STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF WEBB §

Construction Contract
Webb County HVAC Upgrades to Casa Ortiz

This Agreement is made and entered into by and between **WEBB COUNTY, TEXAS,** a Political Subdivision of the State of Texas (hereinafter "Owner") and **Temprite Mechanical, Inc.**, a Texas Domestic For Profit Corporation (hereinafter "Contractor").

WHEREAS at the Webb County Commissioner's Court Meeting held on March 28, 2022, the Court awarded Request for Proposal No. 2022-002, "Casa Ortiz HVAC Upgrades" (the "Project"), as set out in the Scope of Scope of Services attached as Exhibit "A" incorporated herein and made part of this construction contract.

For and in consideration of the mutual covenants herein set forth, and other good and valuable consideration, the Parties do hereby agree as follows:

1. **DESCRIPTION OF PROJECT:** The project consists of the installation of Heating, Ventilation, and Cooling (HVAC) Systems as Upgrades to the Casa Ortiz building (Property). The work includes the installation of HVAC equipment with associated ductwork and as shown in the Project's Plans and Specifications for this Project, including all labor, materials, and all incidentals as shown and required by the construction documents.

2. **PREMISES DEFINED:** The Case Ortiz Property (building) is located at 915 Zaragoza Street, Laredo, Webb County Texas.

3. **SCOPE OF WORK:** The Scope of Work is all of the Work, including all appurtenances and all incidentals, all labor and materials, as shown and required by the construction documents, which are hereby incorporated by reference. Contractor agrees that all work shall be performed in a good and workmanlike manner and all materials incorporated into the work shall be new materials.

4. **CONTRACT SUM:** In exchange for Contractor's performance of services under this Agreement, Owner shall pay Contractor the following amount(s): **SIXTY-NINE THOUSAND FIVE HUNDRED TWENTY DOLLARS ($69,520.00). The Contract Sum includes a Five Thousand Dollars ($5,000.00) Owner's Contingency, which will be returned to Owner if said Contingency is not used in the Project by Owner**. Any and all payments/disbursements by Webb County shall be made payable to contractor based on a numbered and itemized payment application for percentage of completion of the various base bid item(s), less retainage, for the project as agreed to and made by Contractor to Owner, which shall be approved by **Luis Perez-Garcia, P.E., Webb County Engineer, and/or Guillermo Cuellar, P.E., Webb County Engineering Dept.,** after inspecting the progress of completed work and materials on site at the Premises. Said approvals shall not be unduly withheld or delayed.

5. Owner shall make final payment (including the costs and expenses incurred due to change order(s) completed during this project and completion of the Work and then release the **Five percent (5%) retainage** that OWNER previously retained) to Contractor on the day the Project is completed approved and accepted by OWNER. Said approvals shall not be unreasonably withheld or delayed.

6. ***It is hereby expressly acknowledged, consented and agreed to by Contractor that the final payment due for the materials and/or services rendered pursuant to this Agreement shall not be issued to Contractor until Contractor has submitted a signed and sworn "Final Bills Paid Affidavit" confirming payment to each of its subcontractors, laborers, suppliers, and materialmen in full for all labor and materials furnished to Contractor for or in connection with, renovation of, or repair of improvements on or relating to the subject project/property or any portion thereof, pursuant to and in accordance with Sections 53.085 and 53.259 of the Texas Property Code, and that the intentional, knowing, or reckless making of a false or misleading statement in the Affidavit constitutes a criminal offense under said sections cited herein-above and is a Class A Misdemeanor.***

7. **RETAINAGE:** OWNER shall withhold from each installment payment to CONTRACTOR a retainage of FIVE (5%) percent. The retainage shall be paid to CONTRACTOR upon final completion of the work. Completion of the work shall be considered final upon acceptance and written approval by OWNER or his designated representative of the project.

8. **CHANGE ORDERS** In the event either party requests a change from the agreed Scope of Work or Quote in this Agreement, a written change order making such a request shall be prepared by Contractor in accordance with the proposed change. If the Owner or a Third-Party Inspector ("Inspector") requests a change be executed, Owner or Inspector shall, in a timely manner, inform Contractor (via email) of the request. Contractor shall then prepare a written change order in accordance with said request and submit to Owner for Owner's approval and signature. As soon as Owner signs the change order approving the proposed change, Owner shall submit, via email, the approved/signed order to Contractor. Contractor shall begin performance in accordance with the change order only after Contractor receives the written and approved/signed change order. If Contractor requests a change order, Contractor shall prepare a written change order, submit it to Owner for its approval and signature, and the resultant change will only begin on the approved change after Contractor receives the signed change order. Change orders may increase the payment the Owner must pay to Contractor. **IN NO EVENT SHALL THE TOTAL COST OF CHANGE ORDERS EXCEED TWENTY-FIVE PERCENT (25%) OF THE TOTAL AMOUNT OF THIS AGREEMENT.**

9. **NOTICES/CONTACT PERSONS**: Any notice or communication required or permitted t be given hereunder shall be sufficient if sent via electronic transmission to the contact persons for CONTRACTOR and/or OWNER as follows:

To Contractor at: Rene Salinas, President
Temprite Mechanical, Inc.
2806 Cortez Street

Laredo, Texas 78043
E-Mail: rene@temprite-mechanical.com

To Webb Engineer at: WEBB COUNTY, TEXAS
Luis Perez-Garcia, P.E./Webb County Engineer
Webb County Engineering Dept.
(956) 523-4054
lperezgarcia@webbcountytx.gov

10. **CONTRACT PERFORMANCE**: The Effective Date of this Contract shall be the date of the last signatory to this Contract. Upon the Effective Date, Contractor *shall* only have twenty-five (25) weeks **or** One-Hundred Seventy-Five (175) calendar days from the Effective Date to procure and accept delivery of the HVAC units ("Units") for the Project from Contractor's Supplier(s). Failure by Contractor to procure the Units for this Project within the timeline set out under this section shall be considered a material breach of this Contract by Contractor whereby Owner may terminate this Contract for "cause" for nonperformance.

11. **DATE OF COMMENCEMENT:** Within **SEVEN (7) CALENDAR DAYS** of being issued a "Notice to Proceed" from the County. The "Notice to Proceed" shall be issued twenty-five (25) weeks or One Hundred and Seventy-Five (175) calendar days from the Effective Date and upon the Webb County Engineer conducting his preconstruction meeting.

12. **SUBSTANTIAL COMPLETION:** Substantial Completion is the stage in the progress of the completion of the work covered by this Agreement where the work on the Premises is sufficiently complete in accordance with the work specified in "Scope of Work" as set forth in Section 3. above, including completion of all post-construction clean-up on and about the Premises, which shall be required to be confirmed in writing as being substantially completed, by the execution and issuance of a Certificate of Substantial Completion that is dated and signed by both the Webb County Project Engineer and Owner, so that the Owner (or Owner's tenant) can occupy and/or utilize the Premises for its intended use.

13. **DATE FOR FINAL COMPLETION/LIQUIDATED DAMAGES:** The date of final completion of this construction project shall be **FOURTEEN DAYS (14) CALENDAR DAYS** after the date of commencement of construction as set forth in the written and dated notice to proceed issued by Owner to Contractor.

14. The time set forth in the proposal for the completion of the Work is an essential element of the Agreement. For each working day under the conditions described in the preceding Paragraph that any work shall remain uncompleted after the expiration of the working days specified in the Agreement, together with any additional working days allowed, the amount per day given in Section 15 will be deducted from the money due or to become due the Contractor, not as a penalty but as liquidated damages.

15. Said Contractor further agrees to **CONTINUOUSLY PURSUE AND COMPLETE THE WORK** within **FOURTEEN (14) CALENDAR DAYS CALENDAR DAYS** from date of commencement.

16. ***Contractor and Owner do hereby acknowledge that "actual damages are uncertain and would be difficult to ascertain" and therefore both parties do hereby mutually agree that the following stipulated sum of per diem liquidated damages is a reasonable amount. The parties further express and acknowledge that the amount of liquidated damages is meant to be "compensatory" and not "punitive", and Contractor further agrees to pay, as liquidated damages, the sum of TW0 HUNDRED DOLLARS($200.00) per day for each consecutive calendar day there-in-after the date of Substantial Completion and after the date of Final Completion.***

17. **INSURANCE: Contractor and Subcontractor Insurance:** The financial integrity of Contractor is of interest to the Owner, therefore, subject to the right of Contractor to maintain reasonable insurance deductibles in such amounts as are approved by the Owner. Contractor shall obtain and maintain in full force and effect for the entire duration of this agreement, and any extension hereof, at Contractor's sole expense, insurance coverage written on an occurrence basis, by companies authorized and admitted to do business in the State of Texas and rated A-:(VII) or better by A.M. Best Company (Best's Key Insurance Company Rating Guide, current edition and/or as amended) and/or otherwise acceptable to Webb County/Webb County Risk Manager, the following types and amounts:

    a. The Contractor shall not commence work under this Agreement until it has obtained all the insurance required and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on its Subcontract until the insurance required of the Subcontractor has been so obtained and approved. The Contractor shall procure and shall maintain during the life of his Contract, insurance in the amounts required.

18. **PAYMENT AND PERFORMANCE BONDS: ***PLEASE BE ADVISED THAT THIS PROJECT REQUIRES BOTH A PAYMENT & PERFORMANCE BOND FROM THE CONTRACTOR.*****

19. ***Contractor shall supply the required Performance/Payment bonds to Webb County within Seven (7) days of execution of this Agreement or not later than Two (2) working days prior the date of the scheduled pre-construction meeting which shall be the "DEADLINE" for compliance herewith and which both parties have mutually agreed to as an "Express Condition Precedent" to this contract.***

    a. Bonds must be issued by companies authorized and admitted to do business in the State of Texas and rated A-:VII or better by A.M. Best Company (Best's Key Rating Guide, current Edition, and as amended) and/or otherwise acceptable to the Owner.

20. ***NOTICE TO PROCEED SHALL NOT BE ISSUED TO THE CONTRACTOR BY WEBB COUNTY WITHOUT THE DELIVERY OF ALL STATUTORILY REQUIRED PERFORMANCE AND/OR PAYMENT BONDS AND PROOF OF ALL REQUIRED INSURANCE POLICIES TO WEBB COUNTY BY CONTRACTOR NOT LATER THAN TWO (2) WORKING DAYS PRIOR THE DATE OF THE SCHEDULED PRE-CONSTRUCTION MEETING "DEADLINE". FAILURE OF CONTRACTOR TO***

PROVIDE SAID BONDS AND/OR INSURANCE POLICIES BY THE DEADLINE SHALL CONSTITUTE A DEFAULT OF YOUR CONTRACT AND WEBB COUNTY SHALL AT THEIR SOLE OPTION AWARD THE CONTRACT TO THE NEXT LOWEST BIDDER OR RE-ADVERTISE THIS PROJECT FOR NEW BIDS/PROPOSALS.

21. **RELATIONSHIP OF PARTIES:** Contractor is engaged under this Agreement as an ***"INDEPENDENT CONTRACTOR"*** and not as an agent or employee of Owner. Contractor is not entitled to benefits of any kind to which Owner's employees are entitled, including but not limited to unemployment compensation, workers' compensation, health insurance, or retirement benefits. Contractor assumes full responsibility for payment of all federal, state and local taxes or contributions, including but not limited to, unemployment insurance, social security, Medicare, and income taxes with respect to Contractor and Contractor's employees. This Agreement does not create a partnership or a joint venture between the parties hereto, nor does it authorize either party to serve as the legal representative or agent of the other. Neither party has any right or authority to assume, create, or incur any liability or any obligation of any kind, express or implied, against, or in the name of, or on behalf of the other party.

22. **SUCCESSORS AND ASSIGNS:** This Agreement may not be assigned or subcontracted, in full or in part, by either party without first obtaining written consent of the other party. The parties shall not be relieved of its full responsibility for completion of work because of subletting of any portion of the work. This Agreement shall be binding upon and shall ensue to the benefit of the parties hereto and their respective successors, transferees, and assigns.

23. **INDEMNITY: CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD WEBB COUNTY, IT'S COMMISSIONERS COURT, DIRECTORS, EMPLOYEES, AND AGENTS HARMLESS FROM ANY AND ALL LOSS, EXPENSE, COST, OR LIABILITY (INCLUDING REASONABLE LEGAL FEES AND EXPENSES), ARISING FROM ANY CLAIM OR CAUSE OF ACTION FOR ANY LOSS OR DAMAGE CAUSED BY OR ARISING FROM THE PERFORMANCE OF CONTRACTOR'S OBLIGATIONS UNDER THIS AGREEMENT, INCLUDING, BUT NOT LIMITED TO, THE CONDUCT OF CONTRACTOR'S EMPLOYEES AND/OR ANY ACTS PERFORMED UNDER THIS CONTRACT AND THAT RESULT FROM ANY NEGLIGENT ACT, ERROR, OR OMISSION OF THE CONTRACTOR OR OF ANY PERSON EMPLOYED BY THE CONTRACTOR. IN CASE OF ANY SUCH CLAIM, CONTRACTOR, UPON NOTICE FROM OWNER, COVENANTS TO DEFEND ANY SUCH ACTION OR PROCEEDING. THE CONTRACTOR SHALL ALSO SAVE AND HOLD HARMLESS THE OWNER FROM AND AGAINST ANY AND ALL EXPENSES, COURT COSTS, INCLUDING, BUT NOT LIMITED TO, ATTORNEY'S FEES THAT MIGHT BE INCURRED IN LITIGATION OR OTHERWISE DEFENDING OR PROSECUTING THE CLAIMS.**

24. **COMPLIANCE WITH LAWS:** Contractor agrees that it will, in its performance of its obligations hereunder, fully comply with all applicable laws, regulations and ordinances of all relevant authorities, including, but not limited to, those pertaining to safety, and shall obtain all licenses, registrations, or other approvals required in order to fully perform its

obligations hereunder. Contractor represents and warrants that all improvements made to the property shall comply with the Americans with Disabilities Act (ADA) and all other applicable Federal/State Codes, regulations, and laws.

25. **SEVERABILITY:** Should any part of this Agreement be rendered or declared invalid by a court of competent jurisdiction of the State of Texas, such invalidation of such part or portion of this Agreement shall not invalidate the remaining portions thereof, and they shall remain in full force and effect.

26. **GOVERNING LAW/VENUE:** This agreement shall be governed by and construed and interpreted in accordance with the laws of the State of Texas, without regard to choice of law rules of any jurisdiction. The parties hereby further agree that for any litigation regarding this agreement that venue lies exclusively in the State Courts of Webb County, Texas.

27. **OWNER'S RIGHT TO TERMINATE.** Owner may terminate this this Agreement upon thirty (30) days prior written notice. If Owner terminates this Agreement then Contractor shall only be paid for the work performed or expenses incurred prior to the receipt of notice of termination.

28. **DEFAULT AND TERMINATION:** In the event either party interferes with the general progress of this Project intentionally, or by negligence, or intentional or negligent delay, the non-defaulting party may complete the same or cause the same to be completed and charge all sums of money so expended for the completion of this Agreement against the defaulting party, and the defaulting party shall reimburse the non-defaulting Party for any loss sustained thereby.

29. **ATTORNEY'S FEES:** In the event either party breaches any of the terms of this Agreement whereby the party not in default employs attorneys to protect or enforce its rights hereunder and prevails, then the defaulting party agrees to pay the other party reasonable attorney's fees incurred by such other party.

30. **ENTIRE AGREEMENT:** This Agreement and its Exhibits shall constitute the complete and exclusive written expression of the intentions of the parties hereto and shall supersede all previous communications, representations, agreements, promises or statements, either oral or written, by and between the parties. Any modifications to this Agreement must be in writing and signed by the party sought to be bound.

31. **EXHIBITS:** The following documents are attached hereto and fully incorporated herein by reference and made a part of this agreement as if fully set forth herein:

    1. **Contractor's Scope of Services** attached hereto as **Exhibit "A").**
    2. Description of Premises (See Section 2) **Exhibit "B"**
    3. Construction/Plans/Drawings, **Exhibit "C".**
    4. Webb County's General Conditions, **Exhibit "D".**

5. Payment Bond - See sample form: (To be provided by Contractor Prior to Issuance of Notice to Proceed). (See Section 18**), **"Exhibit E".**

6. Performance Bond – See sample form: (To be provided by Contractor Prior to Issuance of Notice to Proceed). (See Section 18**), **"Exhibit F".**

7. Insurance Coverages, Liability, Worker's Comp., Builder's Risk, etc. (To be provided by Contractor Prior to Issuance of Notice to Proceed as set out in Webb County's General Conditions).

8. Webb County's "Notice to Proceed Letter" - See sample form **"Exhibit "G".**

32. OMISSIONS: If any punctuation, word, clause, sentence, or provision necessary to give meaning, validity, or effect to any portion of this Agreement shall be omitted here-from, then it is hereby declared that such omission was unintentional and that the omitted element shall be included in order to give meaning, validity, and/or effect to any portion of this Agreement.

33. MATERIALMEN/SUPPLIERS: Contractor within 10 days from the date of the execution of this agreement shall provide an updated and current listing of all Subcontractors and/or Materialmen or Suppliers, and all laborers, used by the Contactor to Webb County and Contractor shall notify the Owner in writing whenever changes occur, and Contractor shall provide the Owner with an updated listing within FIVE (5) working days of upon request for an updated listing. Contractor will immediately notify the Owner in writing of any Subcontractors and/or Materialmen or Suppliers, and all laborers, independent contractors, and/or other such materialmen and/or suppliers services that are discontinued and/or that have been added to their workforce.

34. REQUEST FOR PAYMENT SUBMISSION: All request for payments are to be made payable to Contractor by dated and signed invoice(s). Said invoice and/or request for progress payments shall be submitted in writing to **Luis Perez-Garcia, P.E., Webb County Engineer,** or its designated and authorized representative, on behalf of Owner for review and approval of same. Upon review and approval of the request for payment by **Luis Perez-Garcia, P.E., Webb County Engineer,** on behalf of Owner, the Webb County Engineer shall then forward the approved request for the payment amount **[less Five percent (5%) retainage]** to the Webb County Business Office to process the progress payment request. Payment will be mailed to Contractor or made available for pick up at the Webb County Business Office. Contractor agrees that Webb County will not process any invoices for the HVAC units for this Project until said HVAC units are delivered to the Project site.

35. COMPLIANCE WITH APPLICABLE LAWS AND ORDINANCES: Contractor agrees to comply at all times with all federal, state, county, and/or City of Laredo building, development codes, city building permits, rules, regulations, ordinances and laws, and Contractor shall not permit the Premises or any part thereof to be used for (a) any offensive, noisy, or dangerous activity that would pose a health or safety risk; (b) the creation or maintenance of a public nuisance, (c) anything which is against public regulations or rules of any public authority at any time applicable to the Premises; or (d) any purpose or any manner

which will obstruct, interfere with, or infringe on the rights of other tenants or adjoining properties.

