks after equipment received from manufacturer).

B. Enclosed Documents

The following are enclosed with this completed Proposal:

B.1 Documents Due Same Business Day

The following are enclosed with this Proposal and delivered by 3:00 p.m., CST time, on the day of the Proposal Deadline pursuant to Section 4.7 of the RFP Instructions to Proposers regarding the Work:

- The completed Proposal Form (including the Proposer information in Section D thereof);
- The Proposal Guaranty described in Section 13;
- The completed Suspension and Debarment Certification;
- The completed Affidavit of Non-Collusion
- The completed Conflict of Interest Questionnaires
- Completed Forms 1295

C. Proposer Representations and Certifications

C.1 By signing and submitting this Proposal, the undersigned Proposer and person signing on its behalf certifies and represents to the Districts, as follows:

C.1.1 Proposer has not offered, conferred or agreed to confer any pecuniary benefit, as defined by Tex. Penal Code, Chapter 36, or any other thing of value, as consideration for the receipt of information or any special treatment or advantage relating to this Proposal;

C.1.2 Proposer has not offered, conferred or agreed to confer any pecuniary benefit or other thing of value as consideration for the recipient's decision, opinion, recommendation, vote or other exercise of discretion concerning this Proposal;

C.1.3 Proposer has not violated any state, federal or local law, regulation or ordinance relating to bribery, improper influence, collusion or the like, and Proposer will not in the future offer, confer, or agree to confer any pecuniary benefit or other thing of value to any officer, Commissioner, agent or employee of the Districts in return for the person's having exercised official discretion, power or duty with respect to this Proposal;

C.1.4 Proposer has not now and will not in the future offer, confer or agree to confer a pecuniary benefit or other thing of value to any officer, Commissioner, agent or employee of the Districts in connection with information regarding this Proposal, the submission of this Proposal, the award of this Proposal, or the performance, delivery or sale pursuant to this Proposal;

C.1.5 Proposer has neither coerced nor attempted to influence the exercise of discretion by any officer, Commissioner, agent or employee of the Districts concerning this Proposal on the basis of any consideration not authorized by law; and

C.1.6 Proposer has not received any information not available to other proposers so as to give the undersigned a preferential advantage with respect to this Proposal.

C.2 All information contained in this Proposal, including the information provided in Section D below is, to the best of the undersigned's knowledge and belief, true, complete and accurate.

C.3 PROPOSER WAIVES ANY CLAIM IT HAS OR MAY HAVE AGAINST THE ARCHITECT, ITS CONSULTING ENGINEERS, OR ANY OTHER CONSULTANTS, AND THEIR RESPECTIVE EMPLOYEES, OFFICERS, MEMBERS, DIRECTORS AND PARTNERS, AND THE DISTRCTS, ITS EMPLOYEES, OFFICERS, AGENTS, REPRESENTATIVES, AND THE MEMBERS OF THE DISTRICTS GOVERNING BODY, CONNECTED WITH OR ARISING OUT OF THIS RFP, INCLUDING, THE ADMINISTRATION OF THE RFP, THE PROPOSAL EVALUATIONS, AND THE SELECTION OF THE PROPOSER. SUBMISSION OF A PROPOSAL INDICATES PROPOSER'S ACCEPTANCE OF THE EVALUATION TECHNIQUE AND PROPOSER'S RECOGNITION THAT SOME SUBJECTIVE JUDGMENTS MUST BE MADE BY THE DISTRICTS DURING THE SELECTION PROCESS. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, PROPOSER ACKNOWLEDGES THAT THE DISTRICTS SHALL DOCUMENT THE BASIS OF ITS SELECTION AND SHALL MAKE THE EVALUATIONS PUBLIC NOT LATER THAN THE SEVENTH (7TH) DAY AFTER THE DATE THE CONTRACT IS AWARDED, AND PROPOSER WAIVES ANY CLAIM IT HAS OR MAY HAVE AGAINST THE ABOVE-NAMED PERSONS, DUE TO INFORMATION CONTAINED IN SUCH EVALUATIONS.

C.4 Proposer has received the following Addenda to the RFP, but agrees and understands that it will be responsible for performing the Work in accordance with all terms and conditions in all Addenda issued in connection with the RFP, and that its Proposal will be construed to include all requirements of all such Addenda, whether or not identified here:

Addenda No.(s)_____,

If not applicable fill “n/a”.

C.5 Proposer (or its subcontractors/suppliers, as applicable) meets all of the Minimum Qualifications specified in Section 1.3 of the RFP.

C.6 The subcontractors/suppliers listed on the completed Disclosure Statement meet all of the qualifications for the Project set forth in the Districts Project Manual/Specifications.

C.7 If requested by a subcontractor or material supplier who submitted a bid/proposal to Proposer in connection with the Work but who is not listed as a proposed subcontractor or supplier on Proposer’s completed Disclosure Statement, Proposer will provide feedback to such subcontractor or supplier as to how its bid/proposal compared with the other bids/proposals received by Proposer for the same services or materials in connection with the Work (e.g., bid was highest bid received, bid fell in the middle of bids received, etc.).

D. Proposer Information

All of the following information must be provided by Proposer. Use additional sheets if necessary. If additional sheets are used, clearly indicate the question number to which you are responding. Responses must be typed or printed neatly. Illegible responses will not be considered. The Proposer is also sometimes hereinafter referred to below as the "organization" or the "company."

D.1 General Information

D.1.1 Name of Proposer:_____

D.1.2 Name of Project:_____

D.1.3 Address of office from which Proposer will conduct the Work:
_____

D.1.4 Proposer’s Contact Person for this Work:
Name: _____
Address: _____Phone:_____

D.1.5 Proposer's Home Office Address:
_____

D.1.6 Does any relationship exist between the Proposer, its officers, principals, or employees and any of **the Districts'** officers, or Board members? ☐ YES ☐ NO
If yes, please explain _____ _____

D.1.7 Principal Business:
☐ General Construction ☐ Mechanical/Electrical Interior Finish-out
☐ Other (Please specify)_____☐_____
☐

D.1.8 Licensing/Certifications for Prime Contractors:
List trade categories in which your organization is legally qualified to do business in Reeves County, Texas, and indicate registration or license numbers, as applicable.

If a Technology, Fire Alarm, Security or Roofing specialty contractor, please provide a list of each manufacturer with which your organization is authorized/certified to supply, service and install their products. Submit letters and certificates from the manufacturers, on manufacturers' letterheads, regarding the authorization to supply, service and install their products and, in addition, provide copies of certifications for the various personnel involved in the Project.

D.1.9 Minimum Qualifications:
To the extent not otherwise described in Section 1.8 above, describe your organization's compliance with all Minimum Qualifications set forth in Section 1.3 of the RFP and include all necessary attachments evidencing same.

D.1.10 Work to be Performed on this Project by Proposer's Own Forces:
List the general categories of work that your organization intends to perform on this Project using its own forces.
_____

D.2 Organization

D.2.1 How many years has your organization been in business as a contractor?_____

D.2.2 How many years has your organization been in business under its present business name? _____

D.2.3 Under what other or former names has your organization operated?
Name:_____Years: _____
Name:_____Years: _____

D.2.4 If your organization is a corporation, answer the following:
Date of incorporation: _____State of incorporation:_____
President's name: _____

D.2.5 If your organization is a limited liability company, answer the following:
Date of organization:____ _____State of organization: _____
President's, Manager's or Managing Member's name:_____

D.2.6 If your organization is a partnership, answer the following:
Date of organization: _____Type of Partnership: _____
Name(s) of general partner(s):_____

D.2.7 If your organization is individually owned, answer the following:
Date of organization:_____Name of owner:_____

D.2.8 For all business entities other than publicly held corporations, provide the following:

Award to Nonresident Bidders
Is your business organized under the laws of the State of Texas? ☐ YES ☐ NO

What is the location of your principal place of business?

_____

Proposals from nonresident contractors shall be evaluated according to Tex. Gov. Code § 2252.002.

D.2.9 Is your company currently for sale or involved in any transaction to expand or to become acquired by another business entity? If yes, please explain the impact both in organizational and directional terms._____

D.3 Relevant Experience

D.3.1 List all projects your company has in progress and provide all additional information requested.

List all building projects your firm has completed within the past five (5) years, and for each project list:

1. Project Owner
2. Brief description of the project, including address
3. Client, Client Contact Person, and Telephone Number
4. Date Construction Completed
5. Managing Principal
6. Specify if it is a West Texas project
7. Specify if it is a relative project to Fire Station/EMS

For the relative projects please also provide the following information:

7. Original contract amount
8. Final contract amount
9. Number of change orders
10. Method of Procurement/Award

D.4 Past Performance

D.4.1 Claims and Suits. (If the answer to any of the questions below is yes, please attach details not to exceed one page for each of the following questions.)

Has your organization ever failed to complete any work awarded to it? (If yes, attach details.)

☐ YES ☐ NO

D.4.2 Are there any judgments, claims, arbitration proceedings or suits (past, pending or outstanding) against your organization or its officers arising out of or in connection with your company's performance under a contract for construction management and/or construction services? (If yes, attach details, including a description of how such suits or claims were resolved, if applicable.)

☐ YES ☐ NO

D.4.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five (5) years? (If yes, attach details.)

☐ YES ☐ NO

D.4.4 Has your organization been assessed liquidated damages on a project in the last eight (8) years? (If yes, attach details.)

☐ YES ☐ NO

D.4.5 Within the last five (5) years, has any officer or principal of your organization ever been

an officer or principal of **another** organization when it failed to complete a construction contract? (If yes, attach details.)

☐ YES ☐ NO

D.4.6 Trade References. Provide the following information for three (3) trade references:

Company name:_____
Contact person:_____
Address :_____Telephone: _____

Company name:_____
Contact person:_____
Address :_____Telephone: _____

Company name:_____
Contact person:_____
Address :_____Telephone: _____

D.5 Personnel

D.5.1 List the names of the key individuals of your organization which are proposed to be assigned to this Project and provide additional information as necessary. For each key individual listed, provide a resume (not to exceed 2 pages) which includes the key individual's construction experience and a description of his/her qualifications and experience relative to the Project.

D.6 Safety Record

D.7.1 Please provide the company's safety record information.

D.7 Approach and Understanding

Attach a summarized narrative that shows your approach and understanding of the project Successful responses will include potential pitfalls and solutions.

D.8 Proposed Project Schedule

Attach a proposed work schedule that demonstrates quality thought processes for accomplishing the work on time.

D.9 Financial Information

D.9.1 Total amount of work performed as general contractor for each of the past five (5) years.

D.9.2 Bonding Capacity
i. Per Project
ii. Aggregate

D.9.3 Bank reference(s)
i. Individual, Title
ii. Name of Bank
iii. Address
iv. Telephone

D.9.4 Bonding Company reference(s)
i. Individual, Title
ii. Name of Bank

iii. Address
iv. Telephone

D.9.5. Safety Rating: Experience Modification Rate. (No. of safety incidents)

Executed as of this_____day of_____, 20_____.

By:

_____
(Signature)

_____
(Proposer's Printed Name)

_____
(Date)

PROPOSAL BOND

KNOW ALL BY THESE PRESENTS: that the undersigned Principal and Surety are firmly bound to Reeves County Emergency Services Districts 1&2 (the "Districts") in the principal sum of:

_____

_____Dollars ($_____).

Now the condition of this bond is this: that, whereas the undersigned principal has submitted to the Districts a proposal to enter into a certain contract whereunder principal undertakes to perform the following-described work of construction, alteration or repair for the Districts' Solicitation No. TBD.

This work is in preparation for subsequent mechanical and electrical work scheduled for 2024. This work consists is previously described in

NOW, THEREFORE, if the principal shall, within five (5) days following acceptance by the Board of Commissioners of the Districts of such proposal or bid and award by said Board to said principal of said contract, execute and return such further contract documents as may be required by the terms of the proposal or bid accepted, and within five (5) days after execution of such contract documents, deliver its safety program manual, the safety plan for the Project, and the bonds and insurance documents, as required by the terms of the proposal accepted, then this obligation shall be null and void, otherwise it shall remain in full force and the amount hereof shall be paid to and retained by the Districts as liquidated damages for principal's failure to do so.

Principal _____ _____

By:_____

Title:_____Date: _____

Surety:_____

By:_____

Title:_____Date: _____

CONFLICT OF INTEREST QUESTIONNAIRES.

Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the Districts shall file completed Conflict of Interest Questionnaires (CIQs) with the Districts. Complete, sign and submit the CIQs as part of your Proposal. The CIQ form is available from the Texas Ethics Commission at www.ethics.state.tx.us.

By: _____
(Signature)

_____
(Proposer's Printed Name)

_____
(Date)

AFFIDAVIT OF NON-COLLUSION
HVAC UPGRADES AT TEMPORARY STATION

By submission of this bid or proposal, the undersigned certifies that:

A. The proposal has been independently arrived at without collusion with any other proposer or with any other competitor;
B. This proposal has not been knowingly disclosed and will not be knowingly disclosed, to any other competitor or potential competitor, prior to the opening of the proposals for this project;
C. No attempt has been or will be made to induce any other person, partnership or corporation to submit or not submit a proposal;
D. The undersigned certifies that he is fully informed regarding the accuracy of the statements contained in this certification, and that the penalties herein are applicable to the proposer as well as to any period signing in his behalf.

