



MURRIETA VALLEY
UNIFIED SCHOOL DISTRICT

Murrieta Valley Unified School District
41870 McAlby Court
Murrieta, CA 92562

DISTRICT BID ADDENDUM NO. 3

Date: October 18, 2022

To: All Bidders

From: Nadia Zeien, Director of Purchasing

Project: Murrieta Valley Unified School District Tovashal and Thompson HVAC Replacement Project

Subject: Modifications to Bid Manual for Murrieta Valley Unified School District Tovashal and Thompson HVAC Replacement Project; DSA Addenda

The attached Addendum is issued for the purposes of amending certain requirements of the bid and hereby made part of and incorporated in full force as part of the Contract Documents. Unless hereinafter specifically noted or specified otherwise, all work shall conform to the applicable provisions of the Contract Documents.

BID ADDENDUM NO. 3 DESCRIPTION:

1. Revision to Document 00 11 16-4 Notice to Bidders
 - **Section 13** to be replaced entirely with the following:
Section 17076.11 of the Education Code requires school districts using funds allocated pursuant to the State of California School Facility Program for the construction and/or modernization of school building(s) to have a participation goal for disabled veteran business enterprises (“DVBE”) of at least three percent (3%) per year of the overall dollar amount expended on projects that receive state funding or demonstrate reasonable efforts to secure participation by DVBE participation in this Contract.
 - Bidders are to complete and submit the Disabled Veterans Business Enterprise (DVBE) Participation Statement **with their bids**.
 - **Reference Attached Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 00 45 46.02a.**

2. Revision to Document 02 21 13-13 Instruction To Bidders
 - **Section 18** to be replaced entirely with the following:
Section 17076.11 of the Education Code requires school districts using funds allocated pursuant to the State of California School Facility Program for the construction and/or modernization of school building(s) to have a participation goal for disabled veteran

business enterprises (“DVBE”) of at least three percent (3%) per year of the overall dollar amount expended on projects that receive state funding or demonstrate reasonable efforts to secure participation by DVBE participation in this Contract.

- **Reference Attached Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 00 45 46.02a**
 - Bidders are to use the latest amended **Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 0045 46.02a** Document at the time of submittal
3. Document 00 45 46.02 Disabled Veteran Business Enterprise Participation Certification
- Document to be replaced with the attached **Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 0045 46.02a**
 - **Reference Attached Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 00 45 46.02a**
 - Bidders are to use the latest amended **Disabled Veteran Business Enterprise (DVBE) Participation Statement – Document 0045 46.02a** Document at the time of submittal
4. Addition of Disabled Veteran Business Enterprise (DVBE) Contractor Close-out Statement – Document 00 45 46.02b
- **Reference Attachment Disabled Veteran Business Enterprise (DVBE) Contractor Close-out Statement – Document 00 45 46.02b**
5. Revision to Agreement – Document 00 52 13-4
- Section 21 Force Majeure is removed entirely
 - **Reference attached revised Document 00 52 13 – Agreement Form with language removed.**
6. Revision to Document 00 72 13
- Revision to Section 13.1.2.2 – Section 13.1.2.2 shall be replaced with the following:
 - Contractor’s primary policy shall meet requirements under section 13.1.8 and 13.1.9.
 - In addition, provide Excess Liability Insurance coverage in the amount of Two Million Dollars (\$2,000,000.00) in addition to primary policy.
 - Revision to 13.1.2.4
 - Removal of “The District, in its sole discretion, may accept the Excess Liability Insurance Policy that brings Contractor’s primary limits to the minimum requirements herein.”

- Revision to 13.1.3 Subcontractor(s) – Section 13.1.3 shall be replaced with the following:

13.1.3 Subcontractor(s): Contractor shall require its Subcontractor(s), if any, to procure and maintain Commercial General Liability Insurance, Automobile Liability Insurance, and Excess Liability Insurance with forms of coverage and limits equal to the amounts required of the Contractor.

- Section 13.1.4 Workers' Compensation and Employers' Liability Insurance remains part of the contract and is not changed.
- Revision to 13.1.7 Proof of Insurance and Other Requirements: Endorsements and Certificates – Add Section 13.1.7.11 to read as follows:

13.1.7.11: The additional insured endorsement shall be an ISO CG 20 10 (11/85), or an ISO CG 20 10 (10/01) and CG 20 37 (10/01), or an ISO CG 20 10 (10/01) and CG 2038 (04/13), or their equivalent as determined by the District in its sole discretion.

- Revision to Insurance Policy Limits Section 13.1.8 and 13.1.9:
 - Addition of Builder's Risk (Course of Construction) per Section 13.1.5.
 - In addition, provide Excess Liability Insurance coverage in the amount of Two Million Dollars (\$2,000,000.00) in addition to primary policy.

7. Revised Bid Form and Proposal Document 00 41 13-2:

- The following change was made to the Bid Form and Proposal Document:
 - Revision to Additional Detail Regarding Calculation of Base Bid Section 7
Added the following under section 7:
 - Disabled Veteran Business Enterprise (DVBE) Participation Statement
- Bidders are to use the latest amended Bid Form and Proposal Document at the time of submittal.

8. Pre-Bid Job Walk Sign in Sheet (attached)

9. Tovashal Elementary School HVAC Replacement Project DSA Addendum 2 issued by PBK Architects on October 18, 2022 (attached).

10. Thompson Middle School HVAC Replacement Project DSA Addendum 1 issued by PBK Architects on October 18, 2022 (attached).

ATTACHMENTS:

- Disabled Veteran Business Enterprise (DVBE) Participation Statement Document 00 45 46.02a (attached). **Needs to be submitted at the time of bid submission.**

- Disabled Veteran Business Enterprise (DVBE) Contractor Close-Out Statement Document 00 45 46.02b (attached).
- Revised Agreement Document 00 52 13 (attached).
- Revised Bid Form and Proposal Document 00 41 13 (attached).
- Pre-Bid Job Walk Sign in Sheet (attached).
- Tovashal DSA Addendum 2 Documents (attached).
- Thompson DSA Addendum 1 Documents (attached).

END OF DISTRICT BID ADDENDUM NO. 3

BID FORM AND PROPOSAL

Revised Per District Bid Addendum 03

To: Governing Board of the Murrieta Valley Unified School District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that Bidder has read and understands the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. 2022-01-10272022, for the following project known as:

MURRIETA VALLEY UNIFIED SCHOOL DISTRICT TOVASHAL AND THOMPSON HVAC REPLACEMENT PROJECT

("Project" or "Contract") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

1.

_____ Dollars \$ _____
Tovashal Elementary School

2.

_____ Dollars \$ _____
Thompson Middle School

3.

Seventy-Five Thousand Dollars \$ 75,000.00
Allowance

	Dollars	\$ _____
<i>BASE BID TOTAL (Total of Item 1, 2, & 3)</i>		
<i>Bidder acknowledges and agrees that the Base Bid accounts for any and all Allowance(s).</i>		

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Additional Detail Regarding Calculation of Base Bid

1. **Allowance: The Bidder's Base Bid shall include an allowance of \$75,000.00.**
The above allowance shall only be allocated for unforeseen items relating to the Work. Contractor shall not bill for or be due any portion of this allowance unless the District has identified specific work, Contractor has submitted a price for that work or the District has proposed a price for that work, the District has accepted the cost for that work, and the District has prepared an Allowance Expenditure Directive incorporating that work. Contractor hereby authorizes the District to execute a unilateral deductive change order at or near the end of the Project for all or any portion of the allowance not allocated.
2. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.
3. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.
4. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.
5. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.
6. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.
7. The following documents are attached hereto:
 - Bid Bond on the District's form or other security
 - Designated Subcontractors List
 - Site Visit Certification
 - Non-Collusion Declaration
 - Disabled Veteran Business Enterprise (DVBE) Participation Statement

8. Receipt and acceptance of the following **DISTRICT BID ADDENDUM** is hereby acknowledged:

No._____, Dated _____	No._____, Dated _____
No._____, Dated _____	No._____, Dated _____
No._____, Dated _____	No._____, Dated _____

9. Bidder acknowledges that the license required for performance of the Work is Classification B AND/OR C-20 license.
10. Bidder hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.
11. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the Department of Industrial Relations.
12. Bidder hereby certifies that its bid includes sufficient funds to permit Bidder to comply with all local, state or federal labor laws or regulations during the Project, including payment of prevailing wage, and that Bidder will comply with the provisions of Labor Code section 2810(d) if awarded the Contract
13. Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.
14. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.
15. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Gov. Code, § 12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.
16. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the Contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents and registered as a public works contractor with the Department of Industrial Relations. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

Furthermore, Bidder hereby certifies to the District that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury.

Dated this _____ day of _____ 20 _____

Name of Bidder: _____

Type of Organization: _____

Signed by: _____

Title of Signer: _____

Address of Bidder: _____

Taxpayer Identification No. of Bidder: _____

Telephone Number: _____

Fax Number: _____

E-mail: _____ Web Page: _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

Public Works Contractor Registration No.: _____

END OF DOCUMENT

AGREEMENT
Revised Per District Bid Addendum 03

THIS AGREEMENT IS MADE AND ENTERED INTO THIS _____ DAY OF _____
_____, 20___, by and between the Murrieta Valley Unified School District ("District") and _____
_____. ("Contractor")
("Agreement").

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other, as follows:

1. **The Work:** Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, and material necessary to perform and complete in a good and workmanlike manner, the work of the following project:

**PROJECT: MURRIETA VALLEY UNIFIED SCHOOL DISTRICT HVAC
TOVASHAL AND THOMPSON HVAC REPLACEMENT PROJECT**

It is understood and agreed that the Work shall be performed and completed as required in the Contract Documents including, without limitation, the Drawings and Specifications and submission of all documents required to secure funding or by the Division of the State Architect for close-out of the Project, under the direction and supervision of, and subject to the approval of, the District or its authorized representative.

2. **The Contract Documents:** The complete Contract consists of all Contract Documents as defined in the General Conditions and incorporated herein by this reference. Any and all obligations of the District and Contractor are fully set forth and described in the Contract Documents. All Contract Documents are intended to cooperate so that any Work called for in one and not mentioned in the other or vice versa is to be executed the same as if mentioned in all Contract Documents.
3. **Interpretation of Contract Documents:** Should any question arise concerning the intent or meaning of Contract Documents, including the Drawings or Specifications, the question shall be submitted to the District for interpretation. If a conflict exists in the Contract Documents, valid, written modifications, beginning with the most recent, shall control over this Agreement (if any), which shall control over the Special Conditions, which shall control over any Supplemental Conditions, which shall control over the General Conditions, which shall control over the remaining Division 0 documents, which shall control over Division 1 Documents which shall control over Division 2 through Division 49 documents, which shall control over figured dimensions, which shall control over large-scale drawings, which shall control over small-scale drawings. In no case shall a document calling for lower quality and/or quantity material or workmanship control. The decision of the District in the matter shall be final.
4. **Time for Completion:** It is hereby understood and agreed that the Work under this Contract shall be completed by **August 1, 2023**. HVAC equipment shop drawings shall be prepared and submitted for review within 10 days after notice to proceed.

HVAC equipment demolition and installation shall commence on **June 5, 2023**.

5. Completion - Extension of Time: Should the Contractor fail to complete this Contract, and the Work provided herein, within the time fixed for completion, due allowance being made for the contingencies provided for herein, the Contractor shall become liable to the District for all loss and damage that the District may suffer on account thereof. The Contractor shall coordinate its Work with the Work of all other contractors. The District shall not be liable for delays resulting from Contractor's failure to coordinate its Work with other contractors in a manner that will allow timely completion of Contractor's Work. Contractor shall be liable for delays to other contractors caused by Contractor's failure to coordinate its Work with the Work of other contractors.

6. Liquidated Damages: Time is of the essence for all work under this Agreement. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage that the District will sustain in the event of and by reason of Contractor's delay; therefore, Contractor agrees that it shall pay to the District the sum of one thousand dollars (\$1,000) per day as liquidated damages for each and every day's delay beyond the time herein prescribed in finishing the Work.

It is hereby understood and agreed that this amount is not a penalty.

In the event that any portion of the liquidated damages is not paid to the District, the District may deduct that amount from any money due or that may become due the Contractor under this Agreement, and such deduction does not constitute a withholding or penalty. The District's right to assess liquidated damages is as indicated herein and in the General Conditions.