36. **LEGAL CONSTRUCTION:** In case any one or more of the provisions contained in the Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

37. **AMENDMENT:** No amendment, modification, or alteration of the terms of this Agreement hereof shall be binding unless the same be in writing, dated subsequent to the date hereof, and approved by the Webb County Commissioner's Court and duly executed by both of the parties hereto.

38. **TIME OF ESSENCE:** Time is of the essence of this Agreement and each and every covenant, condition, and provision herein contained.

39. **ADDITIONAL PROVISIONS:**

a. **Inconsistencies.** Where there exists any inconsistency between this Agreement and other provisions of collateral contractual agreements that are made a part hereof by reference or otherwise, the provisions of this Agreement shall control.

b. **Entire Agreement.** This Agreement incorporates all the agreements, covenants, and understandings between the parties hereto concerning the subject matter hereof, and all such covenants, agreements, and understandings have been merged into this written Agreement. No other prior agreement or understandings, verbal or otherwise, of the parties or their agents shall be valid or enforceable unless signed by both parties and attached hereto and/or embodied herein.

c. **No rights created.** This Agreement is not intended and does not create any rights or interest in persons not a party hereto.

d. **Confidentiality.** Any confidential information provided to or developed by Consultant in the performance of this Agreement shall be kept confidential, unless otherwise provided by law, and shall not be made available to any individual or organization without the prior approval of **WEBB COUNTY.**

e. **Headings.** The headings used herein are for convenience of reference only and shall not constitute a part hereof or affect the construction or interpretation hereof.

f. **Waiver.** The failure on the part of any party to exercise or to delay in exercising, and no course of dealing with respect to any right hereunder shall operate as a waiver thereof; nor shall any single or partial exercise of any right hereunder preclude any other or further exercise thereof or the exercise of any other right. The remedies provided herein are

cumulative and not exclusive of any remedies provided by law or in equity, except as expressly set forth herein.

g. **Consequential Damages.** Neither party shall be liable to the other for consequential damages, including, without limitation, loss of use or loss of profits, incurred by one another or their subsidiaries or successors, regardless of whether such damages are caused by breach of contract, will-full misconduct, negligent act or omission, or other wrongful act of either of them.

h. **Counterparts.** This Agreement may be executed in any number of and by the different parties hereto on separate counterparts, each of which when so executed shall be deemed to be an original, and such counterparts shall together constitute but one and the same document.

i. **Terminology and Definitions.** All personal pronouns used herein, whether used in the masculine, feminine, or neutral, shall include all other genders; the singular shall include the plural and the plural shall include the singular.

j. **Rule of Construction.** The parties hereto acknowledge that each party and its legal counsel have reviewed and revised this agreement, and the parties hereby agree that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this agreement or any amendments or exhibits hereto.

This Agreement becomes effective when signed by the last party whose signing makes the Agreement fully executed.

IN WITNESS WHEREOF, the parties aforesaid have duly executed the foregoing instrument, or caused the same to be executed in duplicate originals on the dates set forth below.

WEBB COUNTY

Tano E. Tijerina
Webb County Judge

Date: 5-23, 2022

ATTESTED:

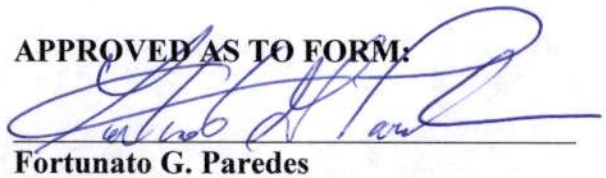
Margie Ramirez-Ibarra
Webb County Clerk

CONTRACTOR
TEMPRITE MECHANICAL, INC.

Rene Salinas, President

Date: May 23, 2022

APPROVED AS TO FORM:



Fortunato G. Paredes
Webb County Civil Legal Division

*By law, this office may only advise or approve contracts or legal documents on behalf of its clients. It may not advise or approve a contract or legal document on behalf of other parties. Our review of this document was conducted solely from the legal perspective of our client. Our approval of this document was offered solely for the benefit of our client. Other parties should not rely on this approval, and should seek review and approval of their own respective attorney(s).

EXHIBIT "A"

SCOPE OF SERVICES

I. Scope of Work: The Work required by Contractor in performance of this Scope of Work (Material and Services) for the HVAC Upgrades to the Casa Ortiz Building located at 915 Zaragoza Street, Laredo, Texas and includes but not limited to:

a. Install AC equipment and ductwork as shown on the contract documents. Refer to drawings of equipment that will be installed as provided by Mechanical Electrical Plumbing Engineer (MEP) as shown in the Plans and Specifications for the Project (Exhibit "C")

b. HVAC: Provide all materials and labor associated with a complete operational installation of new HVAC systems including, but not limited to:

1) DX Split & Roof Top Air Conditioning Units
2) Sheet metal, Ductwork
3) Air Test and Balance as per MEP specifications

Exhibit "B"

DESCRIPTION OF PROJECT SITE PREMISE LOCATIONS:

Casa Ortiz Site Location Information
915 Zaragoza Street
Laredo, Texas
Site Coordinates
27.50218/-99.50513

EXHIBIT "C"

12.22.21

DIVISION 23 – HEATING VENTILATION & AIRCONDITIONING

23 01 00	HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)
23 05 10	COMMON WORK RESULTS FOR HVAC
23 23 00	REFRIGERANT PIPING
23 26 00	CONDENSATE DRAIN PIPING
23 73 12	DX SPLIT SYSTEM HEAT PUMP AIR CONDTIONING UNITS
23 74 10	PACKAGED ROOFTOP DX HEAT PUMP AIR CONDITIONING UNITS

EXHIBIT "C"

SECTION 23 00 00

HEATING, VENTILATION AND AIR-CONDITIONING (HVAC)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The following Summary of Work is intended as an aid to achieve an understanding of the various elements of work included in the project, as is not intended to be all-inclusive. Detailed descriptions of work and requirements are given in drawings and specifications.

B. Mechanical Contract Documents were prepared for the Project by:

Trinity MEP Engineering, LLC
3533 Moreland Dr. Ste. A
Weslaco, Texas 78596
Phone Number: (956) 973-0500
Contact Person: Leonardo Munoz, P.E.

C. General Scope of Work:

1. Install AC equipment and ductwork as shown on the contract documents. Refer to drawings for schedule of equipment that will be installed. After installing equipment, connect power to unit.
2. HVAC: Provide all materials and labor associated with a complete operational installation of new HVAC systems including, but not limited to:

- DX Split & Roof Top Air Conditioning Units
- Sheet metal, Ductwork
- Air Test and Balance
-

1.3 COORDINATION

A. All mechanical work shall be done under sub-contract to a General Contractor. Mechanical Contractor shall coordinate all work through General Contractor, even in areas where only mechanical work is to take place.

B. Coordination between all trades shall take place on a regular basis to avoid conflicts between disciplines and equipment clearances.

C. Work shall take place with minimal disruption to Owner's operations in areas surrounding the new building.

D. Cooperate fully with other contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

E. Fully coordinate with electrical contractor for providing power to mechanical equipment.

F. Mechanical Contractor is responsible for all control wiring including thermostat(s). This includes all conduit, wire, and accessories both low voltage and source voltage for the controls' system. Mechanical Contractor will provide all the necessary actuators, relays, software, hardware, and all necessary accessories required for a fully functional controls' system.

1.4 UTILITIES

1. Coordinate with power, water, telephone, cable and gas utilities to locate all utilities prior to digging in any area.
2. Obtain any approvals required from utilities to relocate utilities.
3. Cost of relocating or bypassing utilities indicated on drawings shall be included in Base Bid.

1.5 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.
2. Driveways and Entrances: Keep driveways and entrances serving the premises, clear and available to the Owner, the Owner's employees, and emergency vehicles at all time. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Site Safety: Take every precaution to ensure the site does not present a threat to the safety of occupants and/or workers. Minimal safety requirements include, but are not limited to the following:

1. Temporary fencing around construction areas.
2. Yellow caution tape and construction barricades along open trenches during the day. Trenches shall be covered at night and warning lights provided on construction barricades.
3. Temporary fencing around equipment while site work is in progress.

1.6 SUBMITTALS

1. To extradite the submittal process more efficiently, DO NOT piece-meal the submittals. Submit entire mechanical or plumbing in a bound enclosure. This will eliminate delays in the submittal process.

END OF SECTION

EXHIBIT "C"

SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1.2 SUMMARY

A. This Section includes the following basic mechanical materials and methods to complement other Sections.

1. Piping materials and installation instructions common to most piping systems.
2. Concrete base construction requirements.
3. Escutcheons.
4. Dielectric fittings.
5. Flexible connectors.
6. Mechanical sleeve seals.
7. Equipment nameplate data requirements.
8. Nonshrink grout for equipment installations.
9. Field-fabricated metal and wood equipment supports.
10. Installation requirements common to equipment specification sections.
11. Cutting and patching.
12. Touchup painting and finishing.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

G. PVC: Polyvinyl chloride plastic.

H. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene propylene diene terpolymer rubber.

1.4 SUBMITTALS

A. Product Data: For dielectric fittings, flexible connectors, mechanical sleeve seals, and identification materials and devices.

B. Coordination Drawings: Detail major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Show space requirements for installation and access. Indicate if sequence and coordination of installations are important to efficient flow of the Work. Include the following:
   1. Planned piping layout, including valve and specialty locations and valve-stem movement.
   2. Clearances for servicing and maintaining equipment, accessories, and specialties, including space for disassembly required for periodic maintenance.
   3. Sizes and location of required concrete pads and bases.
   4. Floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
   5. Reflected ceiling plans to coordinate and integrate installation of air outlets and inlets, light fixtures, communication system components, sprinklers, and other ceiling-mounted items.

1.5 QUALITY ASSURANCE

A. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

B. Equipment Selection: Equipment of higher electrical characteristics, physical dimensions, capacities, and ratings may be furnished provided such proposed equipment is approved in writing and connecting mechanical and electrical services, circuit breakers, conduit, motors, bases, and equipment spaces are increased. Additional costs shall be approved in advance by appropriate Contract Modification for these increases. If minimum energy ratings or efficiencies of equipment are specified, equipment must meet design and commissioning requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes, ductwork, equipment, and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.

C. Protect flanges, fittings, and piping specialties from moisture and dirt.

D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate mechanical equipment installation with other building components.

B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.

C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.

D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.

E. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.

F. Coordinate requirements for access panels and doors if mechanical items requiring access are concealed behind finished surfaces. Access panels and doors are specified in architectural section.

G. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

1.8 OPERATION PRIOR TO ACCEPTANCE

A. When any equipment is operable, and it is to the advantage of the Contractor to operate the equipment, he may do so provided that he properly supervises the operation, and retains full responsibility for the equipment operated.

B. Regardless of whether or not the equipment has or has not been operated, the Contractor shall clean the equipment properly, make required adjustments, and complete punch list items before final acceptance by the Owner.

C. The date of acceptance by the Engineer, for beneficial use by the Owner, shall be the beginning date of the warranty period.

1.9 SPACE AND EQUIPMENT ARRANGEMENT

A. The size of each item of mechanical equipment shown on the Drawings is based on the dimensions of a particular manufacturer as indicated. While other manufacturers may be acceptable, it shall be the responsibility of the Contractor to determine whether or not the equipment he proposes to furnish will fit into the space. Shop drawings shall be prepared when required by the engineer to indicate a suitable arrangement.

B. Install equipment in a manner to permit access to all surfaces. Install valves, motors, drives, lubricating devices, filters, and other accessory items in a position to allow removal for service without requiring the disassembly of another part.

C. Provide access panels acceptable to the Engineer for equipment that is concealed above ceiling space.

D. Large equipment assemblies or components which will be installed in the building, and which are too large to permit access through doorways, stairways or shafts, shall be brought to the site and placed in the appropriate spaces before the enclosing structure is completed. Provisions shall be implemented by the Contractor to insure that the equipment will not be damaged in any way during the associated construction procedures.

1.10 START-UP OF EQUIPMENT AND SYSTEMS

A. Whenever the manufacturer of a particular item of equipment or a particular system makes available a start-up service after completion of the installation, such manufacturer's start-up service (rendered by the manufacturer or his authorized representative) shall be provided.

B. Witnessing and explanations of start-up services shall be included as part of the "Instruction of Owner's Personnel" as specified below.

1.11 INSTRUCTION OF OWNER'S PERSONNEL

A. Provide the services of competent engineers or technicians acceptable to the Engineer to instruct representatives of the Owner in complete and detailed operation and maintenance of each item of equipment, and each system. These instructions shall be provided for whatever periods may be necessary to accomplish the desired results. Upon completion of these instructions, the Contractor shall obtain a letter of release, acknowledged by the Owner or his authorized representative, stating the dates on which the various kinds of instruction were given, and the personnel to whom the instructions were given.

B. The Contractor shall be fully responsible for proper maintenance of equipment and systems until the instructions have been given to the Owner's personnel and the letter of release acknowledged.

C. In providing the instructions to the Owner's personnel, the written operating and maintenance manuals shall be followed in all instances, and the Owner's personnel shall be familiarized with such manuals. Operating and maintenance manuals used for instructions shall include piping diagrams, valve identification charts, control and interlocking wiring diagrams, manufacturers' operation and maintenance manuals, parts lists (with sources identified), and other data as appropriate for each system, and as required elsewhere in the Specifications to be furnished to the Owner prior to final acceptance of the project.

D. Provide the Owner with three (3) complete sets of all maintenance manuals, pamphlets, brochures or instructions. This material shall be catalogued, indexed and bound into books.

1.12 ACCEPTABLE MANUFACTURERS

A. A. Provide equipment and materials from listed manufacturers listed within this specification. Deviations from this specification will not be acceptable. When one manufacturer is listed, alternate materials and equipment may be provided "equal to" the listed. When more than one manufacturer is listed, equipment and material must be provided by one of the listed manufacturers.

PART 2 - PRODUCTS

2.1 STANDARD PRODUCTS

A. Each item of equipment furnished under this Division of the Specifications shall be essentially the standard product of the manufacturer. Where two or more units of the same kind or class of equipment are required, these shall be the products of a single manufacturer; however, the component parts of the equipment need not be the products of one manufacturer.

B. Materials and equipment shall be of the base quality normally used in good commercial practice, and shall be the products of reputable domestic manufacturers unless otherwise specified. Each major component shall bear a nameplate giving the name and address of the manufacturer, and the catalog number or designation of the component.

2.2 QUALITY AND CLASSIFICATION OF MATERIALS

A. Materials and equipment shall be new and of the quality specified, and shall be free from defects at the time of installation. Materials or equipment damaged in shipment or otherwise damaged prior to installation shall not be repaired at the job site, but shall be replaced with new materials or equipment identical with those damaged.

B. Wherever a UL standard has been established for a particular type of material or equipment, each such material or equipment provided on this project shall meet the requirements of the UL standard in every way and shall be UL listed and labeled.

2.3 LOCAL PARTS AND SERVICE

A. Each item of equipment furnished on this project shall have local representation, factory-authorized service, and an adequate stock of repair parts. "Local" shall be defined, for this purpose, as "within 50 miles of the project site."

2.4 FLAME SPREAD PROPERTIES OF MATERIALS

A. Materials used for insulation, acoustical linings, adhesives, jackets and coatings, and combinations of these materials, shall each have a flame spread rating of 25 or less, and a smoke developed rating of 50 or less, as determined by an independent testing laboratory in accordance with NFPA-255.

2.5 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Dielectric Unions:

a. Watts Industries, Inc.; Water Products Div.
b. Zurn Industries, Inc.; Wilkins Div.

2. Mechanical Sleeve Seals:
a. Calpico, Inc.
b. Metraflex Co.
c. Thunderline/Link-Seal.

2.6 MECHANICAL SLEEVE SEALS

A. Description: Modular design, with interlocking rubber links shaped to continuously fill annular space between pipe and sleeve. Include connecting bolts and pressure plates.

2.7 PIPING SPECIALTIES

A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
1. Steel Sheet Metal: 0.0239-inch minimum thickness, galvanized, round tube closed with welded longitudinal joint.
2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
a. Underdeck Clamp: Clamping ring with set screws.

B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
2. OD: Completely cover opening.
3. Cast Brass: One piece, with set screw.
a. Finish: Rough brass.
b. Finish: Polished chrome-plate.

4. Cast-Iron Floor Plate: One-piece casting.

2.8 GROUT

A. Nonshrink, Nonmetallic Grout: ASTM C 1107, Grade B.
1. Characteristics: Post-hardening, volume-adjusting, dry, hydraulic-cement grout, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psig, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. General: Install piping as described below, unless piping Sections specify otherwise. Individual Sections specify unique piping installation requirements.

B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

C. Install piping at indicated slope.

D. Install components with pressure rating equal to or greater than system operating pressure.

EXHIBIT "C"

E. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.
F. Install piping free of sags and bends.
G. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.
H. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.
I. Install piping to allow application of insulation plus 1-inch clearance around insulation.
J. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
K. Install fittings for changes in direction and branch connections.
L. Install couplings according to manufacturer's written instructions.
M. Install pipe escutcheons for pipe penetrations of concrete and masonry walls, wall board partitions, and suspended ceilings according to the following:
    1. Chrome-Plated Piping: Cast brass, one piece, with set screw, and polished chrome-plated finish.
    2. Uninsulated Piping Wall Escutcheons: Cast brass or stamped steel, with set screw.
    3. Uninsulated Piping Floor Plates in Utility Areas: Cast-iron floor plates.
    4. Insulated Piping: Cast brass or stamped steel; with concealed hinge, spring clips, and chrome-plated finish.
    5. Piping in Utility Areas: Cast brass or stamped steel, with set-screw or spring clips.
N. Sleeves are not required for core drilled holes.
O. Install sleeves for pipes passing through concrete and masonry walls, and concrete floor and roof slabs.
P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
    1. Cut sleeves to length for mounting flush with both surfaces.
        a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
    2. Build sleeves into new walls and slabs as work progresses.
    3. Install sleeves large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:Steel Pipe Sleeves: For pipes smaller than 6-inch NPS.
        b. Steel, Sheet-Metal Sleeves: For pipes 6-inch NPS and larger, penetrating gypsum-board partitions.
    4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using elastomeric joint sealants.
    5. Use Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant, unless otherwise indicated.
Q. Aboveground, Exterior-Wall, Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe or pipe insulation and sleeve for installing mechanical sleeve seals.
    1. Install steel pipe for sleeves smaller than 6 inches in diameter.
    2. Install cast-iron "wall pipes" for sleeves 6 inches in diameter and larger.
    3. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.
R. Underground, Exterior-Wall, Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.

S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestopping materials.