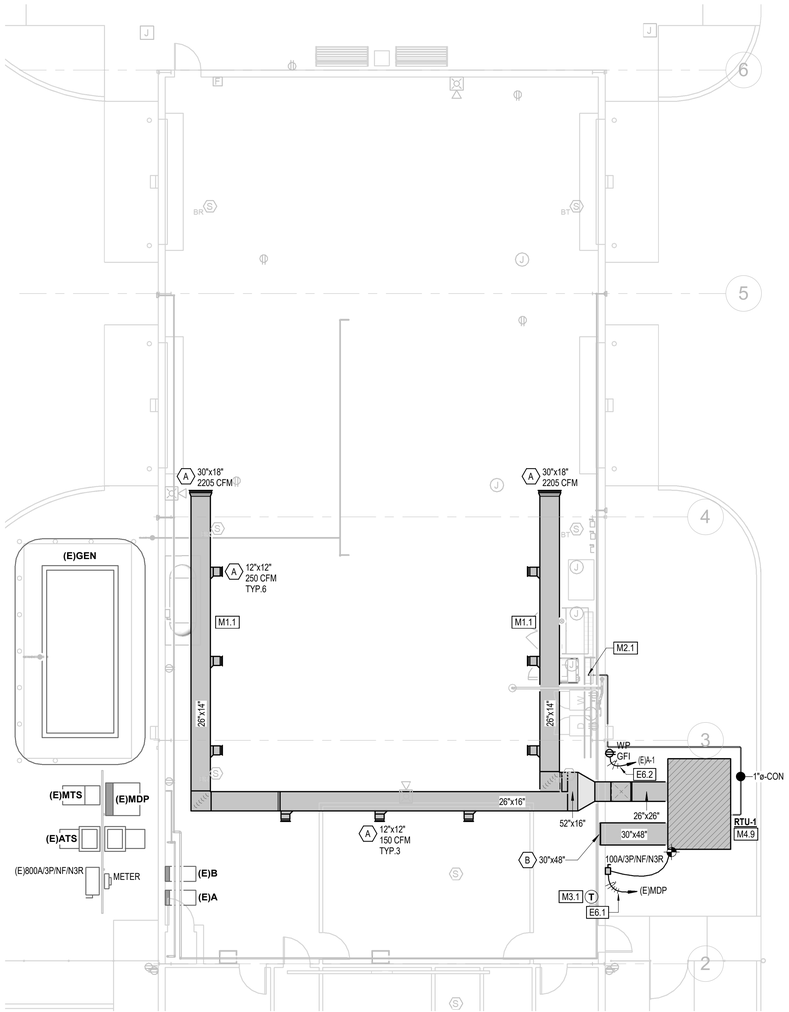
_____ _____
Authorized Agent (Print Name) Date

_____
Signature

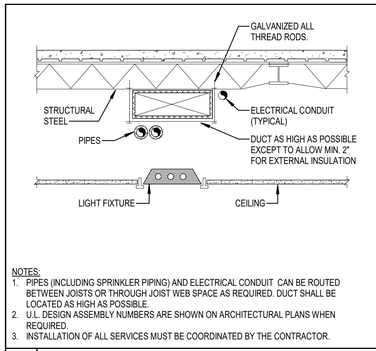
_____
Company Name

_____
Company Address

_____
City State Zip

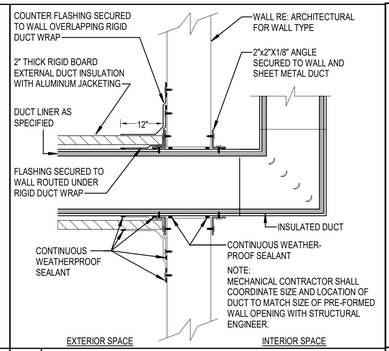


1 MEPT FLOOR PLAN
MEP2.01 — 1/8" = 1'-0"

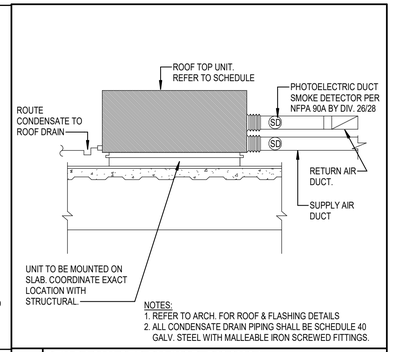


NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

2 TYP. MEP INSTALLATION DETAIL
NOT TO SCALE — M6D.01

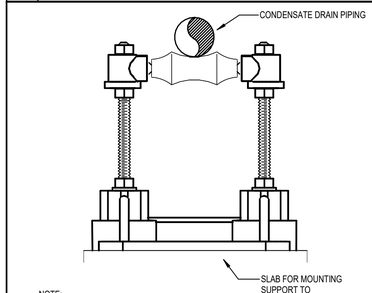


3 DUCT EXT. WALL PENETRATION
NOT TO SCALE — M6D.02



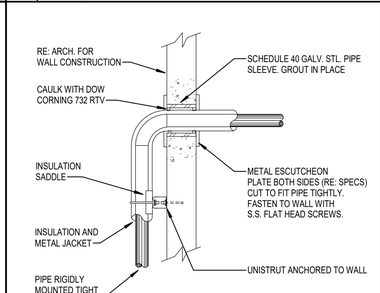
NOTES:
1. REFER TO ARCH. FOR ROOF & FLASHING DETAILS
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALV. STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

4 RTU PACKAGED DX (HOR. DISCHG.)
NOT TO SCALE

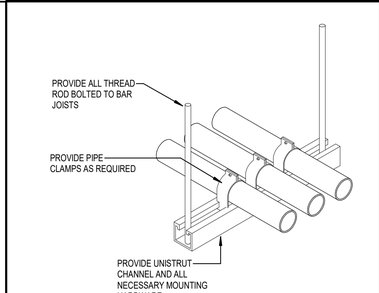


NOTE:
1. PROVIDE PORTABLE PIPE HANGER MODEL SS8-R OR APPROVED EQUAL.
2. SPACE PIPE SUPPORTS AT MAXIMUM INTERVALS OF 10'-0" ON CENTER.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS AND INSTALLATION REQUIREMENTS.

5 DRAIN LINE SUPPORT
NOT TO SCALE

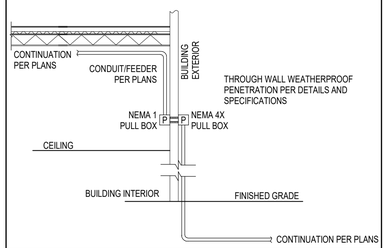


6 PIPE ENTRY THRU EXTERIOR WALL
NOT TO SCALE



7 UNISTRUT CONDUIT DETAIL
NOT TO SCALE — E10003

NOTES:
A. DETAIL APPLIES TO NEW CONDUIT/FEEDER EXTENSIONS FROM EXISTING STRUCTURE.
B. PULLBOXES SHALL BE PROVIDED IN ACCORDANCE WITH N.E.C SIZING REQUIREMENTS FOR QUANTITY, SIZE, AND BEND RADIUS OF ALL CONDUCTORS PASSING THROUGH.
C. CONDUIT TYPE, BURIAL DEPTH, HANGARS, HARDWARE IN ACCORDANCE WITH PLANS AND SPECS.



8 EXISTING BLDG PENETRATION DETAIL
NOT TO SCALE — E10005

Load Analysis - Reeves AC Addition

208 / 120 , 3 -PHASE, 4 -WIRE — Date: 12/11/2023

DESCRIPTION			NEC	KVA
EXISTING:				
PEAK DEMAND PER UTILITY:	89,120	VA		
PER NEC (+ 25%)	111,400	VA		111.4
ADDITIONAL LOADS:				
HVAC:				
RTU =	22,480	VA		22.5
SERVICE RECEPTACLE=	180	VA		0.2
			TOTAL =	134.1
			TOTAL AMPS:	372.1
			SERVICE SIZE:	800.0
			SPARE AMPACITY:	427.9

AIR DEVICE SCHEDULE

MARK	MFR. & MODEL	TYPE	REMARKS
A	TITUS 300FL	SIDEWALL SUPPLY AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT TO DUCT. 3/4" BLADE SPACING, DOUBLE DEFLECTION WITH BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D.
B	TITUS 350FL	SIDEWALL RETURN AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, 35° DEFLECTION WITH BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D. FOR DUCTED EXHAUST.

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR FINISH.
2. REFER TO MECHANICAL FLOOR PLAN FOR NECK SIZES.

PACKAGED DX ROOF TOP UNIT SCHEDULE

MARK	RTU-1	
SERVES	APPARATUS BAY	
DUCT CONFIGURATION	SIDE DISCHARGE	
DESIGN SUPPLY AIR (CFM)	6,360	
DESIGN OUTDOOR AIR (CFM)	640	
EER / IEER	11 / 12.4	
EXT. S.P. (IN. W.G.)	0.80	
FAN MOTOR HORSEPOWER	3.0	
FAN TYPE	PLENUM	
FAN DRIVE	DIRECT	
COOLING DATA		
AMBIENT AIR (°F)	101.0	
TOTAL COOLING CAPACITY (MBH)	141.0	
TOTAL SENSIBLE CAPACITY (MBH)	141.0	
EAT DB/WB (°F)	78.7 / 56.7	
LAT DB/WB (°F)	55 / 54	
HEATING DATA		
HEATING CAPACITY (KW)	COOLING ONLY UNIT	
EAT DB/WB (°F)		
LAT DB/WB (°F)		
ELECTRICAL DATA		
VOLTS/PHASE/HERTZ	208 / 3 / 60	
MCA	78.0	
MOCP	100.0	
MANUFACTURER	TRANE	
MODEL NO.	THJ180A3	
OPERATING WEIGHT (LBS)	2,000	
NOTES	1 TO 9	

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH CONDENSER HAIL GUARD.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
4. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK FOR ALL UNITS DISCHARGING IN EXCESS OF 2,000 CFM.
5. PROVIDE UNITS WITH MINIMUM MERV 13 FILTERS.
6. PROVIDE UNIT WITH A MINIMUM SHORT CIRCUIT CURRENT RATING (SCCR) OF 65,000 AIC.
7. PROVIDE UNIT WITH ECONOMIZER AND BAROMETRIC RELIEF.
8. PROVIDE UNIT WITH CONDENSER HAIL GUARD.
9. PROVIDE UNIT ON MINIMUM 10" CURB ON PAD.

☐ MECHANICAL KEYED NOTES

M1.1 ROUTE DUCT ABOVE EXISTING RADIANT HEATERS. PROVIDE REQUIRED CLEARANCE FROM HEATERS PER EXISTING MANUFACTURER'S RECOMMENDATIONS. LOWER EXISTING HEATERS AND SPRINKLER PIPE AS REQUIRED TO MAINTAIN REQUIRED DISTANCES FROM DUCTWORK.

M2.1 ROUTE CONDENSATE TO TRENCH DRAIN IN APPROXIMATE LOCATION. PROVIDE WITH 2" AIR GAP.

M3.1 PROVIDE PROGRAMMABLE THERMOSTAT AT APPROXIMATE LOCATION SHOWN. THERMOSTAT SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M4.9 PROVIDE PACKAGED ROOFTOP UNIT ON HOUSEKEEPING PAD AT APPROXIMATE LOCATION SHOWN. PROVIDE UNIT ON MINIMUM 10" CURB ON TOP OF CONCRETE PAD. PROVIDE ALL CLEARANCES AROUND UNIT AS REQUIRED BY EQUIPMENT MANUFACTURER. COORDINATE FINAL LOCATION WITH STRUCTURAL. RE: DETAIL 4/MEP2.01.

☐ ELECTRICAL KEYED NOTES

E6.1 PROVIDE (1) 100A/3P CIRCUIT BREAKER AT AVAILABLE SPACE IN EXISTING MDP PANEL (SQUARE D HCP18688M).

E6.2 PROVIDE (1) 20A/1P CIRCUIT BREAKER AT AVAILABLE SPACE IN EXISTING "A" PANEL.

DBR
9601 McAllister Freeway, Suite 410
San Antonio, Texas 78216
210.546.0200 v 210.546.0201 f
TBPE Firm Registration No. 2234

DBR Project Number 236063.000

ZM	JD	AC	WJ	-

PROFESSIONAL SEAL

LOGO/CONTACT

martinez ARCHITECTS
Martinez Architect, LP
900 Rockmead, Suite 250
Houston, Texas 77339
281.346.7371

DESIGN TEAM

Architectural
Martinez Architects

MEP Engineer
DBR

LOGISTICS STATION - HVAC UPGRADE

REEVES COUNTY ESD 1&2

2269 OCOTILLO DR
PECOS, TEXAS 79722

PROJECT No: MA 20034
DATE: 12.12.2023

ISSUE
FOR CONSTRUCTION 12.12.23

MEP PLAN

MEP2.01

ABBREVIATIONS

A

A	AIR (COMPRESSED)
ABV	ABOVE
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT, AIR COMPRESSOR
ACCH	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR, AREA DRAIN
ADJ	ADJUSTABLE
AF	AIR FILTER
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHRI	AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMB	AMBIENT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECT, ARCHITECTURAL
AS	AIR SEPARATOR
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AV	ACID VENT, AIR VENT
AVG	AVERAGE
AW	ACID WASTE
AWS	AMERICAN WELDING SOCIETY
AUX	AUXILIARY

B

B	BOILER
BC	BELOW COUNTER
B/C	BACK OF CURB
BFF	BELOW FINISHED FLOOR
BFV	BUTTERFLY VALVE
BH	BOX HYDRANT
BLDG	BUILDING
BM	BENCHMARK
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STRUCTURE
BP	BACKFLOW PREVENTER
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BWV	BACK WATER VALVE

C

C	CELSIUS
CAB	CABINET
CB	CATCH BASIN
CD	CONDENSATE DRAIN LINE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CH	CHILLER
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CHW	CHILLED WATER
CHWP	CHILLED WATER PUMP
CI	CAST IRON
CIRC	CIRCULATING
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMB	COMBINATION
COMP	COMPRESSOR
CONC	CONCRETE, CONCENTRIC
COND	CONDENSER, CONDENSATE
CONN	CONNECTION
CONT	CONTINUOUS,CONTINUATION
CTR	CENTER
CU	COPPER

D

D	DEPTH, DRAIN, DRYER
DB	DRY BULB
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DDMB	DUAL DUCT MIXING BOX
DESIG	DESIGNATION
DTL	DETAIL
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DPR	DAMPER
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWP	DOMESTIC WATER PUMP
DX	DIRECT EXPANSION

E

EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EDB	ENTERING DRY BULB
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMERG	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EVAP	EVAPORATOR
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EX	EXPLOSION PROOF
EXT	EXTERNAL
EXTG	EXISTING

F

F	FAHRENHEIT, FIRE
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEAN OUT
FCS	FLOOR CONTROL STATION
FCU	FAN COIL UNIT
FD	FLOOR DRAIN, FIRE DAMPER
FDC	FIRE DEPARTMENT SIAMESE CONNECTION
FDV	FIRE DEPARTMENT VALVE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FPTU	FAN POWERED TERMINAL UNIT
FT	FOOT, FEET
FUT	FUTURE

G

G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GLV	GLOBE VALVE
GND	GROUND
GPM	GALLONS PER MINUTE
GV	GATE VALVE

H

HORIZ	HORIZONTAL
HP	HORSEPOWER
HSTAT	HUMIDISTAT
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HW	HOT WATER
HWP	HEATING WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ

I

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INFRARED HEATER
IN	INCH
INSUL	INSULATION
INT	INTERNAL, INTERIOR
INV	INVERT
IW	INDIRECT WASTE