The time during which the Contract is delayed for cause, as hereinafter specified, may extend the time of completion for a reasonable time as the District may grant, provided that Contractor has complied with the claims procedure of the Contract Documents. This provision does not exclude the recovery of damages by either party under other provisions in the Contract Documents.

7. Loss Or Damage: The District and its agents and authorized representatives shall not in any way or manner be answerable or suffer loss, damage, expense, or liability for any loss or damage that may happen to the Work, or any part thereof, or in or about the same during its construction and before acceptance, and the Contractor shall assume all liabilities of every kind or nature arising from the Work, either by accident, negligence, theft, vandalism, or any cause whatsoever; and shall hold the District and its agents and authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatsoever.

8. Insurance and Bonds: Prior to issuance of the Notice to Proceed by the District, Contractor shall provide all required certificates of insurance, insurance endorsements, and payment and performance bonds as evidence thereof.

9. Prosecution of Work: If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this Contract, the District, may, pursuant to the General Conditions and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

10. **Authority of Architect, Project Inspector, and DSA:** Contractor hereby acknowledges that the Architect(s), the Project Inspector(s), and the Division of the State Architect ("DSA") have authority to approve and/or suspend Work if the Contractor's Work does not comply with the requirements of the Contract Documents, Title 24 of the California Code of Regulations, and all applicable laws and regulations. The Contractor shall be liable for any delay caused by its non-compliant Work.
11. **Assignment of Contract:** Neither the Contract, nor any part thereof, nor any moneys due or to become due thereunder, may be assigned by the Contractor without the prior written approval of the District, nor without the written consent of the Surety on the Contractor's Performance Bond (the "Surety"), unless the Surety has waived in writing its right to notice of assignment.
12. **Classification of Contractor's License:** Contractor hereby acknowledges that it currently holds valid Type B and C-20 Contractor's license(s) issued by the State of California, Contractors' State License Board, in accordance with division 3, chapter 9, of the Business and Professions Code and in the classification called for in the Contract Documents.
13. **Registration as Public Works Contractor:** The Contractor and all Subcontractors currently are registered as public works contractors with the Department of Industrial Relations, State of California, in accordance with Labor Code section 1771.1.
14. **Payment of Prevailing Wages:** The Contractor and all Subcontractors shall pay all workers on all Work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code.
15. This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and Title 8 of the California Code of Regulations. Contractor specifically acknowledges and understands that it shall perform the Work of this Agreement while complying with all the applicable provisions of Division 2, Part 7, Chapter 1, of the Labor Code, including, without limitation, the requirement that the Contractor and all of its Subcontractors shall timely submit complete and accurate electronic certified payroll records as required by the Contract Documents, or the District may not issue payment.
16. **Contract Price:** In consideration of the foregoing covenants, promises, and agreements on the part of the Contractor, and the strict and literal fulfillment of each and every covenant, promise, and agreement, and as compensation agreed upon for the Work and construction, erection, and completion as aforesaid, the District covenants, promises, and agrees that it will well and truly pay and cause to be paid to the Contractor in full, and as the full Contract Price and compensation for construction, erection, and completion of the Work hereinabove agreed to be performed by the Contractor, the following price:

_____ Dollars

(\$ _____),

in lawful money of the United States, which sum is to be paid according to the schedule provided by the Contractor and accepted by the District and subject to additions and deductions as provided in the Contract. This amount supersedes any previously stated and/or agreed to amount(s).

- 17. No Representations:** No representations have been made other than as set forth in writing in the Contract Documents, including this Agreement. Each of the Parties to this Agreement warrants that it has carefully read and understood the terms and conditions of this Agreement and all Contract Documents, and that it has not relied upon the representations or advice of any other Party or any attorney not its own.
- 18. Entire Agreement:** The Contract Documents, including this Agreement, set forth the entire agreement between the parties hereto and fully supersede any and all prior agreements, understandings, written or oral, between the parties hereto pertaining to the subject matter thereof.
- 19. Severability:** If any term, covenant, condition, or provision in any of the Contract Documents is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions in the Contract Documents shall remain in full force and effect and shall in no way be affected, impaired, or invalidated thereby.
- 20. Indemnification:** Provider agrees to defend, indemnify, and hold harmless the District, its officers, agents, employees, and/or volunteers from any and all claims, demands, losses, damages and expenses, including legal fees and costs, or other obligations or claims arising out of any liability or damage to person or property, or any other loss, sustained or claimed to have been sustained arising out of activities of the Provider or those of any of its officers, agents, employees, or subcontractors of Provider, whether such act or omission is authorized by this Agreement or not. Provider shall also pay for any and all damage to the Real and Personal Property of the District, or loss or theft of such Property, done or caused by such persons. District assumes no responsibility whatsoever for any property placed on District premises by Provider, Provider's agents, employees or subcontractors. Provider further hereby waives any and all rights of subrogation that it may have against the District. The provisions of this Agreement do not apply to any damage or losses caused solely by the negligence of the District or any of its officers, agents, employees, and/or volunteers.

IN WITNESS WHEREOF, accepted and agreed on the date indicated above:

CONTRACTOR

**MURRIETA VALLEY UNIFIED
SCHOOL DISTRICT**

By: _____

By: _____

Title: _____

Title: _____

NOTE: If the party executing this Contract is a corporation, a certified copy of the by-laws, or of the resolution of the Board of Directors, authorizing the officers of said corporation to execute the Contract and the bonds required thereby must be attached hereto.

END OF DOCUMENT

Document 00 45 46.02a

**DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) PARTICIPATION
STATEMENT**

REVISED PER DISTRICT BID ADDENDUM NO. 3

Each bidder must complete this form in order to comply with the Murrieta Valley Unified School District (“District”) policy for participation of disabled veteran business enterprises (School District projects funded in whole or in part by the State of California pursuant to the Leroy F. Greene School Facilities Act of 1998. (Education Code §17070.10, *et seq.*)

Project Name: Murrieta Valley Unified School District Tovashal and Thompson HVAC Replacement Project

Bid No.: 2022-01-10272022

The undersigned, on behalf of the Contractor named below, certifies that the Contractor has made reasonable efforts to secure participation by DVBE in the Contract to be awarded for the above-referenced Bid No., including participation by DVBE subcontractors and/or material suppliers. **Check only one of the following:**

- The Contractor was unable after reasonable efforts to secure DVBE participation in the Contract for the above-referenced Project/Bid No. However, the Contractor will use DVBE services if the opportunity arises at any time during construction of the Project. Upon completion of the Project, the Contractor will report to the District the total dollar amount of DVBE participation in any Contract awarded to Contractor, and in any change orders, for the above-referenced Project.

- The Contractor has secured DVBE participation in the Contract for the above referenced Project/Bid No., and anticipates that such DVBE participation will equal approximately _____dollars (\$ _____), which represents approximately _____percent (___%) of the total Contract for such Project. Upon completion of the Project, Contractor will report to the District the actual total dollar amount of DVBE participation in the Contract awarded to Contractor, and in any change orders, for such Project

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

Document 00 45 46.02b

**DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) CONTRACTOR CLOSE-
OUT STATEMENT**

The Contractor shall complete this form, as a condition to Final Payment, for purposes of reporting participation by Disabled Veteran Business Enterprises (DVBE) in the Contract for the Project/Bid No. specified below.

Project Name: Murrieta Valley Unified School District Tovashal and Thompson HVAC Replacement Project

Bid No.: 2022-01-10272022

Name	Address/Phone	Category of Work*	\$ Amount of Contract

* Categories of work include: (1) construction services (specify services that DVBE will provide); (2) architecture and engineering services; (3) procurement of materials, supplies and equipment; and (4) information technology.

The undersigned, on behalf of the Contractor, certifies that DVBE participation on the Contract for Bid No. _____ equaled _____ dollars (\$ _____), which represents approximately _____ percent (____%) of the total Contract price including change orders for the Project.

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____



PRE-BID JOB WALK SIGN-IN SHEET

10/12/2022

Murrieta Valley Unified School District Unified Towashal and Thompson HVAC Replacment Project

THOMPSON MIDDLE SCHOOL

BID NO. 2022-01-10272022

COMPANY NAME	NAME (Please Print)	SIGNATURE	EMAIL (Please Print)
K/REMASTERS	RICHARD MARQUEZ		RMARQUEZ@KREMASTERS.SD.CA.US
Performance Electric	Joel Hunter		JoelPerfelectric@gmail.com
Mesa Energy Systems Inc	Justin Davie		JDAVIE@EMCOR.NET
JM Builders Inc.	Sose Ruge		jennifer@jmbuilders.org
NKS Mechanical	Don Canley		Booock@NKSMECHANICAL.COM
Swes, Inc.	Brian Brown		Estimating@swes-inc.com
ARROWHEAD MECH.	ROB MCLELLAN		robmccl@ARROWHEADAIR.COM
ACCO Engineered Systems	Camer McDonough		cmcdonough@accos.com
MMS Construction Inc	J. Briley-Savage		info@mmsconstruction.com
SPEC construction co. inc.	CANDICE De LaFusse		info@specconstructionco.com
S Traight line General	Mark Kephly		Dan ^Q slgcinc.net
WakeCO, Inc.	Melissa Ison		estimating@wakecounc.com
Los Angeles Air-Conditioning	JOSEPH FABILA		joseph@laair.net
ELITE AIR CONDATIONG INC	NICK EVANS		NICK@ELITEHVACINC.COM

Murrieta Valley Unified School District Pre-Bid Jobwalk
Touashal and Thompson HVAC Replacement Project

Touashal Elementary

10-12-2022

Bay City Mechanical

Cory Hicken

Aurison MECH. JARED GIBSON

AIREMASTER AC

RICHARD MARQUEZ

STEC construction

Candice De la Fave

WakeCO, INC.

Melissa Ison

SM Builders Inc.

Jose Ruge

Advantage Air Conditioning

Phillip Hauser

Air-Ex Air Conditioning

Paul Stube

MMJ construction Inc.

Judy Bailey-Savage

CERTIFIED MECHANICAL

Rob Gutierrez



8163 Rochester Avenue
Rancho Cucamonga, CA 91730
P. +1 909-987-0909
PBK.com

October 18, 2022

TO : All Bidders
FROM : Lisa Cox
PROJECT : Tovashal Elementary School HVAC Replacement
Project 1726200.41
SUBJECT : Addendum 2
DSA : 04-119843 / File 33-32

The following changes, omissions, and/or additions to the Project Manual and/or Drawings shall apply to proposals made for and to the execution of the various parts of the work affected thereby, and all other conditions shall remain the same.

Careful note of the Addendum shall be taken by all parties of interest so that the proper allowances may be made in strict accordance with the Addendum, and that all trades shall be fully advised in the performance of the work which will be required of them.

Bidder shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

In case of conflict between Drawings, Project Manual, and this Addendum, this Addendum shall govern.

2. PROJECT MANUAL

2.1 TABLE OF CONTENTS (Attached)

- A. Replace the Table of Contents in its entirety with the attached Table of Contents.

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

- A. Delete specification in its entirety - NOT USED.

2.3 SECTION 23 81 19 - ROOFTOP AIR CONDITIONERS (Attached)

- A. Modified Specification Section for new direct digital control systems requirements for HVAC.

2.4 SECTION 28 01 00 - ELECTRONIC SAFETY AND SECURITY GENERAL PROVISIONS

- A. This entry was placed in error in the Table of Contents. Entry has been removed.

2.5 SECTION 28 30 00 - FIRE ALARM SYSTEM

- A. This entry was placed in error in the Table of Contents. Entry has been removed.

Addendum 2
Tovashal Elementary School HVAC Replacement
Project 1726200.41
DSA 04-119843 / File 33-32
October 18, 2022
Page 2

DRAWINGS

Mechanical

2.6 DRAWING M-1.1 - MECHANICAL SCHEDULES (Attached)

- A. Updated Note 10 to reflect control changes: CONTRACTOR TO REMOVE AND PROTECT CARRIER CCN CONTROLLER FOR INSTALLATION IN REPLACEMENT UNIT. CONTRACTOR TO RE-INSTALL AND PROGRAM AS REQUIRED OWNER CCN CONTROLLER IN NEW RTU. SEE SPECIFICATIONS.

2.7 DRAWING M-5.1 - MECHANICAL DETAILS (Attached)

- A. Detail deleted in its entirety - NOT USED.