T. Verify final equipment locations for roughing-in.

U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

V. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:

1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
3. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
4. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   a. Note internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
   b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.
   c. Align threads at point of assembly.
   d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
   e. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
6. Welded Joints: Construct joints according to AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe," using qualified processes and welding operators according to "Quality Assurance" Article.
7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.
8. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
   a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
   b. PVC Nonpressure Piping: ASTM D 2855.
   c. PVC to ABS Nonpressure Transition Fittings: Procedure and solvent cement according to ASTM D 3138.
9. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions.
   a. Plain-End Pipe and Fittings: Use butt fusion.
   b. Plain-End Pipe and Socket Fittings: Use socket fusion.

W. Piping Connections: Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.
2. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.2 EQUIPMENT AND MATERIAL INSTALLATION - COMMON REQUIREMENTS

A. Install equipment and material to provide maximum possible headroom, if mounting heights are not indicated.
B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.
C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
E. Install equipment and ductwork giving right of way to piping installed at required slope.
F. Install flexible connectors on equipment side of shutoff valves, horizontally and parallel to equipment shafts if possible.

3.3 PAINTING AND FINISHING

A. Refer to paint materials, surface preparation, and application of paint.
B. Do not paint piping specialties with factory-applied finish.
C. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit. Follow supported equipment manufacturer's setting templates for anchor bolt and tie locations. Use 3000-psig, 28-day compressive-strength concrete and reinforcement or as specified.

3.5 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
B. Field Welding: Comply with AWS D1.1, "Structural Welding Code--Steel."

3.6 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.
B. Repair cut surfaces to match adjacent surfaces.

3.7 GROUTING

A. Install nonmetallic, nonshrink, grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix grout according to manufacturer's written instructions.
B. Clean surfaces that will come into contact with grout.
C. Provide forms as required for placement of grout.
D. Avoid air entrapment during placing of grout.

E. Place grout, completely filling equipment bases.
F. Place grout on concrete bases to provide smooth bearing surface for equipment.
G. Place grout around anchors.
H. Cure placed grout according to manufacturer's written instructions.

END OF SECTION

EXHIBIT "C"

SECTION 23 23 00

REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:

1. Furnish and install piping and specialties for refrigeration systems as described in Contract Documents.

B. Products Installed But Not Furnished Under This Section:

1.2 REFERENCES

A. Association Publications:

1. Federal Emergency Management Agency (FEMA) / Vibration Isolation and Seismic Control Manufacturers Association (VISCMA) / American Society of Civil Engineers (ASCE):
   a. FEMA 412, 'Installing Seismic Restraints For Mechanical Equipment' (December 2002).
2. Vibration Isolation and Seismic Control Manufacturers Association (VISCMA):
   a. VISCMA 101-12, 'Seismic Restraint Specification Guidelines for Mechanical, Electrical, and Plumbing Systems'.
   b. VISCMA 102-12, 'Vibration Isolation Specification Guidelines for Mechanical, Electrical, and Plumbing Systems'.

B. Definitions:

1. Refrigerant: Absorbs heat by a change of state (evaporation) from liquid to a gas, and releases heat by a change of state (condenses) from gas back to a liquid.
2. Vibration Isolation: Vibration reduction in which an isolation system is placed between the source of unwanted vibration and an item which needs to be shielded from the vibration.

C. Reference Standards:

1. American National Standards Institute (ANSI) / American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
   a. ANSI/ASHRAE Standard 15-2010, 'Safety Standard for Refrigeration Systems'.
   b. ANSI/ASHRAE Standard 34-2010, 'Designation and Classification of Refrigerants'.
2. American National Standards Institute / American Welding Society:
   a. ANSI/AWS A5.8M/A5.8-2011, 'Specification for Filler Metals for Brazing and Braze Welding'.
3. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
   a. '2011 ASHRAE Handbook - HVAC Applications'.
      1) Chapter 48, 'Noise and Vibration Control'.
4. ASTM International:
   a. ASTM A36/A36M-08, 'Standard Specification for Carbon Structural Steel'.
   b. ASTM B280-08, 'Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service'.

5. National Fire Protection Association / American National Standards Institute:
   a. NFPA 90A-2012, 'Installation of Air Conditioning and Ventilating Systems'.
6. Underwriters Laboratories:
   a. UL 2182, 'Refrigerants' (2nd Edition).

1.3 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings: Show each individual equipment and piping support.
B. Informational Submittals:
   1. Qualification Statements: Technician certificate for use of HFC and HCFC refrigerants.

1.4 QUALITY ASSURANCE

A. Regulatory Agency Sustainability Approvals:
   1. Refrigerants:
      a. Underwriters Laboratories / Underwriters Laboratories of Canada:
         1) Comply with requirements of UL 2182.
B. Qualifications. Section 01 4301 applies, but is not limited to the following:
   1. Installer: Refrigerant piping shall be installed by refrigeration contractor licensed by State and by technicians certified in use of HFC and HCFC refrigerants.

PART 2 - PRODUCTS

2.1 COMPONENTS

A. Manufacturers:
   1. Manufacturer Contact List:
      a. Airtec,
      b. Cush-A-Clamp by ZSI Manufacturing,
      c. Elkhart Products Corp,.
      d. Emerson Climate Technologies,
      e. Handy & Harman Products
      f. Harris Products Group,
      g. Henry Valve Co,
      h. Hilti Inc,
      i. Hydra-Zorb Co,
      j. JB Industries,
      k. Mueller Steam Specialty,
      l. Nibco Inc,
      m. Packless Industries, Parker Corp,
      n. Sporlan Valve Co.
      o. Sherwood Valves,.
      p. Thomas & Betts,
      q. Unistrut, Div of Atkore International, Inc.
      r. Universal Metal Hose.
      s. Vibration Mountings & Controls,
      t. Virginia KMP Corp,
B. Materials:
   1. Refrigerant Piping:
      a. Meet requirements of ASTM B280, hard drawn straight lengths. Soft copper tubing not permitted.

b. Do not use pre-charged refrigerant lines.

2. Refrigerant Fittings:
   a. Wrought copper with long radius elbows.
   b. Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
      1) Mueller Streamline.
      2) Nibco Inc.
      3) Elkhart.
3. Suction Line Traps:
   a. Manufactured standard one-piece traps.
   b. Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
      1) Mueller Streamline.
      2) Nibco Inc.
      3) Elkhart.
4. Tee Access:
   a. Brass:
      1) Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
         a) JB Industries: Part #A3 Series with Factory Cap and Valve Core.
5. Connection Material:
   a. Brazing Rods in accordance with ANSI/AWS A5.8M/A5.8:
      1) Copper to Copper Connections:
         a) Classification BCuP-4 Copper Phosphorus (6 percent silver).
         b) Classification BCuP-5 Copper Phosphorus (15 percent silver).
         2) Copper to Brass or Copper to Steel Connections: Classification BAg-5 Silver (45 percent silver).
         3) Do not use rods containing Cadmium.
   b. Flux:
      1) Type Two Acceptable Products:
         a) Stay-Silv White Brazing Flux by Harris Products Group.
         b) High quality silver solder flux by Handy & Harmon.
         c) Equal as approved by Architect before use. See Section 01 6200.
6. Valves:
   a. Expansion Valves:
      1) For pressure type distributors, externally equalized with stainless steel diaphragm, and same refrigerant in thermostatic elements as in system.
      2) Size valves to provide full rated capacity of cooling coil served. Coordinate selection with evaporator coil and condensing unit.
      3) Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
         a) Emerson Climate Technologies.
         b) Henry.
         c) Mueller.
         d) Parker.
         e) Sporlan.
   b. Manual Refrigerant Shut-Off Valves:
      1) Ball valves designed for refrigeration service and full line size.

2) Valve shall have cap seals.
3) Valves with hand wheels are not acceptable.
4) Provide service valve on each liquid and suction line at compressor.
5) If service valves come as integral part of condensing unit, additional service valves shall not be required.
6) Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
   a) Henry.
   b) Mueller.
   c) Sherwood.
   d) Virginia.

7. Filter-Drier:
   a. On lines 3/4 inch (19 mm) outside diameter and larger, filter-drier shall be replaceable core type with Schraeder type valve.
   b. On lines smaller than 3/4 inch (19 mm) outside diameter, filter-drier shall be sealed type with brazed end connections.
   c. Size shall be full line size.
   d. Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
      1) Emerson Climate Technologies.
      2) Mueller.
      3) Parker.
      4) Sporlan.
      5) Virginia.
8. Sight Glass:
   a. Combination moisture and liquid indicator with protection cap.
   b. Sight glass shall be full line size.
   c. Sight glass connections and sight glass body shall be solid copper or brass, no copper-coated steel sight glasses allowed.
   d. Category Four Approved Product. See Section 01 6200 for definitions of Categories:
      1) HMI by Emerson Climate Technologies.
9. Flexible Connectors:
   a. Designed for refrigerant service with bronze seamless corrugated hose and bronze braiding.
   b. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
      1) Vibration Absorber Model VAF by Packless Industries.
      2) Vibration Absorbers by Virginia KMP Corp.
      3) Anaconda 'Vibration Eliminators' by Universal Metal Hose.
      4) Style 'BF' Spring-flex freon connectors by Vibration Mountings.
10. Refrigerant Piping Supports:
   a. Base, Angles, And Uprights: Steel meeting requirements of ASTM A36.
   b. Securing Channels:
      1) At Free-Standing Pipe Support:
         a) Class One Quality Standard: P-1000 channels by Unistrut.
         b) Acceptable Manufacturers: Hilti, Thomas & Betts.
         c) Equal as approved by Architect before installation. See Section 01 6200.
      2) At Wall Support:

a) Class One Quality Standard: P-3300 channels by Unistrut.
b) Acceptable Manufacturers: Hilti, Thomas & Betts.
c) Equal as approved by Architect before installation. See Section 01 6200.

3) At Suspended Support:
a) Class One Quality Standard: P-1001 channels by Unistrut.
b) Acceptable Manufacturers: Hilti, Thomas & Betts.
c) Equal as approved by Architect before installation. See Section 01 6200.

4) Angle Fittings:
a) Class One Quality Standard: P-2626 90 degree angle by Unistrut.
b) Acceptable Manufacturers: Hilti, Thomas & Betts.
c) Equal as approved by Architect before installation. See Section 01 6200.

c. Pipe Clamps:
1) Type Two Acceptable Manufacturers:
a) Hydra-Zorb.
b) ZSI Cush-A-Clamp.
c) Hilti Cush-A-Clamp.
d) Equal as approved by Architect before installation. See Section 01 6200.

d. Protective Cover: 18 ga (1.2 mm) steel, hot-dipped galvanized.

11. Locking Refrigerant Cap:
a. Provide and install on charging valves:
1) Class One Quality Standard: 'No Vent' locking refrigerant cap.
2) Acceptable Manufacturers: Airtec.
3) Equal as approved by Architect before installation. See Section 01 6200.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refrigerant Lines:
1. Install as high in upper mechanical areas as possible. Do not install underground or in tunnels.
2. Slope suction lines down toward compressor one inch/10 feet (25 mm in 3 meters). Locate traps at vertical rises against flow in suction lines.

B. Connections:
1. Refrigeration system connections shall be copper-to-copper, copper-to-brass, or copper-to-steel type properly cleaned and brazed with specified rods. Use flux only where necessary. No soft solder (tin, lead, antimony) connections will be allowed in system.
2. Braze manual refrigerant shut-off valve, sight glass, and flexible connections.
3. Circulate dry nitrogen through tubes being brazed to eliminate formation of copper oxide during brazing operation.

C. Specialties:
1. Install valves and specialties in accessible locations. Install refrigeration distributors and suction outlet at same end of coil.
2. Install thermostatic bulb as close to cooling coil as possible. Do not install on vertical lines.
3. Install equalizing line in straight section of suction line, downstream of and reasonably close to thermostatic bulb. Do not install on vertical lines.
4. Provide flexible connectors in each liquid line and suction line at both condensing unit and evaporator on systems larger than five tons. Anchor pipe near each flexible connector.

D. Refrigerant Supports:
   1. Support Spacing:
      a. Piping 1-1/4 inch (32 mm) And Larger: 8 feet (2.450 m) on center maximum.
      b. Piping 1-1/8 inch (28.5 mm) And Smaller: 6 feet (1.80 m) on center maximum.
      c. Support each elbow.
   2. Isolate pipe from supports and clamps with Hydrozorb or Cush-A-Clamp systems.
   3. Run protective cover continuous from condensing units to risers or penetrations at building wall.

3.2 FIELD QUALITY CONTROL

A. Field Tests:
   1. Make evacuation and leak tests in presence of Architect's Engineer after completing refrigeration piping systems. Positive pressure test will not suffice for procedure outlined below.
      a. Draw vacuum on each entire system with two stage vacuum pump. Draw vacuum to 300 microns using micron vacuum gauge capable of reading from atmosphere to 10 microns. Do not use cooling compressor to evacuate system nor operate it while system is under high vacuum.
      b. Break vacuum with nitrogen and re-establish vacuum test. Vacuum shall hold for 30 minutes at 300 microns without vacuum pump running.
      c. Conduct tests at 70 deg F (21 deg C) ambient temperature minimum.
      d. Do not run systems until above tests have been made and systems started up as specified. Inform Owner's Representative of status of systems at time of final inspection and schedule start-up and testing if prevented by outdoor conditions before this time.
      e. After testing, fully charge system with refrigerant and conduct test with Halide Leak Detector.
      f. Recover all refrigerant in accordance with applicable codes. Do not allow any refrigerant to escape to atmosphere.

B. Non-Conforming Work:
   1. If it is observed that refrigerant lines are being or have been brazed without proper circulation of nitrogen through lines, all refrigerant lines installed up to that point in time shall be removed and replaced at no additional cost to Owner.

END OF SECTION

EXHIBIT "C"

SECTION 23 26 00

CONDENSATE DRAIN PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:

1. Coordinate installation of condensate drain piping with Section 22 0501 as described in Contract Documents.

1.2 REFERENCES

A. Reference Standards:

1. ASTM International:

a. ASTM B88-09, 'Standard Specification for Seamless Copper Water Tube'.

b. ASTM D1785-12, 'Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120'.

PART 2 - PRODUCTS

2.1 SYSTEMS

A. Materials:

1. Condensate Drains:

a. Exterior And Interior Lines: Type M copper meeting requirements of ASTM B88, unless otherwise noted.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Condensate Drains:

1. Support piping and protect from damage.

END OF SECTION

EXHIBIT "C"

SECTION 23 73 12

DX SPLIT SYSTEM HEAT PUMP AIR CONDITIONING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes split-system air-conditioning heat pump units consisting of separate evaporator-fan and compressor-condenser components.

1.3 SUBMITTALS

A. Product Data: Include rated capacities, operating characteristics, and furnished specialties and accessories. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Field quality-control reports.

D. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.

1.4 QUALIY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. ASHRAE Compliance:

1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
2. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 - "Construction and System Start-Up."

C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004.

D. International Building Code and TDI Compliance: Licensed Professional Engineer shall certify that the listed items are designed for and will withstand wind speed for the location of the project, per the relevant edition of International Building Code, ASCE Std 7, Texas Department of Insurance requirements.
1. Equipment curb/attachment for exterior and roof mounted equipment such as RTUs, ACCU, fans.
2. Attachment of equipment to curb/pad.
3. Attachment of curb/pad to building structure.

1.5 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period. Warranty period to commence from the date of equipment start-up.

1. Warranty Period:

a. For Compressor: **Five** year(s) from date of Substantial Completion.
b. For Parts and Labor: **One** year(s) from date of Substantial Completion.

1.7 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: **One** set for each air-handling unit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Trane.
2. Carrier Corporation
3. RUUD OR RHEEM.

EXHIBIT "C"

2.2 INDOOR UNITS 5 TONS OR LESS

A. Evaporator-Fan Components: An assembly including cabinet, filter, chassis, coil, drain pan, fan, and motor in draw-through configuration with direct-expansion heat pump cooling coil, and electric heating coil where noted.

B. Cabinet: Covers and access panels shall be manufactured of double wall composite formed panels. Cabinet walls shall have insulated panels, fabricated to allow removal for access to internal parts and components without requirement of tools. Units shall be designed and equipped for installation indoors.

1. Insulation: Standard insulation or minimum 1/2", whichever is greater.

C. Refrigerant Coil: Aluminum tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.

D. Electric Coil: If scheduled, helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for over-current protection.

E. Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
1. Special Motor Features: Multi-tapped, multi-speed with internal thermal protection and permanent lubrication.
2. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
3. Enclosure Type: ODP, fan cooled.
4. NEMA Premium (TM) efficient motors as defined in NEMA MG 1.
5. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.
6. Disconnect switches by Div. 26.

F. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.

G. Condensate Drain Pans:
1. Fabricated with slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.

1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1-2004.
2) Depth: A minimum of **1 inch** deep.

b. Stainless-steel sheet or non-corrosive plastic, insulated.
c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on one end of pan.

2. Air Filtration Section:

a. General Requirements for Air Filtration Section:

1) Comply with NFPA 90A.
2) Minimum Arrestance: According to ASHRAE 52.1 and MERV according to ASHRAE 52.2.

3) Filter-Holding Frames: Arranged for flat or angular orientation, with access doors on both sides of unit. Filters shall be removable from one side or lifted out from access plenum.

b. Filters:

1) Factory-fabricated, viscous-coated, flat-panel type.
2) Thickness: **2 inches**.
3) Merv according to ASHRAE 52.2: 8.
4) Media: Interlaced glass fibers sprayed with nonflammable adhesive and antimicrobial agent.
5) Frame: Galvanized steel, with metal grid on outlet side, steel rod grid on inlet side, and hinged; with pull and retaining handles.

2.3 OUTDOOR UNITS (5 TONS OR LESS)

A. Air-Cooled, Compressor-Condenser Components:

1. Casing: Corrosion free pre-painted steel cabinet, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

   a. Compressor Type: Scroll, mounted on rubber mounts for vibration isolation.
   b. Single-stage or two-stage (where scheduled) compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
   c. Refrigerant Charge: R-410A.
   d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins or microchannel and liquid subcooler. Comply with ARI 210/240.
   e. Internal excessive current and temperature protection.
3. Fan: Aluminum-propeller type, directly connected to motor.
4. Motor: Permanently lubricated, with integral thermal-overload protection.

2.4 CONTROLS

1. Provide with new programmable thermostat.
2. See controls sequences/specifications.

2.5 ACCESSORIES

A. Other:

1. Direct driven ECM fan motor, and with built in dehumidification sequence option for indoor units.
2. Low Ambient Controller: Cycles condenser fan to permit operation down to 55 deg F with time-delay relay to bypass low-pressure switch.
3. Package with refrigerant circuit suction and discharge gauges, and service valves.
4. Automatic-reset timer to prevent rapid cycling of compressor.
5. Site glass, filter-dryer.
6. High-Pressure Switch: Automatic-reset switch cycles compressor off on high refrigerant pressure.
7. Low-Pressure Switch: Automatic-reset switch cycles compressor off on low refrigerant pressure.
8. Thermostatic expansion valve to match with existing Evaporator Coil, if existing is incompatible.
9. Time-Delay Relay: Continues operation of evaporator fan after compressor shuts off.
10. Evaporator defrost controller.

