



ADDENDUM No. 2
Request for Proposals (RFP)
19RFP054 HVAC and Plumbing Improvements

October 31, 2018

Item 1: Project Manual/ Specification Revision Items

Item 1:

Revisions to the specifications and project manual in reference to 19RFP054 is attached

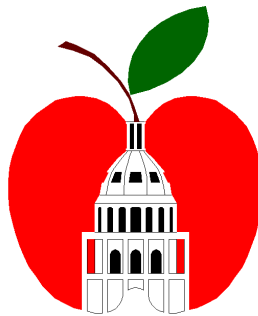
ADDENDUM NO. 2

FOR

**HVAC and Plumbing Improvements at
Bowie High School**

AISD PROJECT NO. 19-0042-BOWIE

Prepared for:



AUSTIN INDEPENDENT SCHOOL DISTRICT

Prepared by:

Vigain Harutunian, P.E.
Harutunian Engineering, Inc.
305 East Huntland Drive
Suite 500
Austin, Texas 78752
Telephone: (512) 454-2788
Fax: (512) 454-6434
Texas Firm Registration
Number F-2408



Addendum Date: October 31, 2018

Total Number of Pages (including this sheet): 8

This Addendum forms a part of the Contract and clarifies, corrects or modifies original Contract Documents, dated October 5, 2018. Acknowledge receipt of this addendum in space provided in proposal form. Failure to do so may subject responder to disqualification.

ADDENDUM NO. 2

PART 1 - PROJECT MANUAL / SPECIFICATION REVISION ITEMS

1.01 GENERAL REQUIREMENTS:

A. WORK IN CRAWL SPACES UNDER BUILDINGS

1. This Work includes effort inside the existing building crawl spaces located below the respective buildings on campus.
2. The Contractor shall carefully review the **“Crawl Spaces Temporary Ventilation”** requirements as noted on sheet G-GEN-02 and comply.
3. Work within the crawlspace includes, but is not limited to, opening/closing the manual isolation valves in the hydronic piping located in the crawl spaces to isolate certain portions of piping as required to sequence the Work, the provision of connections to the new HVAC units as noted in the documents (conduits/raceways, condensate drain lines, hydronic piping/specialties, etc.), cleaning existing condensate drain lines located in the crawl spaces, cleaning hydronic piping strainers located in the crawl spaces, and other elements as noted in the Contract Documents.

B. COMMENCEMENT OF WARRANTY PERIODS

1. This Work spans two (2) summer periods. The Contractor shall furnish, install and place into service products for the beneficial use of the Owner at each of the two (2) summer periods.
2. Please refer to the Contract Drawings, Sheet G-GEN-02 under “Sequence of Construction”, for the minimum products required to be furnished, installed and placed into service during each of the two (2) summer periods.
3. All warranty period termination dates as provided as part of this Work shall be calculated/based on the specified warranties, including any specialty/extended warranties as specified for certain products, and **the established date of Substantial Completion (Tuesday, August 11, 2020)**. The warranty period termination date of a product shall continue to be calculated/based on the established date of Substantial Completion (Tuesday, August 11, 2020) for this Work and shall **not** change if the product were installed, started, tested and/or placed into service for the beneficial use of the Owner **prior** to the established date of Substantial Completion (Tuesday, August 11, 2020).
4. Please refer to the special warranty requirements for specific products as noted in the specification sections.

C. SPECIAL WARRANTY PERIOD FOR SECTIONS 238219 AND 238223

As a reference, the following special warranty requirements are reiterated below that apply to both Section 238219 “Terminal Heating & Cooling Units Blower Coil Units” equipment and Section 238223 “Unit Ventilators” equipment:

Special Warranty: Manufacturer agrees to provide all required parts and labor at no additional cost to Owner to repair or replace components of units that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **Five (5) years from date of Substantial Completion.**
2. All Warranty work is to be performed by a qualified **Service Technician working directly for the equipment Manufacturer** (not for the Contractor or Sales Representative of the equipment manufacturer).
3. All service calls for the equipment requiring Warranty repairs need to be responded to at the earliest availability of the Manufacturer’s Service Technician, but by no more than a **Twenty-four (24) hour period.**
4. If during the Warranty period, the equipment is not performing per the specified/scheduled performance and requirements or has inherent issues not resolved by component repair or replacement, then **the equipment is to be replaced by the Contractor, at no additional cost to the Owner.**

D. SCHEDULING PRODUCT MANUFACTURING AND DELIVERY TO THE SITE

1. The Contractor shall carefully review with the equipment/product manufacturers the manufacturing lead times of all equipment/products as required to allow the successful completion of this Work within the dates allocated for this Work.
2. As an option to the Contractor, the Contractor may store products/equipment inside an existing building at the project site prior to their installation, but only under all of the following conditions:
 - a. Only after a student summer break period has commenced and no later than four (4) weeks prior to when a student summer break period is scheduled to end,
 - b. Only when the equipment will be permanently installed by the Contractor in the same summer break period,
 - c. Only if the building floors/elements are properly protected by the Contractor from any damage and per the Contract Documents, *and*
 - d. Only in areas where the Owner specifically allows such equipment to be stored.

Storage of any products and equipment inside buildings under any other conditions by the Contractor is not allowed unless authorized in writing by the Owner.

3. In no case shall the Contractor bring any product that is to be permanently installed at the project site as part of this Work unless the Contractor permanently installs, makes fully functional, and places the product into service for the beneficial use of the Owner no later than **ELEVEN (11) WEEKS** after the product was first brought to the project site.

4. The Contractor shall not store any products or equipment within the building crawl spaces except where such products are shown to be permanently installed in the respective building crawl space per the Contract Documents.
5. In all cases, all products/equipment shall be properly stored and packaged/protected from the elements/environment in strict accordance with the manufacturer requirements and the Contract Documents.

E. PAINTING OF ELEMENTS, INCLUDING PIPING SYSTEMS AND SUPPORT SYSTEMS

1. The Contractor shall carefully review and provide all painting requirements in Division 9 as required for this Work.
2. The Contractor shall carefully review and provide the painting of piping (the exterior of pipe walls **prior to the application of insulation of piping**, the exterior of piping insulation jacketing, etc.) as required per the Division 9 painting requirements.
3. The Contractor shall carefully review and provide the painting of pipe walls prior to the application of insulation of piping as required per Specification Section 099600 “High-Performance Coatings” Article 3.05.
 - a. **Refer to Specification Section 230719 “HVAC Piping and Equipment Insulation” Article 3.02 for additional requirements.**

F. GENERAL SITE CONDITIONS AND OTHER CONCURRENT CONSTRUCTION PROJECTS ON SITE

1. There are other construction projects on the Bowie High School campus that will take place during the same time as this Work. The Contractor shall carefully coordinate all elements of Work with the Owner and other Contractors that are on site.
2. The following is based on information provided by one of the other concurrent projects onsite and serves as a set of conditions for this Work:
 - a. The driveway entry to Bowie High school from West Slaughter Lane next to the Track/Football field may be **closed down** due to construction efforts by other onsite Contractors.
 - b. **All traffic for this Work will enter and exit through Wolftrap Drive, unless authorized otherwise in writing by the Owner.**
 - c. As part of construction efforts by other onsite Contractors, buried lines/utilities may be installed across Wolftrap Drive at some time period during this Work.
 - 1) The Contractor is asked to carefully coordinate and schedule traffic/delivery with the Owner and other onsite Contractors during the course of this Work and at least four (4) weeks prior to the required time of use of Wolftrap Drive for this Work.
 - d. Parking lot areas at Bowie High School may be under construction and reconfigured as part of construction efforts by other onsite Contractors and may not be available for use as part of this Work.