END OF ADDENDUM 2

Submitted by,



LISA COX
Architect, AIA
Principal



LC:WA:hb/P41726200x2-add

Attachments: Table of Contents
Section 23 81 19 - Rooftop Air Conditioners
Drawing M-1.1, M-5.1

**TABLE OF CONTENTS
SPECIFICATIONS GROUP**

TOVASHAL ELEMENTARY SCHOOL HVAC REPLACEMENT

**SPECIFICATIONS GROUP
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01 25 13	Product Substitution Procedures	4
01 31 00	Project Management and Coordination	7
01 32 17	Construction Schedule - Bar Chart	8
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01 35 16	Alteration Project Procedures	4
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01 45 29	Testing Laboratory Services	4
01 50 00	Temporary Facilities and Controls	6
01 61 00	Product Requirements	3
01 73 00	Execution Requirements	3
01 73 29	Cutting and Patching	3
01 74 19	Construction Waste Management and Disposal	12
01 77 00	Closeout Procedures	6

**SPECIFICATION GROUP
FACILITY CONSTRUCTION SUBGROUP**

DIVISION 02 **EXISTING CONDITIONS**

NOT USED

DIVISION 03 **CONCRETE**

NOT USED

DIVISION 04 **MASONRY**

NOT USED

DIVISION 05 **METALS**

NOT USED

DIVISION 06 **WOOD, PLASTICS, AND COMPOSITES**

NOT USED

DIVISION 07 **THERMAL AND MOISTURE PROTECTION**

NOT USED

DIVISION 08 **OPENINGS**

NOT USED

DIVISION 09 FINISHES

NOT USED

DIVISION 10 SPECIALTIES

NOT USED

DIVISION 11 EQUIPMENT

NOT USED

DIVISION 12 FURNISHINGS

NOT USED

DIVISION 13 SPECIAL CONSTRUCTION

NOT USED

DIVISION 14 CONVEYING EQUIPMENT

NOT USED

DIVISION 15 TO 19 RESERVED

NOT USED

SPECIFICATIONS GROUP
FACILITY SERVICES SUBGROUP

DIVISION 20 RESERVED

NOT USED

DIVISION 21 FIRE SUPPRESSION

NOT USED

DIVISION 22 PLUMBING

NOT USED

DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING

23 05 00	Basic Materials and Methods	13
23 05 29	Hangers and Supports for HVAC	3
23 05 48	Vibration and Seismic Controls for HVAC	4
23 05 53	Identification for HVAC	2
23 05 93	Testing, Adjusting, and Balancing for HVAC	11
23 07 13	Duct Insulation	6
23 11 23	Facility Natural-Gas Piping	6
23 31 13	Metal Duct	10
23 33 00	Duct Accessories	7
23 41 00	Air Filters	2
23 81 19	Rooftop Air Conditioners	10

DIVISION 24 RESERVED

NOT USED

DIVISION 25 INTEGRATED AUTOMATION

NOT USED

DIVISION 26 ELECTRICAL

26 01 00	Electrical General Provisions	13
26 05 19	Power Conductors	2
26 05 26	Grounding	2
26 05 33	Conduit and Fittings	6
26 05 34	Outlet and Junction Boxes	2
26 27 26	Switches and Receptacles	2
26 28 16	Disconnects	2
26 90 90	Electrical Closeout	1

DIVISION 27 COMMUNICATIONS

NOT USED

DIVISION 28 ELECTRONIC SAFETY AND SECURITY

NOT USED

DIVISION 29 RESERVED

NOT USED

SPECIFICATIONS GROUP
SITE AND INFRASTRUCTURE SUBGROUP

DIVISION 30 RESERVED

NOT USED

DIVISION 31 EARTHWORK

NOT USED

DIVISION 32 EXTERIOR IMPROVEMENTS

NOT USED

DIVISION 33 UTILITIES

NOT USED

DIVISION 34 TRANSPORTATION

NOT USED

DIVISION 35 WATERWAY AND MARINE CONSTRUCTION

NOT USED

DIVISION 36 TO 39 RESERVED

NOT USED

SPECIFICATIONS GROUP
PROCESS EQUIPMENT SUBGROUP

DIVISION 40 PROCESS INTEGRATION

NOT USED

DIVISION 41 MATERIAL PROCESSING AND HANDLING EQUIPMENT

NOT USED

DIVISION 42 PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

NOT USED

DIVISION 43 PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE

NOT USED

DIVISION 44 POLLUTION CONTROL AND WASTE EQUIPMENT

NOT USED

DIVISION 45 INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

NOT USED

DIVISION 46 INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

NOT USED

DIVISION 47 INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

NOT USED

DIVISION 48 ELECTRICAL POWER GENERATION

NOT USED

DIVISION 49 RESERVED

NOT USED

SECTION 23 81 19

ROOFTOP AIR CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following rooftop air conditioners:
 - 1. Cooling and heating units 6 tons and smaller.
 - 2. Cooling and heating units 7-1/2 to 20 tons.
 - 3. Cooling and heating units larger than 20 tons.

1.3 DEFINITIONS

- A. DDC: Direct-digital controls.

1.4 SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Prepare the following by or under the supervision of a qualified professional engineer:
 - 1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - 2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
 - 3. Wiring Diagrams: Power, signal, and control wiring.
- C. Manufacturer Seismic Qualification Certification: Submit certification that rooftop air conditioners, accessories, and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For rooftop air conditioners to include in emergency, operation, and maintenance manuals, as specified in Division 23 Section "Basic Mechanical Materials and Methods".

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of rooftop air conditioners and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."

D. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

E. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

F. Comply with NFPA 54 for gas-fired furnace section.

G. ARI Certification: Units shall be ARI certified and listed.

H. ARI Compliance for Units with Capacities Less Than 65,000 Btuh: Rate rooftop air-conditioner capacity according to ARI 210/240, "Unitary Air-Conditioning and Air-Source Heat Pump Equipment."

1. Sound Power Level Ratings: Comply with ARI 270, "Sound Rating of Outdoor Unitary Equipment."

I. ARI Compliance for Units with Capacities from 65,000 to 250,000 Btuh : Rate rooftop air-conditioner capacity according to ARI 340/360, "Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment."

1. Sound Power Level Ratings: Comply with ARI 270, "Sound Rating of Outdoor Unitary Equipment."

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in 23 Section "Basic Mechanical Materials and Methods".

- C. Coordinate size, location, and installation of rooftop air-conditioner manufacturer's roof curbs and equipment supports with roof installer.

- 1. Coordinate installation of restrained vibration isolation roof-curb rails.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of rooftop air conditioners that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.
 - 2. Warranty Period for Heat Exchangers: Manufacturer's standard, but not less than 10 years from date of Substantial Completion.
 - 3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 - 4. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 - 5. Warranty Period for Variable-Speed Fan Motors: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 - 6. Warranty Period for Electronic Thermostats: Manufacturer's standard, but not less than three years from date of Substantial Completion.

1.8 EXTRA MATERIALS

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

- 1. Fan Belts: One set for each belt-drive fan.
 - 2. Filters: One set of filters for each unit.

PART 2 - PRODUCTS

2.1 ROOFTOP AIR CONDITIONERS 6 TONS AND SMALLER

- A. Manufacturers:

- 1. Trane Corp.

- B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, indoor fan and outside coil fan, refrigeration and temperature controls, filters, and dampers.

- C. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, minimum 1/2-inch- thick thermal insulation, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.

- D. Indoor Fan: Forward curved, centrifugal, directly driven by multispeed or belt driven by single-speed motor based on scheduled performance.

- E. Outside Coil Fan: Propeller type, directly driven by motor.

- F. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
- G. Compressor: Scroll compressor with integral vibration isolators, internal overcurrent and overtemperature protection, internal pressure relief, and crankcase heater.
- H. Refrigeration System:
 - 1. Compressor.
 - 2. Outside coil and fan.
 - 3. Indoor coil and fan.
 - 4. Expansion valve with replaceable thermostatic element.
 - 5. Refrigerant dryer.
 - 6. High-pressure switch.
 - 7. Low-pressure switch.
 - 8. Thermostat for coil freeze-up protection during low-ambient temperature operation or loss of air.
 - 9. Low-ambient switch.
 - 10. Brass service valves installed in discharge and liquid lines.
 - 11. Charge of refrigerant.
- I. Filters: 2-inch- thick, fiberglass, pleated, throwaway filters in filter rack complying with all DSA Requirements.
- J. Demand Control Ventilation: Units shall be provided with unit mounted CO2 sensors and all necessary hardware to provide in conjunction with economizer function fully operable DCV (Demand Control Ventilation System). As required, unit manufacturer will provide remote sensors in classroom only if unit cannot be equipped with return duct mounted CO2 sensors and control capability. Otherwise field wiring by mechanical contractor as required to provide unit based DCV.
- K. Heat Exchanger: Stainless-steel construction for natural-gas-fired burners with the following controls:
 - 1. Redundant single or dual gas valve with manual shutoff.
 - 2. Direct-spark pilot ignition.
 - 3. Electronic flame sensor.
 - 4. Induced-draft blower.
 - 5. Flame rollout switch.
- L. Economizer: Return- and outside-air dampers with neoprene seals, outside-air filter, and hood.
 - 1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 - 2. Control: Electronic-control system uses mixed-air temperature and selects between outside-air and return-air enthalpy to adjust mixing dampers.
 - 3. Relief Damper: Gravity actuated with bird screen and hood.
- M. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker, remote power exhaust shall be powered independent, coordinate all requirement with electrical contractor to include full necessary scope of work for installation.
- N. Unit Controls: Solid-state control board and components contain at least the following features:
 - 1. Indoor fan on/off delay.
 - 2. Default control to ensure proper operation after power interruption.
 - 3. Service relay output.
 - 4. Unit diagnostics and diagnostic code storage.
 - 5. Field-adjustable control parameters.
 - 6. Economizer control.
 - 7. Gas valve delay between first- and second-stage firing.

8. Indoor-air quality control with carbon dioxide sensor.
9. Low-ambient control, allowing operation down to 0 deg F.
10. Minimum run time.
11. Night setback mode.
12. Return-air temperature limit.
13. Smoke alarm with smoke detector installed in supply and return air.
14. Low-refrigerant pressure control.
15. Digital display of outside temperature, supply-air temperature, return-air temperature, economizer damper position, indoor-air quality, and control parameters.

O. DDC: Unit shall be provided with stand alone Trane DDC control module as well as necessary Trane hardware to wire to field mounted Carrier CCN control module. Contractor shall remove from replaced unit Carrier Premiere Link module, and shall be responsible for rewiring and programming the Trane Equipment through the Carrier CCN I-Vu network. Control module provided with unit shall be fully programmed and compatible with temperature-control system at the existing campus. Systems shall be fully functional. Owner shall provide at start of work control reports identifying that existing controllers are functioning properly prior to removal from existing equipment. Contractors are responsible to safely remove and protect all controls components until safely restored and operational in the replacement equipment.

P. Thermostats:

1. Existing space thermostats shall be re-used. The new RTU are to be equipped with CO2 monitoring/control and shall be programmable DCV ventilation using the RTU mounted controls.

Q. Accessories:

1. Service Outlets: Two, 115-V, ground-fault, circuit-interrupter type.
2. Condensate drain trap.
3. Dirty-filter switch.

R. Roof Curb: Roof curb is existing to re-use. Unit may require special adapter. See plans for individual unit requirements.

S. Horizontal Discharge Roof Curb (Where Required): Steel with corrosion-protection coating, insulation, gasketing, and factory-installed wood nailer, and configured to convert from downflow to horizontal airflow; complying with NRCA standards; minimum height of 26 inches. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2-inch static deflection and vertical and horizontal restraints; with elastomeric waterproof membrane.

2.2 ROOFTOP AIR CONDITIONERS 7-1/2 TO 25 TONS

A. Manufacturers:

1. Trane Corp.

B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, indoor fan and outside coil fan, refrigeration and temperature controls, filters, and dampers.

C. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, minimum 1/2-inch- thick thermal insulation, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.

D. Indoor Fan: Forward curved, centrifugal, belt driven with adjustable motor sheaves, grease-lubricated ball bearings, and motor.

