

**ADDENDUM No. 3**  
**Request for Competitive Sealed Proposals (CSP)**  
**19CSP134 HVAC Services at Austin High School**

**June 24, 2019**

**Received by bidder:**

**Date:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Item 1: Questions and Answers**

1. I'm reaching out in regards to the Austin High School – HVAC project to see if there are any union requirements, an estimated value, or an estimated start date.

**RESPONSE:** There are no union requirements. An estimated value is provided in the bid documents as an Estimated Project Budget is \$2,000,000. Also an estimated Start Date for Construction Phase according to Project Schedule in bid documents is February 4, 2020.

**PART I COMMENTS**

1. The completion dates for this project are published and understood.  
Please publish the anticipated dates for the:
  - a) Notice of Award or the Notice to Proceed (whichever comes first) on this project.
  - b) 'Construction Start' of the project (The first day when the contractor will be permitted to mobilize and, install temporary chillers and support systems).

**RESPONSE:** Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled "PROJECT SCHEDULE" under Article 1.01 "GENERAL CLARIFICATIONS". Please note, the contract award period and construction kick-off date as currently noted on the Contract Documents are projected based on the information available to date and may be subject to change.

2. Please issue a drawing depicting where the temporary air-cooled chillers, relative to the mechanical room and the cooling towers, are to be set.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “TEMPORARY CHILLER REQUIREMENTS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

3. 1M-FP-01 Mechanical (Chiller) Room: Please issue sectional drawings looking North, South, East and West.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “MECHANICAL DRAWINGS” under Article 1.01 “GENERAL CLARIFICATIONS”. Plan drawings are included of the mechanical room area. The Contractor is required to develop shop drawings during Construction as part of the submittal process.**

4. Demolition drawings, showing mechanical equipment/piping to be demolished, are not included in the bid package. As an alternative to publishing demolition drawings for this project; please publish As-Built drawings of the existing mechanical room, which depicts all ETR equipment and equipment (which will be demolished), along with all the ETR piping and piping (which be demolished).

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “MECHANICAL DRAWINGS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

5. Are there existing valves in place for the temporary chillers to tie onto, or will these tees/valves have to be cut in and welded as part of this project?

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “CONNECTION POINTS FOR RENTAL EQUIPMENT” under Article 1.01 “GENERAL CLARIFICATIONS”. New valves shall be provided as part of this Work.**

6. TEMP COOLING REQUIREMENTS DURING TIMEFRAME THAT TEMP AIR COOLED CHILLERS ARE BEING BROUGHT ON-LINE & WHILE CHW SYSTEM IS OFF-LINE :

If existing valves are not in place for the temporary chillers to tie-onto, what is the maximum down-time for which the CHW system can be taken off-line (for the new valves for the temporary chillers to be cut in place and welded)?

Also, please identify any special cooling requirements (including but not limited to - size of equipment, placement of equipment, etc.) which will be required to be installed during

the installation of isolation valves/fittings for temporary cooling of spaces requiring this additional temporary cooling.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “TIME RESTRICTIONS” on drawing “G-GEN-02”. Please refer to Section 015000 “Temporary Facilities and Controls”. Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “TEMPORARY COOLING EQUIPMENT TO SERVE THE LIBRARY” under Article 1.01 “GENERAL CLARIFICATIONS”. The MDF room is served by a DX unit that is not connected to the cooling central plant. Please note, temporary cooling equipment to specific spaces in the building (i.e. the library) is not required if the chilled water system is out of service (i.e. to install chilled water loop temporary connection points) when the outdoor air temperature is 40-degrees Fahrenheit or lower.**

7. Please verify that, once the change-over of the pre-existing CHW system to the temporary CHW is completed, the demolishing of the chiller, piping, and cooling towers, and the installation of all the new work can be performed during regular work hours.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Not all types of activities required for this Work can occur during regular working hours. Please refer to the notes under “TIME RESTRICTIONS” on drawing “G-GEN-02”.**

8. G-Gen-01: “Fire alarm system, security system, data/telephone, and PA system requirement notes” – requires that the general contractor shall obtain the services of these aforementioned subcontractors for work pertinent to this project.