- e. The recommended driveway access for this Work is from Wolftrap Drive and the interior campus driveway located along the south side and west side of the Bowie High School campus.
- 3. The suggested location for temporary facilities for this Work is the South side of Building “B”, between Building “B” and the interior driveway on the South side of the building, unless directed/approved otherwise in writing by the Owner.
 - a. The Contractor shall coordinate and show any proposed staging area(s) (i.e. material laydown areas, etc.) on the Section 015000 “Temporary Facilities and Controls” Site Plan Submittal per Article 1.04 Paragraph A.
 - b. All staging areas shall first be reviewed by the Owner for prior approval as part of the Section 015000 submittal development, review and comment process.

1.02 SECTION 078413 “PENETRATION FIRESTOPPING”

In 3.05 “PENETRATION FIRESTOPPING SYSTEM SCHEDULE”, **ADD** the following paragraph D and associated sub-paragraphs below:

- D. The Contractor shall carefully review the existing conditions of the existing facility prior to responding to the bid/proposal and prior to commencing construction as required to provide and maintain the structure fire rated assembly.
 - 1. For the purposes of this Work, all corridor walls and ceilings, floors between building levels, electrical room walls and ceilings, data room (i.e. MDF, IDF, etc.) walls and ceilings, and elevator machine room walls and ceilings shall be considered fire rated and their penetration fire stopping rating and fill materials shall conform to the Penetration Firestopping Systems General Requirements as noted in this section.
 - 2. Refer to the Drawings for other areas that may also be rated. Where other areas are noted on the Drawings, and the rating is not shown/listed on the Drawings, the rating and fill materials shall comply with the Penetration Firestopping Systems General Requirements of this section.
 - 3. Seal all penetrations through the structures with materials and methods as listed by UL, including the UL Fire-resistance-rated Systems and Products directory, and as required to maintain the structure fire rating per the requirements of the Authority Having Jurisdiction.
 - 4. If the Contractor determines a portion of the existing structure has a rating that is less than the rating specified under the Penetration Firestopping Systems General Requirements of this section, the Contractor shall promptly bring this matter to the attention of the Owner and Engineer, and only upon written approval by the Owner, may the Contractor deviate from the rating requirements as specified in the Penetration Firestopping Systems General Requirements of this section.

PROJECT PLANS/SHEETS REVISION ITEMS

1.03 MECHANICAL PLANS

- A. SHEET G-GEN-02: **REPLACE** with the attached sheet noted with “10/31/2018 ADDENDUM 2” in the Issues and Revisions portion of the title block.
- B. SHEET M-SCH-05: **REPLACE** with the attached sheet noted with “10/31/2018 ADDENDUM 2” in the Issues and Revisions portion of the title block.

END OF ADDENDUM

GENERAL PROJECT NOTES (CONTINUED)