11. Liquid line solenoid valves, electric unloaders, factory/field installed accumulators to accomplish stages of unloading.
12. See drawing schedules.

B. Unit Casing: Galvanized steel, finished with paint finish with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Mount service valves, fittings, and gage ports on exterior of casing.

1. Condenser coil hail guard to protect coil from physical damage.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.

B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install ground-mounted, compressor-condenser components on 4-inch- thick, reinforced concrete base that is 4 inches larger, on each side, than unit. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.

D. Install and connect refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

E. Provide auxiliary drain pans with float switches to disable fans. Provide drain piping with stop valves from pans to floor drains.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

C. Duct Connections: Duct installation requirements are specified in Division 15 Section "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Division 15 Section "Duct Accessories."

D. Ground equipment according to Division 16 Section "Grounding and Bonding."

E. Electrical Connections: Comply with requirements in Division 16 Sections for power wiring, switches, and motor controls.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove and replace malfunctioning units and retest as specified above.

D. Prepare test and inspection reports.

END OF SECTION

EXHIBIT "C"

SECTION 23 74 10

PACKAGED ROOFTOP DX HEAT PUMP AIR CONDITIONING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Package roof top unit.

B. Heat exchanger.

C. Refrigeration components.

D. Unit operating controls.

E. Roof curb.

F. Electrical power connections.

G. Operation and maintenance service.

1.02 RELATED SECTIONS

A. Section 15170 - Motors.

B. Section 15242 - Vibration Isolation.

C. Section 15290 - Ductwork Insulation.

D. Section 15885 - Air Cleaning.

E. Section 15952 - Controls and Instrumentation.

F. Section 16180 - Equipment Wiring Systems.

1.03 REFERENCES

A. NFPA 90 A & B - Installation of Air Conditioning and Ventilation Systems and Installation of Warm Air Heating and Air Conditioning Systems.

B. ANSI/ASHRAE 15 - Safety Code for Mechanical Refrigeration.

C. AHRI 340/360-2015 - Commercial and Industrial Unitary Air Conditioning Equipment testing and rating standard.

D. ANSI/ASHRAE 37 - Testing Unitary Air Conditioning and Heat Pump Equipment.

E. ANSI/ASHRAE/IESNA 90.1 - Energy Standard for New Buildings Except Low-Rise Residential Buildings.

F. ANSI Z21.47/UL1995 - Unitary Air Conditioning Standard for safety requirements and testing requirements for commercial warm air furnaces.

G. California Energy Commission Administrative Code - Title 20/24 -

H. AHRI 210/240 - 2019 - Unitary Air-Conditioning Equipment and Air- Source Heat Pump Equipment.

I. AHRI 270 - Sound Rating of Outdoor Unitary Equipment.

J. AHRI 370 - Sound Rating of Large Outdoor Refrigerating and Air Conditioning Equipment.

1.04 SUBMITTALS

A. Submit unit performance data including: capacity, nominal and operating performance.

B. Submit Mechanical Specifications for unit and accessories describing construction, components and options.

C. Submit shop drawings indicating overall dimensions as well as installation, operation and services clearances. Indicate lift points and recommendations and center of gravity. Indicate unit shipping, installation and operating weights including dimensions.

D. Submit data on electrical requirements and connection points. Include recommended wire and fuse sizes or MCA, sequence of operation, safety and start-up instructions.

E. Shop drawings submitted for approval shall be accompanied by a copy of the purchase agreement between the Contractor and an authorized service representative of the manufacturer for check, test and start up and first year service.

1.05 DELIVERY, STORAGE and HANDLING

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

B. Protect units from physical damage. Leave factory-shipping covers in place until installation.

1.06 WARRANTY

A. Provide parts warranty (excluding refrigerant) for one year from start-up or 18 months from shipment, whichever occurs first.

B. Provide five-year extended warranty for compressors.

1.07 MAINTENANCE SERVICE

A. All work on units shall be accomplished by OEM factory trained and authorized servicing technicians.

1.08 REGULATORY REQUIREMENTS

A. Unit shall conform to ANSI Z21.47/UL1995 for construction of packaged air conditioner.

1. In the event the unit is not UL approved, the manufacturer must, at his expense, provide for a field inspection by a UL representative to verify conformance to UL standards. If necessary, contractor shall perform modifications to the unit to comply with UL, as directed by the UL representative, at no additional expense to the Owner.

1.09 EXTRA MATERIALS

A. Provide 1 set of filters.

B. Furnish a complete set of fan motor drive belts.

PART 2 PRODUCTS

2.01 SUMMARY

A. The contractor shall furnish and install package rooftop unit(s) as shown and scheduled on the contract documents. The unit(s) shall be installed in accordance with this specification and perform at the specified conditions as scheduled.

B. APPROVED MANUFACTURERS

1. Trane

2. Carrier

3. RUUD OR RHEEM

2.02 GENERAL UNIT DESCRIPTION

A. Unit(s) furnished and installed shall be Heat Pump packaged rooftop (s) as scheduled on contract documents and these specifications. Cooling capacity ratings shall be based on AHRI Standard. Unit(s) shall consist of insulated weather-tight casing with compressor(s), air-cooled condenser coil, condenser fans, evaporator coil, return-air filters, supply motors and unit controls.

B. Unit(s) shall be 100% factory run tested and fully charged with R-410A.

C. Unit(s) shall have labels, decals, and/or tags to aid in the service of the unit and indicate caution areas.

D. Units shall be convertible airflow design as manufactured.

E. Wiring internal to the unit shall be colored and numbered for identification.

2.03 UNIT CASING

A. Cabinet: Galvanized steel with baked enamel finish. Structural members with access doors and removable panels shall be a minimum 22 gauge.

B. Unit's cabinet surface shall be tested 672 hours in salt spray test in compliance with ASTM B117.

C. Cabinet construction shall allow for all service/ maintenance from one side of the unit.

D. Cabinet top cover shall be one piece construction or where seams exits, it shall be double-hemmed and gasket-sealed.

E. Access Panels: Water- and air-tight panels with handles shall provide access to filters, heating section, return air fan section, supply air fan section, evaporator coil section, and unit control section.

F. Unit's base pan shall have a raised 1 1/8 inch high lip around the supply and return openings for water integrity.

G. Provide ½ inch foil faced, fire retardant permanent, odorless glass fiber material. All edges must be captured so that there is no insulation exposed in the air stream.

H. The base pan shall have no penetrations within the perimeter of the curb other that the raised 1 1/8 inch high down flow supply/return openings to provide and added water integrity precaution.

I. Provide openings either on side of unit or through the base for power, control, condensate, and gas connections.

J. The base of the unit shall have 3 sides for forklift provisions. The base of the units shall have rigging/lifting holes for crane maneuvering.

2.04 AIR FILTERS

A. Air Filters: Factory installed filters shall mount integral within the unit and shall be accessible through access panels. Two-inch thick glass fiber disposable media filters shall be provided.

B. Two inch MERV 8 and MERV 13 media filters shall be available option.

2.05 FANS AND MOTORS

A. Provide evaporator fan section with forward curved, double width, double inlet, centrifugal type fan.

B. Provide self-aligning, grease lubricated, ball or sleeve bearings with permanent lubrication fittings.

C. Outdoor and Indoor Fans shall be permanently lubricated and have internal thermal overload protection.

D. Outdoor fans shall be direct drive, statically and dynamically balanced, draw through in the vertical discharge position.

E. Provide shafts constructed of solid hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.

2.6 ELECTRIC HEATING SECTION

F. Provide heavy duty nickel chromium heating elements internally Delta connected for 240V, wye connection for 480V and 600V. Each heater package shall have automatically reset high limit control operating through heating element contactors. Backup protection is also provided via non-resettable single operation limits connected directly to high voltage. All heaters shall be individually fused from the factory, where required, and shall meet all NEC and CEC requirements when properly installed. Power assemblies shall provide single point connection. Electrical heat modules shall be cULus listed.

G. Heater shall be factory installed internal to unit cabinet.

H. Heater shall be UL and CSA listed and approved and provide single point power connection.

2.06 EVAPORATOR COIL & SECTION

A. Evaporator coil shall be constructed of copper tubes, mechanically bonded to aluminum fins.

A. Provide an independent expansion device for each refrigeration circuit. Factory pressure tested at 600 psig and leak tested at 465 psig.

B. Provide a removable, reversible, cleanable double sloped drain pan for base of evaporator coil constructed of PVC.

2.08 CONDENSER SECTION

A. Provide vertical discharge, direct drive fans with aluminum blades. Fans shall be statically balanced. Motors shall be permanently lubricated, with integral thermal overload protection in a weather tight casing.

B. Condenser coil shall be copper tubes mechanically bonded to aluminum fins.

C. Provide tool-less factory installed corrosion resistant louvered hail/vandalism guards to protect condenser coils from hail or physical damage.

2.09 REFRIGERATION SYSTEM

A. All units shall have direct drive hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate.

B. Provide with thermostatic temperature motor winding control for protection against excessive temperatures caused by over/under voltage operation or loss of charge. Also provide high and low pressure switches.

C. Thermal Expansion valves are standard for all models.

D. Units shall have cooling capabilities down to 0 degree F as standard with microprocessor controls (40 degrees F with electromechanical controls. For field-installed low ambient accessory, the manufacturer shall provide a factory-authorized service technician that will assure proper installation and operation.

E. For heat pump units, provide reversing valve, discharge muffler, flow control check valve, and electronic adaptive demand defrost control on all units.

2.10 OUTDOOR AIR SECTION

A. Provide Fault Detection and Diagnostics (FDD) control.

B. Provide economizer with comparative enthalpy control.
C. Provide adjustable minimum position control located in the economizer section of the unit.
D. Provide spring return motor for outside air damper closure during unit shut down or power interruption.
E. Provide Remote Potentiometer for minimum position setting of the economizer

2.11 OPERATING CONTROLS

A. General: Microprocessor controls shall be provided for all 24 volt control functions. The resident control algorithms shall make all heating, cooling and ventilation decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from setpoint and provides better building comfort. A centralized microprocessor shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

B. SZ VAV: Provide all necessary controls to operate a rooftop unit based on maintaining two temperature setpoints: discharge air and zone. During one zone vav cooling, the unit will maintain zone cooling setpoint by modulating the supply fan speed more or less to meet zone load demand; and the unit will maintain discharge temperature to the discharge cooling setpoint by modulating economizer if available and staging dx cooling.

C. Ventilation Override: Provide factory installed, tested and commissioned ventilation override controls. Binary input from independent fire/life safety panel shall cause unit to override standard operation and assume one of two factory preset ventilation sequences: Purge or pressurization.

I. Provide factory-installed indoor evaporator defrost control to prevent compressor slugging by interrupting compressor operation.

2.12 CONTROLS

2. Provide programmable THREMOSTAT.

PART 3 EXECUTION

3.01 EXAMINATION

A. Contractor shall verify that proper power supply is available.

3.02 INSTALLATION

A. Contractor shall install in accordance with manufacturer's instructions.

B. Mount units on factory built roof mounting frame providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

END OF SECTION

EXHIBIT "C"

GENERAL NOTES - MECHANICAL:

(1) THE MECHANICAL CONTRACTOR IS FULLY RESPONSIBLE FOR PERFORMING THE WORK IN FULL COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES UNDER THIS SECTION OF THE CONTRACT. IF THE CONTRACTOR DETERMINES THAT THE CONTRACT DOCUMENTS AND PLANS ARE NOT IN COMPLIANCE WITH THE APPLICABLE LOCAL CODES, HE/SHE SHALL INFORM THE ENGINEER PRIOR TO CONSTRUCTION START FOR DIRECTION. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO MEET APPLICABLE LOCAL CODES, AND RE-WORK SHALL BE AT CONTRACTOR'S EXPENSE.

(2) MOUNT ALL THERMOSTATS (SENSORS) 48" ABOVE THE FINISHED FLOOR LEVEL. THERMOSTATS SHOWN SHALL BE IN CONTROL OF THE ZONE SYSTEM WHICH IS SUPPLYING AIR TO THE AREA WHERE THE THERMOSTAT IS LOCATED. CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL VOLTAGE WIRING AND CONDUIT FOR THERMOSTAT (DDC CONTROL) INSTALLATION.

MECHANICAL SYMBOL LEGEND

Symbol	Description
TAG, NECK SIZE, CPM, QUANTITY	OPPOSED BLADE DAMPER
CONICAL DUCT SPIN-TAP	FLEXIBLE DUCT; ROUND SHEET-METAL DUCT; BALANCING DAMPER
	DETAIL NUMBER; SHEET NUMBER
	PERFORATED INNER METAL LINER, WHERE INDICATED (DOUBLE WALL); HIDDEN DUCT (FOR CLARITY)
	SUPPLY AIR GRILLE
	SUPPLY AIR GRILLE-SLOT DIFFUSER
	RETURN AIR GRILLE ALL RETURN AIR DUCT DROPS TO INCLUDE A MANUAL DAMPER
T S O	THERMOSTAT TEMPERATURE SENSOR TEMPERATURE OVERRIDE SENSOR/SWITCH
FD FSD	FIRE DAMPER FIRE/SMOKE DAMPER
	FLOW DIRECTION
	PIPE DROP
	PIPE RISE
	RETURN AIR DUCT RISE/DROP
	SUPPLY AIR DUCT RISE/DROP
	WALL OR FLOOR SLEEVE
	CHILLED WATER SUPPLY/RETURN PIPING
SQUARE ROUND	SQUARE TO ROUND DUCT TRANSITION

MECHANICAL ABBREVIATIONS

A/C	AIR CONDITIONED	MAX	MAXIMUM
AD	ACCESS DOOR	MBD	MANUAL BALANCING DAMPER
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MS	MOTOR STARTER
BDD	BACK DRAFT DAMPER	NA	NOT APPLICABLE
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
CH	CHILLER	NTS	NOT TO SCALE
CHP	CHILLED WATER PUMP		
CLG	CEILING	OA	OUTSIDE AIR
CWP	CONDENSER WATER PUMP	OAH	OUTSIDE AIR INTAKE HOOD
CO	CLEANOUT	OBD	OPPOSED BLADE DAMPER
CT	COOLING TOWER	OC	ON CENTER
CU	CONDENSING UNIT		
CW	COLD WATER	P	PUMP
CL	CENTER LINE	PBD	PARALLEL BLADE DAMPER
		PP	PRIMARY CHILLED WATER PUMP
DB	DRY BULB	PRESS	PRESSURE
DIA	DIAMETER	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSIG	POUNDS PER SQUARE INCH (GAUGE)
DWG	DRAWING		
DX	DIRECT EXPANSION	R	RETURN (AIR DEVICE)
EAT	ENTERING AIR TEMPERATURE	RA	RETURN AIR
EDH	ELECTRIC DUCT HEATER	RE: 4M7.01	REFER TO DETAIL 4, SHEET M7.01
EF	EXHAUST FAN	RET	RETURN
ELEC	ELECTRICAL	RH	RELATIVE HUMIDITY
ELEV	ELEVATION	RHD	RELIEF HOOD
		RPM	REVOLUTIONS PER MINUTE
F	DEGREES FAHRENHEIT	RTU	ROOF TOP UNIT
FC	FAN COIL		
FD	FIRE DAMPER		
FLEX	FLEXIBLE	S	SUPPLY (AIR DEVICE)
FLG	FLANGE	SA	SUPPLY AIR
FLR	FLOOR	SCH	SCHEDULE
FPM	FEET PER MINUTE	SCHP	SECONDARY CHILLED WATER PUMP
FT	FEET, FOOT	SD	SMOKE DAMPER
FS	FLOW SWITCH	SEC	SECOND
		SF	SUPPLY FAN
GAL	GALLON	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
GALV	GALVANIZED		
GPM	GALLONS PER MINUTE	SP	STATIC PRESSURE
HB	HOSE BIBB	SPEC	SPECIFICATION
HP	HORSEPOWER	SF	SQUARE FOOT
HR	HEAT PUMP (WATER SOURCE)	STD	STANDARD
HR	HOUR	TEMP	TEMPERATURE
HVAC	HEATING/VENTILATING/ AIR CONDITIONING	TSTAT	THERMOSTAT
HWP	HOT WATER PUMP	TYP	TYPICAL
HZ	HERTZ	UF	UNDER FLOOR
		UH	UNIT HEATER
ID	INSIDE DIAMETER	UL	UNDERWRITERS LABORATORIES
IE	INVERT ELEVATION (FLOW LINE)		
IN	INCHES	VEL	VELOCITY
INSUL	INSULATION	VENT	VENTILATE
IN WG	INCHES OF WATER	VF	VENTILATION FAN
KW	KILOWATT(S)	VOL	VOLUME
		VOLT	VOLTAGE
LAT	LEAVING AIR TEMPERATURE	W	WIDE, WIDTH
LB	POUND	W/	WITH
L	LOUVER	WB	WET BULB
		W/O	WITHOUT

TESTING, ADJUSTING & BALANCING

A.	**Air Handlers & Roof Top Units:**	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
B.	**Fan Test:**	
	No work done to existing exhaust fans.	
C.	**Room Grilles, Registers, or Diffusers:**	
	No work done to existing air devices.	

INDEX OF SHEETS

H.V.A.C. SYSTEM SECTION 15500

THE WORK INCLUDES PROVIDING THE HVAC SYSTEMS, INCLUDING DUCTWORK, DIFFUSERS AND GRILLES, INSULATION, CONTROLS, AND ALL OTHER EQUIPMENT NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM. HVAC SYSTEM SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

- HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) UNITS.
- SUPPLY AND RETURN DUCTWORK SYSTEMS WITH GRILLES, DIFFUSERS, FILTERS, AND DAMPERS.
- TEMPERATURE CONTROL SYSTEM INCLUDING LOW VOLTAGE WIRING AND CONDUIT.
- DUCT, PIPING, AND EQUIPMENT INSULATION, WHERE INDICATED HEREIN.
- CONTROLS AND WIRING FOR CONNECTION TO LANDLORD'S FIRE-SMOKE ALARM SYSTEM (WHERE APPLICABLE).

THE CONTRACTOR SHALL COORDINATE ALL NEW DUCTWORK INCLUDING DUCTWORK INSULATION AND REINFORCING WITH EXISTING DUCTWORK AND DUCTWORK ANGLE BRACING SUCH THAT THE NEW DUCTWORK WILL FIT WITHIN THE SPACE LIMITATIONS OF THE PROJECT.