So that AISD pre-qualified subcontractors, who are currently under contract by AISD to perform these services, will be no doubt the most qualified subcontractors to perform services required of this project:

- a) Please publish the contact information for the preferred vendor(s) for the Fire alarm system used by AISD/Austin High School.
- b) Please publish the contact information for the preferred vendor(s) for the security system used by AISD/Austin High School.
- c) Please publish the contact information for the preferred vendor(s) for the data/telephone system used by AISD/Austin High School.
- d) Please publish the contact information for the preferred vendor(s) for the PA system used by AISD/Austin High School.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “DIVISION 27 AND 28 REQUIREMENTS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

9. M-Gen-03 - **“Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems”.**

It is hereby understood that cooling of the school will be maintained by the temporary air-cooled chillers; please clarify if this is NOT the case.

Certainly, it is hereby presumed that CHW from these temporary chillers are supplied to the (15) AHUs referenced herewith.

Given the requirement for flushing (and the presumption that cooling will need to be maintained during the construction period):

- a) **When** will the Owner/PSP permit the contractor to perform the flushing required of the bid documents (NOTE – While flushing is occurring, system cooling will be de-energized), and how is cooling to be maintained while the CHW pipe system is being flushed?
- b) Number of days within which the flushing must occur (NOTE – While flushing is occurring, system cooling will be de-energized).
- c) If draining and filling/flushing of the CHW system is required while cooling is to be maintained, please issue a Method of Procedure (MOP) clearly stating how this is to be performed. Please note that this is not a contractor Means/Methods issue.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “TEMPORARY CHILLER REQUIREMENTS” under Article 1.01 “GENERAL CLARIFICATIONS”. Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “TIME RESTRICTIONS” on drawing “G-GEN-02” and the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. The temporary chillers shall serve the fifteen (15) existing air handling units. The Contractor, at their discretion, may maintain the hydronic system energized during flushing if complying with the schedule of Time Restricted Activities and the maximum fresh water flow rate requirements noted on drawing “M-GEN-03”.**

10. M-Gen-03 - **“Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems”.**

This Scope of Work (SOW) directive/Note (# 1) requires in part that the contractor shall drain and then fill the entire facility CHW piping systems at least once or multiple times as required for this work.

This SOW directive also states that there are minimal to no isolation valves in the CHW & HW systems to isolate the portions required for this work.

Further on in the same paragraph the SOW directive states, “the contractor shall include in the base contract price the need to drain and fill the CHW piping systems multiple

times during the course of this work as required to comply with the required phasing/completion of this work”.

- a) Please verify that the HW system is NOT required to be flushed (there is mention of the HW system being drained and filled as a requirement, with emphasis on the CHW system being drained and flushed).
  - b) To avoid flushing of the entire CHW system will the Owner/PSP permit the provision of new isolation valves so that the flushing of the **new** CHW piping, only, can be accomplished?
  - c) Since the HW system is not being modified, and perhaps may not be required to be drained & filled/flushed – and valves are perhaps permitted to isolate the modified CHW from the pre-existing CHW systems – Would new isolation valves be required
  - d) Please verify that the drain down and flush is intended to be a clear water flush of the systems, or if the flushing is to be performed with chemically treated water.
  - e) Please verify that the house pumps can be used for the flushing of the systems.
  - f) If the house pumps cannot be used for the flushing of the systems, please specify pump requirements for the flushing process.
  - g) The SOW required of Note #1 appears to be very subjective and costly, especially for bidding purposes, therefore:
    - i. Will the Owner/PSP please publish the number of times the CHW systems and (HW systems) need to be drained down so that costs for the drain-downs and system fill are accurately proposed.
- OR**
- ii. Respectfully - Will the Owner please consider/publish an allowance for this SOW which the contractors can include in their proposal cost?  
Depending on the final requirement (of drain to sanitary v/s capture in Frac tanks for disposal; and the number of drain-downs/refills; and if the HW system is also to be drained/flushed) – **this cost allowance could be at least as much as \$100,000.00 - \$150,000.00.**