19. FOR PORTION OF DEMOLITION WORK CONDUCTED IN OCCUPIED SPACES INCLUDING BUT NOT LIMITED TO CLASS ROOMS, CORRIDORS AND STORAGE SPACES, CONTRACTOR SHALL CAREFULLY INSTALL SHEETS OF 5 MIL THICKNESS MINIMUM PLASTIC PROTECTIVE COVERS OVER ALL FURNITURE, EQUIPMENT, SHELVES, BOOKS AND OTHER ITEMS IN THE ROOMS TO PROTECT ALL PROPERTY FROM ANY DUST/DEBRIS THAT MAY ARISE FROM DEMOLITION AND RENOVATION WORK. PROVIDE CONTINUOUS SEGMENTS OF DUCT TAPE BETWEEN ALL PLASTIC PROTECTIVE SHEETS TO PREVENT ANY VOIDS BETWEEN SHEETS WHERE DUST/DEBRIS MAY PASS THROUGH.
20. PROTECT ALL FLOORS/WALLS FROM POSSIBLE DAMAGE WHEN CONDUCTING WORK. PROVIDE NECESSARY TEMPORARY BOARDS/ELEMENTS TO ENSURE PROTECTION OF EXISTING CONDITIONS. CONTRACTOR SHALL REPLACE ANY DAMAGED EXISTING CONDITIONS, INCLUDING ANY REQUIRED HAZARDOUS ABATEMENT TO REPAIR SUCH ELEMENTS, AT NO ADDITIONAL COST TO OWNER.
21. SHOULD A POWER OUTAGE TO THE FACILITY BE REQUIRED, THE CONTRACTOR SHALL REQUEST SUCH AN OUTAGE IN WRITING NO LESS THAN TWO WEEKS IN ADVANCE. CONTRACTOR'S WRITTEN REQUEST SHALL IDENTIFY THE DESIRED DATE, TIME, DURATION, AND PURPOSE OF THE REQUESTED OUTAGE UNLESS HE/SHE OBTAINS A WRITTEN APPROVAL FROM THE OWNER AUTHORIZING THE OUTAGE. THE OWNER RESERVES THE RIGHT TO MODIFY OR REJECT ANY REQUEST FOR SUCH AN OUTAGE. MODIFICATION OR REJECTION OF THE CONTRACTOR'S REQUEST BY THE OWNER SHALL NOT BE CONSIDERED REASON FOR DELAYS IN THE CONSTRUCTION SCHEDULE. THE OWNER RESERVES THE RIGHT TO LIMIT THE DURATION OF THE OUTAGE TO LESS THAN THE DURATION REQUESTED BY THE CONTRACTOR. MODIFICATION OF THE OUTAGE DURATION BY THE OWNER SHALL NOT BE CONSIDERED REASON FOR DELAYS IN THE CONSTRUCTION SCHEDULE. THE CONTRACTOR SHALL CLOSELY COORDINATE ALL REQUESTED OUTAGES WITH THE OWNER TO IDENTIFY AREAS WHERE TEMPORARY POWER MAY BE REQUIRED TO FACILITATE CONTINUOUS OPERATION OF THE FACILITY. THE FOLLOWING ADDITIONAL REQUIREMENTS SHALL ALSO BE MET FOR AREAS WHERE TEMPORARY POWER IS REQUIRED.
 - A. THE CONTRACTOR SHALL KNOW THAT, AT MINIMUM, ANY INTERRUPTION TO THE CONTINUITY OF THE FACILITY'S MAIN DISTRIBUTION FRAME (MDF) AND INTERMEDIATE DISTRIBUTION FRAME (IDF) SYSTEM(S) AT THEIR FULL CAPACITY IS UNACCEPTABLE DURING THE CONSTRUCTION COURSE OF THIS PROJECT. IN ORDER TO INSURE CONTINUOUS AND UNINTERRUPTED OPERATION OF THE SYSTEMS, THE CONTRACTOR SHALL PROVIDE AND OPERATE AT HIS EXPENSE THE MEANS NECESSARY TO PROVIDE CONTINUOUS ELECTRICAL POWER TO ALL PERTINENT ELECTRICAL DISTRIBUTION EQUIPMENT TO ASSURE THE CONTINUOUS OPERATION OF THE MDF AND IDF SYSTEM(S) AND THE LIBRARY HVAC SYSTEM AT THEIR FULL CAPACITY INCLUSIVE OF, BUT NOT EXCLUSIVE TO, RECEPTACLE OUTLETS AND HVAC EQUIPMENT SERVING THE MDF AND IDF SYSTEM(S). THIS REQUIREMENT IS INCLUSIVE OF ANY TEMPORARY POWER GENERATION EQUIPMENT, CONDUIT/WIRE, MOUNTING HARDWARE, CIRCUIT ISOLATION MEANS, FUEL, FUEL STORAGE, LABOR, SUPERVISION, ETC., THAT MAY BE REQUIRED TO PROVIDE FULLY FUNCTIONAL CONTINUOUS ELECTRICAL POWER SERVICE TO ALL EFFECTED SYSTEMS AT NO ADDITIONAL COST TO THE OWNER. CLOSELY AND CAREFULLY COORDINATE ALL REQUIREMENTS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
 - B. THE CONTRACTOR SHALL IDENTIFY AND CLOSELY AND CAREFULLY COORDINATE WITH THE OWNER ALL CIRCUIT ISOLATION PROCEDURES/SEQUENCES AND PROCESS SYSTEM/LOAD OPERATIONAL CONSTRAINTS FOR EACH EFFECTED SYSTEM.
22. WHEN EXCAVATING AND/OR PROVIDING ANY EARTH MOVING ACTIVITIES, PROVIDE ALL REQUIRED TEMPORARY SHORING, BRACING, AND SHEETING ADJACENT TO ALL EXISTING STRUCTURES/ELEMENTS WHEN EXCAVATING TO NOT CAUSE ANY DAMAGE OR IN ANY WAY UNDERMINE EXISTING STRUCTURES/ELEMENTS DURING THE COURSE OF THIS WORK. CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING STRUCTURES AT NO ADDITIONAL COST TO OWNER.
23. REFER TO THE SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO, DIVISION 9, FOR PAINTING REQUIREMENTS OF PROPOSED PIPING, DUCTWORK, CONDUITS, ASSOCIATED SUPPORT SYSTEMS, PATCHING OF BUILDING ELEMENTS AND OTHER SURFACES AS SPECIFIED. ALL SHEETMETAL SHROUDS/COVERS OVER PIPING, DUCTWORK AND OTHER SYSTEMS SHALL HAVE THEIR SURFACES THAT ARE EXPOSED/VISIBLE TO THE BUILDING OCCUPANTS PAINTED. REFER TO APPLICABLE DIVISION 9 INTERIOR AND EXTERIOR PAINTING SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. ALL EXTERIOR/OUTDOOR PIPING/DUCTWORK SPECIFIED TO BE PAINTED AND ALL EXTERIOR/OUTDOOR PIPE/DUCTWORK SUPPORT SYSTEMS, EXCEPT STAINLESS STEEL SUPPORT SYSTEM COMPONENTS, SHALL BE PAINTED PER THE DIVISION 9 HIGH-PERFORMANCE COATINGS SPECIFICATION SECTION USING EPOXY BASED COATINGS. THIS PAINTING REQUIREMENT ALSO APPLIES TO ALL PIPE/DUCT SUPPORT SYSTEMS CONSTRUCTED PER THE REFERENCED STRUCTURAL DRAWINGS. COORDINATE AND SUBMIT ALL PAINT COLORS TO OWNER/ENGINEER PRIOR TO PAINTING/COATING APPLICATIONS. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
24. WHERE MULTIPLE PIPING/CONDUITS PASS THROUGH A BLOCK-OUT THROUGH AN EXISTING WALL/FLOOR AS ALLOWED/NOTED ON THE PLANS, FILL THE ANNULAR SPACE BETWEEN PIPING/CONDUITS WITH MATERIAL TO MATCH ADJOINING WALL/FLOOR. FOR BRICK WALLS, FILL WITH NON-SHRINK GROUT TO MATCH COLOR OF BRICK MORTAR JOINTS. FOR CONCRETE WALLS/FLOORS, FILL WITH CONCRETE AND FINISH/PAINT EXPOSED SURFACES TO MATCH ADJOINING SURFACES. FORM SIDES OF FILL FOR A CLEAN, UNIFORM AND SMOOTH FINISH. REFER TO SPECIFICATIONS FOR ADDITIONAL CONCRETE AND GROUT REQUIREMENTS.
25. ALL CABLING (INCLUDING EXPOSED AND/OR IN CEILING/PLENUM SPACES) THAT IS NOT ROUTED IN CONDUIT SHALL BE SECURELY SUPPORTED WITH ACCEPTABLE DEVICES SUCH AS J-HOOKS OR BRACES A MINIMUM OF TWO (2) FEET ON CENTER TO EXISTING OR PROPOSED STRUCTURES/SUPPORTS AND INSTALLED IN A MANNER TO PREVENT LOOSE CABLING/WIRING FROM FALLING/HANGING FROM STRUCTURES/SUPPORTS. PROVIDE TWO (2) FEET SPACING AS NOTED FOR CABLES SERVING ALL TYPES OF SYSTEMS UNLESS SMALLER OR GREATER SPACING IS SPECIFICALLY REQUIRED/ALLOWED FOR A SPECIFIC CABLE SYSTEM IN THE RESPECTIVE CABLE SYSTEM SPECIFICATION SECTION.

GENERAL PROJECT NOTES (CONTINUED)