- E. Outside Coil Fan: Propeller type, directly driven by permanently lubricated motor.
- F. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
- G. Compressor(s): One or two scroll compressors with integral vibration isolators, internal overcurrent and overtemperature protection, internal pressure relief, and crankcase heater(s).
- H. Refrigeration System:
 - 1. Compressor(s).
 - 2. Outside coil and fan.
 - 3. Indoor coil and fan.
 - 4. Check valves.
 - 5. Expansion valves with replaceable thermostatic elements.
 - 6. Refrigerant dryers.
 - 7. High-pressure switches.
 - 8. Low-pressure switches.
 - 9. Thermostats for coil freeze-up protection during low-ambient temperature operation or loss of air.
 - 10. Independent refrigerant circuits.
 - 11. Brass service valves installed in discharge and liquid lines.
 - 12. Charge of refrigerant.
 - 13. Timed Off Control: Automatic-reset control shuts compressor off after five minutes.
- I. Filters: 2-inch- thick, fiberglass, pleated, throwaway filters in filter rack complying with all DSA Requirements.
- J. Demand Control Ventilation: Units shall be provided with unit mounted CO2 sensors and all necessary hardware to provide in conjunction with economizer function fully operable DCV (Demand Control Ventilation System). As required, unit manufacturer will provide remote sensors in classroom only if unit cannot be equipped with return duct mounted CO2 sensors and control capability. Otherwise field wiring by mechanical contractor as required.
- K. Heat Exchanger: Stainless-steel construction for natural-gas-fired burners with the following controls:
 - 1. Redundant single or dual gas valve with manual shutoff.
 - 2. Direct-spark pilot ignition.
 - 3. Electronic flame sensor.
 - 4. Induced-draft blower.
 - 5. Flame rollout switch.
- L. Economizer: Return- and outside-air dampers with neoprene seals, outside-air filter, and hood.
 - 1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 - 2. Control: Electronic-control system uses mixed-air temperature and selects between outside-air and return-air enthalpy to adjust mixing dampers.
 - 3. Relief Damper: Gravity actuated with bird screen and hood.
- M. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker.
- N. Unit Controls: Solid-state control board and components contain at least the following features:
 - 1. Indoor fan on/off delay.
 - 2. Default control to ensure proper operation after power interruption.
 - 3. Service relay output.
 - 4. Unit diagnostics and diagnostic code storage.

5. Field-adjustable control parameters.
 6. Economizer control.
 7. Gas valve delay between first- and second-stage firing.
 8. Indoor-air quality control with carbon dioxide sensor.
 9. Low-ambient control, allowing operation down to 0 deg F.
 10. Minimum run time.
 11. Night setback mode.
 12. Return-air temperature limit.
 13. Smoke alarm with smoke detector installed in supply and return air.
 14. Low-refrigerant pressure control.
 15. Digital display of outside temperature, supply-air temperature, return-air temperature, economizer damper position, indoor-air quality, and control parameters.
- O. DDC: Unit shall be provided with stand alone Trane DDC control module as well as necessary Trane hardware to wire to field mounted Carrier CCN control module. Contractor shall remove from replaced unit Carrier Premiere Link module, and shall be responsible for rewiring and programming the Trane Equipment through the Carrier CCN I-Vu network. Control module provided with unit shall be fully programmed and compatible with temperature-control system at the existing campus. Systems shall be fully functional. Owner shall provide at start of work control reports identifying that existing controllers are functioning properly prior to removal from existing equipment. Contractors are responsible to safely remove and protect all controls components until safely restored and operational in the replacement equipment.
- P. Thermostats:
1. Existing space thermostats shall be re-used. The new RTU are to be equipped with CO2 monitoring/control and shall be programmable DCV ventilation using the RTU mounted controls.
- Q. Accessories:
1. Service Outlets: Two, 115-V, ground-fault, circuit-interrupter type.
 2. Condensate drain trap.
 3. Dirty-filter switch.
 4. Power exhaust fan. See plans for individual unit requirements.
- R. Roof Curb: Roof curb is existing to re-use. Unit may require special adapter curb. See plans for individual unit requirements.
- S. Horizontal Discharge Roof Curb (Where Required): Steel with corrosion-protection coating, insulation, gasketing, and factory-installed wood nailer, and configured to convert from downflow to horizontal airflow; complying with NRCA standards; minimum height of 26 inches. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2-inch static deflection and vertical and horizontal restraints; with elastomeric waterproof membrane.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb, maintaining manufacturer's recommended clearances. Install according to ARI Guideline B.
- B. Curb Support: . Install and secure rooftop air conditioners on the existing roof curbs and coordinate roof penetrations and flashing with roof construction. Secure units to curb support with anchor bolts. Unit may require special roof curb adapter. See plans for individual unit requirements.

- C. Isolation Curb Support: Install units on the existing isolation curbs according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." In the case of unit may require special roof curb adapter, the existing spring isolation base will be removed. See plans for individual unit requirements

3.2 CONNECTIONS

- A. Install piping adjacent to machine to allow service and maintenance.
 - 1. Gas Piping: Comply with applicable requirements in Division 23 Section "Fuel Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- B. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
 - 1. Install ducts to termination in roof curb.
 - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
 - 3. Connect supply ducts to rooftop unit with flexible duct connectors specified in Division 23 Section "Duct Accessories."
 - 4. Terminate return-air duct through roof structure and insulate space between roof and bottom of unit with 2-inch- thick, acoustic duct liner.
 - 5. Provide flexible connection between ductwork and rooftop unit.
- C. Electrical System Connections: Comply with applicable requirements in Division 23 Sections for power wiring, switches, and motor controls.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding."
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field quality-control tests and inspections and prepare test reports:
 - 1. After installing rooftop air conditioners and after electrical circuitry has been energized, test units for compliance with requirements.
 - 2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
 - 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove malfunctioning units, replace with new units, and retest as specified above.

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.

- B. Complete installation and startup checks according to manufacturer's written instructions and do the following:
1. Inspect for visible damage to unit casing.
 2. Inspect for visible damage to furnace combustion chamber.
 3. Inspect for visible damage to compressor, air-cooled outside coil, and fans.
 4. Inspect internal insulation.
 5. Verify that labels are clearly visible.
 6. Verify that clearances have been provided for servicing.
 7. Verify that controls are connected and operable.
 8. Verify that filters are installed.
 9. Clean outside coil and inspect for construction debris.
 10. Clean furnace flue and inspect for construction debris.
 11. Connect and purge gas line.
 12. Adjust vibration isolators.
 13. Inspect operation of barometric dampers.
 14. Lubricate bearings on fan.
 15. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
 16. Adjust fan belts to proper alignment and tension.
 17. Start unit according to manufacturer's written instructions.
 - a. Start refrigeration system in summer only.
 - b. Complete startup sheets and attach copy with Contractor's startup report.
 18. Inspect and record performance of interlocks and protective devices; verify sequences.
 19. Operate unit for an initial period as recommended or required by manufacturer.
 20. Perform the following operations for both minimum and maximum firing and adjust burner for peak efficiency. Adjust pilot to stable flame.
 - a. Measure gas pressure on manifold.
 - b. Measure combustion-air temperature at inlet to combustion chamber.
 - c. Measure flue-gas temperature at furnace discharge.
 - d. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.
 - e. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.
 21. Calibrate thermostats.
 22. Adjust and inspect high-temperature limits.
 23. Inspect outside-air dampers for proper stroke and interlock with return-air dampers.
 24. Start refrigeration system and measure and record the following:
 - a. Coil leaving-air, dry- and wet-bulb temperatures.
 - b. Coil entering-air, dry- and wet-bulb temperatures.
 - c. Outside-air, dry-bulb temperature.
 - d. Outside-air-coil, discharge-air, dry-bulb temperature.
 25. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
 26. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.
 - a. Supply-air volume.
 - b. Return-air volume.
 - c. Relief-air volume.
 - d. Outside-air intake volume.

27. Simulate maximum cooling demand and inspect the following:
 - a. Compressor refrigerant suction and hot-gas pressures.
 - b. Short circuiting of air through outside coil or from outside coil to outside-air intake.

28. Verify operation of remote panel, including pilot-light operation and failure modes. Inspect the following:
 - a. High-limit heat exchanger.
 - b. Warm-up for morning cycle.
 - c. Freezestat operation.
 - d. Economizer to limited outside-air changeover.
 - e. Alarms.

29. After startup and performance testing, change filters, vacuum heat exchanger and cooling and outside coils, lubricate bearings, adjust belt tension, and inspect operation of power vents.

3.5 ADJUSTING

- A. Adjust initial temperature and humidity set points.
- B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain rooftop air conditioners. Refer to Division 23 Section "General Mechanical Requirements".

END OF SECTION

GAS ROOFTOP PACKAGED AC UNITS

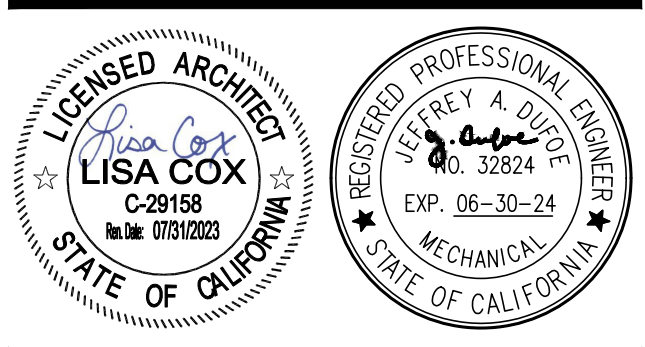
UNIT NO.	MANUFACTURER & MODEL NO.	SERVICE	C.F.M.	OSA (CFM)	E.S.P. (IN. WC)	COOLING			HEATING			ELECTRICAL				POWER EXHAUST				UNIT WEIGHT LBS	CURB ADAPTER WEIGHT LBS	EXISTING CURB WEIGHT LBS	REMARKS	
						TOTAL (MBH)	SENSIBLE (MBH)	E.E.R. / S.E.E.R.	INPUT (MBH)	OUTPUT (MBH)	A.F.U.E. (%)	INDOOR MOTOR B.H.P.	V./PH./HZ.	M.C.A.	M.O.P.	V./PH./HZ.	H.P.	F.L.A.	M.C.A.					M.O.C.P.
AC 1-A	TRANE YHD-150	BUILDING A	4,800	1,200	0.75	152.39	119.70	12.1 / 15.0	150.00	120.00	80	2.43	460/3/60	30	40	460/3/60	2	6.5	8.1	14.6	2,800	200	220	1 2 3 4 5 6 8 9 10 11
AC 1-B	TRANE YHC-074	BUILDING B	2,400	360	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11
AC 2-B	TRANE YSD-300	BUILDING B	10,000	3,300	1.00	281.98	201.36	10.0 / 12.0	250.00	200.00	80	8.73	460/3/60	56	70	460/3/60	6	14.3	17.9	32.2	2,800	N/A	250	1 2 3 4 5 6 8 9 10 11
AC 3-B	TRANE YHC-120	BUILDING B	4,000	2,500	0.75	113.97	94.06	12.4 / 15.2	150.00	120.00	80	1.34	460/3/60	22	25	460/3/60	2	4.5	5.6	10.1	1,700	300	200	1 2 3 4 5 6 8 9 10 11
AC 1-C	TRANE YHD-180	BUILDING C	6,000	1,500	1.00	180.52	142.17	12.0 / 15.0	250.00	200.00	80	2.98	460/3/60	33	45	460/3/60	2	6.5	8.1	14.6	3,000	N/A	220	1 2 3 4 5 6 8 9 11 9
AC 1-D	TRANE YHC-074	BUILDING D	2,400	800	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11
AC 2-D	TRANE YHC-074	BUILDING D	2,400	800	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11
AC 3-D	TRANE YHC-074	BUILDING D	2,400	800	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11
AC 1-E1	TRANE YHC-074	BUILDING E (AREA 1)	2,400	800	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11
AC 1-E2	TRANE YHC-074	BUILDING E (AREA 2)	2,400	800	0.75	73.60	58.70	13.1 / 16.0	80.00	64.80	80	92	460/3/60	18	20	460/3/60	N/A	N/A	N/A	N/A	1,170	130	100	1 2 3 4 5 6 7 9 10 11

- ① VERTICAL DUCT DISCHARGE PACKAGED DX AC UNIT.
- ② ELECTRICAL TO PROVIDE FUSED DISCONNECT.
- ③ PROVIDE THERMOSTAT INSTALLED AT 48" AFF.
- ④ PROVIDE WITH CURB ADAPTER.
- ⑤ NO CURB ADAPTER REQUIRED. REUSE EXISTING CURB.
- ⑥ FURNISH WITH FACTORY PROVIDED CO2 MONITORING FOR DEMAND CONTROL VENTILATION.
- ⑦ PROVIDE WITH UNIT WITH MODULATING ECONOMIZER WITH FAULT DETECTION & DIAGNOSTIC SYSTEM.
- ⑧ PROVIDE WITH UNIT WITH MODULATING ECONOMIZER AND POWER EXHAUST WITH FAULT DETECTION & DIAGNOSTIC SYSTEM.
- ⑨ PROVIDE WITH UNIT WITH MODULATING ECONOMIZER WITH FAULT DETECTION & DIAGNOSTIC SYSTEM.
- ⑩ CONTRACTOR TO REMOVE AND PROTECT CARRIER CCN CONTROLLER FOR INSTALLATION IN REPLACEMENT UNIT. CONTRACTOR TO RE-INSTALL AND PROGRAM AS REQUIRED OWNER CCN CONTROLLER IN NEW RTU. SEE SPECIFICATIONS.
- ⑪ EXISTING SMOKE DETECTORS MUST BE MOUNTED ON UNIT MOUNTED SHALL BE REMOVED AND RE-INSTALLED. PROVIDE NECESSARY HARDWARE FOR UNIT SPOT DOWN. COORDINATE WITH FIRE ALARM VENDOR.