**RESPONSE:** Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. Renovations to the hot water system, including draining/filling/flushing, are not required for this Work. The existing chilled water system shall be flushed as noted on drawing “M-GEN-03”. Refer to the chilled water hydronic system valves shown on the mechanical drawings and piping schematic. Drain down and flushing activities of the closed loop system and sequences shall be as directed by the closed loop water treatment service provider, including the use or lack thereof of chemicals



**to be used during flushing. Please refer to the notes on drawing “M-GEN-03” of when existing pumps may be used for flushing. The Contractor shall plan their work accordingly based on the information provided, any site visits attended, and allow for the number of drain-downs, fills, etc. as for the hydronic systems as required for a fully functional system and at no additional cost to the Owner.**

## PART II COMMENTS

1. Per the RFQ, all items requiring clarification are to be submitted by 6/18/19. Clarifications to these items requiring clarification will then be issued, via addendum, by 6/24/19. The bid date is maintained at 6/27/19. Since answers to the 1<sup>st</sup> set of questions submitted by MPS has not been published at this time - and, it is presumed that the answers to the questions asked could tremendously impact the proposal pricing, and perhaps eventually cost AISD additional monies – which in turn will also require time (more than 3 days) for the contractors to accurately and responsibly incorporate and present in the respective bid tenders to the AISD: Will the AISD respectfully postpone the bid date by the requisite (State mandated )1 week from the issue of any addendum, to allow more time for contractors to properly assess costs for items which will be addressed in the addendum.

**RESPONSE: Austin ISD is maintaining same bid due date and no change to bid date is expected as sufficient time has been provided for preparation of bids.**

2. AISD Prevailing wages requires that the contractor shall pay the wages, as follows, to:
  - Pipefitter – Base wage \$29.5 with fringes at \$12.82.
  - Laborer – Pipe layer Base wage \$12.45 with fringes at \$0.00.

Please:

- a) Verify that contractors will not be able to use pipe layers on this project (no UG piping to be installed), and that only pipe-fitters and pipe-fitting apprentices will be required to work on the piping SOW (scope of work) of this project. This verification is required so that employees engaged in the service of pipe fitting for contractors would not be exploited under the classification ‘Pipe layers’
- b) Verify that certified pay-roll is not required on this project.
- c) Verify that any wages paid to artisans on this project CANNOT be less than the prevailing wages specified on this project.

**RESPONSE: Please refer to Project Specifications in Bid documents regarding Wage Rate information and Contractor to select appropriate Wage Rate for the job function for employee. Certified Pay-roll may be requested in event there is a discrepancy with Wage Rates paid to employee or in evaluation of Change Orders.**

3. ACM has been identified on this project, and it is understood that asbestos abatement is part of the contract. Please verify that chillers, concrete pads, and other items to be removed do not contain lead, and that lead abatement is not a requirement of this project.

**RESPONSE: Baer Engineering performed Asbestos and Lead survey in the work areas for this project and any abatement required is in the specifications provided by them and provided in the Project Specifications in Bid documents.**

4. Specification 015000, 3.02 requires that the contractor shall provide temporary toilets, wash facilities, and drinking water for use by construction by construction personnel. Please verify that the toilets, wash facilities at the school cannot be used by the contractor personnel.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the additions to Section 015000 “TEMPORARY FACILITIES AND CONTROLS”.**

5. Please clarify if the refrigerant recovered on this project is to be returned to the Owner. If the Owner is to retain custody of this refrigerant, please verify that the Owner will furnish the canisters for the recovered refrigerant.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “REFRIGERANT RECOVERY” under Article 1.01 “GENERAL CLARIFICATIONS”.**

6. Specification 099600, 3.05: Please verify that wherever the requirement to “...paint all division 23 pipes....” (for example), it is to only apply to all new material provided on the project, and not to materials that were on the project prior to the start of the project.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “PAINTING OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

7. Specification 017600, 1.3B requires the contractor to have its Performance Bond for a period of 1 year after completion (acceptance) of work to cover contractor warranty. Since this is a potential cost to the project, please verify this requirement.