26. REFER TO SPECIFICATIONS FOR APPLICABLE PAINTING, INSULATION JACKETING, AND SUPPORT SYSTEM MATERIAL REQUIREMENTS THAT ARE A FUNCTION OF WHERE ITEMS/SURFACES ARE LOCATED WITH REGARD TO INDOOR/INTERIOR, OUTDOOR/EXTERIOR, AND ON THE ROOF. WITH REGARD TO PAINTING, INSULATION JACKETING, AND SUPPORT SYSTEM MATERIAL REQUIREMENTS, THE FOLLOWING CONDITIONS SHALL APPLY:
 - A. AREAS/SURFACES IN THE CRAWLSPACES AND UNDER THE BUILDING OCCUPIED LEVELS ARE CONSIDERED OUTDOOR/EXTERIOR.
 - B. AREAS/SURFACES UNDER COVERED WALKWAY CANOPIES ARE CONSIDERED OUTDOOR/EXTERIOR.
 - C. AREAS/SURFACES OUTSIDE THE BUILDING ENVELOPE INCLUDING BUT NOT LIMITED TO AREAS ON THE ROOF, AREAS UNDER ANY CANOPIES, AND ALL OTHER AREAS ON SITE BEYOND THE BUILDING ARE CONSIDERED OUTDOOR/EXTERIOR.
 - D. AREAS/SURFACES IMMEDIATELY ABOVE A FINISHED ROOF LEVEL ARE CONSIDERED ON THE ROOF.
27. PROVIDE TEMPORARY FENCING AROUND ALL SITE WORK, TEMPORARY FACILITIES, MATERIAL STAGING AREAS, AND OTHER SIMILAR AREAS DURING THE COURSE OF CONSTRUCTION TO PREVENT ACCESS OF BUILDING OCCUPANTS AND OTHERS NOT AUTHORIZED INTO CONSTRUCTION AREA TO ENTER AREAS UNDER CONSTRUCTION. TEMPORARY FENCING SHALL BE 8-FOOT MINIMUM TALL GALVANIZED STEEL CHAIN LINK FENCING WITH TOP AND BOTTOM RAILS, POSTS AT 10-FOOT MAXIMUM ON CENTER AND SECTIONS SECURED TOGETHER WITH CHAINS AND PAD-LOCKS TO PREVENT UNAUTHORIZED ACCESS. SUBMIT A SITE PLAN SHOWING ALL TEMPORARY FACILITIES, UTILITY HOOKUPS, STAGING AREAS, AND PARKING AREAS FOR CONSTRUCTION PERSONNEL. COORDINATE THESE REQUIREMENTS WITH OWNER AND LOCAL FACILITY ADMINISTRATIVE STAFF FOR APPROVAL PRIOR TO SUBMISSION AND IMPLEMENTATION. SHOW ALL TEMPORARY FENCING ON THE TEMPORARY FACILITIES AND CONTROLS SITE PLAN SUBMITTAL. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
28. COMPLY WITH THE MINIMUM REQUIREMENTS OF THE AISD SUSTAINABILITY SCORECARD. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
29. FOR ALL MATERIALS THE CONTRACTOR TRANSFERS TO THE OWNER, INCLUDING, BUT NOT LIMITED TO, EXISTING SYSTEM COMPONENTS REMOVED FROM THE FACILITY THAT ARE TO BE HANDED TO OWNER AND/OR SPARE PARTS FOR NEW PRODUCTS, SUCH MATERIALS SHALL BE HANDED TO THE OWNER WITH A TRANSFER OF MATERIALS SUBMITTAL PREPARED BY THE CONTRACTOR. THE TRANSFER OF MATERIALS SUBMITTAL SHALL INCLUDE A COMPLETE LIST OF THE MATERIALS, EACH WITH A CLEAR DESCRIPTION (INCLUDING MODEL AND SERIAL NUMBER, IF ANY) AND QUANTITY OF EACH, AND A PLACE ON THE TRANSMITTAL FOR OWNER PERSONNEL TO SIGN AND DATE TO CONFIRM RECEIPT OF MATERIALS. THE CONTRACTOR SHALL PROVIDE A COLOR PDF SCAN COPY OF THE SIGNED TRANSFER OF MATERIALS TRANSMITTAL TO THE OWNER WITHIN 24 HOURS AFTER THE MATERIALS ARE TRANSFERRED.

CRAWL SPACES TEMPORARY VENTILATION:

1. THIS WORK REQUIRES ACCESS TO THE CRAWLSPACES OF BUILDINGS "A" AND "B" TO ACCESS THE HYDRONIC PIPING, PIPING ISOLATION VALVES, AND PIPE STRAINERS LOCATED IN THE CRAWLSPACES OF THESE BUILDINGS TO PERFORM THE SERVICES ASSOCIATED WITH THIS WORK.
2. ALL OF THE CRAWLSPACES REQUIRE TEMPORARY VENTILATION, INCLUDING THE MEANS OF TEMPORARY POWER FOR THE TEMPORARY VENTILATION SYSTEMS, TO MEET ALL SAFETY REQUIREMENTS TO PERFORM THE RENOVATIONS IN THIS WORK. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY VENTILATION SYSTEMS, INCLUDING ALL REQUIRED TEMPORARY POWER SOURCES AND POWER GENERATORS, TEMPORARY DUCTWORK, FANS, SENSORS, CONTROLS, AND OTHER SYSTEM COMPONENTS AS REQUIRED TO COMPLY WITH VENTILATION REQUIREMENTS WHEN WORK SHALL TAKE PLACE IN THE CRAWLSPACE AREAS DURING THE TIMES TO COMPLY WITH THE PROJECT SCHEDULE AT NO ADDITIONAL COST TO THE OWNER.
3. FOR VENTILATION SYSTEM SIZING PURPOSES, THE CONTRACTOR SHALL BUDGET FOR A SYSTEM TO ACCOMMODATE A CRAWLSPACE HAVING A MINIMUM 12-FOOT FLOOR TO CEILING CLEARANCE AND A PLAN AREA EQUAL TO THE FULL PLAN AREA OF THE BUILDING AREA BELOW WHICH THE CRAWLSPACE IS LOCATED. THE CONTRACTOR SHALL SIZE THE VENTILATION SYSTEM TO PROVIDE THE REQUIRED AIR CHANGES PER HOUR AND FLOW RATES TO COMPLY WITH LOCAL, STATE AND FEDERAL REQUIREMENTS. REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

SEQUENCE OF CONSTRUCTION:

1. CONTRACTOR SHALL PREPARE A DETAILED CONSTRUCTION SEQUENCE SHOWING DATES OF ALL RENOVATION ACTIVITIES FOR THE PROPER SEQUENCING OF THIS WORK. CONTRACTOR SHALL SUBMIT THIS SCHEDULE NO LATER THAN 14 CALENDAR DAYS AFTER THE DATE OF NOTICE TO PROCEED PROVIDED BY THE OWNER. REFER TO SPECIFICATIONS FOR ADDITIONAL CONSTRUCTION PROGRESS AND DOCUMENTATION REQUIREMENTS.
2. THE SUBMISSION OF THE CONSTRUCTION SEQUENCE IS CRITICAL AND SHALL BE PROVIDED WITH NO DELAY. NO EXCEPTIONS.
3. WHERE ANY EXISTING SYSTEM IS TO BE DEMOLISHED AND TAKEN OUT OF SERVICE, THE CONTRACTOR SHALL COORDINATE THE DEMOLITION OF THE SYSTEM SHUTDOWN A MINIMUM OF FOUR (4) WEEKS IN ADVANCE WITH AISD AND THE LOCAL SCHOOL PERSONNEL. ALL SYSTEMS NOT SHOWN TO BE DEMOLISHED AND/OR RENOVATED SHALL REMAIN IN FULL/COMPLETE SERVICE AT ALL TIMES DURING THE COURSE OF THIS WORK.
4. IF ANY WORK IS SCHEDULED ON THE PROJECT SITE ON ANY CALENDAR DAY (WEEKDAYS OR WEEKENDS) PRIOR TO MAY 30, 2019, OR BETWEEN AUGUST 8, 2019 AND MAY 20, 2020, OR AFTER AUGUST 11, 2020, SUCH WORK SHALL COMMENCE NO EARLIER THAN 10:00 PM ON ANY GIVEN DAY AND SHALL TERMINATE NO LATER THAN 5:00 AM ON THE IMMEDIATELY FOLLOWING DAY. THE CONSTRUCTION SCHEDULE OF SUCH WORK SHALL BE APPROVED BY AISD AND THE LOCAL SCHOOL PERSONNEL A MINIMUM OF FOUR (4) WEEKS PRIOR TO THE COMMENCEMENT OF SUCH WORK.