J

JB	JUNCTION BOX
JP	JOCKEY PUMP

K

KEC	KITCHEN EQUIPMENT CONTRACTOR
KO	KNOCKOUT
KVA	KILOVOLT- AMPS
KW	KILOWATT

L

L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LF	LINEAR FEET
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPS
LVL	LEVEL
LWB	LEAVING WET BULB
LWCO	LOW WATER CUT OFF
LWT	LEAVING WATER TEMPERATURE

M

MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBTUH	THOUSAND OF BTU'S
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MI	MALLEABLE IRON
MIN	MINIMUM
MP	MEDIUM PRESSURE
MS	MOP SINK
MTD	MOUNTED
MU	MAKE-UP
MVD	MANUAL VOLUME DAMPER
MSAH	MINI-SPLIT AIR HANDLER
MSCU	MINI-SPLIT CONDENSING UNIT

N

N.C.	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE

O

OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
OAHU	OUTSIDE AIR HANDLING UNIT
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
OFCU	OUTSIDE AIR FAN COIL UNIT
OPG	OPENING
OS&Y	OPEN STEM AND YOLK

P

PG	PRESSURE GAUGE
PP	POLYPROPYLENE
PPM	PART PER MILLION
PRI	PRIMARY
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE

Q

QTY	QUANTITY

R

RA	RETURN AIR
RAD	REFRIGERATED AIR DRYER
RAF	RETURN AIR FAN
RAG	RETURN AIR GRILLE
RAT	RETURN AIR TEMPERATURE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE	REFERENCE, REFER
RED	REDUCER
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCING
REQD	REQUIRED
REV	REVISION, REVISE
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RLA	RUNNING LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
RV	RELIEF VALVE

S

SA	SUPPLY AIR
SAF	SUPPLY AIR FAN
SAG	SUPPLY AIR GRILLE
SAN	SANITARY SEWER
SAR	SUPPLY AIR REGISTER
SC	STEAM CONDENSATE
SCHED	SCHEDULED
SD	STORM DRAIN
SEC	SECONDARY
SECT	SECTION
SENS	SENSIBLE
SF	SQUARE FEET
SFCS	SPRINKLER FLOOR CONTROL STATION
SH	SHOWER
SHT	SHEET
SIM	SIMILAR
SK	SINK
SM	SHEETMETAL
SP	STATIC PRESSURE, SUMP PUMP
SPEC	SPECIFICATION
SPR	SPRINKLER
SQ	SQUARE
SS	SERVICE SINK
SSSC	SOLID STATE SPEED CONTROL
STD	STANDARD
STL	STEEL
STR	STRAINER
SURF	SURFACE
SUSP	SUSPEND
SV	SANITARY VENT
SW	SOFT WATER

T

TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CORNEAL COMPRESSOR
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TF	TRANSFER FAN
TH BLK	THRUST BLOCK
THERM	THERMOMETER
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TPD	TRAP PRIMER DEVICE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TW	TEMPERED HOT WATER
TYP	TYPICAL

U

U	URINAL
UCD	UNDER CUT DOOR
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES, INC
UNO	UNLESS NOTED OTHERWISE
U/F	UNDERFLOOR
U/S	UNDERSLAB

V

V	VOLT
VA	VOLT- AMPERE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VALVE BOX, VACUUM BREAKER
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIB	VALVE IN BOX
VOV	VALVE ON VERTICAL
VP	VACUUM PUMP
VR	VARIABLE AIR VOLUME REHEAT
VTR	VENT THRU ROOF

W

W	WATT, WIDTH
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WH	WALL HYDRANT
WM	WATER METER
WP	WEATHERPROOF
WPD	WATER PRESSURE DROP
WWF	WELDED WIRE FABRIC

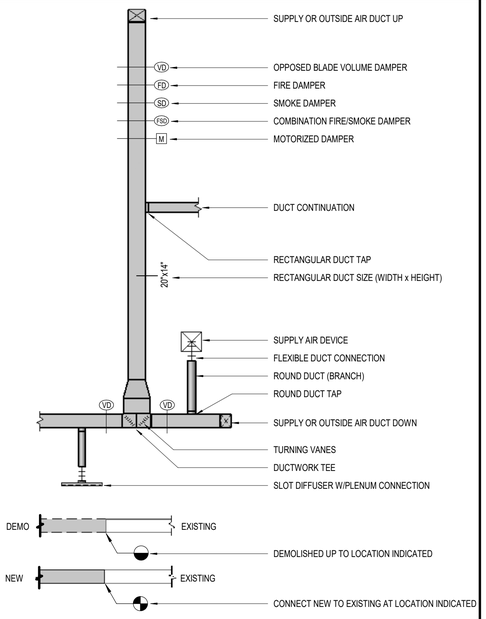
Y

Y	YARD HYDRANT

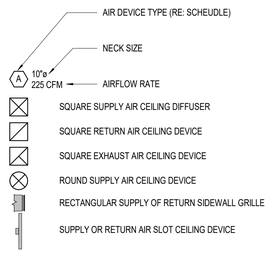
Z

Z	ZONE

DUCTWORK



AIR DEVICE TYPES



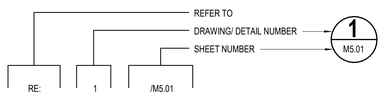
WALL MOUNTED SENSOR TYPES

T	THERMOSTAT	CO	CARBON MONOXIDE SENSOR
H	HUMIDISTAT	N	NITROGEN DIOXIDE SENSOR
C	CARBON DIOXIDE SENSOR	S	ON/OFF SWITCH

PIPING TYPES

CD	CONDENSATE DRAIN LINE	HWR	HOT WATER RETURN
CHS	CHILLED WATER SUPPLY	CWS	CONDENSER WATER SUPPLY
CHR	CHILLED WATER RETURN	CWR	CONDENSER WATER RETURN
HWS	HOT WATER SUPPLY	REF	REFRIGERANT PIPING SIZED BY MFR.

DRAWING/DETAIL REFERENCE KEY



MECHANICAL GENERAL NOTES

1. PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATIONS.
2. EXACT LOCATIONS OF EQUIPMENT, GRILLES, AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.
3. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUTSHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS.
4. SHEET METAL INLET DUCTS TO VAV TERMINAL UNITS SHALL BE SAME SIZE AS THE BOX INLET SIZE. PROVIDE RIGID ROUND DUCT THAT IS ONE SIZE LARGER THAN THE INLET BOX SIZE IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE VAV BOX IS MORE THAN 6'-0".
5. PROVIDE CONICAL SPIN-IN CONNECTOR FOR ALL ROUND DUCT CONNECTIONS TO VAV TERMINAL UNITS.
6. INSTALL EQUIPMENT TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST BE PROVIDED.
7. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
8. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.
9. PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR DUCT TRUNKS.
10. ALL DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR HVAC DUCT CONSTRUCTION.
11. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATION 23 07 13 DUCT INSULATION FOR FURTHER INFORMATION AND ADDITIONAL REQUIREMENTS.
12. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATION 23 31 13 METAL DUCTWORK FOR FURTHER INFORMATION.
13. ALL EXPOSED DUCTWORK AND PIPING WITH ASSOCIATED ACCESSORIES IN AREAS WITH NO CEILING OR PARTIAL CEILING SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR.
14. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.
15. PROVIDE REMOTE SPIN-IN DAMPER OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED OVER GYPSUM CEILINGS.
16. PROVIDE AIRFOIL TYPE TURNING VANES IN ALL 90 DEGREE ELBOWS.
17. PROVIDE INSULATED ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.
18. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
19. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.
20. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.
21. ALL PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS.
22. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 15 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS.
23. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN PIPES CONNECTING TO A SINK DRAIN TAIL PIECE.
24. ALL KITCHEN GREASE EXHAUST DUCTWORK SHALL BE CONTINUOUSLY WELDED 16 GA. CARBON STEEL. ALL GREASE EXHAUST DUCTS SHALL BE WRAPPED WITH 3M 2 HR. FIRE RATED WRAP OR INSTALLED WITHIN A FIRE RATED ENCLOSURE.

ROOF MOUNTED EQUIPMENT ANCHORAGE REQUIREMENTS

1. ALL ROOF MOUNTED EQUIPMENT CURBS, ROOF MOUNTED EQUIPMENT, EQUIPMENT TIE DOWNS, AND CONNECTIONS OF ALL EQUIPMENT TO BUILDING STRUCTURE FOR WIND LOADING ARE TO BE DESIGNED AND ENGINEERED BY A REGISTERED SPECIALTY ENGINEER RETAINED BY THE CONTRACTOR. DESIGN CRITERIA FOR WIND LOADING SHALL BE AS INDICATED IN THE CONSTRUCTION DOCUMENTS AND PER LOCAL CODES FOR THE PROJECT LOCATION AND BUILDING CATEGORY. SIGNED AND SEALED DRAWINGS AND CALCULATIONS ARE TO BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL. THE SUBMITTAL SHALL INCLUDE ATTACHMENT DETAILS OF THE EQUIPMENT TO THE STRUCTURE WITH DESIGN LOADS, LOCATIONS, AND METHODS OF ATTACHMENT. THE CONTRACTOR SHALL ALSO SUBMIT THE INFORMATION TO THE STRUCTURAL ENGINEER TO COORDINATE THE DESIGN OF THE PRIMARY STRUCTURAL FRAME WITH THE FINAL LOADS AND ATTACHMENTS SUBMITTED.

CONTROLS SCHEMATIC SYMBOLS LEGEND

AI	ANALOG INPUT	FS	FLOW SWITCH
AO	ANALOG OUTPUT	DAT	DISCHARGE AIR TEMPERATURE SENSOR
DI/BI	DIGITAL/BINARY INPUT	S	WALL SENSOR
DO/BO	DIGITAL/BINARY OUTPUT	T	THERMOSTAT
MD	ON-OFF MOTORIZED DAMPER	CO2	CARBON DIOXIDE SENSOR
MMD	MODULATING TYPE MOTORIZED DAMPER	SP	SET POINT
AFMS	AIR FLOW MEASURING STATION	S/A	SUPPLY AIR
MCV	CONTROL VALVE MODULATING TYPE	R/A	RETURN AIR
VFD	VARIABLE FREQUENCY DRIVE	O/A	OUTSIDE AIR
CSR	CURRENT SENSING RELAY	HC	HEATING COIL
FRZ	FREEZESTAT	CC	COOLING COIL
HSL	HIGH STATIC LIMIT	DX	DIRECT EXPANSION COOLING COIL
SPT	STATIC PRESSURE TRANSMITTER	PICCV	PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
DPT	DIFFERENTIAL PRESSURE TRANSDUCER	AFC	AIRFLOW CROSS
FM	FLOW METER	DPS	DIFFERENTIAL PRESSURE SWITCH

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DESIGN TEAM

Architectural
Martinez Architects

MEP Engineer
DBR

LOGISTICS STATION - HVAC UPGRADE

REEVES COUNTY ESD 1&2

2269 OCOTILLO DR
PECOS, TEXAS 79722

PROJECT No: **MA 20034**
DATE: **12.12.2023**

ISSUE

FOR CONSTRUCTION	12.12.23

MECHANICAL SYMBOL LEGEND

M0.01

SECTION 23 00 00 - MECHANICAL SPECIFICATIONS

PART I - GENERAL-MECHANICAL

1-1 DESCRIPTION

All work on these Drawings shall be done in strict accordance with these Specifications. The Work included under this Contract shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning system in all of its various phases, all as shown on the accompanying drawings and/or described in these Specifications.

1-2 WARRANTY

The Contractor shall guarantee the work for a period of one year beyond date of final acceptance. During that period, the Contractor shall repair or replace, at his own expense, any faults or imperfections that may arise due to defects in material and workmanship, including the loss of refrigerant and/or oil due to leaks. Defects shall include but not be limited to noisy operation, loose or missing parts, or noticeable deterioration of finish. During the period, the Contractor shall actually perform all service work required, including the servicing of air filters. All air conditioning compressors shall have parts and labor guarantees for a period of not less than 5 years beyond the date of Substantial Completion.

1-3 PROJECT CONDITIONS

The Contractor shall visit the Site of the Work and fully understand the conditions that affect the work, or the cost thereof, understand the existing utilities from which services will be supplied, verify locations of utility services, determine requirements for connections, and determine in advance that equipment and materials proposed for installation fit into the confines indicated.

1-4 PERMITS AND FEES

The Contractor shall arrange and pay for all permits, fees, test, and all inspections as required by Governmental Authorities.

1-5 COORDINATION WITH FIELD CONDITIONS

The Contract Documents are schematic in nature in that they are only to establish "Scope" and a minimum level of quality. All duct or pipe or equipment locations as indicated on the Documents do not indicate every transition, offset, or exact location. All transitions, offsets, and exact locations shall be established by actual field measurements, coordination with the structural, architectural and reflected ceiling plans. All transitions, offsets, and relocations as required by actual field conditions shall be performed by the Contractor at no additional cost to the Owner.

1-6 SUBMITTALS

Contractor shall provide six sets of Shop Drawings and Submittals on all Mechanical equipment, insulation, air devices, ductwork (flexible and rigid), and thermostats. Any deviations from the specified items shall be listed on the cover sheet and clearly itemized for all deviations. The Contractor shall provide a complete digital copy of Owner's Manual to the Architect upon completion of the Work.

1-7 QUALITY ASSURANCE

All Work shall be performed in accordance with all State, Local, and Federal Codes and all Authorities and Jurisdiction.

1-8 EQUIPMENT IDENTIFICATION

All Mechanical equipment shall be identified by means of nameplates permanently attached to the equipment. Nameplates shall be engraved laminated plastic or etched metal.

1-9 TESTING AND BALANCING

Testing and balance shall be provided by the Mechanical Sub-Contractor, with the services of an Independent Test and Balance Agency. The Test and Balance Company shall specialize in such work, and be a member of Associated Air Balance Council (AABC). The forms used shall be based on recommendations of AABC. Upon completion of the Balancing and Testing, the Balancing Contractor shall compile the test data in report forms, and forward five copies to the Architect for evaluation. The final report shall contain logged results of all tests, including such data as:

- Tabulation of air volume at each outlet. (Balanced to within 5% design).
- Outside dry bulb and wet bulb temperature.
- Inside dry bulb and wet bulb temperatures in each conditioned space room or area.
- Actual fan capacities, RPM's and static pressures. Motor current and voltage readings at each fan.
- Entering and leaving air temperatures, DB and WB.