THE DESIGN, SELECTION, SPACING AND APPLICATION OF HORIZONTAL PIPE HANGERS, SUPPORTS, RESTRAINTS, ANCHORS AND GUIDES SHALL BE IN ACCORDANCE WITH THE STANDARD CODE FOR PRESSURE PIPING ANSI B31.1 AND THE LATEST EDITION OF THE MANUFACTURERS' STANDARDIZATION SOCIETY STANDARDS MSS SP-69, "PIPE HANGERS AND SUPPORTS--SELECTION AND APPLICATION".

PROVIDE PIPE COVERING PROTECTION SHIELDS AND SADDLES FOR ALL INSULATED PIPING AT THE LOCATIONS OF ALL SUPPORTS. THE PROTECTION SHIELD LENGTH AND GAUGE THICKNESS FOR USE AT EACH CLEVIS HANGER SHALL BE AS SPECIFIED FOR TYPE 40 PROTECTION SHIELDS IN THE CURRENT EDITION OF MSS SP-69. PROTECTION SHIELDS SHALL BE GALVANIZED AND SHALL BE ARRANGED TO COVER ONE-HALF OF THE CIRCUMFERENCE OF THE INSULATION AND SHALL BE MOUNTED ON THE OUTSIDE OF THE INSULATION WITH INSULATION BLOCKING BETWEEN THE PIPE AND SADDLE TO PREVENT CRUSHING OF THE INSULATION. INSULATION BLOCKING SHALL BE UPJOHN 2 POUND HIGH DENSITY MOLDED URETHANE OR SEGMENTED MACHINERY CORK DIPPED IN HOT ASPHALT VAPOR SEAL OF NOT LESS THAN THE SAME LENGTH AND CIRCUMFERENCE AS THE PIPE PROTECTION SHIELD.

ALL HANGERS, HARDWARE, RODS, CLAMPS, CHANNELS, BASE PLATES, ANGLES, BOLTS, NUTS AND OTHER FACTORY-BUILT OR SHOP FABRICATED PIPE SUPPORT DEVICES SHALL BE GALVANIZED OR CADMIUM PLATED UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL SHOP FABRICATED AND WELDED STEEL SUPPORTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

FIELD VERIFY THE EXACT SIZES AND LOCATIONS OF ALL EXISTING DUCTWORK AND PIPING PRIOR TO DEMOLITION OF ANY EXISTING WORK. THE DEMOLITION WORK SHALL BE COORDINATED WITH THE NEW WORK TO ASSURE PROPER LIMITS OF DEMOLITION.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS, AS REQUIRED. PROVIDE ALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. THE WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE LANDLORD, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

EXTRA STOCK: PROVIDE TWO SETS OF REPLACEMENT FILTERS PER EACH INSTALLED FOR ALL THE ROOFTOP UNITS, AND OTHER EQUIPMENT AND DEVICES, AND PROVIDE AN ITEMIZED LIST OF THE NUMBER, TYPE REQUIRED, AND WHERE USED. OBTAIN RECEIPT FROM OWNER THAT THESE ITEMS HAVE BEEN DELIVERED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.

PROVIDE WHERE APPLICABLE, DUCT MOUNTED SUPPLY AND/OR RETURN AIR PHOTOELECTRIC TYPE UL LISTED SMOKE DETECTORS. DETECTORS SHALL BE LISTED FOR THE AIR VELOCITIES ENCOUNTERED. PROVIDE INTERLOCK WIRING AND RELAYS FOR UNIT SHUT DOWN. ON ACTIVATION OF ANY DETECTOR, ALL HVAC UNIT FANS SHALL STOP.

TEST AND ADJUST EACH PIECE OF EQUIPMENT AND EACH SYSTEM AS REQUIRED TO ASSURE PROPER BALANCE AND OPERATION. TEST AND BALANCE SHALL BE PERFORMED BY AN INDEPENDENT NEBB OR AABC REGISTERED CONTRACTOR. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF ALL CONTROLS, MAINTENANCE OF TEMPERATURE, AND OPERATION. BALANCE MECHANICAL SYSTEM, AND SUBMIT COMPLETED TEST.

EXPOSED ROUND (SPIRAL) DUCT TO BE INTERNALLY LINED. SUPPLY DUCTWORK SHALL BE LINED W/1" INSULATION. RETURN/EXHAUST/VENTILATION DUCT TO BE LINED W/1/2" INSULATION. CONCEALED ROUND DUCT TO BE EXTERNALLY INSULATED. USING R-5 INSULATION MIN FOR CONDITIONED SPACES (WHERE PLENUM RETURN IS USED) OR R-8 INSULATION MIN FOR UNCONDITIONED SPACES.

TRINITY MEP ENGINEERING
Texas Registered Engineering Firm
Wilford L. McGee III
12/22/2021

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WEBB COUNTY MECHANICAL RETROFIT

J.P. PRECINT 2 PLACE 2 / CASA ORTIZ

LAREDO TEXAS

MG01

EXHIBIT "C"

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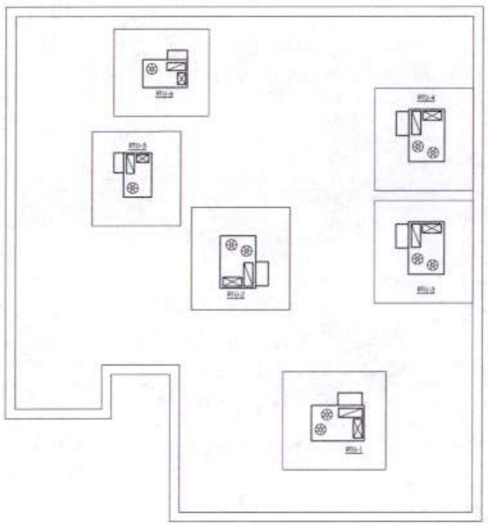


PLAN
NORTH

(A) JP PRECINCT 2, PL.1 & PL.2 DEMOLITION PLAN
SCALE : 1/8" = 1'-0

GENERAL DEMOLITION NOTES

A. REMOVE EXISTING RTUS AND DISCARD. AFTER RTUS HAVE BEEN REMOVED, ROOF CURB OPENINGS SHALL BE COVERED UNTIL NEW UNITS/CURBS ARE INSTALLED.

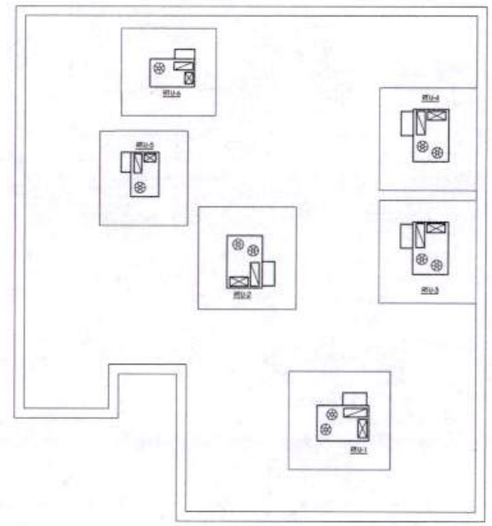
B. REMOVE CONDENSATE LINES AND DISCARD. CONDENSATE HEADERS SHALL STAY IN PLACE.

C. ANY DAMAGES CAUSED TO THE FACILITY DURING THE DEMOLITION OR REINSTALLATION OF THE SCOPE SHALL BE REPLACED AT CONTRACTORS EXPENSE.

D. THE EXTENT OF DEMOLITION WORK IS INDICATED ON THESE DRAWINGS AND BY THE REQUIREMENTS OF THIS SECTION. A VISIT TO THE SITE WILL BE REQUIRED TO PROPERLY BID THE DEMOLITION WORK.

E. PROVIDE ALL DEMOLITION WORK REQUIRED FOR THE REMOVAL AND/OR RELOCATION OF HVAC FIXTURES AND EQUIPMENTS AND ASSOCIATED SERVICES TO PROVIDE A COMPLETE AND OPERABLE SYSTEM UPON COMPLETION OF THE PROJECT.

F. WHERE EXISTING EQUIPMENT IS TO BE RELOCATED, BE CAUTIOUS TO PREVENT DAMAGE DURING THE REMOVAL AND REINSTALLATION. WHERE DAMAGE OCCURS, THE EQUIPMENT SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION AND APPROVAL OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.



PLAN
NORTH

(B) JP PRECINCT 2, PL.1 & PL.2 ROOF MECHANICAL PLAN
SCALE : 1/8" = 1'-0

GENERAL NOTES:

(1) ELECTRICAL DISCONNECTS SHALL BE REMOVED, SALVAGED AND RECONNECTED. REFER TO ELECTRICAL SHEETS FOR FURTHER INFORMATION. ALL MATERIAL AND LABOR REQUIRED FOR REINSTALLATION SHALL BE INCLUDED IN BID. EXISTING DISCONNECTS SHALL BE PROVIDED WITH A TAG IDENTIFYING THE UNIT IT SERVES AS WELL AS THE PANEL/CIRCUIT IT'S BEING FED FROM.

(2) PROVIDE NEW COPPER CONDENSATE LINES AND P-TRAPS FROM UNIT TO EXISTING MAIN CONDENSATE LINE.

(3) NEW EQUIPMENT SHALL BE INTEGRATED TO EXISTING SCHNEIDER HVAC CONTROLS SYSTEM.

(4) CONTRACTOR SHALL PROVIDE ALL DUCTWORK MODIFICATIONS/EXTENSIONS NEEDED FOR EXISTING DUCTWORK TO CONNECT TO NEW ROOF CURBS.

(5) IF NEW EQUIPMENT HAS OUTSIDE AIR INTAKE CLOSER THAN 10 FEET FROM ANY EXISTING SANITARY SEWER VENTS, VENTS SHALL BE REROUTED ABOVE ROOF FURTHER THAN 10 FEET AWAY.

TRINITY
MEP ENGINEERING

12/22/2021

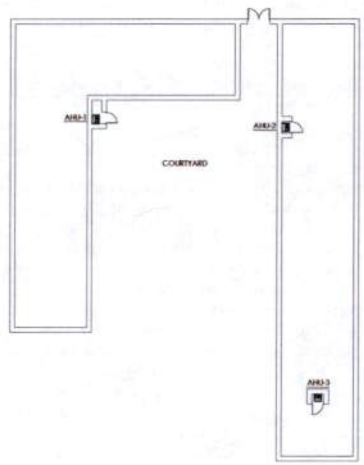
WEBB COUNTY MECHANICAL RETROFIT

J.P. PRECINT 2 PLACE 2 / CASA ORTIZ

LAREDO TEXAS

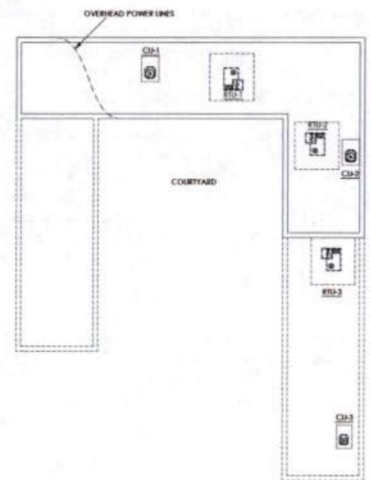
MP01

EXHIBIT "C"



PLAN NORTH

(A) CASA ORTIZ MECHANICAL 1ST FLOOR DEMO PLAN
SCALE : 1/16" = 1'-0



PLAN NORTH

(B) CASA ORTIZ MECHANICAL ROOF DEMO PLAN
SCALE : 1/16" = 1'-0

GENERAL DEMOLITION NOTES

A. REMOVE EXISTING RTUS, AIR HANDLERS AND CONDENSER UNITS AND DISCARD. AFTER RTUS HAVE BEEN REMOVED, DUCT OPENINGS SHALL BE COVERED UNTIL NEW UNITS/CURBS ARE INSTALLED. GAS HEATER FLUE STACKS SHALL BE REMOVED FROM UNIT TO TERMINATION POINT. ALL OPENINGS LEFT AFTER REMOVAL SHALL BE CAPPED.

B. REMOVE CONDENSATE LINES AND DISCARD.

C. ANY DAMAGES CAUSED TO THE FACILITY DURING THE DEMOLITION OR REINSTALLATION OF THE SCOPE SHALL BE REPLACED AT CONTRACTORS EXPENSE.

D. THE EXTENT OF DEMOLITION WORK IS INDICATED ON THESE DRAWINGS AND BY THE REQUIREMENTS OF THIS SECTION. A VISIT TO THE SITE WILL BE REQUIRED TO PROPERLY BID THE DEMOLITION WORK.

E. PROVIDE ALL DEMOLITION WORK REQUIRED FOR THE REMOVAL OF HVAC EQUIPMENT AND ASSOCIATED SERVICES TO PROVIDE A COMPLETE AND OPERABLE SYSTEM UPON COMPLETION OF THE PROJECT.

F. WHERE EXISTING EQUIPMENT IS TO BE RELOCATED, BE CAUTIOUS TO PREVENT DAMAGE DURING THE REMOVAL AND REINSTALLATION. WHERE DAMAGE OCCURS, THE EQUIPMENT SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION AND APPROVAL OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

G. ELECTRICAL DISCONNECTS SHALL BE REMOVED, SALVAGED AND RECONNECTED. ALL MATERIAL AND LABOR REQUIRED FOR REINSTALLATION SHALL BE INCLUDED IN BID. EXISTING DISCONNECTS SHALL BE PROVIDED WITH A TAG IDENTIFYING THE UNIT IT SERVES AS WELL AS THE PANEL/CIRCUIT ITS BEING FED FROM.

TRINITY MEP ENGINEERING

12/22/2021

STATE OF TEXAS — Willford L. McGee III

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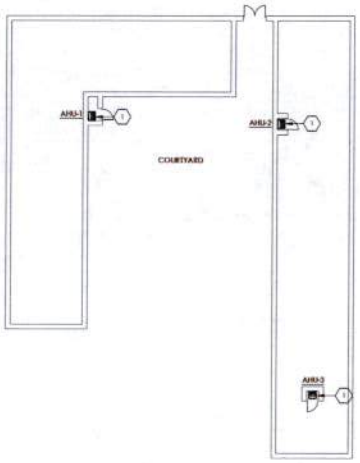
WEBB COUNTY MECHANICAL RETROFIT

LAREDO — J.P. PRECINT 2 PLACE 2 / CASA ORTIZ — TEXAS

MP02

EXHIBIT "C"



PLAN NORTH

A CASA ORTIZ MECHANICAL 1ST FLOOR PLAN
SCALE : 1/16" = 1'-0

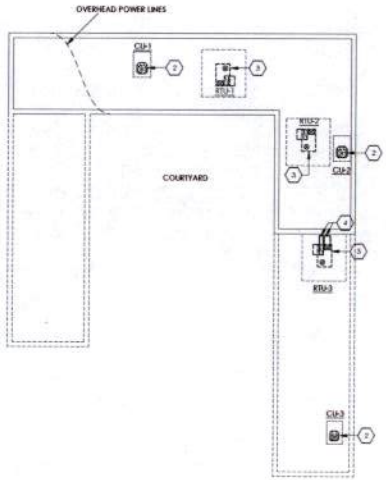
KEYED NOTES: MECHANICAL

1
- MOUNT AIR HANDLING UNIT OVER THE EXISTING DUCTWORK PLENUM. PROVIDE ALL DUCT MODIFICATIONS REQUIRED TO PROPERLY MOUNT/CONNECT UNIT TO EXISTING SUPPLY AND RETURN DUCTWORK.
- PROVIDE NEW CONDENSATE DRAIN LINE AND P-TRAP (PVC MATERIAL) AND CONNECT TO EXISTING DRAIN LINE.
- PROVIDE UNIT WITH NEW 7-DAY PROGRAMMABLE THERMOSTAT AND ALL NEW WIRING.
- EXTEND EXISTING REFRIGERANT LINES TO NEW UNIT AS NEEDED.
- PROVIDE NEW REFRIGERANT LINE INSULATION FOR ENTIRE LENGTH OF EXISTING AND NEW LINES. EXTERIOR INSULATION SHALL BE PROVIDED WITH WHITE UV RESISTANT PAINT. PROVIDE TREATED TIMBER REFRIGERANT LINE SUPPORTS AT EVERY 5 FEET.
- NEW AHU SHALL BE PLACED SUCH THAT ALL UNITS' MAINTENANCE CLEARANCES ARE PROVIDED.
- EXISTING MECHANICAL CLOSET SHALL BE THOROUGHLY CLEANED.
- AIR HANDLING UNIT SHALL BE PROVIDED WITH A PLASTIC TAG.

2
- NEW CONDENSING UNIT SHALL BE RELOCATED AT LEAST 10 FEET AWAY FROM OVERHEAD ELECTRICAL SERVICE. (NOTE APPLICABLE TO CU-1 ONLY).
- PLACE NEW CONDENSING UNIT OVER (2) 4"X4" TREATED TIMBERS. UNIT SHALL BE ANCHORED TO TIMBERS WITH MINIMUM ¼" WOOD SCREWS. TIMBERS SHALL EXTEND 12 INCHES PASSED EACH SIDE OF THE CONDENSER.
- NEW CONDENSING UNIT SHALL BE PLACED SUCH THAT ALL UNITS MAINTENANCE CLEARANCES ARE PROVIDED.
- SOLDERING FOR REFRIGERANT LINES SHALL BE DONE CORRECTLY TO AVOID ANY FOREIGN MATERIAL FROM ENTERING LINES. DRY NITROGEN MUST BE USED WHEN BRAZING REFRIGERANT COPPER LINES. WHEN LINES ARE CUT, THEY SHALL BE SEALED ON BOTH CONDENSER AND AIR HANDLER SIDES.
- ALL EXISTING FILTER DRYERS SHALL BE REMOVED AND PROVIDE WITH NEW ONES.
- CONDENSING UNIT SHALL BE PROVIDED WITH A PLASTIC TAG.