SEQUENCE OF CONSTRUCTION (CONTINUED):

5. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEANS/METHODS AND REQUIRED AFTER-HOURS/WEEKEND LABOR TO COMPLY WITH THE PROJECT SCHEDULE REQUIREMENTS NOTED HEREIN AT NO ADDITIONAL COST TO THE OWNER.
6. IF THE CONTRACTOR FAILS TO ACHIEVE ANY OF THE SCHEDULE REQUIREMENTS SPECIFIED ON THESE PLANS AND THE CONTRACT DOCUMENTS TO MAINTAIN HVAC SYSTEMS IN SERVICE AND PLUMBING SYSTEMS SERVICE, THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, PROVIDE TEMPORARY HVAC COOLING/HEATING AND TEMPORARY DOMESTIC WATER HEATING EQUIPMENT TO PROVIDE THE NECESSARY HVAC AND PLUMBING SYSTEMS OF THE SAME OR GREATER PERFORMANCE OF THE SYSTEMS TAKEN OUT OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATION/CONNECTION, ELECTRICAL CONNECTIONS, POWER GENERATOR, FUEL COSTS, WATER CONNECTIONS, CONTROL CONNECTIONS, RENTAL EQUIPMENT, CITY/STATE PERMITS, COORDINATING TEMPORARY EQUIPMENT LOCATIONS, WITH AISD AND LOCAL PERSONNEL, AND THE REMOVAL COSTS ASSOCIATED WITH SUCH TEMPORARY EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
7. WHEN SCHEDULING THE SHUTDOWN OF THE HYDRONIC PIPING SERVING HYDRONIC EQUIPMENT (AHU, FCU, HF OR VF) FOR THIS WORK, THE CONTRACTOR SHALL INCLUDE IN THEIR SEQUENCE OF WORK THE FOLLOWING EXISTING CONDITIONS:
 - A. ALL UNITS IN BUILDING "A" MAY BE SHUTDOWN AT THE SAME TIME VIA ISOLATION VALVES LOCATED IN THE CRAWLSPACE OF BUILDING "A".
 - B. FOR EACH OF THE FOUR WINGS "A", "B", "E" AND "F" OF BUILDING "B", THE FOLLOWING TWO CONDITIONS APPLY: (1) ALL UNITS ON THE NORTH SIDE OF A WING MAY BE SHUTDOWN AT THE SAME TIME VIA ISOLATION VALVES LOCATED IN THE CRAWLSPACE OF BUILDING "B". (2) ALL UNITS ON THE SOUTH SIDE OF A WING MAY BE SHUTDOWN AT THE SAME TIME VIA ISOLATION VALVES LOCATED IN THE CRAWLSPACE OF BUILDING "B".
 - C. FOR EACH OF THE TWO WINGS "C" AND "D" OF BUILDING "B", THE FOLLOWING APPLIES: ALL UNITS IN THE WING MAY BE SHUTDOWN AT THE SAME TIME VIA ISOLATION VALVES LOCATED IN THE CRAWLSPACE OF BUILDING "B".
8. THE WORK SHALL BE COMPLETED IN TWO (2) PHASES AS SHOWN BELOW, WITHIN THE TIME CONSTRAINTS LISTED BELOW.
9. PHASE I CONSTRUCTION ACTIVITIES – SUMMER 2019:
 - A. THE PHASE I SCOPE OF WORK SHALL INCLUDE, AT A MINIMUM, ALL WORK IN BUILDING "A", BUILDING "F", BUILDING "B" WING "A", AND BUILDING "B" WING "D". THE WORK IN THE AFOREMENTIONED AREAS SHALL INCLUDE ALL "AHU", "FCU", "VF", AND "HF" REPLACEMENTS, THEIR ASSOCIATED HVAC FMS CONTROL WORK (TRIDIUM JACE WEB-SERVER, BACNET NETWORK CABLES/RACEWAYS, CONTROLLERS, SENSORS, ETC.), ASSOCIATED ELECTRICAL WORK, ASSOCIATED CEILING SYSTEM RENOVATIONS, ASSOCIATED PATCHING OF BUILDING ELEMENTS, ASSOCIATED COMBINATION FIRE AND SMOKE DAMPER AND AIR DEVICE REPLACEMENTS, FIRE ALARM SYSTEM RENOVATIONS (SMOKE DETECTION, FIRE ALARM PANEL REPLACEMENTS/EXPANSIONS, FSD POWER/CONTROL, ETC.), HVAC FMS CONTROL WORK FOR EXISTING UNITS NOT BEING REPLACED, ALL PLUMBING WORK, AND ALL OTHER WORK SHOWN IN THE CONTRACT DRAWINGS AND SPECIFICATIONS IN THE AFOREMENTIONED AREAS. THE CONTRACTOR MAY INSTALL ADDITIONAL SCHEDULED UNITS IN OTHER WINGS OF BUILDING "B" IN PHASE I IF, AND ONLY IF, ALL RENOVATIONS SHOWN IN THE CONTRACT DRAWINGS AND SPECIFICATIONS IN THAT WING ARE INSTALLED BY THE SCHEDULED DATES PRESCRIBED FOR PHASE I. IF SO, ADDITIONAL BUILDING "B" WINGS SHALL BE RENOVATED IN THE FOLLOWING ORDER OF PRECEDENCE: WING "F", THEN WINGS "B" AND "C" (TOGETHER), AND THEN WING "E". NOTE: WINGS "B" AND "C" SHALL BE RENOVATED TOGETHER BECAUSE THEY SHARE A COMMON HVAC CONTROL NETWORK.
 - B. NO EXISTING SYSTEM, INCLUDING BUT NOT LIMITED TO, PLUMBING, HVAC, AND ELECTRICAL SHALL BE DEMOLISHED OR IN ANY WAY TAKEN OUT OF SERVICE PRIOR TO THURSDAY, MAY 30, 2019.
 - C. THE CONTRACTOR SHALL COMPLETE THE MANUFACTURING OF EQUIPMENT AT THE RESPECTIVE FACTORY AND THE PRE-FABRICATION OF PIPING, DUCTWORK, CONTROLLERS, AND OTHER ELEMENTS AT THEIR SHOPS AS MUCH AS POSSIBLE FOR ALL SYSTEMS IN THE SCOPE OF WORK FOR THIS PHASE PRIOR TO THURSDAY, MAY 30, 2019 TO COMPLY WITH THE PROJECT SCHEDULE.
 - D. ALL ELEMENTS REQUIRED FOR THE COMPLETE RENOVATION OF EACH UNIT (AHU, FCU, VF, HF, ETC.) INCLUDING, BUT NOT LIMITED TO, THE REPLACEMENT OF THE UNIT, UNIT PIPING RENOVATIONS, UNIT CONTROL SYSTEM RENOVATIONS, UNIT/ROOM FIRE ALARM SYSTEM RENOVATIONS, AND ALL OTHER RENOVATIONS REQUIRED FOR THE COMPLETE REPLACEMENT AND OPERATION OF EACH UNIT SHALL BE COMPLETED WITHIN 14 CONSECUTIVE CALENDAR DAYS SUCH THAT THE UNIT IS OUT OF SERVICE NO GREATER THAN 14 CONSECUTIVE CALENDAR DAYS. THESE 14 CONSECUTIVE CALENDAR DAYS MAY INCLUDE SATURDAY AND SUNDAY. THE CONTRACTOR SHALL CAREFULLY STAGE AND SCHEDULE WHEN EACH UNIT SHALL BE TAKEN OUT OF SERVICE WITH AISD AND THE LOCAL SCHOOL PERSONNEL AT LEAST FOUR (4) WEEKS PRIOR TO TAKING THE UNIT OUT OF SERVICE. IN NO CASE SHALL MORE THAN FIFTY (40) UNITS BE TAKEN OUT OF SERVICE AT ANY ONE TIME.
 - E. SUBMIT ALL PRE-FUNCTIONAL AND FUNCTIONAL COMMISSIONING FORMS WITH ALL CONTRACTOR ENTRIES IN THESE FORMS FULLY COMPLETED, AND MAKE AVAILABLE ALL REQUIRED PERSONNEL TO COORDINATE AND COMMENCE ON-SITE COMMISSIONING FOR ALL SYSTEMS IN THE SCOPE OF WORK FOR THIS PHASE BY TUESDAY, JULY 9, 2019.
 - F. COMPLETE STARTUP AND MAKE FULLY FUNCTIONAL AND READY FOR TESTING AND BALANCING ALL SYSTEMS IN THE SCOPE OF WORK FOR THIS PHASE BY THURSDAY, JULY 18, 2019.
 - G. COORDINATE AND SCHEDULE WITH OWNER AND ENGINEER ALL DATES FOR TEST AND BALANCE AND COMMISSIONING ON-SITE TESTS/ACTIVITIES A MINIMUM OF FOUR (4) WEEKS PRIOR TO DATES OF ACTIVITIES.