PART II - DUCTWORK-MECHANICAL

2-1 METAL DUCTWORK

All ductwork shall be properly suspended or supported from the building structure. Hangers shall be galvanized steel straps or hot-dipped galvanized rod with thread pointed after installation. Strap hanger shall be attached to the bottom of the ductwork. The spacing, size and installation hangers shall be in accordance with the recommendations of latest edition of SMACNA space hangers as required to support ducts without sagging.

Ventlock No. 699 "Test Plugs" shall be provided in ductwork at all openings in ductwork required for testing and balancing.

2-1-1 DUCTWORK MATERIALS

Exposed Ductwork Materials: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections including pitting, seam marks, roller marks, stains and discolorations, and other imperfections, including those which would impair painting.

Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet, sheet complying with ASTM A527, lockforming quality, with G90 zinc coating in accordance with ASTM A 525; and mill phoshatized for exposed locations.

Stainless Steel Sheet: Where indicated, provided stainless steel complying with ASTM A167; Type 316; with No. 4 finish where exposed to view in occupied spaces, No. 1 finish elsewhere. Protect finished surfaces with mill-applied adhesive protective paper, maintained through fabrication and installation.

Aluminum Sheet: Where indicated, provide aluminum sheet complying with ASTM B209, Alloy 3003, Temper H14.

A. Non combustible and conforming to UL 181, Class 1 air duct materials.

B. Flexible ducts: Flexmaster U.S.A. Inc. Type 5M, Thermaflex MKE, ATCO #036 or approved equal. Flexible duct shall be corrosion resistant galvanized steel formed and Mechanically locked to inner fabric with R-6 insulation when flexible ducts are located inside the thermal envelope and with R-8 insulation when located outdoors or outside of the building envelope. Flexible duct shall have reinforced metalized outer jacket comply with UL 181, Class 1 air duct.

C. Sealants: Hard-Cast "Iron Grip: or approved equal, non-hardening, water resistant, fire resistive and shall not be a solvent curing product. Sealants shall be compatible with mating materials, liquid used alone or with tape or heavy mastic.

D. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

1. For exposed stainless steel ductwork, provide matching stainless steel support materials.
2. For aluminum ductwork, provide aluminum support materials.

2-1-2 LOW PRESSURE DUCTWORK

A. Fabricate and support in accordance with latest SMACNA low pressure duct construction standards and ASHRAE handbooks, except as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by approved shop drawings. Obtain engineer's approval prior to using round duct in lieu of rectangular duct.

2-2 DUCT INSULATION

All insulation shall be installed in accordance with the Manufacturer's recommendations and printed installation instructions.

All items required for a complete and proper installation are not necessarily indicated on the Plans or in the Specifications. Provide all items required as per manufacturer's requirements.

All toilet exhaust ductwork shall be unlined sheet metal with all joints sealed. Duct dimensions shown on Plans are clear inside dimensions.

2-2-1 EXTERNAL DUCT INSULATION

A. Fasten all longitudinal and circumferential laps with outward clinching staples 3" on center. On rectangular ducts over 24" wide apply as above and hold insulation in place on bottom side with mechanical pins and clips on 12" centers.

B. Seal all joints, fastener penetrations and other breaks in vapor barrier with 3 inch wide strips of white glass fabric embedded between two coats of vapor barrier mastic, childers CP-30 or approved equal.

C. All external duct insulation shall be Johns Manville Type 75 fiberglass duct wrap insulation with reinforced aluminum facing or approved equal.

D. External duct wrap is required on all outside air ducts and supply air ducts that are not internally insulated. Duct wrap shall be provided as follows:

1. 1 ½ " thick, 1/0 PCF density minimum when ducts are located in conditioned spaces.
2. 2" thick with a minimum installed R-value as follows:
   - On roof or exterior of building: R-8
   - Located inside building envelope: R-6
   - Located outside the building thermal envelope: R-8

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 are used, provide airfoil-turning vanes. Where acoustical lining is indicate, provide turning vanes of perforated metal with glass fiber insulation.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible. Divergence upstream of equipment shall not exceed 30 degrees; convergence downstream shall not exceed 45 degrees.

E. Use crimp joints with bead for joining round duct sizes 6 inch smaller with crimp in direction of airflow.

F. Use double nuts and lock washers on threaded rod supports.

2-1-4 CASINGS

A. Fabricate casings in accordance with SMACNA low pressure duct construction standards and SMACNA high pressure duct construction standard and construct for operating pressures indicated.

B. Mount floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, provide liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

C. Reinforce doorframes with steel angles tied to horizontal and vertical plenum supporting angles. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection. Provide clear wire glass observation ports, minimum 6x6 inch size.

D. Fabricate acoustic casings with reinforcing turned inward. Provide 16 gage back facing and 22 gage perforated front facing with 3/32 inch diameter holes on 5/32 inch centers. Construct panels 3 inches thick packed with 4.5 lb./cubic foot minimum glass fiber media, on inverted channels of 16 gage.

2-1-11 EXECUTION

A. Obtain Manufacturer's Inspection and acceptance of fabrication and installation of ductwork at beginning of installation.

B. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide Pitot 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.

C. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

D. Connect terminal units to medium or high pressure ducts with four feet maximum length of flexible duct. Do not use flexible duct to change direction.

E. Connect diffusers or troffer boots to low pressure ducts with 5 feet maximum, 4 feet minimum, length of flexible duct. Hold in place with strap or clamp.

F. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

G. The interior surface of all ductwork shall be smooth. No sheet metal parts, tabs, angles, or anything else may project into the ducts for any reason, except as specified to be so. All seams and joints shall be external.

H. All ductwork located exposed on roof shall be "Crowned" to prevent water from ponding. Reference insulation for additional requirements.

I. Where ducts pass through floors, provide structural angles for duct support. Where ducts pass through walls in exposed areas, install suitable sheet metal escutcheons as closers.

J. All angles shall be carried around all four sides of the duct or group of ducts. Angles shall overlap corners and be welded or riveted.

K. All ductwork shall be fabricated in a manner to prevent the seams or joints being cut for the installation of grilles, registers, or ceiling outlets.

2-1-12 INSTALLATION OF FLEXIBLE DUCTS

A. Maximum length: For any duct run using flexible ductwork, do not exceed 5'-0" extended length.

B. Installation: Install in accordance with Section 3 of SMACNA's, "HVAC duct construction standards, metal and flexible".

C. Provide spin-in fitting for all round flexible duct connections to rectangular duct. Spin-in fittings shall factory fabricated, and include an air extractor scoop and a balancing butterfuly damper with a locking quadrant and handle. Balancing shall be at the spin-in fitting and not at the air distribution device.

2-1-13 DUCTWORK HANGERS AND SUPPORTS

A. All ductwork shall be properly suspended or supported from the building structure. Hangers shall be galvanized steel straps or hot-dipped galvanized rod with threads pointed after installation. Strap hanger shall be attached to the bottom of the ductwork, Provide a minimum of two screws one at the bottom and one in the side of each strap on metal ductwork. The spacing, size and installation of hangers shall be in accordance with the recommendations of the latest SMACNA Edition.

B. All duct risers shall be supported by angles or channels secured to the sides of the ducts at each floor with sheet metal screws or rivets. The floor supports may also be secured to ducts by rods, angles or flat bar to the duct joint or reinforcing. Structural steel supports for duct risers shall be provided under this division.

2-1-14 DUCTWORK JOISTS AND SEAMS

A. All ductwork shall be constructed to Seal Class A, as referenced in SMACNA Standards.

B. All non-welded joints and seams shall be sealed. This includes but is not limited to:
1. Transverse joints.
2. Longitudinal seams.
3. Duct wall penetrations.
4. Spin-ins, taps, and other branch connections.
5. Access doors, access panels, and duct connections to equipment.

C. Openings for rotating shafts shall be sealed with bushings.

2-2-2 DUCT LINER

A. Duct liner shall be kept clean and dry during transportation, storage and installation. Care should be taken to protect the liner from exposure to the elements or damage from mechanical abuse.

B. All portions of duct designed to receive duct liner shall be completely covered with liner as specified. The smooth, black, acrylic-coated surfaces with flexible glass cloth reinforcement shall face the airstream. All duct liner shall be cut to assure tight, overlapped corner joints. The top pieces shall be supported y the sidepieces. Duct liner shall be installed following the guidelines in the NAIMA "Duct Liner Installation Standard".

C. The duct liner shall be tested according to erosion test method in UL 181 and shall be guaranteed to withstand velocities in the duct system up to 5000 FPM without surface erosion.

D. Duct liner shall be adhered to the sheet metal with full coverage of an approved adhesive that conforms to ASTM C 916, and all exposed leading edges and transverse joints shall be coated with permacote factory-applied or field-applied edge coating and shall be neatly butted without gaps. Shop or field cuts shall be liberally coated with Johns Manville Superseal? Duct butter and edge treatment or approved adhesive.

E. Metal nosings shall be securely installed over transversely oriented liner edges facing the airstream at forward discharge and at any point where lined duct is preceded by unlined duct.

F. When velocity exceeds 4000 FPM (20.3 M/SEC), use metal nosing on every leading edge. Nosing may be formed on duct or be channel or zee attached by screws, rivets or welds.

G. The liner shall further be secured with graham welding pins and washers on not more than 18 inch centers both vertical and horizontal surfaces, and the pins and washers shall be pointed up with adhesive.

H. Duct liner shall be Knauf Insulation Atmosphere Duct Liner with ECOSE Technology, Johns Manville Linacoustic RC duct liner with factory-applied edge coating and acrylic coating on the mat surface of airstream side or approved equal. The liner shall meet the life safety standards as established by NFPA 90A and 90B, FHC 25/50 and limited combustibility and the air stream surface coating should contain an immobilized, EPA-registered, anti microbial agent so it will not support microbial growth as tested in accordance with ASTM G21 and G22, the duct liner shall conform to the requirements of ASTM C 423 using a Type "A" mounting, and a thermal conductivity no higher than 0.24 BTUIN/(HRFT2°F) at 75°F mean temperature.

I. Duct liner is required on all return air ductwork, return air boots and supply air ductwork downstream of the terminal units. Duct liner shall be provided as follows:
1. 1" thick, 1.5 PCF density minimum; minimum installed R-value of 4.2 when ducts are located in conditioned spaces.
2. 1 ½ " thick with a minimum installed R-value of 6 when ducts are located inside of the building thermal envelope.
3. 2" thick with a minimum installed R-value of 8 when ducts are located outdoors OR outside of the building thermal envelope.

J. Line supply and return ductwork at connection of HVAC unit to a point of 15 feet upstream and downstream of the equipment and in return air boots. Attach with full cover coat of cement, duct dimensions up to 16 inches, provide stick clips or screws and cap for dimension over 16 inches, space 16 inches O.C. maximum. Provide sheet metal liner cap over all leading edges of internal insulation exposed to air stream. R-value shall be in accordance with the requirements listed above.

2-2-3 EXPOSED DUCTWORK LOCATED INDOORS

A. Duct routed exposed in occupied spaces shall be double wall.

B. Round and flat oval duct routed exposed shall be double wall with perforated inner liner and 1" thick layer of glass mineral wool insulation as manufactured by United McGill Company model no. Acousti-27 or approved equal. Insulation density shall be a minimum of 1.0 PCF.

2-2-4 EXPOSED DUCT LOCATED OUTDOORS

A. All duct located outdoors shall be internally lined as specified and also shall have a 2" thick, 6lb. density rigid board external duct insulation, finished with a white weatherproofed canvas material.

2-2-5 AIR DEVICE AND MISCELLANEOUS DUCT INSULATION

A. The backside of all supply air devices shall be insulated with taped and sealed 1 ½ inch thick external duct wrap.

B. The Contractor shall install an additional layer of 1 ½ inch thick external fiberglass duct wrap on any portion of the supply air, return air, outside air, or exhaust air system that has condensation forming during any period of operation. The insulation shall be taped and sealed and located until all evidence of the condensation had been eliminated at no additional cost to the owner.

PART III: EQUIPMENT - MECHANICAL

3-1 AIR DISTRIBUTION

A. Air distribution devices shall be selected at a maximum of 30 noise criteria and at a maximum of 0.06" W.G. total pressure drop. Approved Manufacturers are Metalaire, Titus, Price, Nailor, and Krueger.

B. The backside of all supply air devices shall be insulated with taped and sealed 1-½" thick one lb. density fiberglass insulation with vapor barrier.

3-2 PIPING

A. All condensate drains shall be Schedule 40 galvanized steel pipe with 1" thick elastomeric armaflex insulation.

3-3 SOUND AND VIBRATION CONTROL

A. Provide vibration isolation supports for equipment, piping, and ductwork to prevent transmission of vibration and noise to the building structure that may cause discomfort to the occupants.

B. All items required for a complete and proper installation are not necessarily indicated on the plans or in the Specification. Provide all items required as per Manufacturers requirements and install as per Manufacturers recommendations and instructions.

C. All vibration isolators shall be designed and treated for resistance to corrosion.

3-4 FANS

A. The following Manufacturers are approved subject to Specification Compliance: Greenheck, Cook, PennBarry, TwinCity Fans, and ACME.

B. All fans shall be tested in accordance with latest AMCA Fan Test Code shall bear AMCA certified rating seal.

C. All fans shall be designed, manufactured, and testing in accordance with UL 705 for Power Ventilators.

D. Provide fans that are factory fabricated and assembled, factory tested, and factory finished with indicated capacities and characteristics.

E. Fans and shafts shall be statically and dynamically balanced and designed for continuous operation at the maximum rated fan speed and motor horsepower.

F. Fans shall be direct drive or belt driven as indicated.

G. Provide factory baked-enamel finish coat after assembly unless otherwise indicated.

H. All motors shall be selected so that they will not overload if the static pressure drops one-half inch. Motor Controller will be furnished by this division, unless noted otherwise on the plans.

I. Provide fan with all dampers and accessories as scheduled.

J. Fans shall be installed as detailed on drawings and in accordance with Manufacturer's recommendations.

K. Fans moving 2,000 CFM and more shall have smoke detector installed in ductwork or other suitable location to detect products of combustion and shut-off fan.

3-5 AIR FILTERS

A. The following Manufacturers are approved subject to Specification Compliance; American Air Filter, Camfil, Air Guard Industries Inc., Cambridge, and Filtration Group.

B. The filters shall be AAF PREpleat M13, 2 inch thick or approved equal.

C. Filters shall have a minimum of MERV 13 rating with initial resistance of 0.30 in.w.g. at 500 FPM face velocity.

3-7 AUTOMATIC TEMPERATURE CONTROLS

A. Provide programmable Wi-Fi enabled thermostat similar to Honeywell model RTH9585WF. Thermostat shall be capable of 24 hour, seven day scheduling and night-time setback. Thermostat shall have capability to be controlled via access from smart-phone, computer, and tablet.