3
- PROVIDE UNIT WITH NEW 7-DAY PROGRAMMABLE THERMOSTAT AND ALL NEW WIRING.
- PLACE PACKAGE UNIT OVER (2) 4"X4" TREATED TIMBERS. UNIT SHALL BE ANCHORED TO TIMBERS WITH MINIMUM ¼" WOOD SCREWS. TIMBERS SHALL EXTEND 12 INCHES PASSED EACH SIDE OF THE UNIT.
- PROVIDE NEW CONDENSATE DRAIN LINE AND P-TRAP (COPPER MATERIAL) AND CONNECT TO EXISTING ROOF DRAIN SYSTEM. CONDENSATE LINE SHALL BE INSULATED AND PAINTED WITH WHITE UV RESISTANT PAINT.
- NEW UNIT SHALL BE PLACED SUCH THAT ALL UNITS MAINTENANCE CLEARANCES ARE PROVIDED. ADDITIONALLY, UNIT SHALL BE AT LEAST 3 FEET AWAY FROM THE EDGE OF ROOF.
- PROVIDE DUCT EXTENSION PIECES TO CONNECT SUPPLY AND RETURN DUCTS TO NEW UNIT. FINAL CONNECTION TO UNIT SHALL HAVE A FLEXIBLE DUCT WITH MATERIAL RATED FOR OUTDOOR USED. NEW DUCT EXTENSION SHALL BE INTERNALLY LINED WITH FIBERGLASS INSULATION.
- EXISTING EXTERIOR DUCTS SHALL BE PROVIDED WITH NEW DUCT MASTIC OVER ALL EXISTING JOINTS.
- UNIT SHALL BE PROVIDED WITH A PLASTIC TAG.

4
- EXISTING DUCTS RUNNING OVER ROOF SHALL BE REPLACED.



PLAN NORTH

B CASA ORTIZ MECHANICAL ROOF PLAN
SCALE : 1/16" = 1'-0

12/22/2021

TRINITY
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WEBB COUNTY MECHANICAL RETROFIT

LAREDO J.P. PRECINT 2 PLACE 2 / CASA ORTIZ TEXAS

MP03

EXHIBIT "C"

AIR HANDLING UNIT SCHEDULE

PROJECT	CASA ORTIZ		
TAG	AHU-1	AHU-2	AHU-3
TYPE	SNGL ZN VAV	SNGL ZN VAV	SNGL ZN VAV
FLOW CONFIGURATION	VERTICAL	VERTICAL	VERTICAL
AREA SERVED			
INDOOR UNIT FAN			
SUPPLY CFM	2000	1200	800
MIN. OUTSIDE AIR (CFM)	300	200	150
EXT. STATIC INCHES WC	0.5	0.5	0.5
MIN FAN POWER	1.0 HP - ECM	1.0 HP - ECM	1.0 HP - ECM
INDOOR UNIT COOLING COIL			
ENTERING AIR DB/WB (°F)	80/67	80/67	80/67
LEAVING AIR DB/WB (°F)	59.5/57.5	57.7/56.9	58/56.8
MIN. TOTAL/SENSIBLE CAPACITY (MBH)	57.9/43.6	36.9/28.4	24.9/18.7
DESIGN RETURN AIR DB/WB (°F)	73/61	73/61	73/61
DESIGN OUTSIDE AIR DB/WB (°F)	108/80	108/80	108/80
INDOOR UNIT HEATING SELECTION			
HEATER TYPE/AMBIENT DESIGN DB (°F)	HEAT PUMP/47	HEAT PUMP/47	HEAT PUMP/47
HEAT INPUT/STAGES	55 MBH/1	32.8 MBH/1	24 MBH/1
ENTERING/LEAVING DB (°F)	65/91	65/91	65/93
AUXILIARY ELECTRIC HEAT	7.2 KW	7.2 KW	3.6
DETAILS AND ACCESSORIES			
VOLTAGE/PHASE	208/3	208/3	208/1
MCA/MOCP	33/35	30/30	25/25
MANUFACTURER	TRANE	TRANE	TRANE
MODEL	TEM6A0C60	TEM6A0C36	TEM6A0B24
NOMINAL UNIT SIZE TONNAGE	5.0 TONS	3.0 TONS	2.0 TONS
MAX WEIGHT (lbs)	175 lbs	175 lbs	175 lbs
NOTES	ALL	ALL	ALL

CONDENSING UNIT SCHEDULE

TAG	CU-1	CU-2	CU-3
OUTDOOR UNIT ELECTRICAL			
VOLTAGE/PHASE	208/3	208/3	208/1
MCA/MOCP	22/35	15/25	15/25
DETAILS AND ACCESSORIES			
MIN COOL/HEAT EFFICIENCY	16.5 SEER/-	17.3 SEER/-	17 SEER/-
COMPRESSOR QTY/STAGE QTY	1/2	1/2	1/2
COOL/HEAT AMBIENT DB (°F)	108/47	108/47	108/47
MANUFACTURER	TRANE	TRANE	TRANE
MODEL	4TWA7060	4TWA7036	4TXR7024
NOMINAL UNIT SIZE TONNAGE	5.0 TONS	3.0 TONS	2.0 TONS
MAX WEIGHT	305 lbs	325 lbs	230 lbs
NOTES	ALL	ALL	ALL

NOTES:

01. MECHANIC ADDITIONAL CONTRACTOR TO PROVIDE ADDITIONAL BELTS & PULLEYS AS NECESSARY SUCH THAT TESTING & BALANCING CAN BE PERFORMED TO THE DESIGN AIR VOLUMES. SPECIFIED IN SCHEDULE ABOVE.
02. PROVIDE W/ SINGLE POINT PWR.
03. ACCEPTABLE MANUFACTURERS TO BE: CARRIER, RUUD, TRANE.
04. PROVIDE W/ SINGLE ZONE VAV CONTROL.
05. PROVIDE CONDENSER W/ FACTORY HAIL GUARDS.
06. PROVIDE WITH NEW THERMOSTATS.

DX PACKAGED UNIT SCHEDULE

PROJECT	JUSTICE OF THE PEACE			CASA ORTIZ	
TAG	RTU-1-4	RTU-5	RTU-6	RTU-1,2	RTU-3
TYPE	SNGL ZN VAV	SNGL ZN VAV	SNGL ZN VAV	SNGL ZN VAV	SNGL ZN VAV
DISCHARGE CONFIGURATION	DOWNFLOW	DOWNFLOW	DOWNFLOW	DOWNFLOW	DOWNFLOW
AREA SERVED					
FAN DATA					
SUPPLY CFM	2000	1600	1600	1200	800
MIN. OUTSIDE AIR (CFM)	300	250	250	200	200
EXT. STATIC INCHES WC	0.5	0.5	0.5	0.5	0.5
MIN FAN POWER	1.0 HP - ECM	0.75 HP - ECM	0.75 HP - ECM	0.75 HP - ECM	1/3 HP - ECM
COOLING COIL					
ENTERING AIR DB/WB (°F)	80/67	80/67	80/67	80/67	80/67
LEAVING AIR DB/WB (°F)	57.94/57.85	57.93/57.85	57.93/57.85	57.23/57.15	58.6/57.5
MIN. TOTAL/SENSIBLE CAPACITY (MBH)	56.43/47.11	44.95/37.36	44.95/37.36	35.53/26.55	23.3/18
DESIGN RETURN AIR DB/WB (°F)	73/61	73/61	73/61	73/61	73/61
DESIGN OUTSIDE AIR DB/WB (°F)	108/80	108/80	108/80	108/80	108/80
HEATING SELECTION					
HEAT TYPE/AMBIENT DB (°F)	HEAT PUMP/47	HEAT PUMP/47	HEAT PUMP/47	HEAT PUMP/47	HEAT PUMP/47
HEAT INPUT/STAGES	55.84 MBH/1	42.77 MBH/1	42.77 MBH/1	31.22 MBH/1	22.5 MBH/1
ENTERING/LEAVING DB (°F)	65/91	65/90	65/90	65/89	65/91
AUXILIARY ELECTRIC HEAT	13.5 KW	9 KW	4.5 KW	4.5 KW	3.76 KW
DETAILS AND ACCESSORIES					
MIN COOL/HEAT EFFICIENCY	16.4 SEER/-	16.5 SEER/-	16.5 SEER/-	16 SEER/-	14 SEER/-
COMPRESSOR QTY/COOL STAGE QTY	1/1	1/1	1/1	1/1	1/1
VOLTAGE/PHASE	208/3	208/3	208/3	208/3	208/1
MCA/MOCP	77/80	40/40	45/50	39/45	25/25
MOUNTING	14" TDI CURB	14" TDI CURB	14" TDI CURB	14" TDI CURB	14" TDI CURB
MANUFACTURER	TRANE	TRANE	TRANE	TRANE	TRANE
MODEL	WHC060	WHC048	WHC048	WHC036	4WCC4024
NOMINAL UNIT SIZE TONNAGE	5.0 Tons	4.0 TONS	4.0 TONS	3.0 TONS	2.0 TONS
MAX WEIGHT	1000 lbs	1000 lbs	1000 lbs	800 lbs	600 lbs
NOTES	1-5	1-5	1-5	1-4,6	1-4,6

NOTES:

01. PROVIDE W/ MOTORIZED OA DAMPER, DIFF ENTH ECON, & BARR RELIEF DAMPER.
02. CARRIER, RUUD, TRANE, APPROVED AS MANUFACTURERS.
03. UNIT TO HAVE SINGLE ZONE VAV CONTROL.
04. MECHANICAL CONTRACTOR TO PROVIDE ADDITIONAL BELTS & PULLEYS AS NECESSARY SUCH THAT TESTING ADJUSTING & BALANCING CAN BE PERFORMED TO THE DESIGN AIR VOLUMES SPECIFIED IN SCHEDULE ABOVE.
05. PROVIDE W/ CURB ADAPTERS.
06. PROVIDE W/ NEW THERMOSTATS.

TRINITY
MEP ENGINEERING
Texas Registered Engineering Firm
Wilford L. McGee III
12/22/2021

PROJECT #: -----
DATE: -------
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WEBB COUNTY MECHANICAL RETROFIT

J.P. PRECINT 2 PLACE 2 / CASA ORTIZ

LAREDO TEXAS

MS01

EXHIBIT "C"

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ELECTRICAL ABBREVIATIONS:

ABBV:	DESCRIPTION	ABBV:	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	MFR.	MANUFACTURER
BFC	BELOW FINISHED CEILING	(S.C.)	SHARE CIRCUIT
C	CONDUIT	QRCPT(S)	QUAD RECEPTACLE(S)
CB	CIRCUIT BREAKER	RCPT(S)	DUPLEX RECEPTACLE(S)
EC	EMPTY CONDUIT	CRCPT(S)	I.G. RECEPTACLE(S)
EX	EXISTING	QCRCPT(S)	QUAD I.G. RECEPTACLE(S)
F	FUSE	PNL	PANEL
G	GROUND (EQUIPMENT)	SO (S.O.)	SPACE ONLY
GFI	GROUND FAULT INTERRUPTER	SP	SPARE
MTD	MOUNT OR MOUNTED	ST (S.T.)	SHUNT TRIP
NF	NONFUSED	SW	SWITCH
NIC	NOT IN CONTRACT	UF	UNDERFLOOR
H.D	HEAVY DUTY	UG	UNDERGROUND
NL	NIGHT LIGHT	UNO(U.N.O.)	UNLESS NOTED OTHERWISE
AC	ABOVE COUNTER	WG	WIRE GUARD
HT.	HEIGHT	WP	WEATHERPROOF
MTD.	MOUNTING	XFMR	TRANSFORMER
FDR.	FEEDER	MB	MAIN BREAKER
CKT.	CIRCUIT	MLO	MAIN LUGS ONLY
LTG.	LIGHTING	RMC	RIGID METAL CONDUIT
LC	LIGHTING CONTACTOR	RNC	RIGID NONMETALLIC CONDUIT
IG	ISOLATED GROUND	EMT	ELECTRICAL METALLIC TUBING CONDUIT
EA.	EACH	S/N	SOLID NEUTRAL
N1	NEMA-1	AC	ABOVE COUNTER
N3R	NEMA-3R	AHJ	AUTHORITY HAVING JURISDICTION
N4X	NEMA-4X		
SS	STAINLESS STEEL		

NOTES:

1.) 48" AFF INDICATES TO TOP OF DEVICE;
15" AFF INDICATES TO BOTTOM OF DEVICE;
ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.
AC INDICATES 6" ABOVE COUNTER TO BOTTOM OF DEVICE.

GENERAL ELECTRICAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
3. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.
4. CONTRACTOR SHALL NOT INSTALL MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY. IF CONTRACTOR IS PLANNING ON GROUPING MULTIPLE CIRCUITS IN A SINGLE RACEWAY, THE CONTRACTOR MUST SUBMIT ALL DERATING CALCULATIONS FOR THE PROPOSED INSTALLATION IN ACCORDANCE WITH NEC ARTICLE 310.15 (B) (2) FOR APPROVAL PRIOR TO INSTALLATION. NON APPROVED INSTALLATIONS WILL BE REMOVED AND REINSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE NEC AT NO ADDITIONAL COST TO THE OWNER.
5. THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF THREE 90° BENDS (270 DEGREES TOTAL) BETWEEN PULL POINTS. WHERE THERE ARE MORE THAN THREE QUARTER BENDS, CONTRACTOR SHALL PROVIDE PULL BOXES AT SPECIFIED AND SIZED IN ACCORDANCE WITH NEC.
6. COMPLY WITH NEC REQUIREMENTS FOR ELECTRICAL INSTALLATIONS. ALL ELECTRICAL EQUIPMENT AND MATERIAL TO BE APPROVED, LISTED, LABELED, IDENTIFIED AND INSTALLED PER RECOGNIZED ELECTRICAL TESTING LABORATORY.
7. ALL RECEPTACLES, SWITCHES AND JUNCTION BOXES SERVED BY EMERGENCY BRANCH CIRCUITS SHALL BE "RED" IN COLOR. COVERPLATES SHALL BE LABELED IN ACCORDANCE WITH SPECIFICATIONS TO INDICATE PANELBOARD AND CIRCUIT NO. (IE: E1"LA-3).

ELECTRICAL LEGEND-GENERAL

—ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	HEAVY DUTY DISCONNECT SWITCH FUSED
	HEAVY DUTY DISCONNECT SWITCH NONFUSED
	SWITCH LEG
	ELECTRICAL CONDUIT
	UNDERGROUND COMMUNICATION CONDUIT
	UNDERGROUND ELECTRICAL CONDUIT
X, X, X	MULTI-POLE DEVICE CIRCUIT NUMBERS
X/X/X	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS
A-1	CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATES OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
A-1	UNDERGROUND CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
J	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED, VERIFY CONDITIONS PRIOR TO ORDERING ANY BOX.

INDEX OF SHEETS

ELECTRICAL SYSTEM GENERAL NOTES

THE ELECTRICAL WORK INCLUDES PROVIDING NEW MATERIALS, FIXTURES, DEVICES AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING ELECTRICAL SYSTEM. THE WORK ALSO INCLUDES FINAL CONNECTIONS TO EQUIPMENT ITEMS PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC, SHOWING THE LOCATION, TYPE DEVICES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. PROVIDE ALL FIXTURES, LAMPS, DEVICES, ACCESSORIES, OFFSETS AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

COORDINATE WITH THE WORK OF OTHER SECTIONS. VERIFY EXISTING SITE CONDITIONS BEFORE BIDDING. MAKE ALL CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS. COMPLY WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

ALL WORK SHALL COMPLY WITH LOCAL LAWS GOVERNING ELECTRICAL INSTALLATIONS, AND THE MOST RECENT EDITION OF THE "NATIONAL ELECTRIC CODE", REFER TO REFERENCE STANDARDS. PROVIDE CODE REQUIRED CLEARANCES AROUND ALL ELECTRICAL EQUIPMENT. OBTAIN ALL PERMITS RELATING TO ELECTRICAL WORK.

1.1 REFERENCE STANDARDS

A. Materials, equipment, devices and workmanship shall comply with applicable local, county, state and national codes, laws and ordinances, utility company regulations and industry standards.

B. In case of differences between building codes, state laws, local ordinances, industry standards, utility company regulations and the Contract Documents, the most stringent shall govern. The Contractor shall promptly notify the Owner's Representative in writing of any such difference. Should the Contractor perform any work that does not comply with local codes, laws and ordinances, industry standards or other governing regulations, the work shall be corrected of noncompliance deficiencies with the Contractor bearing all costs.

C. In addition to the aforementioned ordinances, industry standards published by the following organizations shall apply:

AABM - American Association of Battery Manufactures
ADA - American's with Disabilities Act
AIA - American Institute of Architects
ANSI - American National Standards Institute
ASTM - American Society for Testing and Materials
CBM - Certified Ballast Manufacturers Association
ETL - Electrical Testing Laboratories
FM - Factory Mutual
ICEA - Insulated Cable Engineers Associated
IEEE - Institute of Electrical and Electronic Engineers
IES - Illuminating Engineering Society
IRI - Industrial Risk Insurance
NBS - National Bureau of Standards
NEC - National Electrical Code
NECA - National Electrical Contractors Association
NEMA - National Electrical Manufacturers Association
NESC - National Electrical Safety Code
NETA - National Electrical Testing Association
NFPA - National Fire Protection Association
UL - Underwriters Laboratories
IECC - International Energy Code

VERIFY VOLTAGE DROPS AND A.I.C. RATINGS FOR ALL EQUIPMENT CONNECTED, AND VERIFY SIZE OF ELECTRICAL SYSTEM BREAKERS, CONDUITS, ETC. REFER TO LATEST NEC FOR VOLTAGE DROP REQUIREMENTS.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

TEMPORARY SERVICES: ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/208 VOLT, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

DISCONNECT SWITCHES SHALL BE HEAVY-DUTY, QUICK-MAKE, QUICK-BREAK, TYPE NEMA 1 ENCLOSURE (NEMA 3R FOR OUTDOOR). SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D", SIEMENS (I.T.E., EATON MFR., & GE. PROVIDE ALL FUSES AS MANUFACTURED BY BUSSMAN, GOULD-SHAWMUT, OR LITTLE FUSE. ALL CONDUCTOR TERMINALS TO BE U.L. FOR MINIMUM 75°C. MAIN SWITCH DISCONNECT SHALL BE LABELED "MAIN DISCONNECT".

GROUNDING SYSTEM: PERMANENTLY AND EFFECTIVELY GROUND ALL METALLIC CONDUITS, SUPPORTS, CABINETS, PANELBOARDS AND SYSTEM GROUNDING NEUTRAL. MAINTAIN CONTINUITY OF EQUIPMENT GROUND THROUGHOUT THE SYSTEM BY INSTALLING GROUNDING CONDUCTORS IN ALL FEEDERS AND CIRCUITS. PROVIDE INSULATED GREEN-COLORED GROUND CONDUCTOR. GROUND CLAMPS SHALL BE APPROVED TYPE, SPECIFICALLY DESIGNED FOR GROUNDING. GROUND WIRE SIZED IN ACCORDANCE WITH "NEC" TABLE 250-122. GROUND ROD SHALL BE COPPER-CLAD STEEL, SIZE: 3/4" BY 120" INCHES IN DIAMETER.