SEQUENCE OF CONSTRUCTION (CONTINUED):

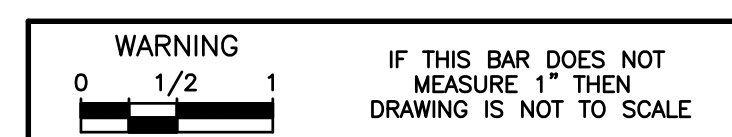
10. PHASE II CONSTRUCTION ACTIVITIES – SUMMER 2020:
 - A. THE PHASE II SCOPE OF WORK SHALL INCLUDE ALL RENOVATIONS FOR THIS WORK HAVE NOT YET BEEN COMPLETED.
 - B. FOR THIS PHASE OF WORK, NO SYSTEM, INCLUDING BUT NOT LIMITED TO, PLUMBING, HVAC, AND ELECTRICAL ASSOCIATED WITH THIS PHASE SHALL BE DEMOLISHED OR IN ANY WAY TAKEN OUT OF SERVICE PRIOR TO THURSDAY, MAY 28, 2020 UNLESS SPECIFICALLY AGREED TO AND AUTHORIZED IN WRITING BY THE OWNER.
 - C. THE CONTRACTOR SHALL COMPLETE THE MANUFACTURING OF EQUIPMENT AT THE RESPECTIVE FACTORY AND THE PRE-FABRICATION OF PIPING, DUCTWORK, CONTROLLERS, AND OTHER ELEMENTS AT THEIR SHOPS AS MUCH AS POSSIBLE FOR ALL SYSTEMS INSTALLED IN THE SCOPE OF WORK FOR THIS PHASE PRIOR TO THURSDAY, MAY 28, 2020 TO COMPLY WITH THE PROJECT SCHEDULE.
 - D. ALL ELEMENTS REQUIRED FOR THE COMPLETE RENOVATION OF EACH UNIT (AHU, FCU, VF, HF, ETC.) INCLUDING, BUT NOT LIMITED TO, THE REPLACEMENT OF THE UNIT, UNIT PIPING RENOVATIONS, UNIT CONTROL SYSTEM RENOVATIONS, UNIT/ROOM FIRE ALARM SYSTEM RENOVATIONS, AND ALL OTHER RENOVATIONS REQUIRED FOR THE COMPLETE REPLACEMENT AND OPERATION OF EACH UNIT SHALL BE COMPLETED WITHIN 14 CONSECUTIVE CALENDAR DAYS SUCH THAT THE UNIT IS OUT OF SERVICE NO GREATER THAN 14 CONSECUTIVE CALENDAR DAYS. THESE 14 CONSECUTIVE CALENDAR DAYS MAY INCLUDE SATURDAY AND SUNDAY. THE CONTRACTOR SHALL CAREFULLY STAGE AND SCHEDULE WHEN EACH UNIT SHALL BE TAKEN OUT OF SERVICE WITH AISD AND THE LOCAL SCHOOL PERSONNEL AT LEAST FOUR (4) WEEKS PRIOR TO TAKING THE UNIT OUT OF SERVICE. IN NO CASE SHALL MORE THAN FIFTY (40) UNITS BE TAKEN OUT OF SERVICE AT ANY ONE TIME.
 - E. SUBMIT ALL PRE-FUNCTIONAL AND FUNCTIONAL COMMISSIONING FORMS WITH ALL CONTRACTOR ENTRIES IN THESE FORMS FULLY COMPLETED, AND MAKE AVAILABLE ALL REQUIRED PERSONNEL TO COORDINATE AND COMMENCE ON-SITE COMMISSIONING FOR ALL SYSTEMS IN THE SCOPE OF WORK FOR THIS PHASE BY WEDNESDAY, JULY 8, 2020.
 - F. COMPLETE STARTUP AND MAKE FULLY FUNCTIONAL AND READY FOR TESTING AND BALANCING ALL SYSTEMS IN THE SCOPE OF WORK FOR THIS PHASE BY MONDAY, JULY 20, 2020.
 - G. COORDINATE AND SCHEDULE WITH OWNER AND ENGINEER ALL DATES FOR TEST AND BALANCE AND COMMISSIONING ON-SITE TESTS/ACTIVITIES A MINIMUM OF FOUR (4) WEEKS PRIOR TO DATES OF ACTIVITIES.
 - H. ALL WORK MUST BE SUBSTANTIALLY COMPLETED BY NO LATER THAN TUESDAY, AUGUST 11, 2020.

EQUIPMENT MANUFACTURING LEAD TIMES:

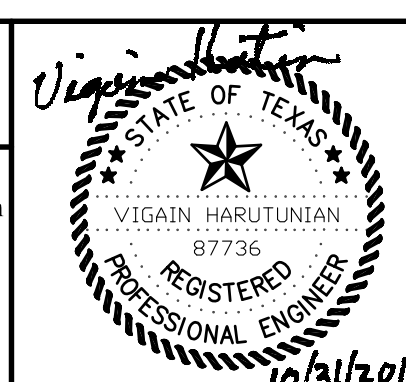
1. THE HVAC EQUIPMENT SCHEDULED FOR THIS WORK HAS RELATIVELY LONG MANUFACTURING LEAD TIMES, ESPECIALLY, BUT NOT LIMITED TO, THE TYPE "HF", "VF", "FCU-604", AND "FCU-608" SCHEDULED HVAC EQUIPMENT.
2. THE CONTRACTOR SHALL CAREFULLY COORDINATE WITH THE MANUFACTURER AND PREPARE SUBMITTALS IN ACCORDANCE WITH THE SPECIFICATIONS, CAREFULLY PLAN FOR THE MINIMUM TIME SPECIFIED FOR EACH SUBMITTAL REVIEW PERIOD PER THE CONTRACT SPECIFICATIONS, AND ORDER EQUIPMENT IN TIME FOR THEIR ARRIVAL WHEN EACH SUMMER BREAK PERIOD COMMENCES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH INSUFFICIENT AND/OR UNTIMELY SUBMITTALS, THE LATE ORDERING OF EQUIPMENT, THE LATE ARRIVAL OF EQUIPMENT TO THE JOB SITE, AND THE INABILITY TO COMPLETE THE WORK AS SCHEDULED, AT NO ADDITIONAL COST TO THE OWNER.
4. IN NO CASE SHALL THE CONTRACTOR BRING ANY PRODUCT THAT IS TO BE PERMANENTLY INSTALLED AT THE PROJECT SITE AS PART OF THIS WORK UNLESS THE CONTRACTOR PERMANENTLY INSTALLS, MAKES FULLY FUNCTIONAL, AND PLACES THE PRODUCT INTO SERVICE FOR THE BENEFICIAL USE OF THE OWNER NO LATER THAN ELEVEN (11) WEEKS AFTER THE PRODUCT WAS FIRST BROUGHT TO THE PROJECT SITE.