B. The thermostat shall have the capability to set back or shut down the system based on the day, and provide readily accessible manual overdrive that will return to the presetback or shutdown schedule with programming.

C. Where used to control both heating and cooling, zone thermostat controls shall provide a temperature range or deadband of a least 5°F within which the supply of eat and cooling energy to zone is capable of being shut off or reduced to a minimum.

D. When space humidity exceeds 60% RH (Adjustable), the cooling shall be engaged to maintain zone humidity setpoint. The reheat control shall energize the heater as required to maintain space temperature.

E. Acceptable Manufacturers shall be HVAC Unit Manufacturer Johnson Controls, and Honeywell.

F. Thermostats shall cycle stages of cooling and heating as indicated on the drawings to maintain room setpoint temperature (adjustable). Supply fan shall operate continuously during scheduled hours of operation.

G. Controls shall be installed under the supervision of the Manufacturer's Representative.

END OF SECTION

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LOGISTICS STATION - HVAC UPGRADE

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PROJECT No: **MA 20034**
DATE: **12.12.2023**

ISSUE

FOR CONSTRUCTION	12.12.23

MECHANICAL SPECIFICATIONS

M7.01

ABBREVIATIONS

AC	ALTERNATING CURRENT
AF	AMPERE FUSE, AMPERE FRAME
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPT CAPACITY
AL	ALUMINUM
AM	AMMETER
AMP	AMPLIFIER
ANN	ANNUNCIATOR
ASC	AMPERES SHORT CIRCUIT
AT	AMPERE TRIP RATING
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BKR	BREAKER
BLDG.	BUILDING
C	CONDUIT, CELSIUS
CKT	CIRCUIT
CLG.	CEILING
CONT.	CONTINUOUS,CONTINUATION
CONTR	CONTROLLER, CONTRACTOR
CT	CURRENT TRANSFORMER/COOLING TOWER
CU	COPPER
DAS	DISTRIBUTED ANTENNA SYSTEM
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
DWG	DRAWING
ELEV.	ELEVATOR
EPO	EMERGENCY POWER OFF
ERRC	EMERGENCY RESPONDER RADIO COVERAGE SYSTEM
FA	FIRE ALARM
FF	FURNITURE FEED
FLA	FULL LOAD AMPS
FTL	FEED-THRU LUGS
GA	GAUGE
GEN	GENERATOR
GND	GROUND
GTD	GENERATOR TRANSFER DEVICE
IG	ISOLATED GROUND
LF	LINEAR FEET
LTG	LIGHTING
LV	LOW VOLTAGE
LVL	LEVEL
MAX.	MAXIMUM
MC	METAL CLAD CABLE
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCCB	MOLDED CASE CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MIC	MICROPHONE
MIN.	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MSB	MAIN SWITCHBOARD
N3R	NEMA 3R
N4X	NEMA 4X
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSED
NFS	NON-FUSED SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE
PH	PHASE
POS	POINT OF SALE
QTY	QUANTITY
RCP	REFLECTED CEILING PLAN
RCPT	RECEPTACLE
RE	REFERENCE, REFER
SF	SQUARE FOOT
SIM	SIMILAR
SKVA	STARTING KILOVOLT-AMPS
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW
SPEC	SPECIFICATION
SQFT	SQUARE FOOT
ST	SHUNT TRIP
SWB	SWITCHBOARD
TL	TWIST-LOCK
TOC	TOP OF CURB
TOS	TOP OF STEEL
TR	TAMPER RESISTANT RECEPTACLE
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SYSTEM
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
WT	WATERTIGHT, WEIGHT
W/SF	WATTS PER SQUARE FOOT
XFMR	TRANSFORMER

MANY ABBREVIATIONS NOT LISTED MAY BE FOUND IN THE NATIONAL ELECTRIC CODE, OR IN THE INTERNATIONAL AND UNIFORM CODES

PHASING

(E)	EXISTING (TO REMAIN)
(D)	SHALL BE DEMOLISHED
(N)	PROVIDE NEW
(R)	RELOCATED ELEMENT

ELECTRICAL SYMBOLS

MOTORS AND CONTROLS

- $_M — MOTOR RATED SWITCH WITH THERMAL OVERLOADS
- (5) — SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER
- ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE, "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R
- B — ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP.
- MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER. "30/3/15/#0" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE, "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- EPO — EMERGENCY POWER OFF BUTTON.

RECEPTACLES AND OUTLETS

ALL RECEPTACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE. REFER TO SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS.

ABBREVIATIONS APPLICABLE TO RECEPTACLES:
- "GFCI" GROUND FAULT INTERRUPTER
- "WP" WEATHERPROOF
- "IG" ISOLATED GROUND
- "TR" TAMPER RESISTANT
- "USB" RECEPTACLE WITH USB CHARGING PORTS
- "AC" ABOVE COUNTER MOUNTING
- "UC" UNDER COUNTER MOUNTING
- "H" HORIZONTALLY ORIENTED RECEPTACLE

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. SHADED INDICATES SPLIT-WIRED
- FOURPLEX (QUADRUPLEX) RECEPTACLE
- DUPLEX RECEPTACLE (PEDESTAL MOUNTED)
- CONTROLLED WALL RECEPTACLE. DUPLEX: SPLIT-WIRED QUAD: SEPARATELY WIRED UNDER A COMMON COVERPLATE.
- POWER DEVICE RED IN COLOR, ON EMERGENCY POWER CIRCUIT
- CEILING RECEPTACLE/QUAD, EMERGENCY POWER SYMBOL MAY APPLY
- SPECIAL RECEPTACLE, NEMA CONFIGURATION PER PLAN OR EQUIPMENT
- TV — TV ROUGH-IN: 3-GANG RECESSED TV BOX, CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR AV, 1 GANG FOR DATA
- FLOOR BOX OR POKE THRU. POKE-THRU'S WHERE IN SUSPENDED SLABS, RECESSED IN FOUNDATION WHERE SLAB ON GRADE
- FLUSH ELECTRICAL FLOOR OUTLET. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.
- DC — DROP CORD WITH SIMPLEX RECEPTACLE UNLESS OTHERWISE NOTED
- CR — CORD REEL WITH DUPLEX RECEPTACLE UNLESS OTHERWISE NOTED
- J J — JUNCTION BOX
  - "MD" INDICATES POWER CONNECTION TO SERVE MOTOR DAMPER
  - "HD" INDICATES POWER CONNECTION TO SERVE HAND DRYER
  - "FV" INDICATES POWER CONNECTION TO SERVE FLUSH VALVES
- P — PULL BOX (OVER 4" SQUARE)
- BELL/BUZZER/CHIME
- PUSH BUTTON/DOOR BELL/START-STOP
- PP — POWER POLE
- POINT OF DIRECT CONNECTION TO EQUIPMENT
- C (2) — CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

LIGHTING

LETTER(S) DENOTE TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

2' X 4' | 2' X 2' | 1' X 4' | 1' X 2' | 1' X 1'

- STRIP LIGHTING FIXTURES.
- ROUND DOWNLIGHT FIXTURE.
- SQUARE DOWNLIGHT FIXTURE.
- WALL MOUNTED LIGHTING FIXTURE.
- TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.
- CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.
- SITE LIGHTING FIXTURE.

HATCHING PATTERNS BELOW SHALL APPLY TO ALL LIGHTING FIXTURE SYMBOLS.

- NL — EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPERATE IN THE EVENT OF A POWER OUTAGE.
  - "NL" NIGHT LIGHT ON UNSWITCHED 24HR OPERATION
- EM CIRCUIT — LIGHT FIXTURE ON EMERGENCY BRANCH CIRCUIT, GENERATOR TRANSFER DEVICES REQUIRED (UL1008 OR UL924) PROVIDE UNSWITCHED HOT, NEUTRAL AND GROUND FOR ALL EMERGENCY LIGHTING ORIGINATING FROM THE EMERGENCY CIRCUIT SHOWN.
- CRITICAL OPERATIONS LIGHTING ORIGINATING FROM THE CRITICAL CIRCUIT INDICATED, HATCHED AS INDICATED. HATCHING TYPICAL FOR ALL CRITICAL BRANCH LIGHT FIXTURES

RACEWAYS AND WIRING

- CAP AND STAKE
- CONDUIT CONCEALED IN WALL OR CEILING
- UNDERGROUND, UNDERSLAB, CONCEALED ROUTING
- OHE — OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE
- CONDUIT UP/DOWN
- HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT: PHASE/NEUTRAL/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES EMPTY CONDUIT, 1" MINIMUM, UNLESS NOTED OTHERWISE.
- 1LA-2,4,6 — HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- (ON)1LA-6 — PARTIAL/SHARED CIRCUIT HOMERUN TO PANEL.
- TELECOMMUNICATIONS CABLE TRAY SHALL BE CONCEALED ABOVE ACCESSIBLE CEILING UNLESS OTHERWISE NOTED.

ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- MSB — SWITCHBOARD, MAIN DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
- PANELBOARD (FLUSH/SURFACE MOUNT)
- FLOOR MOUNTED DRY-TYPE TRANSFORMER
- SUSPENDED OR WALL MOUNTED TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE

COMMUNICATIONS

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 18" ABOVE FINISHED FLOOR (AFF)
- DATA/COMM/AV ROUGH-IN. CONDUIT TO PLENUM AND BOX ONLY
- HS DS — SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 42" AFF
- VC — VOLUME CONTROL - WALL MOUNTED
- CB — INTERCOM/PA SYSTEM CALL-IN OR CALL-BACK DEVICE

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 120" AFF OR 12" BELOW CEILING, WHICHEVER IS LOWER
- (S)L — INTERCOM/PA SPEAKER "L" LOCAL SOUND REINFORCEMENT

CEILING MOUNTED DEVICES:
- (S)VC — INTERCOM/PA SPEAKER. "VC" INDICATES VOLUME CONTROL ON SPEAKER.

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

ONE-LINE DIAGRAM

- TRANSFORMER, TYPE AND RATINGS AS NOTED
- 800A/3P — SWITCH, RATING AS SHOWN
- 400A — FUSE, RATING AS SHOWN
- ST — SHUNT TRIP
- GFP — GROUND FAULT PROTECTION
- K — KIRK-KEY INTERLOCK
- M — DIGITAL METER OR SUB-METER INTEGRATED INTO EQUIPMENT
- 1200/5 — CURRENT TRANSFORMER, RATED AS SHOWN
- GROUND CONNECTION
- AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG
- M — ELECTRICAL UTILITY REVENUE METER
- SPD — SURGE PROTECTION DEVICE
- GANN — GENERATOR ANNUNCIATOR PANEL
- CIRCUIT BREAKER
- DRAW-OUT CIRCUIT BREAKER

DAYLIGHT ZONES

- DAYLIGHT ZONE/PRIMARY DAYLIGHT ZONE
- SECONDARY DAYLIGHT ZONE

DAYLIGHT ZONES SHALL BE INCLUSIVE OF THE FIXTURES WITHIN THE SHADED REGION, AND SHALL BE DIMMED USING ON-BOARD OR EXTERNAL CONTROL IN ACCORDANCE WITH IECC 2021. IECC 2018 OR 2015 MAY BE REFERENCED ONLY WHERE ADOPTED BY LOCAL AHJ.

MISCELLANEOUS

- SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
- INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL
- (1) — DRAWING NOTE REFERENCE
- SOS — AREA OF RESCUE ASSISTANCE

FIRE ALARM

- W — WATER FLOW SWITCH
- SP — SUPERVISORY SWITCH
- S — SMOKE DETECTOR - MULTI CRITERIA DETECTOR
- S # — SMOKE DETECTOR - "SB" INDICATES IN INTEGRAL SOUNDER BASE; "D" INDICATES DUCT TYPE; "R" INDICATES 120 VOLT RESIDENTIAL TYPE
- H — HEAT DETECTOR
- S BT — BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S BR — BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S — FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
- S — FIRE ALARM SPEAKER / CEILING MOUNT.
- DH — MAGNETIC DOOR HOLDER
- R — AUXILIARY CONTROL RELAY
- FH — FIRE FIGHTER HANDSET
- F — FIRE ALARM PULL STATION +42" AFF
- F — FIREMAN'S TELEPHONE JACK +42" AFF
- AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
- AUDIO FIRE ALARM HORN +80" AFF
- FACP — FIRE ALARM CONTROL PANEL
- ANN — REMOTE FIRE ALARM ANNUNCIATOR PANEL
- RPS — REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
- FSD — FIRE SMOKE DAMPER
- • — REMOTE LED INDICATOR LIGHT

SECURITY

- PB — ADA AUTO DOOR OPEN BUTTON
- DR — DOOR RELEASE BUTTON
- CR — WALL MOUNTED CARD READER

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

SWITCHES AND LIGHTING CONTROL DEVICES

ALL SWITCH TYPES AND SENSORS TYPES FOUND ON 'LIGHTING CONTROL DEVICE SCHEDULE' LOCATED ON ELECTRICAL SCHEDULE SHEETS

SWITCH ANNOTATION AS FOLLOWS:
- $ x a,b,c — TYPE, PER SCHEDULE; NO TYPE INDICATES SINGLE POLE TOGGLE SWITCH; SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a,b,c)

OCCUPANCY SENSOR ANNOTATION, AS FOLLOWS:
- OCx — OCCUPANCY / VACANCE SENSOR 'x' INDICATES TYPE, PER SCHEDULE; CEILING SENSOR; WITH BRACKET INDICATES WALL / CORNER MOUNT

LIGHT SENSOR ANNOTATION, AS FOLLOWS:
- PC — DIGITAL PHOTOCELL
- DS — DAYLIGHT HARVESTING SENSOR

RELAY PANELS, CONTACTORS, TIME SWITCHES:
- XX — RELAYS/CONTACTORS/TIMERS/DEVICES WHERE 'XX' INDICATES: "LC" LIGHTING CONTRACTOR; "LCP" LIGHTING CONTROL PANEL; "TS" TIME SWITCH; "TC" TIME CLOCK

DRAWING/DETAIL REFERENCE KEY

RE: 1 /E3-2 — REFER TO DRAWING/DETAIL NUMBER; SHEET NUMBER (1 / E3-2)

PANELBOARD NOMENCLATURE

5 DP C H A 1
- 1 — SUB PANEL
- A — AREA
- H — VOLTAGE: H: 480Y/277V; L: 208Y/120V
- C — BRANCH: NONE: NORMAL; E: LIFE SAFETY; Q: EQUIPMENT; C: CRITICAL; R: LEGALLY REQUIRED; X: OPTIONAL STAND-BY
- DP — DISTRIBUTION PANEL (IF APPLICABLE)
- 5 — LEVEL

GENERAL NOTES:

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.