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 HVAC REPLACEMENT
 MURRIETA VALLEY UNIFIED SCHOOL DISTRICT**
 23801 SAINT RAPHAEL DRIVE
 MURRIETA, CA 92562

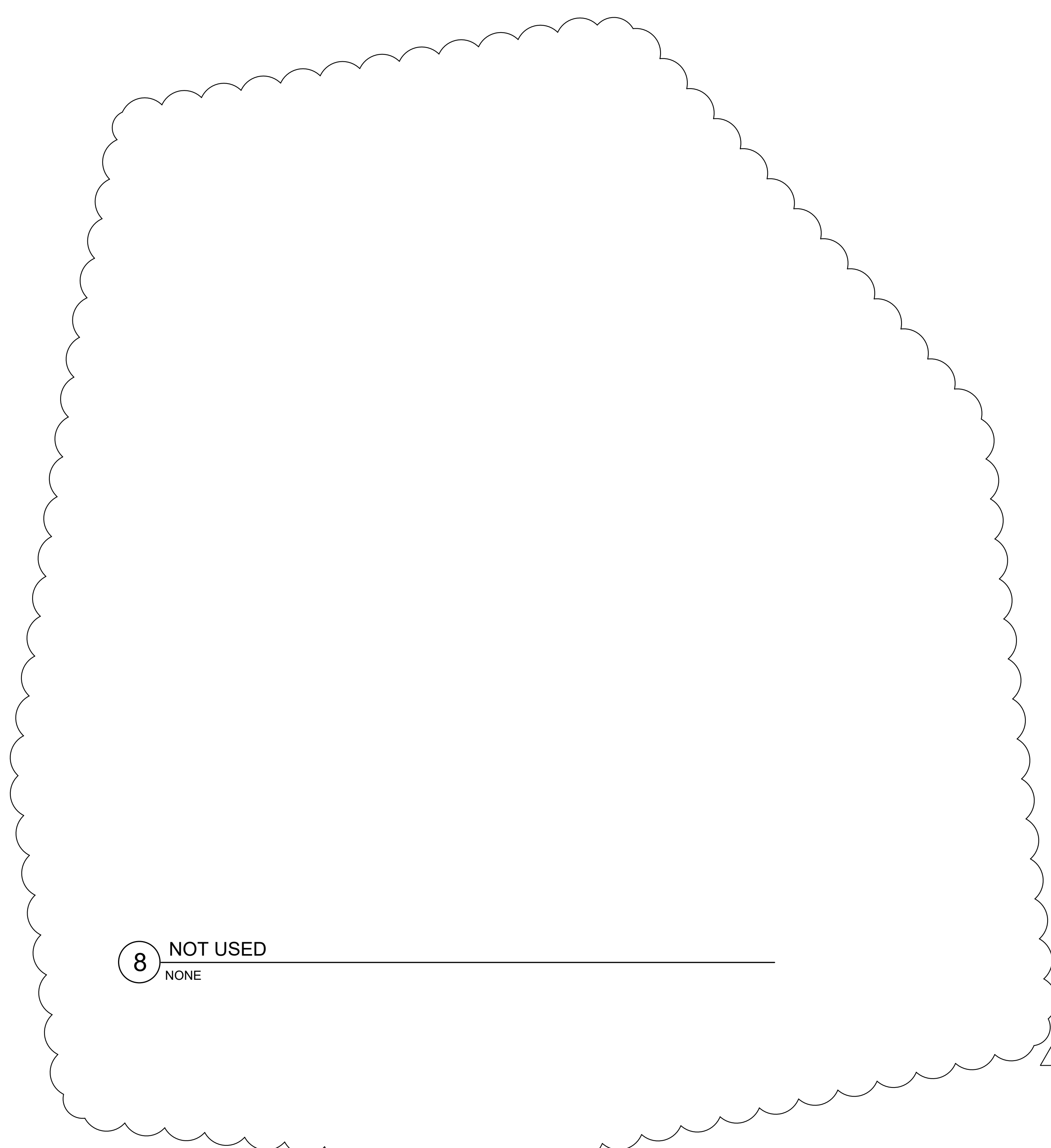


NO	DATE	BY	DESCRIPTION
①	09/23/22	JD	Addendum 1
②	10/17/22	JD	Addendum 2
REVISIONS			