CRAWLSPACE OVERHEAD CONDITIONS:

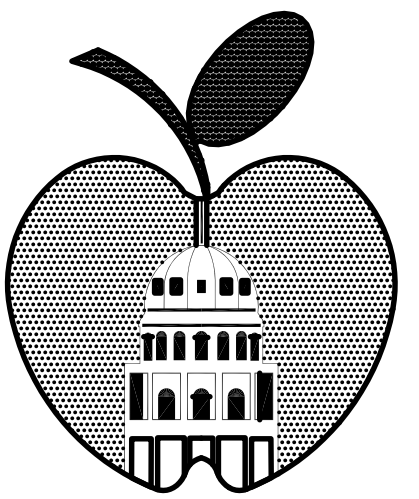
1. THE EXISTING OVERHEAD SLAB IN CRAWLSPACES HAVE AN EXISTING SPRAYED-ON CELLULOSE INSULATION THAT IS ADHERED ONTO THE UNDERSIDE OF THE OVERHEAD CONCRETE SLAB. REMOVE THE EXISTING INSULATION ONLY AS REQUIRED IN LIMITED AREAS FOR THE DEMOLITION OF OVERHEAD PIPE/CABLE/SYSTEM SUPPORT SYSTEM ELEMENTS AND AS REQUIRED TO INSTALL THE NEW PROPOSED PIPE/CABLE/SYSTEM SUPPORT SYSTEM ELEMENTS. WHERE SUCH EXISTING INSULATION IS REMOVED OR IN ANY WAY DAMAGED, THE CONTRACTOR SHALL PATCH/REPLACE SUCH INSULATION BY APPLYING A 5-INCH THICK LAYER OF K-13 SERIES SPRAYED-ON CELLULOSE INSULATION AS MANUFACTURED BY THE INTERNATIONAL CELLULOSE CORPORATION OR ENGINEER APPROVED EQUAL. INSTALL THE INSULATION IN STRICT ACCORDANCE WITH THE MANUFACTURER WRITTEN REQUIREMENTS.



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HARUTUNIAN ENGINEERING INCORPORATED
ENGINEERING AND ENVIRONMENTAL CONSULTANTS
305 East Huntland Drive, Suite 500
Austin, Texas 78752
Texas Firm Registration Number F-2408



AUSTIN I.S.D.

DEPARTMENT OF CONSTRUCTION MANAGEMENT
812 San Antonio St., Suite 200
Austin, Texas 78701

HVAC & PLUMBING IMPROVEMENTS AT BOWIE HIGH SCHOOL

BOWIE HIGH SCHOOL
4103 W SLAUGHTER LANE
AUSTIN, TEXAS 78749

ISSUES AND REVISIONS

NO.	DATE	DESCRIPTION
1	10/31/2018	ADDENDUM 2

SHEET TITLE

GENERAL NOTES (SHEET 2 OF 2)

DATE: OCTOBER 5, 2018
PROJECT NO.: 19-0042-BOWIE
HEI PROJECT NO.: 2016-700
SCALE: AS NOTED
DRAWN BY: HEI
CHECKED BY: HEI

SHEET NUMBER

G-GEN-02

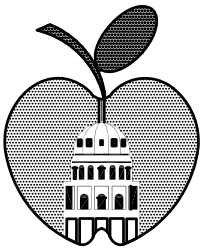
VERTICAL FLOW (VF), HORIZONTAL FLOW (HF), FCU-604, AND FCU-608 VENTILATOR SCHEDULE