**RESPONSE: Please refer to Project Specifications in the Bid documents related to Performance Bond and provide as defined.**

8. Specification 220719, 3.02B.2, & B.3 requires that carbon steel and copper systems are to be painted with a 5 mil epoxy primer and a 5 mil epoxy topcoat for both types of piping.  
Please verify that:



- a) Epoxy coats of paint are indeed required for ONLY the new CHW (and NOT the existing CHW piping) piping.
- b) Epoxy coats of paint are indeed required for new copper systems to be insulated

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “PAINTING OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

9. Please verify if the new condenser water piping is to be painted; and if it is required to be painted, please specify the paint system with which the new condenser water piping is to be painted.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “PAINTING OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

10. Drawing M-EL-01 - Keyed notes 17 & 18 requires, in part, that the condenser water supply/return/bypass lines are to be heat traced. Consequently, it is presumed that these pipes will also be insulated.

Please verify that these CW lines are to be insulated.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “INSULATION OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

11. Please verify that the 10” CPVC Sch.80 Equalization pipe is to be heat traced and insulated.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “PAINTING OF PIPING SYSTEMS” and “INSULATION OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”. As per the noted drawings and specifications, the equalization pipe between the cooling tower two (2) cells shall be insulated, but not heat traced.**

12. Please verify that if the 10” CPVC Sch. 80 Equalization pipe is to be insulated, that this pipe is still required to be painted for UV protection (per General mechanical installation requirement #12, on M-GEN-03) prior to the application of any insulation.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “PAINTING OF PIPING SYSTEMS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

13. Is there a preferred BAS/Controls contractor which performs work at Austin High School? If yes, please publish the contact information for that contractor.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “FACILITY MANAGEMENT SYSTEM (FMS) HVAC CONTROLS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

14. Please verify that ANY rework of the CHW and the CW pumps, are not required on this project.

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “EXISTING CHILLED WATER AND CONDENSER WATER PUMPS” under Article 1.01 “GENERAL CLARIFICATIONS”.**

15. M-Gen-03 - “**Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems**”.

Since no work is being performed on the Hot water system, please verify if the Hot water system is required to be flushed.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. Renovations to the hot water system, including draining/filling/flushing, are not required for this Work.**

16. M-Gen-03 - “**Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems**”.

Please verify that the condenser water system is not required to be flushed.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. Renovations to the condenser water system, including draining/filling/flushing, are required for this Work.**

17. M-Gen-03 - “**Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems**”.



Given that the entire CHW & HW hydronic piping systems are required to be flushed while, in particular, the CHW system is being operated to maintain cooling for the school:

- a) Please issue a detailed flushing sequence, to include but not limited to, the sequence indicating precisely how the contractor is to flush the system while maintaining cooling of the school – also stipulating the time-frames for each of the flushes which need to occur.

**PLEASE NOTE THAT THIS IS NOT A MEANS/METHODS IMPLEMENTATION OF THE CONTRACTOR.**

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. Renovations to the hot water system, including draining/filling/flushing, are not required for this Work. The Contractor, at their discretion, may maintain the hydronic system energized during flushing if complying with the schedule of Time Restricted Activities and the maximum fresh water flow rate requirements noted on drawing “M-GEN-03”.**

18. M-Gen-03 - **“Draining, Filling, and water treatment of existing facility entire chilled water and hot water hydronic piping systems”.**

Given the requirement for flushing of the entire CHW & HW piping systems, please issue a pipe flushing specification for this project, including but not limited to:

- a) Will the House pumps be permitted for this flushing process?
- b) Required flushing specifics as related to flow-rates, etc.

**RESPONSE: Please refer to the attached Addendum No. 3 drawings prepared by the Engineer. Please refer to the notes under “DRAINING & FILLING OF EXISTING CHILLED WATER AND WATER TREATMENT OF EXISTING CHILLED & HOT WATER HYDRONIC PIPING SYSTEMS” on drawing “M-GEN-03”. Please refer to when the existing pumps may be used during flushing and the requirements with regard to the fresh water flow rate during flushing.**

19. Drawing M-FP-01 and Drawing M-PSC-01 appears to depict all new piping drawn in bold is piping that is to be replaced.