GENERAL ELECTRICAL NOTES:

A. ELECTRICAL DEVICES SHOWN ARE NOT EXACT. ALL DEVICE LOCATIONS SHALL BE VERIFIED WITH ARCHITECTURAL MILLWORK, CASEWORK, AND GENERAL ELEVATION VIEWS.

B. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TECHNOLOGY, LOW VOLTAGE, ACCESS CONTROL SECURITY, SURVEILLANCE, AND OTHER DIVISION 27/28 SCOPE. REFER TO DIVISION 27/28 DRAWINGS AND SPECIFICATIONS FOR ALL WORK REQUIRED. OMISSION OF THIS SCOPE FROM DIV 26 SCOPE OF WORK IS PROHIBITED.

C. HVAC AND PLUMBING EQUIPMENT LOCATIONS ARE NOT EXACT, AND THE EXACT POINT OF CONNECTION TO EQUIPMENT MAY VARY. COORDINATE EXACT ROUGH-IN REQUIREMENTS IN FIELD AND WITH FINAL SUBMITTALS FOR ALL DIV. 21/22/23 EQUIPMENT.

D. PROVIDE LABELING OF ALL DEVICES, CONDUIT, PANELS, AND JUNCTION BOXES IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

E. MINIMIZE ROOF PENETRATIONS. WHERE ABLE, ROUTE ALL CONDUIT FOR ROOF MOUNTED EQUIPMENT THROUGH ROOF CURB. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING NECESSARY WATER PROOFING AROUND ROOF PENETRATIONS WITH ROOFING INSTALLER.

F. ALL RECEPTACLES LOCATED IN RESTROOMS, JANITOR CLOSETS, MECHANICAL ROOMS, ELEVATOR PITS OR SHAFTS, ELEVATOR EQUIPMENT ROOMS, SERVING ELECTRIC DRINKING FOUNTAINS OR VENDING MACHINES, LOCATED WITHIN 6' OF A SINK, LOCATED ABOVE A WET COUNTERTOP OR IN A KITCHEN OR COFFEE BAR SHALL BE GFCI. FEED-THRU GFCI/GFI IS PROHIBITED, ALL GFCI/GFI DEVICES SHALL BE PROVIDED WITH INDIVIDUAL TEST/RESET FEATURES.

G. MULTI-WIRE HOME RUNS SHALL NOT BE ALLOWED. PROVIDE DEDICATED NEUTRALS FOR ALL CIRCUITS. SHARING CONDUIT IS PERMISSIBLE WHERE TOTAL CONDUCTOR AMPACITY DERATING HAS BEEN PERFORMED BY ELECTRICAL CONTRACTOR. THE NEUTRAL IS CONSIDERED CURRENT-CARRYING.

H. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE. CONTRACTOR MAY PROVIDE NON-TAMPER-RESISTANT RECEPTACLES WHERE NOT REQUIRED PER CURRENT NEC ARTICLE 406

I. LABEL ALL CIRCUITS AT ALL JUNCTION BOXES AND OUTLETS (AS DEFINED BY NEC) WITH TYPE-WRITTEN LABEL IDENTIFYING CIRCUIT ON THE BACK OF DEVICE COVER PLATES OR ON COVER OF JUNCTION BOX. IF A BOX HAS MULTIPLE CIRCUITS WITHIN, LABEL ALL CIRCUITS.

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LOGISTICS STATION - HVAC UPGRADE

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PROJECT No: **MA 20034**
DATE: **12.12.2023**

ISSUE
FOR CONSTRUCTION 12.12.23

ELECTRICAL SYMBOL LEGEND

E0.01

SECTION 26 00 00
ELECTRICAL SPECIFICATIONS

PART 1: GENERAL – ELECTRICAL

1–1 DESCRIPTION:

All work on these drawings shall be done in strict accordance with these specifications. All work fairly implied as essential to the complete functioning of the electrical systems shown on the Drawings and Specifications shall be completed as part of the work of this Division unless specifically stated otherwise. It is the intention of the Drawings and Specifications to establish the types of the systems, but not set forth each item essential to the functioning of the system. In case of doubt as to the work intended, or in the event of amplification of clarification thereof, the Contractor shall call upon the Architect for supplementary instructions, Drawings, etc. Refer to landlord's criteria for additional requirements and include in bid.

1–2 WARRANTY:

The undertaking of the work described in this Division shall be considered equivalent to the issuance, as part of this work, of a specific guarantee extending one year beyond the date of completion of work and acceptance by Owner, against defects in materials and workmanship. Materials, appliances and labor necessary to effect repairs and replacement so as to maintain said work in good functioning order shall be provided as required. Replacements necessitated by normal wear in use or by Owner's abuse are not included under this guarantee.

1–3 PROJECT CONDITIONS:

Visit the site of the proposed construction in order to fully understand the facilities, difficulties and restriction attending the execution of the work. No additional compensation will be allowed this Contractor for work or items omitted from his original Proposal due to his failure to inform himself regarding such matters affecting the performance of the work in this Contract or necessary for the installation and completion of the work included herein.

1–4 PERMITS AND FEES:

The contractor shall arrange and pay for all permits, fees, tests, and all inspections as required by governmental authorities.

1–5 COORDINATION WITH FIELD CONDITIONS:

Contractor shall review all pertinent Drawings and adjust his work to all conditions shown there on. Discrepancies between Plans, Specifications, and actual field conditions shall be brought to the prompt attention of the Architect.

Approximate location of transformers, feeders, branch circuits, lighting and power outlets panels, outlets for special systems, etc., are indicated on the Drawings. However, the Drawings, do not give complete and accurate detailed locations of such outlets, conduit runs, etc., and exact locations must be determined by actual field measurement. Such locations will, at all times, be subject to the approval of the Architect.

Communicate with the Architect and secure his approval of any outlet (light fixture, receptacle, switch, etc.) location about which there may be the least question. Outlets obviously placed in a location not suitable to the finished room or without specific approval, shall be removed and relocated when so directed by the Architect. Location of light fixtures shall be coordinated with reflected ceiling plans.

1–6 SUBMITTALS:

Contractor shall provide six sets of submittals, shop drawings, descriptive literature, physical data and a specification critique for the following items:

Panelboards
Wiring Gutters
Heavy Duty Disconnect Switches
Lighting Fixtures and Lamps
Lighting Contactors
Time Clocks
Photocells
Wiring Devices and Plates
Conduit and Fittings
Wire
Fire Alarm System
Transformers
Lighting Controls
Generator
Automatic Transfer Switch

Any deviations from the specified items shall be listed on the cover sheet and clearly itemized for all deviations. The contractor shall provide two copies of owner's manuals to the architect upon completion of the work.

1–7 SUBSTITUTIONS

A. The names, manufacturers, and model numbers have been used in the Contract documents to establish types of equipment and standards of quality. Where more than one manufacturer is named for a specific item of equipment, only one of the specified manufacturers will be considered for approval. Where only one manufacturer is mentioned with the phrase "or approved equal", Contractor may submit an alternate manufacturer for consideration, provided the following conditions are met:

1. Submit alternate equipment with complete descriptive data in shop drawing form. Provide sample of equipment upon request for review by Architect. Samples will be returned if requested in writing.
2. Alternate equipment must be equal from the standpoint of materials, construction and performance.
3. Alternate submittal must be presented to the Engineer/Architect ten (10) days prior to bid date for approval.

B. The Architect and Engineer shall be the sole judge of quality and equivalence of equipment, materials and methods.

1–8 QUALITY ASSURANCE:

All work shall be performed in accordance with all state, local & federal codes and all authorities having jurisdiction, including but not limited to:

National Electrical Code (NEC)
American Society for Testing and Materials (ASTM)
Underwriter's Laboratories, Inc. (UL)
Insulated Power Cable Engineer's Association (IPCEA).
National Electrical Manufacturer's Association (NEMA).
Institute of Electrical and Electronic's Association (IEEE).
American National Standards Institute (ANSI).
National Fire Protection Association (NFPA).

1–9 SLEEVES, CUTTING AND PATCHING:

This Section shall be responsible for the placing of sleeves for all conduit passing through walls, partitions, beams, floors, roof, etc. Sleeves through below–grade walls shall be as specified and detailed on the plans.

All cutting and patching will be done under another Division, but this Section will be responsible for timely performance of this work and layout of holes and setting sleeves.

1–10 EXCAVATION AND BACKFILL:

Trenching and backfilling and other earthwork operations required to install the facilities specified herein shall conform to the applicable requirements of Division 2 (95% of maximum standard density). Where trenching or excavation is required in improved areas, the backfill shall be compacted to a condition equal to that of adjacent undisturbed earth and the surface of the area restored to the condition existing prior to trenching or excavating operations. The plans indicate information pertaining to surface and sub–surface obstructions; however, this information is not guaranteed. Should obstructions be encountered whether or not shown, the Contractor shall alter routing of new work, reroute existing lines, remove obstructions where permitted, or otherwise perform whatever work is necessary to satisfy the purpose of new work and leave existing surfaces and structures in a satisfactory and serviceable condition.

1–11 CLEANING:

Clean lighting fixtures and equipment.

Touch–up and refinish scratches and marred surfaces on panels, switches, starters, and transformers.

1–12 TESTS AND INSPECTIONS

Tests and inspection requirements shall be coordinated Architect.

Date for final acceptance test shall be sufficiently in advance of completion date of contract to permit alterations or adjustments necessary to achieve proper functioning of equipment prior to contract completion date.

Conduct re–tests as directed by Architect on portions of work or equipment altered or adjusted as determined to be necessary by final acceptance test. No resultant delay or consumption of time as a result of such necessary re–test beyond contract completion date shall relieve Contractor of his responsibility under contract.

Put circuits and equipment into service under normal conditions, collectively and separately, as may be required to determine satisfactory operation. Demonstrate equipment to operate in accordance with requirements of these specifications. Perform tests in the presence of Architect. Furnish instruments and personnel required for tests.

At the time designated by the Architect, the entire system shall be inspected by the Architect and Engineer. The contractor or his representative shall be present at this inspection.

Panelboards, switches, fixtures, etc., shall be cleaned and in operating condition. Certificates and documents required hereinbefore shall be in order and presented to the Architect prior to inspection.

Panel covers, junction box covers, etc., shall be removed for visual inspection of the wire, bus bars, etc.

After the inspection, any items that are noted as needing to be changed or corrected in order to comply with these specifications and the drawings shall be accomplished without delay.

PART 2: PRODUCTS – ELECTRICAL

2–1 ALL PRODUCTS:

All products shall be listed by Underwriter's Laboratories and have the U.L. label affixed.

2–2 RACEWAYS AND FITTINGS:

Except as noted or otherwise specified, all wiring shall be installed in galvanized rigid steel conduit or electrical steel tube (EMT) of the proper size to contain the number of conductors required in accordance with the latest edition of the N.E.C. Where conduit sizes are shown on the drawings, those shall take preference.

Provide EMT in sizes up to 4 inches when concealed or not exposed to damage; Rigid steel, galvanized for underground use, where exposed to damage, or in exterior applications; Rigid galvanized steel where embedded in concrete or masonry construction.

Minimum size shall be 3/4 inch except for fixture whips not exceeding 6'–0" long. Branch circuits run underground shall be run in Carlon Schedule 40 PVC conduit. Install ground wire in accordance with NEC table 250–95. Electrical metallic tubing systems shall utilize watertight compression type fittings where exposed to moisture and set screw type fittings elsewhere.

Conduit shall be run concealed in finished areas. Conduit may be exposed in mechanical rooms and where otherwise indicated.

Concealed conduit shall run in as direct manner with as long bends as possible. Exposed conduit shall be run parallel with, or at right angles to the lines of the building; and all bends shall be made with standard conduit ells or conduit bent to not less than same radius. Not more than equivalent of four quarter bends shall be used in any run between terminals and cabinet, of between outlet or junction boxes. Approved conduits shall be used in lieu of conduit ells where ease of installation and appearance warrants their use. Conduit joints shall be made with approved couplings and unions.

Provide #30 nylon pulling line in all conduits in which permanent wiring is not installed.

Branch circuit conduits installed in concrete slabs on fill or grade shall be positioned in a manner to ensure complete concrete cover. In no case shall such conduits be exposed below or above the slab surfaces, or penetrate the waterproof membrane.

At locations where feeder, or other large conduits, must pass through slabs on fill or grade, the conduit shall be PVC coated rigid galvanized steel, extended 6 inches into the earth, and 2 inches above exposed surface of slab.

All conduit shall be securely fastened and supported using hot galvanized malleable iron one–hole pipe straps, clamps, hangers or other means approved by the engineer. Supports shall be as required by NEC. Tie wire shall not be used as support or securing means. Support conduit independently of ceiling hanger wire.

2–3 OUTLET AND JUNCTION BOXES:

Provide an approved galvanized outlet box with adequate volume for number of conductors concerned.

Provide standard galvanized switch boxes of the required number of gangs. Switch boxes for exposed wiring shall be handy boxes or approved equal.

Outlet boxes for receptacles shall be similar to Universal 52151 with suitable raised cover. Receptacle boxes on exposed wiring shall be handy boxes or approved equal.

Weatherproof boxes where necessary shall be FS or FD.

Outdoor boxes shall be NEMA 3R, with conduit connections made by Myers Hubs.

See notes and details on Drawings for special box requirements.

Provide junction boxes required to facilitate installation of the various conduit systems. Provide support boxes required for risers, each complete with approved cable supports as described elsewhere in this Division.

Outlet boxes for drywall shall be standard galvanized 4" square boxes with the appropriate device cover. Secure all outlet boxes with a backing brace connected to two adjacent studs. Mounting brackets with a single ear to rest against the backing sheet rock are not acceptable.

Provide coverplates for all outlet boxes.

Provide junction boxes and conduit system for all electrical systems and low voltage systems: (i.e. electrical, sound, security, fire alarm, CCTV, cameras, CATV, intercom).

2–4 PULL BOXES:

Pull boxes shall be provided for conduit systems as required and shall be constructed of galvanized steel of not less than gauge and size specified by National Electrical Code.

Where two or more feeders pass through a common pull box, they shall be tagged to indicate clearly their electrical characteristics, circuit number, and panel designation.