CONDUIT SHALL BE SIZED TO COMPLY WITH "NEC" FOR NUMBER AND SIZE OF CONDUCTORS INSTALLED, MINIMUM SIZE OF 1/2" ABOVE GRADE (UNLESS 3/4" IS REQUIRED BY LOCAL JURISDICTION). PROVIDE SCHEDULE 40 PVC PLASTIC OR RIGID STEEL CONDUIT BELOW GRADE, MINIMUM SIZE OF 3/4". MINIMUM 3/4". PROVIDE ELECTRICAL METAL TUBING (EMT) MEETING FS #W-C563, OR FLEXIBLE CONDUIT (IN LENGTHS 6'-0" OR LESS) FOR INTERIOR LOCATIONS. EMT CONNECTORS AND COUPLINGS SHALL BE SET-SCREW TYPE. CLAMP CONDUIT TO BOXES WITH BUSHINGS INSIDE AND LOCKNUT OUTSIDE. TYPE AC & MC ARMORED CABLE AND METAL CLAD CABLE ARE NOT ACCEPTABLE FOR THIS INSTALLATION.

CONDUCTORS SHALL BE INSULATED SOFT ANNEALED 98% PURE COPPER WITH COLOR CODING, B & S GAGE, #10 AND SMALLER TO BE SOLID, #8 AND LARGER TO BE STRANDED, MINIMUM #12 UNLESS OTHERWISE INDICATED. ALUMINUM CONDUCTORS SHALL NOT BE ALLOWED. "THHN" MAY NOT BE USED UNDERGROUND, AT SERVICE ENTRANCE, OUTSIDE, OR IN WET LOCATIONS. ALL INSULATION TO BE RATED AT 75° FOR 600 VOLT AND TYPES AS FOLLOWS:

#10 AND SMALLER: THW, THHN, OR THWN
#8 AND LARGER: THW OR THWN
SERVICE ENTRANCE: USE-RHW

WIRE THROUGH LIGHT FIXTURES OR WITHIN 3" OF HEATING EQUIPMENT TO BE "THHN".

DEVICES SHALL BE MANUFACTURED BY LEVITON OR EQUAL. ALL DEVICES AND COVER PLATES SHALL BE IVORY COLOR. STANDARD DUPLEX RECEPTACLES SHALL BE GROUNDING TYPE, 20 AMP, NEMA 5-20R, BACK AND SIDE WIRED. OTHER DEVICES SHALL BE AS INDICTED ON THE DRAWINGS OR AS REQUIRED BY THE EQUIPMENT ITEM INTENDED TO BE SERVED. WHERE SWITCHES ARE GROUPED, PROVIDE GANG-PLATES.

LIGHT SWITCHES SHALL BE DECORA TYPE, GROUNDING TYPE, 20AMP. COORDINATE FINISH WITH OWNER PRIOR TO BID DATE.

WALL PLATES: PROVIDE STAINLESS STEEL PLATES AT ALL WIRING DEVICE LOCATIONS.

LAYOUT BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS FOR MAXIMUM ECONOMY AND EFFICIENCY. INCREASE WIRE SIZE IF VOLTAGE DROP EXCEEDS 3% OR CONDUCTOR LENGTH EXCEEDS 100 FEET.

CONCEAL WIRING SYSTEM ABOVE SUSPENDED CEILINGS OR IN WALL OR FLOOR CONSTRUCTION WHERE POSSIBLE. INSTALL CONDUIT PARALLEL TO BUILDING LINES AND TO CLEAR ALL OPENINGS, DEPRESSIONS, PIPES, DUCTS, STRUCTURE, ETC.

INSTALL CONDUIT CONTINUOUS BETWEEN BOXES AND CABINETS WITH NO MORE THAN FOUR (4) 90° BENDS. SECURELY FASTEN IN PLACE WITH STRAPS, HANGERS AND STEEL SUPPORTS AS REQUIRED. DO NOT SUPPORT CONDUIT FROM SUSPENDED CEILING GRID OR SUSPENSION WIRES. REAM CONDUIT ENDS BEFORE INSTALLATION AND THOROUGHLY CLEAN BEFORE INSTALLATION. OPENINGS SHALL BE PLUGGED OR COVERED TO KEEP CONDUIT CLEAN. TERMINALS ON SWITCHES AND RECEPTACLES SHALL NOT BE USED TO "FEED-THRU" TO THE NEXT SWITCH OR RECEPTACLE. THE DISCONNECTING OR REMOVAL OF A DEVICE FROM A BOX SHALL NOT INTERFERE WITH OR INTERRUPT THE CONDUCTOR CONTINUITY.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EQUIPMENT AND SYSTEMS AGAINST HARMFUL EXPOSURE, OR ACCUMULATION OF DUST OR MOISTURE, FLOODING, CORROSION, AND ALL OTHER FORMS OF DAMAGE. CLEAN AND RESTORE DAMAGED FINISHES AND EQUIPMENT TO "LIKE-NEW" CONDITION.

ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED AND TESTED FOR PROPER OPERATION. AFTER WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUNDS. ALL HOT AND NEUTRAL CONDUCTORS, IF SHORTED OR GROUNDED, SHALL BE REMOVED AND REPLACED. ALL METERS, INSTRUMENTS, CABLE CONNECTIONS, EQUIPMENT, OR APPARATUS NECESSARY FOR MAKING ALL TESTS SHALL BE FURNISHED BY THIS CONTRACTOR.

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Texas Registered Engineering Firm - F10362

12/22/2021

STATE OF TEXAS

WEBB COUNTY MECHANICAL RETROFIT

LAREDO — J.P. PRECINT 2 PLACE 2 / CASA ORTIZ — TEXAS

EG01

EXHIBIT "C"

GENERAL DEMOLITION NOTES (TO ALL SHEETS)

A. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. THE CONTRACTOR IS RESPONSIBLE TO REFER TO OTHER DOCUMENTS SUBMITTED BY THE OWNER TO REFERENCE SCALE MEASUREMENTS AND COMPARE TO THE ELECTRICAL DOCUMENTS. ANY DISCREPANCIES SHALL BE BROUGHT UP THE ENGINEER ATTENTION PRIOR TO BID DATE. FAILURE TO DO THIS THE CONTRACTOR IS RESPONSIBLE TO MAKE THE NECESSARY ADJUSTMENTS FOR THIS BID.

B. ALL WIRING SHALL BE COPPER.

C. ALL SLEEVES, PENETRATIONS, ETC. SHALL BE SEALED SOLID NON-SHRINKING MATERIAL IMMEDIATELY UPON FILLING OF THE OPENING WITH PIPE OR CONDUIT.

D. ALL ELECTRICAL EQUIPMENT OUTDOORS SHALL BE RATED TYPE NEMA 3R UNLESS OTHERWISE NOTED.

E. CONTRACTOR SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODES AND ALL OTHER AHJ'S. OBTAIN PERMITS AND PAY ALL FEES. PERFORM MODIFICATIONS TO MEET CODE AND ORDINANCE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER OR ENGINEER. VERIFY PRIOR TO BID DATE.

F. VERIFY AT JOB SITE THE EXACT LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS, COLUMNS, ETC. TO LOCATE EQUIPMENT CONDUIT, PANELS AND DEVICES. IF DEVIATIONS FROM THE DRAWING ARE NECESSARY TO MEET STRUCTURAL CONDITIONS MAKE DEVIATIONS WITHOUT ADDITIONAL COST TO OWNER OR ENGINEER.

G. IN COOPERATION WITH OTHER CONTRACTORS, DETERMINE THE EXACT LOCATION OF EQUIPMENT AND DEVICES AND CONNECTIONS THERETO BY REFERENCE TO THE SUBMITTALS, AND THROUGH DRAWINGS, AND BY MEASUREMENTS AT THE SITE. REFER TO ALL OTHER TRADES SUBMITTAL FOR ELECTRICAL INFORMATION.

H. GROUND ENTIRE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

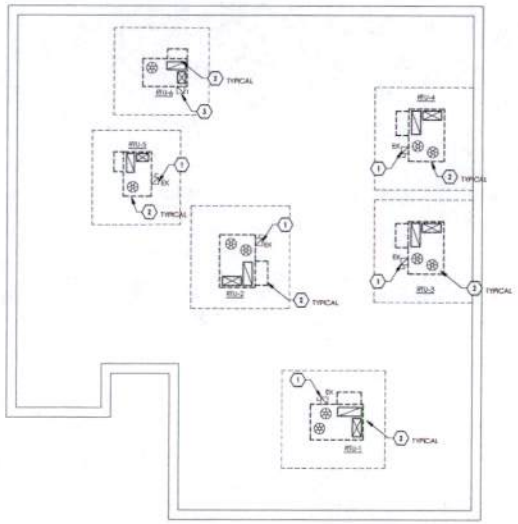
I. VERIFY AT JOB SITE GENERAL WORK TO BE DONE AS SPECIFIED, AS NOTED, OR AS REQUIRED FOR INSTALLATION ELECTRICAL SYSTEMS PRIOR TO SUBMISSION OF BIDS.

J. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND EQUIPMENT TO BE REMOVED AND REPLACED BEFORE SUBMITTING HIS BID.

K. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SHALL SCALE ONLY. THEY CONVEY THE INTENT OF THE WORK BUT DO NOT SHOW DETAIL SUCH AS JUNCTION AND PULL BOXES REQUIRED BY THE SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE(NEC). PROVIDE ALL MATERIALS AND METHODS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED IN THE NEC TO PROVIDE A COMPLETE INSTALLATION OF ALL WORK.

KEYED NOTES: DEMOLITION

1. EXISTING ELECTRICAL DISCONNECTS SHALL BE REMOVED TEMPORARY AND REINSTALL ONCE THE NEW HVAC UNIT IS IN PLACE. FIELD VERIFY EXISTING CONDITIONS AND REFER TO MECHANICAL DOCUMENTS.
2. EXISTING WHIP TO BE REMOVED AND DISCARDED. REFER TO MECHANICAL DOCUMENTS.
3. REPLACE EXISTING DISCONNECTS WITH NEW, REFER TO DETAILS IN THIS SHEET.



PLAN NORTH

A JP PRECINCT 2, PL.2 ROOF ELECTRICAL DEMOLITION PLAN
SCALE : 1/8" = 1'-0

GENERAL NOTES: POWER

A. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTION TO H.V.A.C EQUIPMENT, PLUMBING EQUIPMENT, REFER TO PANEL SCHEDULE FOR WIRE SIZE.

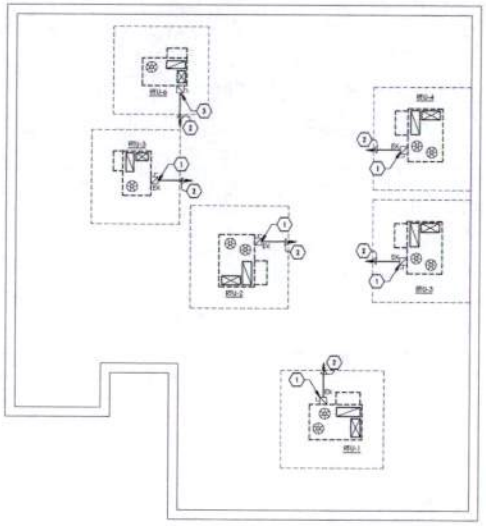
B. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT IN ACCORDANCE W/MECHANICAL DRAWINGS TO MEET ELECTRICAL AND MECHANICAL REQUIRED CLEARANCE BY THE LATEST CODE.

C. CONTRACTOR SHALL REFER TO EQUIPMENT SUBMITTAL FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO COMMENCING ANY WORK.

F. ELECTRICAL CONTRACTOR SHALL PROVIDE J-BOX AND CONDUIT FOR H.V.A.C. CONTROLS AND THERMOSTATS. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.

KEYED NOTES: POWER

1. EXISTING ELECTRICAL DISCONNECT SHALL BE REUSE FOR RECONNECTION. FIELD VERIFY EXISTING CONDITIONS.
2. CONNECT TO EXISTING ELECTRICAL CIRCUIT SERVING HVAC UNIT. FIELD VERIFY EXISTING CONDITIONS. PROVIDE NEW WIRE(#3 AWG, 1.5"C) TO MATCH EXISTING WIRE SIZE TO CONNECT TO NEW UNIT.
3. CONTRACTOR SHALL REPLACE EXISTING DISCONNECT WITH NEW 60AMP, 208V, 3PHASE, 4WIRE, NEMA-3R, HEAVY DUTY, FUSED DISCONNECT, FUSED AT 60AMPS.



PLAN NORTH

B JP PRECINCT 2, PL.2 ROOF ELECTRICAL EQUIPMENT PLAN
SCALE : 1/8" = 1'-0

PROJECT # : ------
DATE: -------
CHECKED BY: LM

REVISION:

WEBB COUNTY MECHANICAL RETROFIT

J.P. PRECINT 2 PLACE 2 / CASA ORTIZ

LAREDO TEXAS

EP01

12/22/2021

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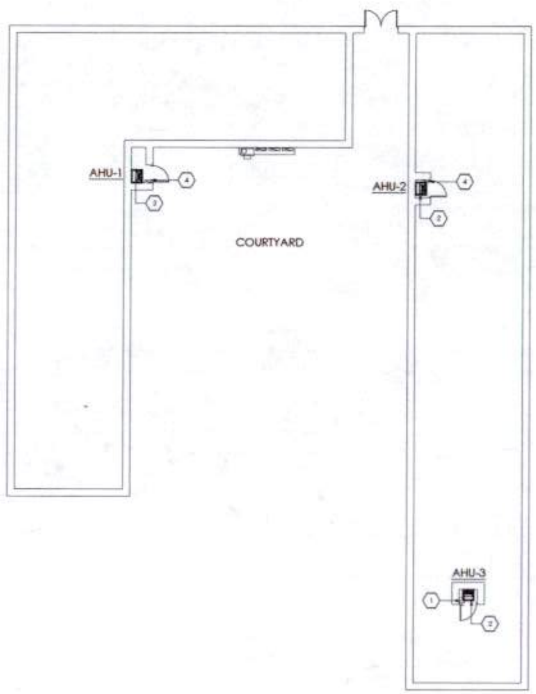
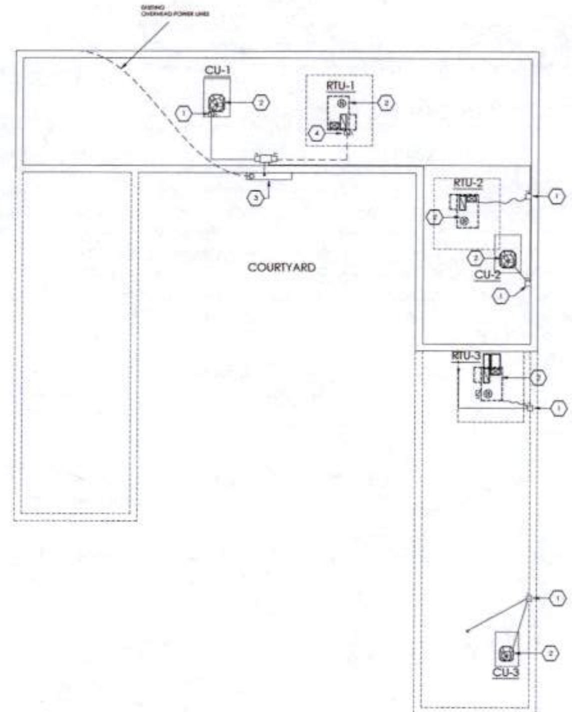


A CASA ORTIZ 1ST FLOOR ELECTRICAL DEMOLITION PLAN
SCALE : 3/32" = 1'-0



B CASA ORTIZ ROOF ELECTRICAL DEMOLITION PLAN
SCALE : 3/32" = 1'-0

GENERAL DEMOLITION NOTES (TO ALL SHEETS)

A. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. THE CONTRACTOR IS RESPONSIBLE TO REFER TO OTHER DOCUMENTS SUBMITTED BY THE OWNER TO REFERENCE SCALE MEASUREMENTS AND COMPARE TO THE ELECTRICAL DOCUMENTS. ANY DISCREPANCIES SHALL BE BROUGHT UP THE ENGINEER ATTENTION PRIOR TO BID DATE. FAILURE TO DO THIS THE CONTRACTOR IS RESPONSIBLE TO MAKE THE NECESSARY ADJUSTMENTS FOR THIS BID.

B. ALL WIRING SHALL BE COPPER.

C. ALL SLEEVES, PENETRATIONS, ETC. SHALL BE SEALED SOLID NON-SHRINKING MATERIAL IMMEDIATELY UPON FILLING OF THE OPENING WITH PIPE OR CONDUIT.

D. ALL ELECTRICAL EQUIPMENT OUTDOORS SHALL BE RATED TYPE NEMA 3R UNLESS OTHERWISE NOTED.

E. CONTRACTOR SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODES AND ALL OTHER AUTHORITY HAVING JURISDICTION. OBTAIN PERMITS AND PAY ALL FEES. PERFORM MODIFICATIONS TO MEET CODE AND ORDINANCE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER OR ENGINEER. VERIFY PRIOR TO BID DATE.

F. VERIFY AT JOB SITE THE EXACT LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS, COLUMNS, ETC. TO LOCATE EQUIPMENT CONDUIT, PANELS AND DEVICES. IF DEVIATIONS FROM THE DRAWING ARE NECESSARY TO MEET STRUCTURAL CONDITIONS MAKE DEVIATIONS WITHOUT ADDITIONAL COST, TO OWNER OR ENGINEER.

G. IN COOPERATION WITH OTHER CONTRACTORS, DETERMINE THE EXACT LOCATION OF EQUIPMENT AND DEVICES AND CONNECTIONS THERETO BY REFERENCE TO THE SUBMITTALS AND ROUGH-IN DRAWINGS, AND BY MEASUREMENTS AT THE SITE. REFER TO ALL OTHER TRADES SUBMITTAL FOR ELECTRICAL INFORMATION.

H. GROUND ENTIRE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

I. VERIFY AT JOB SITE GENERAL WORK TO BE DONE AS SPECIFIED, AS NOTED, OR AS REQUIRED FOR INSTALLATION ELECTRICAL SYSTEMS PRIOR TO SUBMISSION OF BIDS.

J. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND EQUIPMENT TO BE REMOVED AND REPLACED BEFORE SUBMITTING HIS BID.

K. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SMALL SCALE ONLY. THEY CONVEY THE INTENT OF THE WORK BUT DO NOT SHOW DETAIL SUCH AS JUNCTION AND PULL BOXES REQUIRED BY THE SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE(NEC). PROVIDE ALL MATERIALS AND METHODS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED IN THE NEC TO PROVIDE A COMPLETE INSTALLATION OF ALL WORK.

KEYED NOTES: DEMOLITION

(1) EXISTING ELECTRICAL DISCONNECTS SHALL BE REMOVED TEMPORARY AND REINSTALL ONCE THE NEW HVAC UNIT IS IN PLACE. FIELD VERIFY EXISTING CONDITIONS AND REFER TO MECHANICAL DOCUMENTS.