DRAWN: RV CHECKED: JD
 DATE: 09/22/2022 SCALE:
 PROJECT NUMBER: 1726200

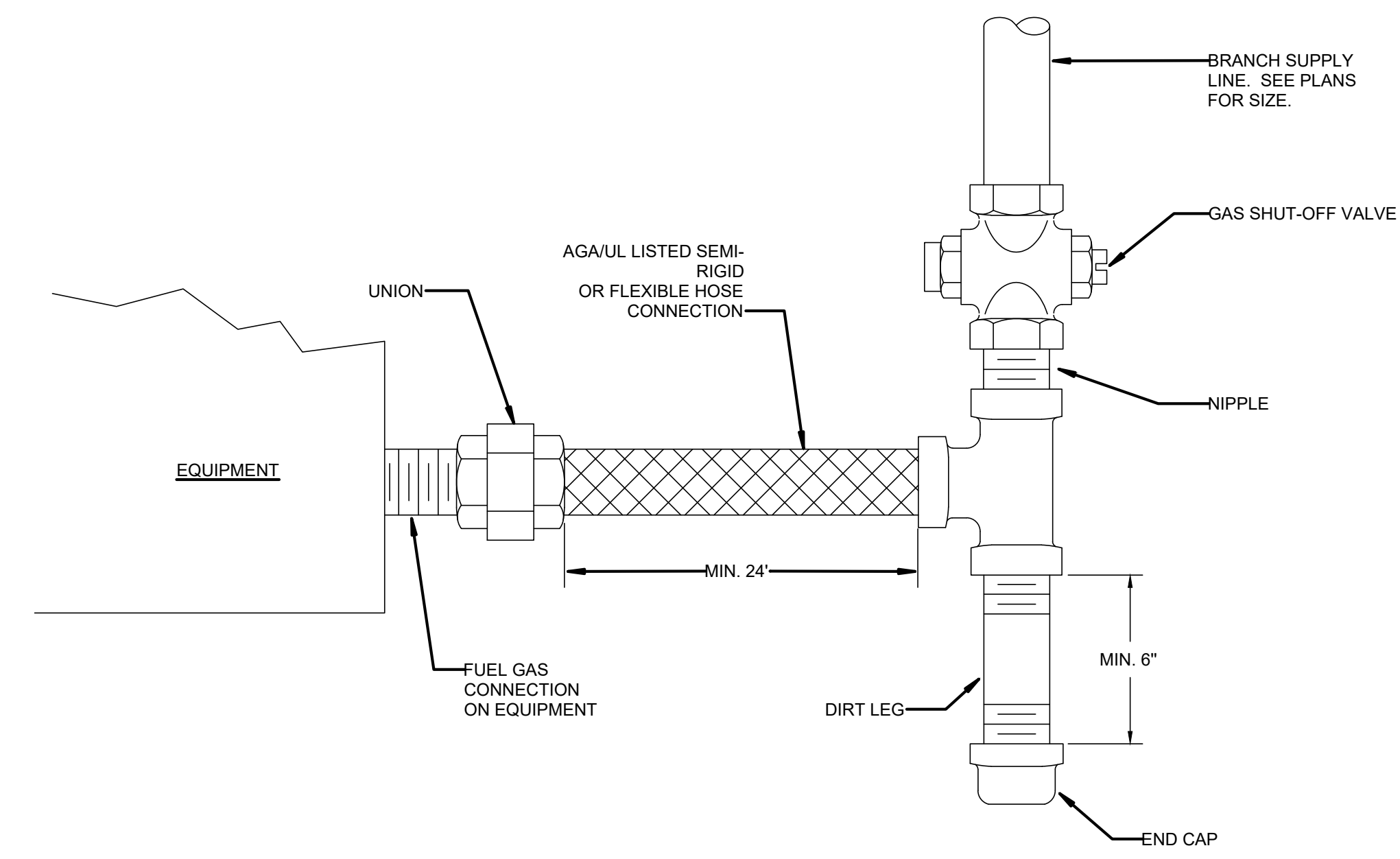
**MECHANICAL
 SCHEDULES**

DRAWING NUMBER: **M-1.1**

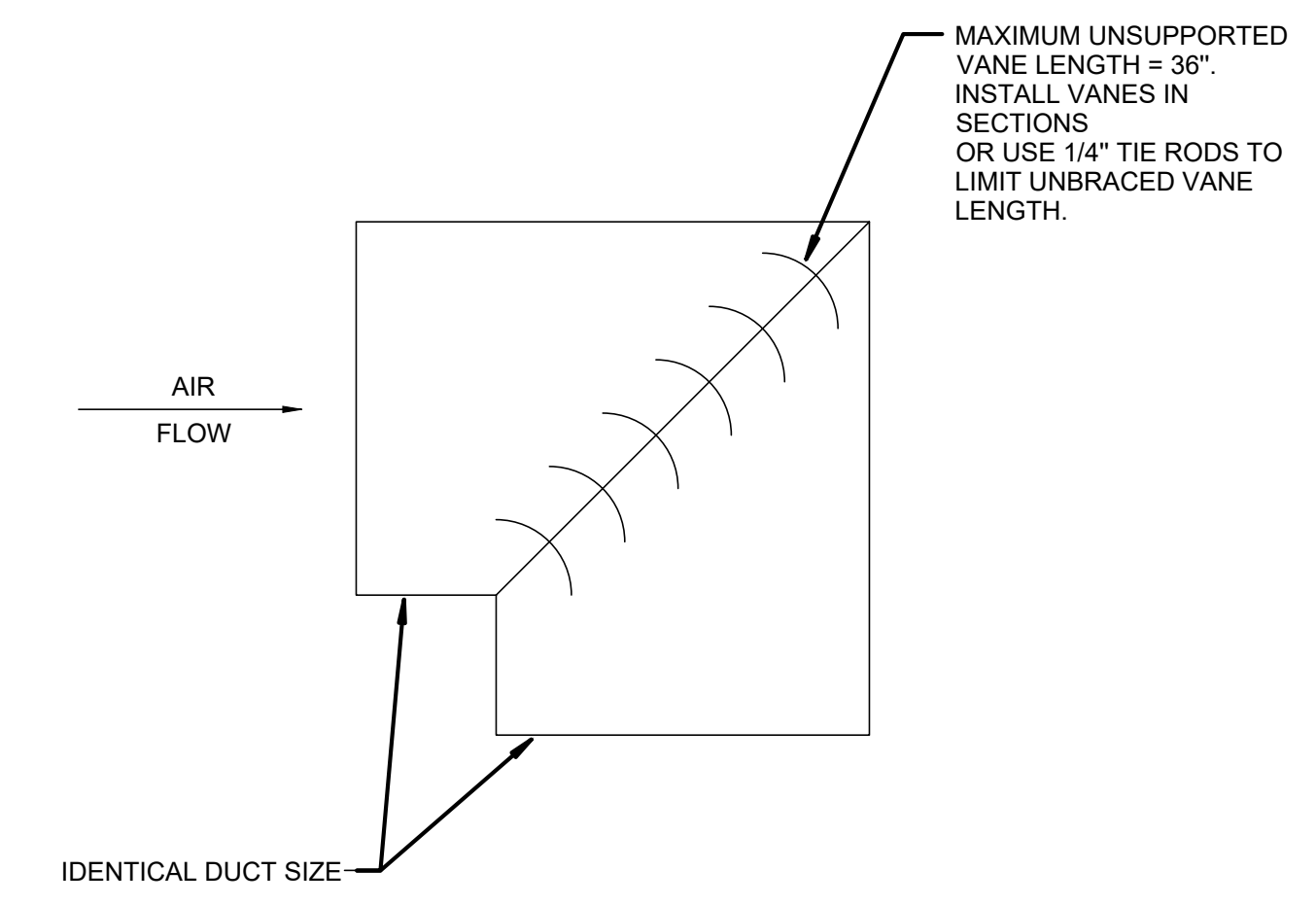


8 NOT USED
NONE

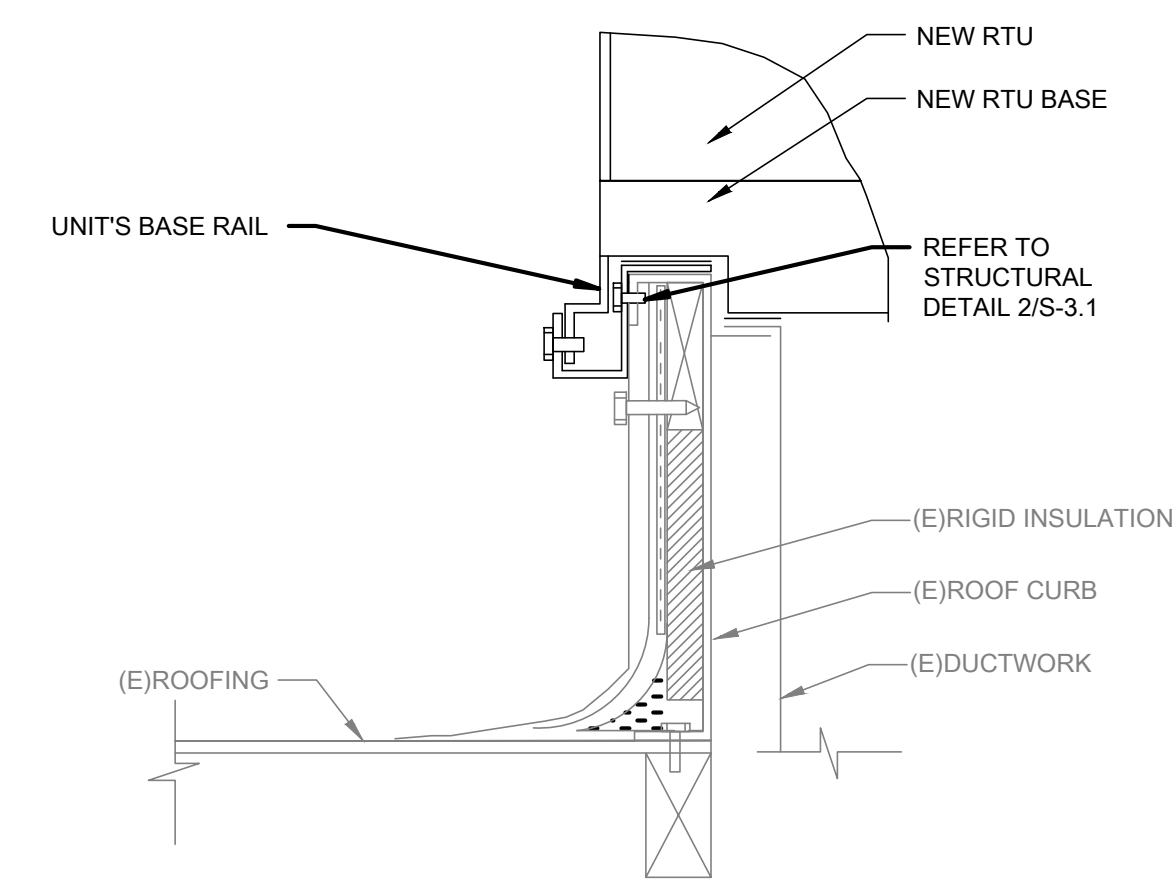
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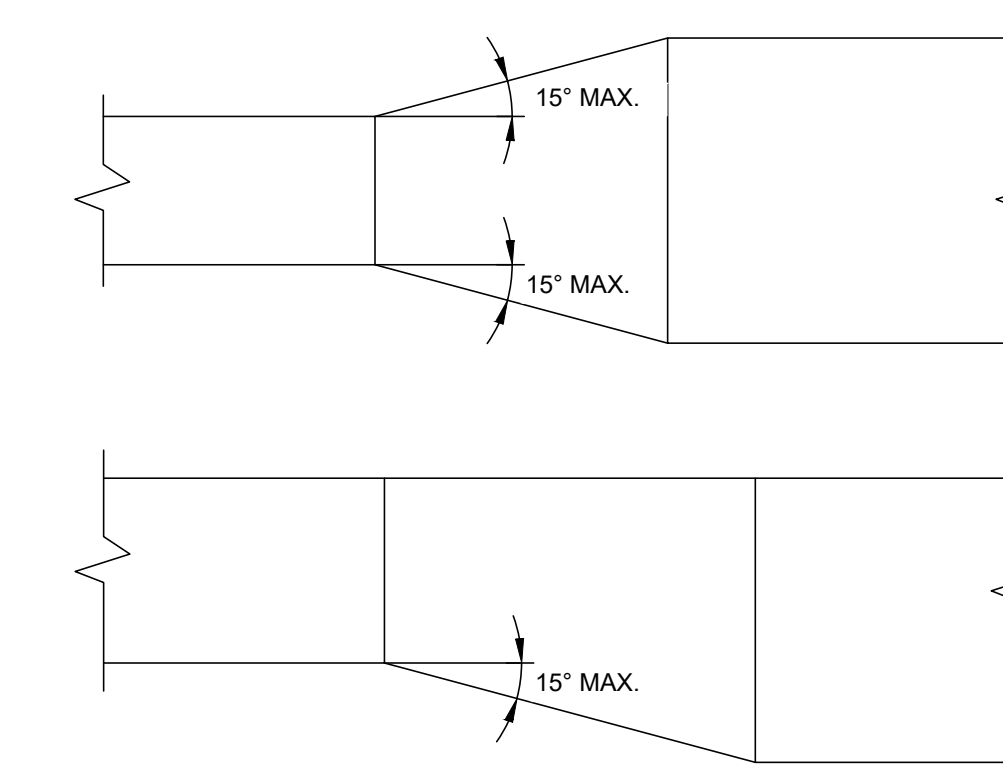
5 EQUIPMENT FUEL GAS CONNECTION DETAIL
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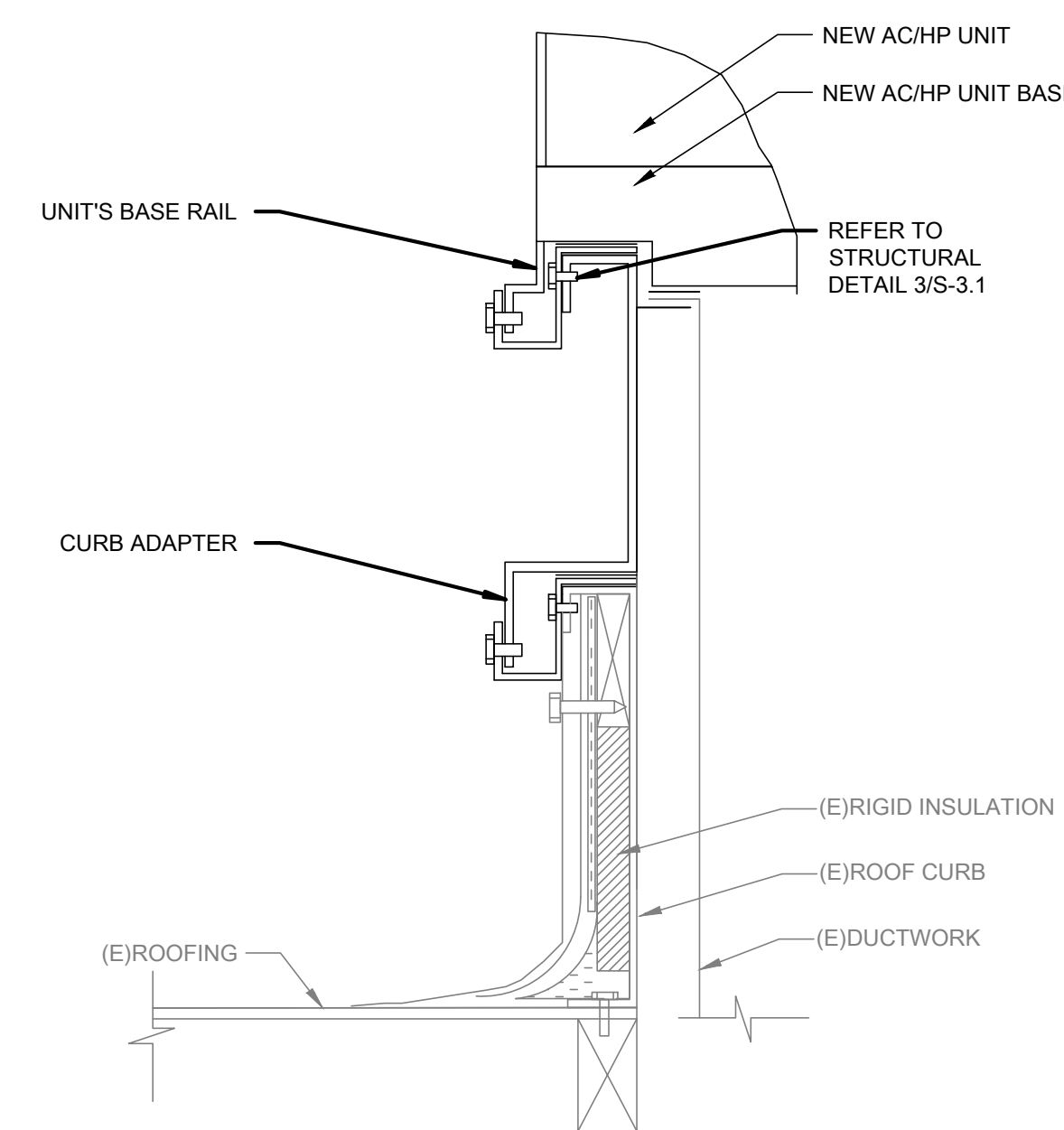
1 FILTERED ELBOW WITH TURNING VANES DETAIL
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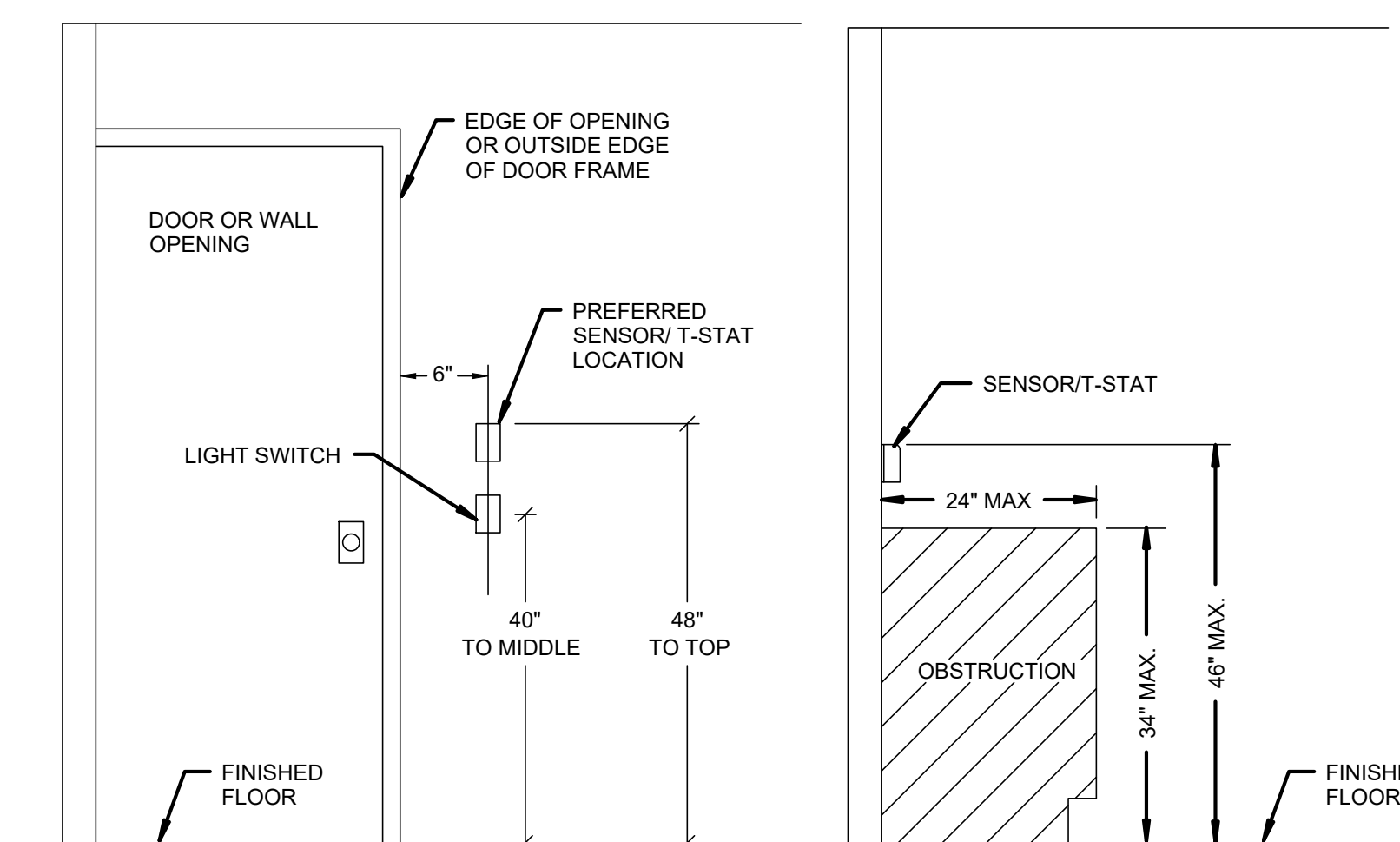
6 RTU AND EXISTING ROOF CURB DETAIL
NONE