EQUIPMENT TAG	UNITS	FCU-604	FCU-608	VF-12	VF-15	VF-15S	HF-7	HF-12	HF-15	HF-15S	HF-20
QUANTITY IN BUILDING "A"		--	--	--	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "A"		--	--	30	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "B"		--	--	22	1	--	--	2	--	3	--
QUANTITY IN BUILDING "B" WING "C"		--	--	--	5	--	--	2	1	--	1
QUANTITY IN BUILDING "B" WING "D"		1	1	--	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "E"		--	--	13	2	--	--	9	2	2	--
QUANTITY IN BUILDING "B" WING "F"		--	--	5	--	2	1	--	4	--	--
TRANE MODEL NUMBER		VUVE-100	VUVE-125	VUVE-125	VUVE-150	VUVE-150	HUVC-075	HUVC-125	HUVC-150	HUVC-150	HUVC-20
SPECIFICATION SECTION		238223	238223	238223	238223	238223	238223	238223	238223	238223	238223
UNIT TYPE		UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT	UNIT VENT
UNIT AIRFLOW ORIENTATION		VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL
COIL RELATIVE TO FAN		BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU	BLOW-THRU
SUPPLY FAN HIGH-SPEED AIRFLOW (DESIGN)	CFM	1000	1250	1250	1500	1500	750	1250	1500	1500	2000
OUTSIDE AIRFLOW PER OWNER RECORD DRAWINGS	CFM	140	140	150	150	150	150	150	150	150	150
SUPPLY FAN LOW-SPEED AIRFLOW	CFM	300	375	375	450	450	300	375	450	450	600
FAN ESP	IN. WC	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
FAN MOTOR POWER	HP	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1
FAN SPEED	RPM	1105	1116	1116	1116	1116	1050	1050	1050	1050	1050
FAN MOTOR TYPE		ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM
COOLING TYPE		HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC
COOLING SENSIBLE CAPACITY	MBH	22	24.9	24.9	30.4	39.4	15.8	24.5	31.2	39.4	42.6
COOLING TOTAL CAPACITY	MBH	30.8	33.4	33.4	43.3	55	22.5	33.4	45	55	66.3
COOLING ENT AIR TEMP	F, EDB/EWB	80/69	80/69	80/69	80/69	80/67	80/69	80/69	80/69	80/67	80/69
COOLING ENT WATER TEMP	F	44	44	44	44	44	44	44	44	44	44
COOLING MAX FLOW RATE	GPM	2.5	3	3	4.5	7	2	3	4.5	7	14
COOLING MAX HEAD LOSS	FT H2O	4.3	4.8	4.8	4.8	13.2	5.3	5.5	5.2	13.2	6.5
COOLING MAX FACE VELOCITY	FT/MIN	300	300	300	300	300	300	300	300	300	300
HEATING TYPE		HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC	HYDRONIC
HEATING CAPACITY	MBH	24.5	29	29	33	54.1	18	30.9	34.7	54.1	37.3
HEATING ENT AIR TEMP	F, EDB	65	65	65	65	48	65	65	65	48	65
HEATING ENT WATER TEMP	F	140	140	140	140	140	140	140	140	140	140
HEATING MAX FLOW RATE	GPM	1.5	1.5	1.5	1.5	3	1	1.5	1.5	3	1.5
HEATING MAX HEAD LOSS, FT	FT H2O	1	1.1	1.1	1.3	4.9	0.5	1.3	1.4	4.9	1.4
HEATING MAX FACE VELOCITY	FT/MIN	300	300	300	300	300	300	300	300	300	300
UNIT WEIGHT	LB	450	450	450	470	470	340	435	500	550	600
ELECTRICAL VOLTS/PHASE/FREQUENCY	V/PH/HZ	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60	277/1/60
ELECTRICAL MCA	A	2	4	4	4	4	6.2	6.2	6.2	6.2	6.2
ELECTRICAL MOP	A	15	15	15	15	15	15	15	15	15	15
FACTORY MOUNTED DISCONNECT		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
UNIT LENGTH	IN	82.25	94.25	94.25	106.25	106.25	70.25	94.25	106.25	106.25	106.25
UNIT DEPTH (FCU & VF UNITS)	IN	21.25	21.25	21.25	21.25	21.25	--	--	--	--	--
UNIT HEIGHT	IN	30	30	30	30	30	16.63	16.63	16.63	16.63	17.63
UNIT WIDTH (HF UNITS)	IN	--	--	--	--	--	35.63	35.63	35.63	35.63	43.13
MAXIMUM TOTAL SOUND - 63 HZ	DB	66	66	66	66	66	64	66	66	66	73
MAXIMUM TOTAL SOUND - 125 HZ	DB	70	75	75	72	72	68	75	72	72	75
MAXIMUM TOTAL SOUND - 250 HZ	DB	67	69	69	67	67	67	69	67	67	68
MAXIMUM TOTAL SOUND - 500 HZ	DB	64	64	64	64	64	63	64	64	64	64
MAXIMUM TOTAL SOUND - 1 KHZ	DB	63	62	62	63	63	61	62	63	63	60
MAXIMUM TOTAL SOUND - 2 KHZ	DB	59	58	58	59	59	57	58	59	59	57
MAXIMUM TOTAL SOUND - 4 KHZ	DB	56	53	53	55	55	53	53	55	55	53
MAXIMUM TOTAL SOUND - 8 KHZ	DB	53	47	47	50	50	49	47	50	50	45
FILTER THICKNESS	IN	1	1	1	1	1	1	1	1	1	1
FILTER REQUIREMENTS SPECIFICATION		234100	234100	234100	234100	234100	234100	234100	234100	234100	234100

GENERAL NOTES:

- REFER TO DRAWINGS, DETAILS, ELEVATIONS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- DISASSEMBLE ALL UNITS AS REQUIRED TO ALLOW THEM TO PASS THROUGH THE EXISTING ROOM DOORS, CORRIDORS AND OTHER EXISTING CONDITIONS. PROVIDE ALL LABOR REQUIRED FOR ASSEMBLING UNITS ONSITE, INCLUDING ALL QUALITY ASSURANCE AND TESTING REQUIREMENTS AFTER ONSITE ASSEMBLY PER THE SPECIFICATIONS.

THE NEW PROPOSED UNITS REPLACE EXISTING UNITS. THE SCHEDULED OUTSIDE AIR VENTILATION AIRFLOW RATES WERE OBTAINED FROM OWNER PROVIDED RECORDS OF THE EXISTING UNITS.



AUSTIN I.S.D.

DEPARTMENT OF CONSTRUCTION MANAGEMENT
812 San Antonio St., Suite 200
Austin, Texas 78701

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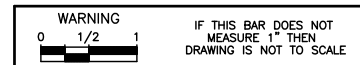
BOWIE HIGH SCHOOL
4103 W SLAUGHTER LANE
AUSTIN, TEXAS 78749

ISSUES AND REVISIONS

10/31/2018	ADDENDUM 2

COMBINATION FIRE AND SMOKE DAMPER (FSD) & ASSOCIATED AIR DEVICE SCHEDULE

EQUIPMENT TAG	FSD-01	FSD-02	FSD-03	FSD-04	FSD-05	FSD-06	FSD-07	FSD-08	FSD-09	FSD-10	FSD-11	FSD-12	FSD-13	FSD-14	FSD-15	FSD-16
QUANTITY IN BUILDING "A"	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "A"	--	4	1	--	--	--	--	--	2	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "B"	5	2	--	1	--	--	--	--	1	1	1	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "C"	4	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "D"	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QUANTITY IN BUILDING "B" WING "E"	13	--	--	--	--	--	--	--	2	--	--	--	1	2	--	--
QUANTITY IN BUILDING "B" WING "F"	--	9	--	--	4	1	2	2	2	--	--	--	--	1	--	1
RUSKIN MODEL OR EQUAL FSD	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3	FSD60-3
SUPPLY/RETURN/OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR	OUTSIDE AIR
SYSTEM TYPE SERVED (HF OR FCU)	HF	FCU	FCU	FCU	FCU	FCU	HF	HF	FCU	FCU	EXISTING FAN	EXISTING FAN	EXISTING FAN	EXISTING FAN	EXISTING FAN	EXISTING FAN
FSD LEAKAGE CLASS	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1
FSD HOUR RATING, MINIMUM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
FSD DAMPER SIZE (INCHES)	46 X 22	46 X 22	18 X 12	18 X 12	18 X 12	18 X 12	18 X 12	48 X 12	24 X 12	30 X 12	20 X 14	24 X 20	22 X 20	48 X 20	24 X 24	46 X 38 [2X(23X38)]
FSD PRESSURE CLASS (INCHES WC)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
FSD MOUNTING	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL
FSD ACTUATOR ELECTRICAL POWER (CAPABLE OF BOTH VDC AND VAC)	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC	24/1/160 VAC & 24VDC
TITUS OR EQUAL MODEL AND DESCRIPTION OF ALUMINUM CONSTRUCTION SURFACE-MOUNTED AIR DEVICE INSTALLED ON EXPOSED FACE/WALL OF EACH FSD.	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN	MODEL 63FL, OFF-WHITE FINISH, SAME SIZE AS FSD, POINT HORIZONTAL BLADES DOWN



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HARUTUNIAN ENGINEERING INCORPORATED
ENGINEERING AND ENVIRONMENTAL CONSULTANTS
305 East Huntland Drive, Suite 500
Austin, Texas 78752
Texas Firm Registration Number F-2408

SHEET TITLE

MECHANICAL SCHEDULES (SHEET 5 OF 5)

DATE: OCTOBER 5, 2018
PROJECT NO.: 19-0042-BOWIE
HEI PROJECT NO.: 2016-700
SCALE: AS NOTED
DRAWN BY: HEI
CHECKED BY: HEI

SHEET NUMBER

M-SCH-05