(2) EXISTING HVAC UNIT TO BE REMOVED AND DISCARDED. REFER TO MECHANICAL DOCUMENTS.

(3) EXISTING ELECTRICAL SERVICE EQUIPMENT, EXISTING A/C PANEL AND 2 OTHER PANEL LOCATIONS. FIELD VERIFY EXISTING CONDITIONS.

(4) EXISTING HVAC UNIT DISCONNECT OR BREAKER AND RELATED CONDUIT TO BE REMOVED.

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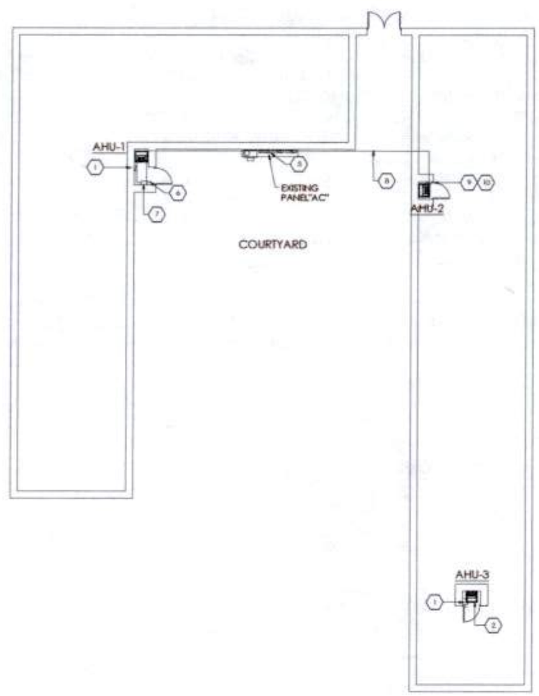
WEBB COUNTY MECHANICAL RETROFIT

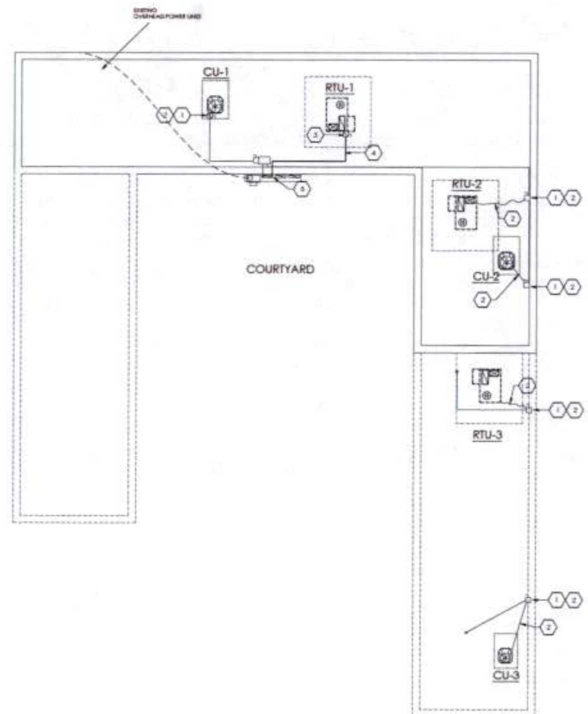
LAREDO — J.P. PRECINT 2 PLACE 2 / CASA ORTIZ — TEXAS

EP02

EXHIBIT "C"



A CASA ORTIZ 1ST FLOOR ELECTRICAL EQUIPMENT PLAN
SCALE : 3/32" = 1'-0



B CASA ORTIZ ROOF ELECTRICAL EQUIPMENT PLAN
SCALE : 3/32" = 1'-0

GENERAL NOTES: POWER

A. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTION TO H.V.A.C EQUIPMENT, PLUMBING EQUIPMENT, REFER TO PANEL SCHEDULE FOR WIRE SIZE.

B. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT IN ACCORDANCE W/MECHANICAL DRAWINGS TO MEET ELECTRICAL AND MECHANICAL REQUIRED CLEARANCE BY THE LATEST CODE.

C. CONTRACTOR SHALL REFER TO EQUIPMENT SUBMITTAL FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO COMMENCING ANY WORK.

F. ELECTRICAL CONTRACTOR SHALL PROVIDE J-BOX AND CONDUIT FOR H.V.A.C. CONTROLS AND THERMOSTATS. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.

G. ALL NEW CONDUIT ELECTRICAL CONDUIT SHALL BE CONCEALED AS MUCH AS POSSIBLE.

KEYED NOTES: POWER

1. EXISTING ELECTRICAL DISCONNECT SHALL BE REUSE FOR RECONNECTION. FIELD VERIFY EXISTING CONDITIONS.
2. CONNECT TO EXISTING ELECTRICAL CIRCUIT SERVING HVAC UNIT. FIELD VERIFY EXISTING CONDITIONS. PROVIDE NEW WIRE TO MATCH EXISTING WIRE SIZE TO CONNECT TO NEW UNIT. FIELD VERIFY EXISTING WIRING PRIOR TO BID.
3. CONTRACTOR SHALL PROVIDE NEW CIRCUIT IN EXISTING PANCEL-AC. PROVIDE NEW 1-45AMP 3-POLE BREAKER IN SPACE AVAILABLE. CIRCUIT WIRING SHALL BE 3#4, 1#8G, 1.25"C.
4. CONTRACTOR SHALL PROVIDE NEW CONDUIT ROOF SUPPORTS AT EVERY 10'MIN. ROOF SUPPORTS SHALL BE EQUAL TO MFR. MIRO INDUSTRIES 8-BASE STRUT-3 SERIES. PROVIDE TO MATCH CONDUIT SIZE.
5. PROVIDE NEW CONDUIT DOWN TO EXISTING PANEL "AC" LOCATION. SEAL AROUND CONDUIT OPENING WITH WEATHER PROOF SEALANT.
6. CONTRACTOR SHALL PROVIDE NEW CIRCUIT IN EXISTING PANCEL-AC. PROVIDE NEW 1-35AMP 2-POLE BREAKER IN SPACE AVAILABLE. CIRCUIT WIRING SHALL BE 2#8, 1#10G, 1"C.
7. PROVIDE NEW DISCONNECT, 60AMP, 240V, SINGLE PHASE, 3WIRE, NEMA-3R, HEAVY DUTY, FUSED DISCONNECT, FUSED AT 35AMPS.
8. SUPPORT CONDUIT TO SURFACE, FIELD VERIFY EXISTING CONDITIONS.
9. CONTRACTOR SHALL PROVIDE NEW CIRCUIT IN EXISTING PANCEL-AC. PROVIDE NEW 1-30AMP 2-POLE BREAKER IN SPACE AVAILABLE. CIRCUIT WIRING SHALL BE 2#10, 1#10G, 3/4"C.
10. PROVIDE NEW DISCONNECT, 30AMP, 240V, SINGLE PHASE, 3WIRE, NEMA-3R, HEAVY DUTY, FUSED DISCONNECT, FUSED AT 30AMPS.

PROJECT # : -----
DATE: -------
CHECKED BY: LM

REVISION:

WEBB COUNTY MECHANICAL RETROFIT

J.P. PRECINT 2 PLACE 2 / CASA ORTIZ

LAREDO TEXAS

12/22/2021

TRINITY
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EP03

GENERAL CONDITIONS FOR WEBB COUNTY CONSTRUCTION CONTRACTS

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GENERAL CONDITIONS
FOR WEBB COUNTY CONSTRUCTION CONTRACTS

ARTICLE I. GENERAL PROVISIONS

1.1 CONTRACT DEFINITIONS

Wherever used in the Contract Documents and printed with initial capital letters, the terms listed below shall have the meanings indicated, which are applicable to both the singular and plural thereof.

1.1.1. "ALTERNATE" means a variation in the Work in which WEBB COUNTY requires a price separate from the Base Bid. If an Alternate is accepted by WEBB COUNTY, the variation shall become a part of the Contract through award of the Contract and the Base Bid shall be adjusted to include the amount quoted as stated in the Notice of Award to Contractor. If an Alternate is accepted by WEBB COUNTY, and later deleted, WEBB COUNTY shall be entitled to a credit in the full value of the Alternate as priced in Contractor's Bid Proposal.

1.1.2. "AMENDMENT" is a written modification of the Contract prepared by WEBB COUNTY or Design Consultant and signed by WEBB COUNTY and Contractor, (and approved by the WEBB COUNTY COMMISSIONERS COURT, if required) which authorizes an addition, deletion or revision in the Work (specifically the services) or an adjustment in the Contract Sum or the Contract Times and is issued on or after the Effective Date of the Contract.

1.1.3. "BASE BID" is the price quoted for the Work before Alternates are considered.

1.1.4. "CHANGE ORDER" refer to Article VII herein for definition.

1.1.5. "WEBB COUNTY" is defined in Article II herein.

1.1.6. "WEBB COUNTY COMMISSIONERS COURT" means the duly elected members of the WEBB COUNTY COMMISSIONERS COURT of WEBB COUNTY, Texas.

1.1.7. "CONSTRUCTION OBSERVER/INSPECTOR (hereafter referred to as "COI") is the authorized representative of WEBB COUNTY to observe and inspect any or all parts of the Project and the materials to be used therein. Also referred to herein as Resident Inspector.

1.1.8. "CONTRACT" means the Contract Documents which represent the entire and integrated agreement between WEBB COUNTY and Contractor and supersede all prior negotiations, representations or agreements, either written or oral. The

terms and conditions of the Contract Documents may be changed only in writing by a Field Work Directive, Change Order or Amendment. The Contract Documents shall not be construed to create a contractual relationship of any kind between:

1.1.8.1. Design Consultant and Contractor;

1.1.8.2. WEBB COUNTY and a Subcontractor or Sub-Subcontractor; or

1.1.8.3. any persons or entities other than WEBB COUNTY and Contractor.

1.1.9. "CONTRACT DOCUMENTS" means the Construction Contract between WEBB COUNTY and Contractor, which consists of, but is not limited to, the following: the solicitation documents, the Notice of Award, an enabling WEBB COUNTY Ordinance and all other contract-related documents, which include:

1.1.9.1. General Conditions;

1.1.9.2. Vertical and/or Horizontal specific General Conditions and Special Conditions included by Special Provisions or addenda;

1.1.9.3. Drawings;

1.1.9.4. Specifications;

1.1.9.5. addenda issued prior to the close of the solicitation period;

1.1.9.6. other documents listed in the Contract, including Field Work Directives, Change Orders and/or Amendments; and

1.1.9.7. a written order for a minor change in the Work issued by Design Consultant and/or WEBB COUNTY, as described in Article VII herein.

The geotechnical and subsurface reports, which WEBB COUNTY may have provided to Contractor, specifically are excluded from the Contract Documents.

1.1.10. "CONTRACT TIME" means, unless otherwise provided, the period of time, including any authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. When the plural ("Contract Times") is used, it refers to milestones designated in the Work Progress Schedule.

1.1.11. "CONTRACTOR" means the entity entering into a Contract with WEBB COUNTY to complete the Work. Contractor, as used herein, includes

Construction Manager at Risk or other applicable entities performing work under a Contract with WEBB COUNTY.

1.1.12. "DAY" as used in the Contract Documents shall mean Calendar Day, unless otherwise specifically defined. A Calendar Day is a day of 24 hours, measured from midnight to the next midnight, unless otherwise specifically stipulated. For Projects not affecting WEBB COUNTY traffic, a determination made solely by WEBB COUNTY on a project-by-project basis, a Working Day is measured from sunrise to sundown Monday through Friday, except legal holidays, or the hours during which Contractor has been authorized and/or directed to work by WEBB COUNTY. For Projects affecting WEBB COUNTY traffic, a determination made solely by WEBB COUNTY on a project-by-project basis, a working day shall mean sunrise to sundown Monday through Saturday, except legal holidays, or hours during which Contractor has been authorized and/or directed to work by WEBB COUNTY.

1.1.13. "DEPARTMENT" means the Webb County Engineering Department

1.1.14. "DESIGN CONSULTANT" means, unless the context clearly indicates otherwise, an Engineer, Architect or other Design Consultant in private practice, licensed to do work in Texas and retained for a specific project under a contractual agreement with WEBB COUNTY. In the event there is no private Engineer, Architect or other Design Consultant then the DEPARTMENT ENGINEER is the DESIGN CONSULTANT.

1.1.15. "DRAWINGS" (also referred to herein as "Plans") are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of Work, generally including elevations, sections, details, schedules and diagrams.

1.1.16. "FIELD WORK DIRECTIVES" OR "FORCE ACCOUNT" is a written order signed by WEBB COUNTY directing a change in the Work prior to agreement and adjustment, if any, in the Contract Sum and/or Contract, as further defined in Section 7.3 herein.

1.1.17. "HAZARDOUS SUBSTANCE" is defined to include the following:

1.1.17.1. any asbestos or any material which contains any hydrated mineral silicate, including chrysolite, amosite, crocidolite, tremolite, anthophylite or actinolite, whether friable or non-friable;

1.1.17.2. any polychlorinated biphenyls ("PCBs"), or PCB-containing materials, or fluids;

1.1.17.3. radon;

1.1.17.4. any other hazardous, radioactive, toxic or noxious substance, material, pollutant, or solid, liquid or gaseous waste; any pollutant or contaminant (including but not limited to petroleum, petroleum hydrocarbons, petroleum products, crude oil or any fractions thereof, any oil or gas exploration or production waste, any natural gas, synthetic gas or any mixture thereof, lead, or other toxic metals) which in its condition, concentration or area of release could have a significant effect on human health, the environment, or natural resources;

1.1.17.5. any substance, whether by its nature or its use, is subject to regulation or requires environmental investigation, monitoring, or remediation under any federal, state, or local environmental laws, rules, or regulations;

1.1.17.6. any underground storage tanks, as defined in 42 U.S.C. Section 6991(1)(A)(I) (including those defined by Section 9001(1) of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq.;

1.1.17.7. the Texas Water Code Annotated Section 26.344; and Title 30 of the Texas Administrative Code Sections 334.3 and 334.4), whether empty, filled or partially filled with any substance; and

1.1.17.8. any other hazardous material, hazardous waste, hazardous substance, solid waste, and toxic substance as those or similar terms are defined under any federal, state, or local environmental laws, rules, or regulations.

1.1.18. "Liquidated Damages" reflect the daily monetary compensation, as designated in the Project's solicitation and contract documents, to be paid to WEBB COUNTY by Contractor for losses/damages incurred by WEBB COUNTY as a result of Contractor's failure to achieve the contractual dates for Substantial Completion and/or Final Completion of the Project.

1.1.19. "NOTICE TO PROCEED (HEREIN ALSO REFERRED TO AS "WORK PROJECT AUTHORIZATION" OR "NTP")" is a written notice given by WEBB COUNTY to Contractor establishing the date on which the Contract Time shall commence to run and the date on which Contractor may begin performance of its contractual obligations.

1.1.20. "OWNER" is defined in Article II herein.

1.1.21. "OWNER'S DESIGNATED REPRESENTATIVE (ODR)" means the person(s) designated by WEBB COUNTY to act for WEBB COUNTY.

1.1.22. "Party" shall refer to WEBB COUNTY or Contractor individually herein.

1.1.23. "Parties" shall refer to WEBB COUNTY and Contractor collectively herein.

1.1.24. "PROJECT" means the total design and construction of Work performed under the Contract Documents and may be the whole or a part of the Project and which may include construction by WEBB COUNTY or by separate contractors. All references in these General Conditions to or concerning the Work or the Site of the Work shall use the term "Project," notwithstanding the Work referenced only may be a part of the Project.

1.1.25. "PROJECT MANAGEMENT TEAM" is composed of WEBB COUNTY, its representatives, Design Consultant and Program Manager (if any) for this Work.

1.1.26. "SITE" means the land(s) or area(s) (as indicated in the Contract Documents) furnished by WEBB COUNTY, upon which the Work is to be performed, including rights-of- way and easements for access thereto, and such other lands furnished by WEBB COUNTY which are designated for the use of Contractor.

1.1.27. "SPECIAL CONDITIONS" are terms and conditions to a contractual agreement which supplement and are superior to these General Conditions and grant greater authority or impose greater restrictions upon Contractor, beyond those granted or imposed in these General Conditions. WEBB COUNTY's Horizontal Special Conditions are attached hereto, made a part of these General Conditions and shall be used as applicable.

1.1.28. "SPECIFICATIONS" are those elements of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, workmanship for the Work, performance of related services and other technical requirements.

1.1.29. "SUBSTANTIAL COMPLETION" is the date certified by WEBB COUNTY and Design Consultant, in accordance with Section 9.8 herein, when the Work, or a designated portion thereof, is sufficiently complete in accordance with the Contract Documents so as to be operational and fit for the intended use by WEBB COUNTY.

1.1.30. "TEMPORARY BENCH MARKS (TBM)" are temporary affixed marks which establish the exact elevation of a place; TBMs are used by surveyors in measuring site elevations or as a starting point for surveys.

1.1.31. "THE 3D MODEL" is the Building Information Model prepared by Design Consultant in the format designated, approved and acceptable to WEBB COUNTY with databases of materials, products and systems available for use

by Contractor to prepare schedules for cost estimating, product and materials placement schedules and evaluations of crash incidences. The 3D Model, if available, may be used as a tool, however all information taken from the Model is the responsibility of Contractor and not WEBB COUNTY or Design Consultant.

1.1.32. "WORK" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by Contractor, or any Subcontractors, Sub-Subcontractors, material suppliers or any other entities for which Contractor is responsible, to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.33. OTHER DEFINITIONS. As used in the Contract Documents, the following additional terms have the following meanings:

1.1.33.1. "provide" means to furnish, install, fabricate, deliver and erect, including all services, materials, appurtenances and all other expenses necessary to complete in place and ready for operation or use;

1.1.33.2. "shall" means the mandatory action of the Party of which reference is being made;

1.1.33.3. "as required" means as prescribed in the Contract Documents; and

1.1.33.4. "as necessary" means all action essential or needed to complete the work in accordance with the Contract Documents and applicable laws, ordinances, construction codes and regulations.

1.2 PRELIMINARY MATTERS

1.1.34. Upon the WEBB COUNTY Commissioners Court's award of the project, a Notice of Award Letter shall be sent to Contractor by WEBB COUNTY, notifying Contractor of the award of a contract. In its Notice of Award Letter, Contractor shall be informed of a date certain by which Contractor's bond(s) and evidence of insurance shall be delivered to WEBB COUNTY.

1.1.35. DELIVERY OF CONTRACT AND BONDS. Not later than the Pre-Construction meeting and prior to the commencement of any Work on the Project, Contractor shall deliver a fully executed Contract to WEBB COUNTY, along with such bonds as Contractor may be required to furnish, including, but not limited to, a required payment bond in the form and amount specified in the Contract Documents and these General Conditions and a required performance bond in the form and amount specified in the Contract Documents and these