**Please verify that all piping and valves, drawn in bold in the afore-referenced drawings, are indeed required to be new for both the CHW and the condenser water systems.**

**RESPONSE: Please refer to the attached Addendum No. 3 document prepared by the Engineer. Please refer to the section entitled “NEW PROPOSED PIPING” under Article 1.01 “GENERAL CLARIFICATIONS”.**

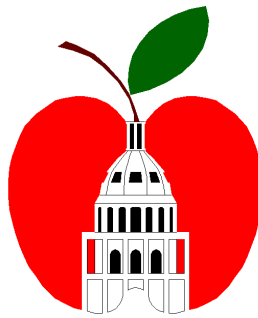
**ADDENDUM NO. 3**

**FOR**

**HVAC Improvements at  
Austin High School**

**AISD PROJECT NO. 19-0041-AUSTN**

**Prepared for:**



**AUSTIN INDEPENDENT SCHOOL DISTRICT**

**Prepared by:**

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**Addendum Date: June 20, 2019**

**Total Number of Pages (including this sheet): 11**

**This Addendum forms a part of the Contract and clarifies, corrects or modifies original Contract Documents, dated May 17, 2019. Acknowledge receipt of this addendum in space provided in proposal form. Failure to do so may subject responder to disqualification.**

## ADDENDUM NO. 3

### PART 1 - PROJECT MANUAL / SPECIFICATION REVISION ITEMS

#### 1.01 GENERAL CLARIFICATIONS:

##### A. PROJECT SCHEDULE:

1. Please refer to sheet G-GEN-02 for project scheduling requirements and critical dates under the “Sequence of Construction” notes.
2. Please refer to Section 013200 “Construction Progress Documentation” for additional project scheduling requirements. Please refer to the project schedule at the end of Section 013200 for more specific schedule requirements.

##### B. REFRIGERANT RECOVERY:

1. Please refer to Sheet M-GEN-02, under “GENERAL RENOVATION/DEMOLITION NOTES”, note #22 for requirement to remove all the refrigerant from the existing equipment and transfer to owner provided canisters and other requirements.

##### C. PAINTING OF PIPING SYSTEMS:

1. Please refer to the requirements in Specification Section 099600 “High-Performance Coatings” and Specification Section 230719 “HVAC Piping and Equipment Insulation” for pipe cleaning, preparation and painting requirements.
  - a. The requirements in Specification Section 230719 “HVAC Piping and Equipment Insulation” Article 3.01-B apply to stainless steel, carbon steel, and copper pipes as noted.
2. Painting of pipes is intended to apply to new proposed pipes and proposed pipe insulation installations where required on existing pipes, unless noted otherwise or as required for patching existing conditions as related to the demolition/renovation elements associated with this Work.
3. Painting of piping and elements for this Work includes, but it not limited to, chilled water piping, condenser water piping, drain piping, make-up water piping, domestic potable water piping, and other piping as shown on the Drawings.
4. Per Specification Section 099600 “High-Performance Coatings” Article 3.05-A-2-b-4), painting is not required for plastic piping not exposed to outdoor ambient ultraviolet rays. Thus, if the plastic pipe is insulated, or otherwise not exposed to outdoor ambient ultraviolet rays, painting of the pipe is not required.

##### D. INSULATION OF PIPING SYSTEMS:

1. Please refer to Section 230719 “HVAC Piping and Equipment Insulation” Article 3.12 “PIPING AND EQUIPMENT INSULATION SCHEDULE” for pipe sections that require insulation. Please note, per Article 3.12-D, condenser water piping, including the basin equalization piping, requires insulation.

E. TEMPORARY COOLING EQUIPMENT TO SERVE THE LIBRARY:

1. Please refer to Drawing M-GEN-02, under “GENERAL RENOVATION/DEMOLITION NOTES”, note #26 for temporary cooling equipment requirements to serve the existing school library, and when such temporary cooling would be required.

F. HEAT TRACE OF PIPING SYSTEMS:

1. Please refer to the Drawings, including, but not limited to, M-FP-02, M-EL-01, M-EL-02, M-SCH-01, E-FP-03, and E-SCH-01 and Specification Section 230533 “Heat Tracing for HVAC Piping” for heat trace requirements. The requirements are applicable to the make-up water supply piping, condenser drain and blow-down piping, and the condenser water supply, return and bypass piping. Please note, the equalization piping is not shown/scheduled to be heat traced.