2 DUCT TRANSITION DETAIL
NONE

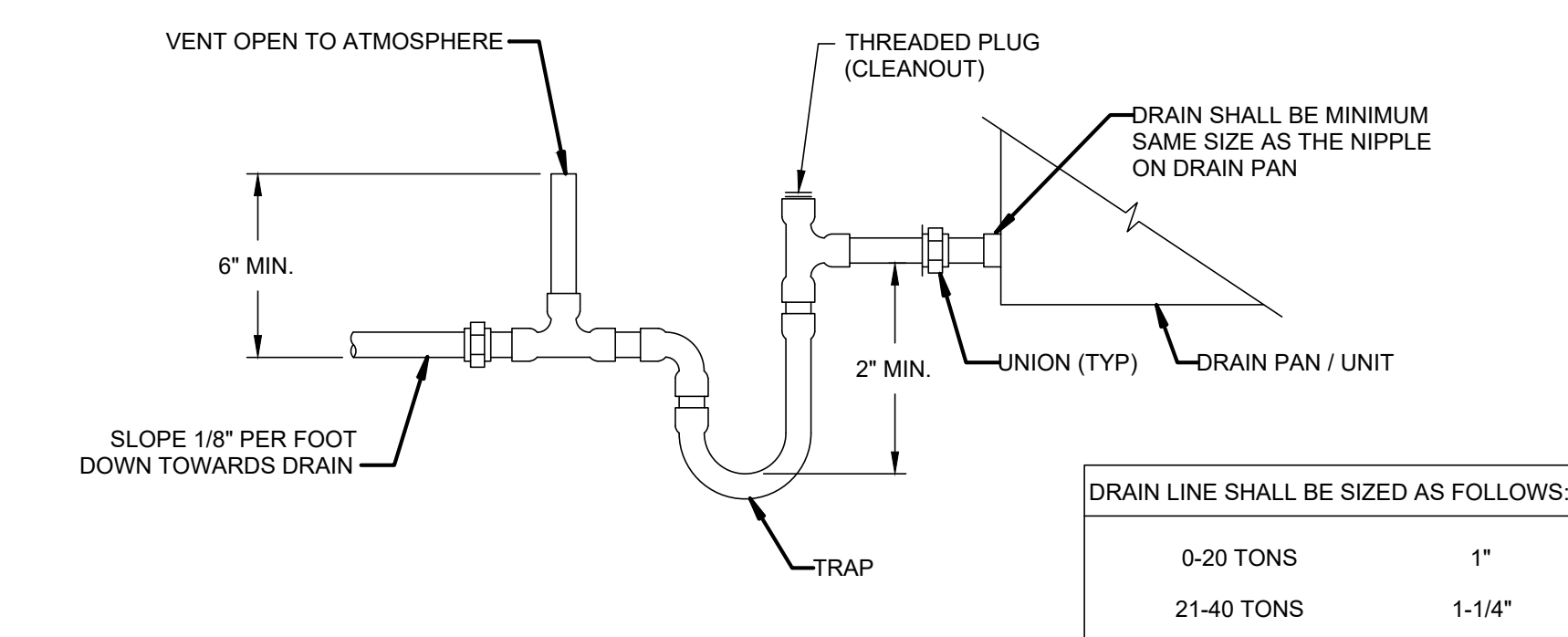


7 RTU, CURB ADAPTER, AND EXISTING ROOF CURB DETAIL
NONE



NOTES:
1. DO NOT INSTALL T-STATS ON EXTERIOR WALLS.
2. DO NOT INSTALL CO2 SENSORS ON ACOUSTICAL PANELS.
3. SEE ARCHITECTURAL DETAILS FOR FURTHER COORDINATION AND SENSOR CLUSTERS DETAILS.

3 THERMOSTAT MOUNTING DETAIL
NONE



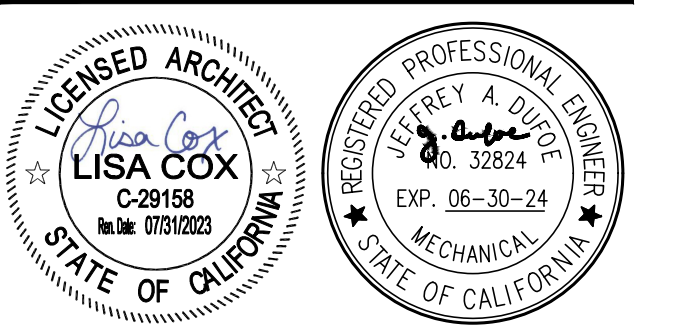
* BUT NOT LESS THAN FULL SIZE EQUIP. CONN.

4 CONDENSATE DRAIN DETAIL
NONE



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MURRIETA, CA 92562



NO	DATE	BY	DESCRIPTION
△	09/23/22	JD	Addendum 1
△	10/17/22	JD	Addendum 2
REVISIONS			

DRAWN: RV CHECKED: JD
DATE: 09/22/2022 SCALE:
PROJECT NUMBER: 1726200

**MECHANICAL
DETAILS**

DRAWING NUMBER: **M-5.1**



8163 Rochester Avenue
Rancho Cucamonga, CA 91730
P. +1 909-987-0909
PBK.com

October 18, 2022

TO : All Bidders
FROM : Lisa Cox
PROJECT : Thompson Middle School HVAC Replacement
Project 1726300.41
SUBJECT : Addendum 1
DSA : 04-119844 / File 33-32

The following changes, omissions, and/or additions to the Project Manual and/or Drawings shall apply to proposals made for and to the execution of the various parts of the work affected thereby, and all other conditions shall remain the same.

Careful note of the Addendum shall be taken by all parties of interest so that the proper allowances may be made in strict accordance with the Addendum, and that all trades shall be fully advised in the performance of the work which will be required of them.

Bidder shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

In case of conflict between Drawings, Project Manual, and this Addendum, this Addendum shall govern.

1. PROJECT MANUAL

1.1 SECTION 23 81 19 - ROOFTOP AIR CONDITIONERS (Attached)

- A. Modified Specification Section for new direct digital control systems requirements for HVAC.

DRAWINGS

Mechanical

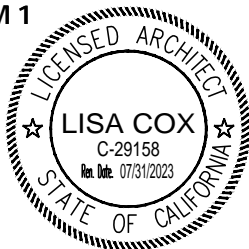
1.2 DRAWING M-1.1 - MECHANICAL SCHEDULES (Attached)

- A. Updated Note 12 to reflect control changes: CONTRACTOR TO REMOVE AND PROTECT CARRIER CCN CONTROLLER FOR INSTALLATION IN REPLACEMENT UNIT. CONTRACTOR TO RE-INSTALL AND PROGRAM AS REQUIRED OWNER CCN CONTROLLER IN NEW RTU. SEE SPECIFICATIONS.

END OF ADDENDUM 1

Submitted by,

LISA COX
Architect, AIA
Principal



LC:WA:hb/P41726300x1-add

Attachments: Section 23 81 19 - Rooftop Air Conditioners
Drawing M-1.1

SECTION 23 81 19

ROOFTOP AIR CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following rooftop air conditioners:

1. Cooling and heating units 6 tons and smaller.
2. Cooling and heating units 7-1/2 to 20 tons.
3. Cooling and heating units larger than 20 tons.

1.3 DEFINITIONS

- A. DDC: Direct-digital controls.

1.4 SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Prepare the following by or under the supervision of a qualified professional engineer:
 1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
 3. Wiring Diagrams: Power, signal, and control wiring.
- C. Manufacturer Seismic Qualification Certification: Submit certification that rooftop air conditioners, accessories, and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls." Include the following:
 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For rooftop air conditioners to include in emergency, operation, and maintenance manuals, as specified in Division 23 Section "Basic Mechanical Materials and Methods".
- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of rooftop air conditioners and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."
- D. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- E. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- F. Comply with NFPA 54 for gas-fired furnace section.
- G. ARI Certification: Units shall be ARI certified and listed.
- H. ARI Compliance for Units with Capacities Less Than 65,000 Btuh: Rate rooftop air-conditioner capacity according to ARI 210/240, "Unitary Air-Conditioning and Air-Source Heat Pump Equipment."
 - 1. Sound Power Level Ratings: Comply with ARI 270, "Sound Rating of Outdoor Unitary Equipment."
- I. ARI Compliance for Units with Capacities from 65,000 to 250,000 Btuh : Rate rooftop air-conditioner capacity according to ARI 340/360, "Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment."
 - 1. Sound Power Level Ratings: Comply with ARI 270, "Sound Rating of Outdoor Unitary Equipment."

1.6 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in 23 Section "Basic Mechanical Materials and Methods".
- C. Coordinate size, location, and installation of rooftop air-conditioner manufacturer's roof curbs and equipment supports with roof installer.
 - 1. Coordinate installation of restrained vibration isolation roof-curb rails.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of rooftop air conditioners that fail in materials or workmanship within specified warranty period.
1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.
 2. Warranty Period for Heat Exchangers: Manufacturer's standard, but not less than 10 years from date of Substantial Completion.
 3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 4. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 5. Warranty Period for Variable-Speed Fan Motors: Manufacturer's standard, but not less than three years from date of Substantial Completion.
 6. Warranty Period for Electronic Thermostats: Manufacturer's standard, but not less than three years from date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Fan Belts: One set for each belt-drive fan.
 2. Filters: One set of filters for each unit.

PART 2 - PRODUCTS

2.1 ROOFTOP AIR CONDITIONERS 6 TONS AND SMALLER

- A. Manufacturers:
1. Trane Corp.
- B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, indoor fan and outside coil fan, refrigeration and temperature controls, filters, and dampers.
- C. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, minimum 1/2-inch- thick thermal insulation, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.
- D. Indoor Fan: Forward curved, centrifugal, directly driven by multispeed or belt driven by single-speed motor based on scheduled performance.
- E. Outside Coil Fan: Propeller type, directly driven by motor.
- F. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
- G. Compressor: Scroll compressor with integral vibration isolators, internal overcurrent and overtemperature protection, internal pressure relief, and crankcase heater.
- H. Refrigeration System:
1. Compressor.