2–5 WIRE AND CABLE:

All wire shall be new and continuous without weld, splice, or joints throughout its length. It must be uniform in cross–section, free from flaws, scales and other imperfections.

Wire shall be soft drawn, annealed, 98% pure copper, with tin coating. Aluminum wiring is not acceptable.

Acceptable manufacturers for 600 volt wire and cable shall be Southwire, Encore, and Cerro.

Acceptable manufacturers for 300 volt wire and cable shall be Westpenn, Beldon, Alpha and Tappan.

Acceptable manufacturers for connectors shall be AMP, Burndy, Ideal, 3M, O.Z. Gedney, and Thomas & Betts.

A. TYPES:

1. Provide code gauge type "THHN/THWN–2" insulation.
2. All wiring shall be stranded. Minimum wire shall be No. 12, unless otherwise shown on Drawings.
3. Fire alarm device wiring shall be 300 volt, PVC jacket UL–listed when routed in a raceway. The jacket shall be UL listed for use in air plenums when a raceway is not used.
4. Control wiring shall be No. 14 AWG copper conductor unless otherwise shown; 600 volt rated insulation.
5. Open low voltage wiring in return air plenums shall be plenum rated or run in conduit. All wiring in mechanical rooms electrical rooms and other areas subject to physical damage shall be run in conduit.

B. COLOR CODING: Conductors shall be color coded in accordance with the governing authority requirements or as follows:

120/208V	277/480V	120/240V
NEUTRAL: White	Neutral: Gray	Neutral: White
PHASE A: Black	Phase A: Brown	Phase A: Black
PHASE B: Red	Phase B: Purple	Phase B: Orange
PHASE C: Blue	Phase C: Yellow	Phase C: Blue
GROUND: Green	Ground: Green	Ground: Green

C. SPLICES:

Splices, where required, shall be fully made up in outlet boxes with compression crimp–on type splice connectors and at least 12 inches tagged end left for the fixture hanger. Where local requirements specify certain colors for phases and neutral, etc., these shall become the standard for this project.

Joints and splices will not be permitted in mains or feeder. Joints in branch circuits will be permitted where branch circuits divide, and then shall consist of one through–circuit to which the branch shall be spliced. Joints shall not be left for the fixture hanger to make. Fit joints and splices with Buchanan Series "2000" solderless connectors complete with insulating caps or properly sized wire nuts. 'Wago' push–in connectors are not acceptable.

D. Terminations: Provide STA–CON devices to terminate stranded conductors on device not rated to accept stranded conductors. All wiring shall be torqued per manufacturers specifications.

E. METAL CLAD CABLE – TYPE MC

1. At the contractor's option, metal clad cable (MC) may be used if approved by the authority having jurisdiction and building owner. The cable shall contain an insulated green grounding conductor (3 wire) and shall be the same size as the phase conductor. Conductors shall be solid copper.
2. Metal clad cable shall not be used for homeruns. Metal clad cable shall only be used for branch circuit drops from ceiling mounted junction boxes to outlets and for horizontal runs in a common wall from outlet to outlet. Do not route outlet to adjacent walls. Fixture to fixture wiring is acceptable in hard non–accessible ceilings.
3. Metal clad shall be UL approved connectors and shall be used and installed per Article 334 of the National Electrical Code.

2–6 WIRING DEVICES:

Provide decora devices except in remodeled areas where existing devices not being replaced are toggle switches and standard receptacles.

Acceptable manufacturer is Hubbell.

A. SWITCHES

Furnish and install generally where indicated on the Drawings. Coordinate final color and exact locations with architect.

Wall switches shall be 20 amp, 120–277 volt and shall be as follows:
1. SINGLE POLE SWITCHES: DS–120W, White. Decora,(HBL 1221 TOGGLE)
3. THREE WAY SWITCHES: DS–320W, White. Decora,(HBL 1223 TOGGLE)

B. DIMMERS:

Provide Lutron "DIVA" series wall box dimmers sized to handle the load. Gang dimmers without removing heat sink fins and mount under a common Lutron coverplate.

C. RECEPTACLES:

Furnish and install generally where indicated on the Drawings. Coordinate final color and exact location with architect. Provide tamper resistant when required. All devices shall be 20AMP unless otherwise noted.

Receptacles shall be Hubbell as follows:

1. Duplex 20A–125V–self grounding: DR20WH decora (Nema configuration 5–20R) (5362 standard).
2. Ground fault circuit interrupter (GFCI) receptacle 20A–125V; GFRST20. (White with indicator light Nema Configuration 5–20R, with "Feed through" connectors capable of protecting connected downstream receptacles on a single circuit, and of being installed in a 2–3/4" deep outlet box without adapter).
3. Equipment receptacles shall be coordinated with owner/manufacturer requirements and the correct and appropriate receptacle and cover plate then installed.

D. PLATES:

1. Furnish and install plates on all outlet boxes.
2. Plates in offices and break rooms and similar finished areas shall be HUBBELL white smooth thermo–plastic.
3. Wet Locations: Provide Taymac or Carlon Nema 3R, impact resistant polycarbonate enclosure. Enclosure shall be suitable for wet locations when in use.

4. Indoor Exposed Raceway Systems: Stamped sheet metal, sized to match box without overlapping sharp edges.

Unless noted to the contrary on plans, or directed otherwise during the progress of the Work, wiring devices shall be set as follows:

1. Switches 42 inches above finished floor.
2. Duplex and single receptacles 18 inches above finish floor to the center of the device except where located above counters or interferes with shelving or as required by local codes.
3. Wall telephone outlets, except where counters or shelving interferes 18 inches above finished floor to the center of the outlet box..
4. At locations above counters, set devices 1 foot–0 inches above counter tops, verify exact mounting height with the architect.

2–7 GROUNDING AND BONDING:

Provide electrical service, equipment and wiring device grounding as shown, scheduled and as specified.

The types of grounding include, but are not limited to, the grounding bonding of all equipment devices, building steel piping, and as required by the National Electrical Code, Local Inspection Department and Power Company. A grounding conductor is required for all feeders and circuits.

Provide grounding products manufactured by Copperweld and Cadweld.

Ground rods shall be 3/4" inch diameter by 10 feet long construction with copper jacket and a steel core. Ground clamps shall be copper except for steel or iron pipes in which the clamps shall be galvanized iron. Conductors shall be connected by means of an approved pressure connector or clamp.

Perform a ground resistance test using a biddle megger. The system resistance shall not exceed 5 OHMS. Provide additional electrodes as required (refer to 250–84 of the NEC). Test shall not be conducted following wet weather. Provide personnel and instruments to conduct these tests and submit certified test for review.

A. BUILDING STEEL AND PIPING SYSTEM: Install a bonding jumper between building steel and metallic piping systems to bond them to the electrical grounding system.

B. NEUTRAL: The neutral shall be grounded only at the service entrance and other separately derived systems. The neutral shall be kept separate from the grounding system and shall not be used as a ground.

C. GROUNDING CONDUCTOR: A grounding conductor and metallic conduit system shall bond all equipment served by the electrical system. Provide a flexible bonding jumper for isolated metallic piping and ductwork and around expansion fittings and joints.

D. MOTORS: The frame of all motors shall grounded.

E. SPECIAL GROUNDING: Provide a #6 AWG copper grounding conductor for each telephone board, television system, MDF rooms, IDF rooms etc. Terminate the grounding conductor on ground bus and to the building electrical grounding system. Refer to article 800 and 820 of the NEC.

F. LIGHTING FIXTURES: Provide grounding conductor in all flexible whips, whips shall not exceed 6 feet.

G. RECEPTACLES: All receptacle shall be grounded. Receptacles shall use an approved grounding yoke.

H. REMOTE PANELBOARDS: Provide a grounding electrode conductor at all remote panels as required by the NEC.

2–10 PANELBOARDS:

Furnish and install power distribution, lighting and appliance panelboards as indicated in the panelboard schedule and as shown on the plans. Power distribution panelboards shall be equipped with fusible switches or circuit breakers as shown on the schedule. Panelboards shall be equipped with thermal–magnetic, molded case circuit breakers of frame and trip ratings as shown on the schedule. Acceptable manufactures are General Electric Company or Square D Company. Load centers are not acceptable.

Panelboard bus structure and main lugs or main breaker shall have current ratings as shown on the panelboard schedule. Such ratings shall be established by heat rise tests with maximum hot spot temperature on any connector or bus bar not to exceed 50°C. rise above 40°C ambient. Heat rise test shall be conducted in accordance with Underwriters Laboratories Standard UL 67. The use of conductor dimensions will not be accepted in lieu of actual heat tests. All current carrying parts of the bus shall be tin plated copper.

Bus structure shall be insulated. Bus bar connections to the branch circuit breakers shall be distributed phase or phase sequence type and shall accept bolt–on circuit breakers for lighting and appliance panelboards.

Provide a bare uninsulated and/or insulated ground bus and full or double size neutral bus as required and indicated in each panelboard schedule.

Each panelboard shall have an engraved bakelite nameplate. Nameplates shall be white with black letters and show panel designation. Nameplates shall be attached with stainless steel screws.

Place a neat, carefully typewritten directory card identifying the load served by each branch circuit in the frame on the panel door, under a clear plastic cover. Spares and spaces shall be written with erasable pencil for future use.

Where circuit breakers or fuses are applied in compliance with the series combination ratings marked on the equipment by the manufacturers, the equipment enclosure(s) shall be legibly marked in the field to indicate the equipment has been applied with a series combination rating. The marking shall be readily visible and state "caution – Series Rated System." (NEC 110–22). Nameplate shall identify replacement components.

A. Circuit Breakers

Where circuit breakers or fuses are applied in compliance with the series combination ratings marked on the equipment by the manufacturers, the equipment enclosure(s) shall be legibly marked in the field to indicate the equipment has been applied with a series combination rating. The marking shall be readily visible and state "caution – Series Rated System." (NEC 110–22).

1. Distribution Panelboards:
Circuit breakers shall be equipped with individually insulated, braced and protected connectors. The front faces of all circuit breakers shall be flush with each other. Large, permanent, individual circuit numbers shall be affixed to each breaker in a uniform position. Tripped indication shall be clearly shown by the breaker handle taking a position between "ON and "OFF". Provisions for additional breakers shall be such that no additional connectors will be required to add breakers. Circuit breakers shall be of the frame size, trip setting and interrupting capacity as indicated on the drawings.

Current limiting circuit breakers shall be equal to Square D Company "I–Limiter" Series.

Circuit breakers shall be conventional interrupting capacity but in no case be less than the following symmetrical amperes RMS.

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TBPE Firm Registration No. 2234

DBR Project Number 236063.000

ZM	JD	AC	WJ	-

PROFESSIONAL SEAL

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LOGISTICS STATION - HVAC UPGRADE

REEVES COUNTY ESD 1&2
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PECOS, TEXAS 79722

PROJECT No: **MA 20034**
DATE: **12.12.2023**

ISSUE
FOR CONSTRUCTION 12.12.23

ELECTRICAL SPECIFICATIONS

E7.01

FRAME SIZE/ VOLTAGE	CONVENTIONAL INTERRUPTING CAPACITY	HIGH INTERRUPTING CAPACITY	CURRENT LIMITING
100AF/240V	10,000 AIC	65,000 AIC	200,000 AIC
225AF/240V	10,000 AIC	65,000 AIC	200,000 AIC
400AF/240V	42,000 AIC	65,000 AIC	200,000 AIC
600AF/240V	42,000 AIC	65,000 AIC	200,000 AIC
800AF/240V	42,000 AIC	65,000 AIC	200,000 AIC
1000AF/240V	42,000 AIC	65,000 AIC	200,000 AIC
1200AF/240V	42,000 AIC	65,000 AIC	200,000 AIC
100AF/480V	14,000 AIC	25,000 AIC	200,000 AIC
225AF/480V	22,000 AIC	65,000 AIC	200,000 AIC
400AF/480V	30,000 AIC	35,000 AIC	200,000 AIC
600AF/480V	30,000 AIC	65,000 AIC	200,000 AIC
800AF/480V	30,000 AIC	65,000 AIC	200,000 AIC
1000AF/480V	30,000 AIC	65,000 AIC	200,000 AIC
1200AF/480V	50,000 AIC	65,000 AIC	200,000 AIC

B. Fusible Switches

All fusible switches shall be quick-make, quick-break with visible blades and dual horsepower ratings. Switch handles shall physically indicate "ON" and "OFF" positions. Switches shall be lockable only in the "OFF" position and accept three industrial type heavy duty padlocks. Switch covers and handles shall be interlocked to prevent opening in the "ON" position. A means shall be provided to permit authorized personnel to release the interlock for inspection purposes. Switches shall include positive pressure rejection type fuse clips for use with UL class R fuses and be UL labeled for 200,000 AIC. Class "J"

fuses shall be UL labeled for 200,000 AIC. The lugs for terminating conductors shall be rated at 75°C.

C. Cabinets and Fronts

The panelboard bus assembly shall be enclosed in a steel cabinet with multiple knockouts. The rigidity and gauge of steel to be as specified in UL Standard 50 for cabinets. Wiring gutter space shall be in accordance with UL Standard 67 for panelboards. The box shall be fabricated from galvanized steel or equivalent rust resistant steel. Provide stainless steel front cover for all panels located in all Pool Equipment rooms, Food Labs, Snack Bars, Culinary Arts, Kitchens and Life Skills rooms.All NEMA-1 lighting and receptacle panels shall have hinged front covers. The front cover shall have a door with hinges, latch and a lock. The hinged front covers shall allow full access to the circuit breaker gutter area without having to remove the entire front cover. All panelboard lock shall be keyed alike. Fronts shall have adjustable indicating trim clamps, which shall be completely concealed when the doors are closed. Doors shall be mounted with completely concealed steel hinges. A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the door. Where required by local code, provide Nema 3R enclosure where installed in a sprinkled area.

D. Safety Barrier

The distribution panelboard interior assembly shall be dead front with panelboard front removed. Main lugs or main breakers shall have barriers on five sides. The barrier in front of the main lugs shall be hinged to a fixed part of the interior. The end of the bus structure opposite the mains shall have barriers.