2. Outside coil and fan.
 3. Indoor coil and fan.
 4. Expansion valve with replaceable thermostatic element.
 5. Refrigerant dryer.
 6. High-pressure switch.
 7. Low-pressure switch.
 8. Thermostat for coil freeze-up protection during low-ambient temperature operation or loss of air.
 9. Low-ambient switch.
 10. Brass service valves installed in discharge and liquid lines.
 11. Charge of refrigerant.
- I. Filters: 2-inch- thick, fiberglass, pleated, throwaway filters in filter rack complying with all DSA Requirements.
- J. Demand Control Ventilation: Units shall be provided with unit mounted CO2 sensors and all necessary hardware to provide in conjunction with economizer function fully operable DCV (Demand Control Ventilation System). As required, unit manufacturer will provide remote sensors in classroom only if unit cannot be equipped with return duct mounted CO2 sensors and control capability. Otherwise field wiring by mechanical contractor as required.
- K. Heat Exchanger: Stainless-steel construction for natural-gas-fired burners with the following controls:
1. Redundant single or dual gas valve with manual shutoff.
 2. Direct-spark pilot ignition.
 3. Electronic flame sensor.
 4. Induced-draft blower.
 5. Flame rollout switch.
- L. Economizer: Return- and outside-air dampers with neoprene seals, outside-air filter, and hood.
1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 2. Control: Electronic-control system uses mixed-air temperature and selects between outside-air and return-air enthalpy to adjust mixing dampers.
 3. Relief Damper: Gravity actuated with bird screen and hood.
- M. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker, remote power exhaust shall be powered independent, coordinate all requirement with electrical contractor to include full necessary scope of work for installation.
- N. Unit Controls: Solid-state control board and components contain at least the following features:
1. Indoor fan on/off delay.
 2. Default control to ensure proper operation after power interruption.
 3. Service relay output.
 4. Unit diagnostics and diagnostic code storage.
 5. Field-adjustable control parameters.
 6. Economizer control.
 7. Gas valve delay between first- and second-stage firing.
 8. Indoor-air quality control with carbon dioxide sensor.
 9. Low-ambient control, allowing operation down to 0 deg F.
 10. Minimum run time.
 11. Night setback mode.
 12. Return-air temperature limit.
 13. Smoke alarm with smoke detector installed in supply and return air.
 14. Low-refrigerant pressure control.
 15. Digital display of outside temperature, supply-air temperature, return-air temperature, economizer damper position, indoor-air quality, and control parameters.

- O. DDC: Unit shall be provided with stand alone Trane DDC control module as well as necessary Trane hardware to wire to field mounted Carrier CCN control module. Contractor shall remove from replaced unit Carrier Premiere Link module, and shall be responsible for rewiring and programming the Trane Equipment through the Carrier CCN I-Vu network. Control module provided with unit shall be fully programmed and compatible with temperature-control system at the existing campus. Systems shall be fully functional. Owner shall provide at start of work control reports identifying that existing controllers are functioning properly prior to removal from existing equipment. Contractors are responsible to safely remove and protect all controls components until safely restored and operational in the replacement equipment.
- P. Thermostats:
 - 1. Existing space thermostats shall be re-used. The new RTU are to be equipped with CO2 monitoring/control and shall be programmable DCV ventilation using the RTU mounted controls.
- Q. Accessories:
 - 1. Service Outlets: Two, 115-V, ground-fault, circuit-interrupter type.
 - 2. Condensate drain trap.
 - 3. Dirty-filter switch.
- R. Roof Curb: Roof curb is existing to re-use. Unit may require special adapter. See plans for individual unit requirements.
- S. Horizontal Discharge Roof Curb (Where Required): Steel with corrosion-protection coating, insulation, gasketing, and factory-installed wood nailer, and configured to convert from downflow to horizontal airflow; complying with NRCA standards; minimum height of 26 inches. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2-inch static deflection and vertical and horizontal restraints; with elastomeric waterproof membrane.

2.2 ROOFTOP AIR CONDITIONERS 7-1/2 TO 25 TONS

- A. Manufacturers:
 - 1. Trane Corp.
- B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, indoor fan and outside coil fan, refrigeration and temperature controls, filters, and dampers.
- C. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, minimum 1/2-inch- thick thermal insulation, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.
- D. Indoor Fan: Forward curved, centrifugal, belt driven with adjustable motor sheaves, grease-lubricated ball bearings, and motor.
- E. Outside Coil Fan: Propeller type, directly driven by permanently lubricated motor.
- F. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
- G. Compressor(s): One or two scroll compressors with integral vibration isolators, internal overcurrent and overtemperature protection, internal pressure relief, and crankcase heater(s).
- H. Refrigeration System:
 - 1. Compressor(s).
 - 2. Outside coil and fan.
 - 3. Indoor coil and fan.

4. Check valves.
 5. Expansion valves with replaceable thermostatic elements.
 6. Refrigerant dryers.
 7. High-pressure switches.
 8. Low-pressure switches.
 9. Thermostats for coil freeze-up protection during low-ambient temperature operation or loss of air.
 10. Independent refrigerant circuits.
 11. Brass service valves installed in discharge and liquid lines.
 12. Charge of refrigerant.
 13. Timed Off Control: Automatic-reset control shuts compressor off after five minutes.
- I. Filters: 2-inch- thick, fiberglass, pleated, throwaway filters in filter rack complying with all DSA Requirements.
- J. Demand Control Ventilation: Units shall be provided with unit mounted CO2 sensors and all necessary hardware to provide in conjunction with economizer function fully operable DCV (Demand Control Ventilation System). As required, unit manufacturer will provide remote sensors in classroom only if unit cannot be equipped with return duct mounted CO2 sensors and control capability. Otherwise field wiring by mechanical contractor as required.
- K. Heat Exchanger: Stainless-steel construction for natural-gas-fired burners with the following controls:
1. Redundant single or dual gas valve with manual shutoff.
 2. Direct-spark pilot ignition.
 3. Electronic flame sensor.
 4. Induced-draft blower.
 5. Flame rollout switch.
- L. Economizer: Return- and outside-air dampers with neoprene seals, outside-air filter, and hood.
1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 2. Control: Electronic-control system uses mixed-air temperature and selects between outside-air and return-air enthalpy to adjust mixing dampers.
 3. Relief Damper: Gravity actuated with bird screen and hood.
- M. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker.
- N. Unit Controls: Solid-state control board and components contain at least the following features:
1. Indoor fan on/off delay.
 2. Default control to ensure proper operation after power interruption.
 3. Service relay output.
 4. Unit diagnostics and diagnostic code storage.
 5. Field-adjustable control parameters.
 6. Economizer control.
 7. Gas valve delay between first- and second-stage firing.
 8. Indoor-air quality control with carbon dioxide sensor.
 9. Low-ambient control, allowing operation down to 0 deg F.
 10. Minimum run time.
 11. Night setback mode.
 12. Return-air temperature limit.
 13. Smoke alarm with smoke detector installed in supply and return air.
 14. Low-refrigerant pressure control.
 15. Digital display of outside temperature, supply-air temperature, return-air temperature, economizer damper position, indoor-air quality, and control parameters.

- O. DDC: Unit shall be provided with stand alone Trane DDC control module as well as necessary Trane hardware to wire to field mounted Carrier CCN control module. Contractor shall remove from replaced unit Carrier Premiere Link module, and shall be responsible for rewiring and programming the Trane Equipment through the Carrier CCN I-Vu network. Control module provided with unit shall be fully programmed and compatible with temperature-control system at the existing campus. Systems shall be fully functional. Owner shall provide at start of work control reports identifying that existing controllers are functioning properly prior to removal from existing equipment. Contractors are responsible to safely remove and protect all controls components until safely restored and operational in the replacement equipment.
- P. Thermostats:
 - 1. Existing space thermostats shall be re-used. The new RTU are to be equipped with CO2 monitoring/control and shall be programmable DCV ventilation using the RTU mounted controls.
- Q. Accessories:
 - 1. Service Outlets: Two, 115-V, ground-fault, circuit-interrupter type.
 - 2. Condensate drain trap.
 - 3. Dirty-filter switch.
 - 4. Power exhaust fan. See plans for individual unit requirements.
- R. Roof Curb: Roof curb is existing to re-use. Unit may require special adapter curb. See plans for individual unit requirements.
- S. Horizontal Discharge Roof Curb (Where Required): Steel with corrosion-protection coating, insulation, gasketing, and factory-installed wood nailer, and configured to convert from downflow to horizontal airflow; complying with NRCA standards; minimum height of 26 inches. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2-inch static deflection and vertical and horizontal restraints; with elastomeric waterproof membrane.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb, maintaining manufacturer's recommended clearances. Install according to ARI Guideline B.
- B. Curb Support: . Install and secure rooftop air conditioners on the existing roof curbs and coordinate roof penetrations and flashing with roof construction. Secure units to curb support with anchor bolts. Unit may require special roof curb adapter. See plans for individual unit requirements.
- C. Isolation Curb Support: Install units on the existing isolation curbs according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." In the case of unit may require special roof curb adapter, the existing spring isolation base will be removed. See plans for individual unit requirements

3.2 CONNECTIONS

- A. Install piping adjacent to machine to allow service and maintenance.
 - 1. Gas Piping: Comply with applicable requirements in Division 23 Section "Fuel Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.

- B. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
 - 1. Install ducts to termination in roof curb.
 - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
 - 3. Connect supply ducts to rooftop unit with flexible duct connectors specified in Division 23 Section "Duct Accessories."
 - 4. Terminate return-air duct through roof structure and insulate space between roof and bottom of unit with 2-inch-thick, acoustic duct liner.
 - 5. Provide flexible connection between ductwork and rooftop unit.
- C. Electrical System Connections: Comply with applicable requirements in Division 23 Sections for power wiring, switches, and motor controls.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding."
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field quality-control tests and inspections and prepare test reports:
 - 1. After installing rooftop air conditioners and after electrical circuitry has been energized, test units for compliance with requirements.
 - 2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
 - 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove malfunctioning units, replace with new units, and retest as specified above.

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
- B. Complete installation and startup checks according to manufacturer's written instructions and do the following:
 - 1. Inspect for visible damage to unit casing.
 - 2. Inspect for visible damage to furnace combustion chamber.
 - 3. Inspect for visible damage to compressor, air-cooled outside coil, and fans.
 - 4. Inspect internal insulation.
 - 5. Verify that labels are clearly visible.
 - 6. Verify that clearances have been provided for servicing.
 - 7. Verify that controls are connected and operable.
 - 8. Verify that filters are installed.
 - 9. Clean outside coil and inspect for construction debris.
 - 10. Clean furnace flue and inspect for construction debris.
 - 11. Connect and purge gas line.
 - 12. Adjust vibration isolators.
 - 13. Inspect operation of barometric dampers.

14. Lubricate bearings on fan.
15. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
16. Adjust fan belts to proper alignment and tension.
17. Start unit according to manufacturer's written instructions.
 - a. Start refrigeration system in summer only.
 - b. Complete startup sheets and attach copy with Contractor's startup report.
18. Inspect and record performance of interlocks and protective devices; verify sequences.
19. Operate unit for an initial period as recommended or required by manufacturer.
20. Perform the following operations for both minimum and maximum firing and adjust burner for peak efficiency. Adjust pilot to stable flame.
 - a. Measure gas pressure on manifold.
 - b. Measure combustion-air temperature at inlet to combustion chamber.
 - c. Measure flue-gas temperature at furnace discharge.
 - d. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.
 - e. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.
21. Calibrate thermostats.
22. Adjust and inspect high-temperature limits.
23. Inspect outside-air dampers for proper stroke and interlock with return-air dampers.
24. Start refrigeration system and measure and record the following:
 - a. Coil leaving-air, dry- and wet-bulb temperatures.
 - b. Coil entering-air, dry- and wet-bulb temperatures.
 - c. Outside-air, dry-bulb temperature.
 - d. Outside-air-coil, discharge-air, dry-bulb temperature.
25. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
26. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.
 - a. Supply-air volume.
 - b. Return-air volume.
 - c. Relief-air volume.
 - d. Outside-air intake volume.
27. Simulate maximum cooling demand and inspect the following:
 - a. Compressor refrigerant suction and hot-gas pressures.
 - b. Short circuiting of air through outside coil or from outside coil to outside-air intake.
28. Verify operation of remote panel, including pilot-light operation and failure modes. Inspect the following:
 - a. High-limit heat exchanger.
 - b. Warm-up for morning cycle.
 - c. Freezestat operation.
 - d. Economizer to limited outside-air changeover.
 - e. Alarms.
29. After startup and performance testing, change filters, vacuum heat exchanger and cooling and outside coils, lubricate bearings, adjust belt tension, and inspect operation of power vents.

3.5 ADJUSTING

- A. Adjust initial temperature and humidity set points.
- B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain rooftop air conditioners. Refer to Division 23 Section "General Mechanical Requirements".

END OF SECTION