E. Integrated Equipment Short Circuit Rating

Each panelboard, as a complete unit, shall have a short circuit current rating equal to or greater than the integrated equipment rating shown on the panelboard schedule or on the plans. This rating shall be established by testing with the over-current devices mounted in the panelboard. The short circuit tests on the over-current devices and on the panelboard structure shall be made simultaneously by connecting the fault to each over-current device with the panelboard connected to its rated voltage source. Method of testing shall be per Underwriters Laboratories Standard UL 67. The source shall be capable of supplying the specified panelboard short circuit current or greater. Testing of panelboard over-current devices for short circuit rating only while individually mounted is not acceptable. Also, testing of the bus structure alone is not acceptable. Panelboards shall be marked with their maximum short circuit current rating at the supply voltage and shall be UL listed.

2-12 SAFETY AND DISCONNECT SWITCH:

A. Products shall be designed, manufactured, tested and installed in compliance with applicable standards.

1. NEMA KS1 – Enclosed switches
2. Federal specification W-S-865C-Heavy duty switches

Products shall conform all applicable UL standards, including UL98 (standard for safety, enclosed and dead front switches) and shall be UL-labeled.

Acceptable manufacturers are:

General Electric Company, Square D Company, or Eaton.

Furnish and install heavy-duty type safety switches with the number of switched poles as indicated on the plans and specifications. All safety switches shall be NEMA Heavy Duty Type HD, and Underwriters Laboratories listed.

B. Switch Interior

All switches shall have switchblades, which are fully visible in the "OFF" position when the door is open. Switches shall have removable arc suppressor where necessary, to permit easy access to line side lugs. Lugs shall be front removable and UL listed for 60°C and 75°C copper aluminum cables. All switches blades and contacts shall be plated copper.

C. Switch Mechanism

Switches shall have a quick-make and quick-break operating handle and mechanism, which shall be an integral part of the box, not the cover. Padlocking provisions shall be provided for locking in the "OFF" position with at least three padlocks. Switches shall have a dual cover interlock to prevent unauthorized opening of the switch door when the handle is in the "ON" position, and to prevent closing of the switch mechanism with the door open. A means shall be provided to permit authorized personnel to release the interlock for inspection purposes. Handle position shall indicate if switch is "ON" or "OFF".

D. Neutral

Provide a solid neutral with the safety switch where a neutral is present in the circuit.

E. Ratings

Switches shall be horsepower rated for ac and/or dc as indicated by the plans. The fused switches shall have Class R rejection fuse clips when required. Adjust load side terminal block as required to accept Class J fuses. UL listed short circuit ratings of the switches, when equipped with Class R or Class J fuses, shall be 200,000 symmetrical amperes.

2-14 MISCELLANEOUS ELECTRICAL CONTROLS AND WIRING

A. The types of miscellaneous control devices and wiring include but not limited to the following.

1. Additional control wiring and safety devices as shown and specified.

Various control devices, of an electrical nature, for the safe operation and temperature control of the heating, ventilating, air conditioning and plumbing systems are provided under Division 23.

All control wiring and conduit shall be furnished under Division 23 00 00. All power wiring 120 volt or larger shall be provided by Division 26 00 00.

E. Control wiring shall be not less than #14 AWG type TW, and shall be color coded and labeled with Brady markers throughout. Bundle multiple conductors with Ty-Raps.

FIRE ALARM REMODELING NOTES:

1. REFER TO THE FIRE ALARM PLAN FOR FIRE ALARM DEVICES, NEW OR EXISTING. BEING ADDED, RE-USED OR REMOVED BY THIS REMODEL.
2. THE INTENT OF THIS PLAN IS TO INCORPORATE NEW AND RELOCATED DEVICES WITH THE EXISTING BASE BUILDING FIRE ALARM SYSTEM. WHEN A PULL STATION OR SMOKE DETECTOR IS ACTIVATED THE STROBES WILL FLASH AND SPEAKERS WILL SOUND ON THE FLOOR ABOVE AND THE FLOOR BELOW THE FLOOR OF INCIDENCE.
3. IT IS ASSUMED WITH THIS REMODEL THAT THE EXISTING SYSTEM MEETS ALL APPLICABLE CODES AND THAT MANAGEMENT HAS MAINTAINED SYSTEM IN COMPLIANCE WITH LIFE SAFETY 101. FOR SEQUENCE OF OPERATIONS AND SPECIFICATIONS, REFER TO ORIGINAL SYSTEM DOCUMENT. COORDINATE WITH BUILDING MANAGEMENT.
4. THE EQUIPMENT SUPPLIER AND INSTALLING CONTRACTOR SHALL BE LICENSED BY THE STATE FIRE MARSHALL TO SELL, INSTALL, AND SERVICE FIRE ALARM SYSTEMS AS REQUIRED BY ARTICLE 5.49-2 OF THE TEXAS INSURANCE CODE.
5. ALL NEW EQUIPMENT REQUIRED FOR THIS REMODEL SHALL BE COMPATIBLE WITH THE EXISTING BUILDING SYSTEM AND IS TO BE A PART OF THE SUBMITTAL PROCESS AS NOTED IN THE ELECTRICAL SPECIFICATIONS FOR THIS PROJECT. PROVIDE ADDITION SYSTEM POWER BOOSTER WHERE REQUIRED.
6. APPROVED FIRE ALARM CONTRACTOR TO FIELD VERIFY THAT THE EXISTING SYSTEM IS ADEQUATE FOR ADDITIONS AND MODIFICATIONS AND DETERMINE EXACT LOCATIONS OF NEW, RELOCATED AND EXISTING DEVICES. VERIFY QUANTITIES OF NEW DEVICES TO INTERFACE WITHE EXISTING BUILDING SYSTEM. THE CONTRACTOR SHALL COORDINATE WITH BUILDING MANAGEMENT AND SHALL NOTIFY THE ENGINEER IF ANY CONFLICT EXISTS PREVENTING MODIFICATIONS REQUIRED IN THESE PLANS.
7. THE SYSTEM WHEN MODIFIED, SHALL BE A COMPLETE AND WORKING SYSTEM, AND COMPLY WITH THE MOST RECENT RULES, REGULATIONS, AND ORDINANCES THAT PRESENTLY APPLY TO THIS REMODEL.
8. ALL FIRE ALARM WORK IS TO BE APPROVED BY THE OWNER PRIOR TO START OF CONSTRUCTION. FIRE ALARM CONTRACTOR SHALL BE APPROVED BY BUILDING OWNER TO PERFORM WORK IN THIS BUILDING.
9. ALL EXISTING SMOKE DETECTORS SUBJECTED TO DUST AND DEBRIS DURING CONSTRUCTION SHALL BE REPLACED WITH HEAT TYPE DETECTORS. REPLACE SMOKE DETECTORS WITH NEW UPON COMPLETION OF CONSTRUCTION. FIELD VERIFY LOCATIONS OF ALL DEVICES.
10. FIRE ALARM CONTRACTOR SHALL SUBMIT AUDIBILITY TESTING RESULTS TO BUILDING MANAGEMENT UPON COMPLETION.

GENERAL ELECTRICAL REMODELING NOTES:

1. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF CONDUIT BACK TO THE NEAREST REMAINING BOX OR CABINET AND EXPOSED CONDUIT, THAT HAS BEEN ABANDONED, MUST BE REMOVED.
2. REESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED BECAUSE OF REMODELING WORK.
3. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE, OR REINSTALL ALL ITEMS DESCRIBED IN THESE NOTES.
4. VERIFY THE LOADING OF EACH CIRCUIT AFFECTED BY REMODELING WORK. THE MAXIMUM LOAD OF ANY BRANCH CIRCUIT MUST NOT EXCEED 80% OF ITS RATING.
5. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.

GENERAL ELECTRICAL SPECIFICATIONS

BASE BUILDING SPECIFICATIONS SHALL APPLY. REFER TO BUILDING ENGINEER FOR ADDITIONAL DETAILS.

1. COMPLY WITH THE MOST RECENTLY REVISED VERSIONS OF ALL APPLICABLE RULES, REGULATIONS AND ORDINANCES ADOPTED BY THE AUTHORITY HAVING JURISDICTION AND AS PER LASTEST EDITION OF THE NATIONAL ELECTRICAL CODE, NFPA-70.
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH BUILDING MANAGEMENT FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO STANDARD LIGHT FIXTURES, SWITCHES, RECEPTACLES, COVER PLATES, AND WIRING METHODS. AVAILABLE QUANTITIES AND TENANT ALLOWANCES MUST ALSO BE VERIFIED WITH BUILDING MANAGEMENT.
3. THE SCOPE OF THE ELECTRICAL WORK INCLUDES FURNISHING AND INSTALLING ALL ELECTRICAL WORK FOR A COMPLETE INSTALLATION.
4. THIS DRAWING IS FOR FIXTURE AND OUTLET CIRCUITING INFORMATION. REFER TO ARCHITECTURAL DRAWING FOR NOTES, MOUNTING DETAILS AND EXACT LOCATIONS.
5. CONTRACTOR TO PROVIDE PULL STRING ROUTED TO CEILING PLENUM, TYPICAL FOR EACH TELEPHONE OUTLET USING PLENUM RATED CABLE. IF CABLE ROUTING IS RESTRICTED, BY ROUTING HORIZONTALLY OR IN AN INSULATED WALL, PROVIDE 3/4" MINIMUM WITH PULL STRING ROUTED TO ABOVE CEILING. COORDINATE WITH TENANT'S CABLE INSTALLER.
6. VERIFY ELECTRICAL REQUIREMENTS (IF ANY) FOR ANY SPECIAL EQUIPMENT, COPIERS, DATA PROCESSING EQUIPMENT, TELEPHONE EQUIPMENT AND KITCHEN APPLIANCE PRIOR TO ANY WORK PERFORMED. PROVIDE GROUNDING BUS IN PANEL PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
7. ALL RECEPTACLES TO BE MOUNTED A MINIMUM OF 18" A.F.F. AND ALL SWITCHES SHALL BE A MAXIMUM OF 42" A.F.F. UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE TO THE CENTERLINE. NEW DEVICE TYPES SHALL MATCH ORIGINAL BASE BUILDING STANDARDS WITH COLOR SELECTION BY ARCHITECT, UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL PROVIDE EIGHT SETS OF SUBMITTALS ON ALL ELECTRICAL EQUIPMENT, INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, ELECTRICAL DEVICES, DIMMERS, RACEWAYS, FIRE ALARM DEVICES ETC.
9. ALL WIRING SHALL BE COPPER. ALUMINUM WIRING IS NOT ACCEPTABLE. MINIMUM WIRE SIZE IS #12 AWG. CONDUCTORS SIZED SHALL BE STRANDED. INSULATION SHALL BE "UL" TYPE THW OR THHN/THWN. METAL CLAD CABLE MAY BE USED FOR BRANCH CIRCUITS IF APPROVED BY THE AUTHORITY HAVING JURISDICTION.
10. LAMP SPECIFICATION SHALL MATCH BUILDING STANDARDS FOR MANUFACTURER, WATTAGE, AND COLOR. IF NON BUILDING STANDARD LAMPS EXIST, RELAMPING REQUIREMENTS SHALL BE CONFIRMED WITH BUILDING MANAGEMENT PRIOR TO FINAL PRICING. ALL INCANDESCENT LAMPS SHALL BE RATED FOR 120V UNLESS NOTED OTHERWISE. FOR NON BUILDING STANDARD FIXTURES, LAMPS SHALL BE MANUFACTURED BY GENERAL ELECTRIC, NORTH AMERICAN PHILLIPS, OR OSRAM-SYLVANIA. ALL LAMPS, IN NEW AND EXISTING FIXTURES, SHALL BE IN WORKING ORDER UPON COMPLETION OF THE WORK.
11. ALL ELECTRICAL MATERIALS USED ON THIS PROJECT MUST BE U.L. LISTED AND LABELED.
12. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SUBCONTRACTORS TO PROVIDE A COMPLETE WORKING SYSTEM.
13. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL MOTOR STARTERS NOT PROVIDED WITH MECHANICAL OR PLUMBING EQUIPMENT.
14. THIS CONTRACTOR SHALL PROVIDE CONDUIT FOR CONTROL WIRING. COORDINATE WITH MECHANICAL CONTRACTOR.
15. COORDINATE WITH MECHANICAL AND PLUMBING DRAWINGS FOR EXACT EQUIPMENT LOCATION SUCH AS RTU'S, VAV'S, ACCU'S, HP'S, EF'S, WATER HEATERS, PUMPS ETC.
16. MAINTAIN ALL U.L. FIRE RATED ASSEMBLIES AS NOTED ON ARCHITECTURAL DRAWINGS WHENEVER PENETRATING FLOOR SLABS, FIRE RATED CEILINGS AND FIRE RATED WALLS. ALL FIRE PROOFING MUST BE U.L. LISTED FOR THAT APPLICATION. MAINTAIN THE FIRE RESISTANCE RATING AS REQUIRED PER ARTICLE N.E.C.
17. PROVIDE UPDATED, TYPED DIRECTORY FOR EACH PANEL BOARD, DESIGNATING NEW CIRCUITS AND SUITE BEING SERVED.
18. WHEN A LIFE SAFETY SYSTEM EXISTS, MAINTAIN THIS EXISTING SYSTEM IN ACCORDANCE WITH THE LOCAL CODES AND N.F.P.A., COORDINATING WITH BUILDING MANAGEMENT FOR APPROVED LIFE SAFETY CONTRACTOR. BUILDING CORRIDORS MUST BE PROTECTED WITH SMOKE DETECTORS. AUDIBLE DEVICES MUST BE DISTINCT THROUGHOUT THIS TENANT SPACE. VISUAL ALARMS MUST PROVIDE COVERAGE PER AMERICANS WITH DISABILITIES ACT. THIS CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THAT EXISTING SYSTEM IS ADEQUATE FOR ADDITIONS AND MODIFICATIONS REQUIRED IN THESE PLANS. REFER TO SEPARATE FIRE ALARM REMODELING NOTES.
19. IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR CONTRACTORS TO VISIT THE SITE OF THE PROPOSED CONSTRUCTION IN ORDER TO FULLY UNDERSTAND THE FACILITIES, DIFFICULTIES AND RESTRICTION ATTENDING THE EXECUTION OF THE WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED THIS CONTRACTOR FOR WORK OR ITEMS OMITTED FROM HIS ORIGINAL PROPOSAL DUE TO HIS FAILURE TO INFORM HIMSELF REGARDING SUCH MATTERS AFFECTING THE PERFORMANCE OF THE WORK IN THIS CONTRACT OR NECESSARY FOR THE INSTALLATION AND COMPLETION OF THE WORK INCLUDED HEREIN.

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PROFESSIONAL SEAL

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER
12-12-2023

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PROJECT No: MA 20034
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ISSUE

ELECTRICAL SPECIFICATIONS

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