G. TEMPORARY CHILLER REQUIREMENTS:

1. Please refer to sheet M-GEN-02 for rental equipment requirements.
2. Please refer to note #4 under “General Requirements for Rental Equipment” regarding the placement/location of the rental equipment.
3. Please refer to Section 015000 “Temporary Facilities and Controls” for additional requirements, including the submission of a site plan for temporary facilities. Rental equipment are part of the temporary facilities to be provided by the Contractor for this Work.
4. The temporary air-cooled chillers shall provide cooling for the chilled water system currently being served by the two (2) water-cooled chillers that are scheduled to be replaced.

H. MECHANICAL DRAWINGS:

1. Demolition of elements is noted on the drawings. Please refer to the mechanical drawings for the demolition of mechanical elements.
2. The Contractor shall prepare shop drawings of the proposed mechanical piping installations. Please refer to drawing sheet M-GEN-03 for shop drawing requirements and additional requirements in the respective specification sections.
3. Please note the chillers and associated chilled water piping to be demolished in the main mechanical room will be replaced by the new chillers and piping. Please refer to the renovations drawings for demolition notes, including equipment that is to be demolished and will not be replaced (i.e. air compressors).

I. CONNECTION POINTS FOR RENTAL EQUIPMENT:

1. Please refer to the mechanical drawings for the installation of connections points in the chilled water piping near the chillers for the connection of temporary chillers. Please refer to sheet M-FP-01 Key Note #11 and M-PSC-01 Key Note #13.
2. The temporary chilled water system connection points shall require a shutdown of the chilled water system and therefore is a time restricted activity. Please refer to the attached revised Sheet G-GEN-02 for additional requirements of when time restricted activities may be performed.

J. EXISTING CHILLED WATER AND CONDENSER WATER PUMPS:

1. Please refer to the Drawings for the extent of scope and services for this Work. Please note, the Drawings do not show the replacement of the existing building chilled water condenser water pumps. The Work does include the balancing of the hydronic piping systems, control system renovations, strainer cleaning, etc. as related to the chilled water and condenser water hydronic piping/pumping elements.

K. NEW PROPOSED PIPING:

1. Please refer to the Drawings for the extent of piping renovations, including the provision of new chilled water hydronic piping and condenser water piping. Please note, as noted on Sheet M-GEN-02, under “GENERAL PROPOSED RENOVATION NOTES:”, per Note #2, on renovation drawings, shaded linework depicts existing conditions; dark linework depicts renovated conditions.

L. FACILITY MANAGEMENT SYSTEM (FMS) HVAC CONTROLS:

1. Please refer to Section 230926a “Direct Digital Controls for Local Building Systems (Tridium-BACnet)” for requirements related to the Facility Management System (FMS) HVAC Control System requirements, including, but not limited to, Article 1.4 “ACCEPTABLE CONTRACTORS”.

M. DIVISION 27 AND 28 REQUIREMENTS:

1. Please refer to the individual Division 27 and 28 specification sections, as applicable, for certifications/experience requirements for the individual providers of the subject systems.

**1.02 SECTION 015000 “TEMPORARY FACILITIES AND CONTROLS”**

Under 3.02 “TEMPORARY UTILITY INSTALLATION” Paragraph A, **ADD** the following subparagraphs:

1. Please note that unless allowed in advance by the Owner in writing, the presence of the Contractor at the existing facility shall be limited to the renovation work areas only and within the scheduled time periods as noted on the Drawings and as allowed in writing by the Owner.
2. Use of existing facility elements outside of the renovated areas for purposes beyond the intended Work, including, but not limited to, the use of existing

facility restrooms, janitorial closets, etc. are not allowed unless approved in advance in writing by the Owner.

### 1.03 SECTION 236514.14 “OPEN-CIRCUIT, INDUCED-DRAFT, CROSSFLOW COOLING TOWERS”

Under Article 1.12 “MAINTENANCE MATERIAL SUBMITTALS”, **ADD** the following sub-paragraphs:

#### B. Digital Protractor for Fan Blade Adjustment:

1. Furnish **Two (2)** Exact-A-Pitch Model 360 digital protractors as manufactured by the Hudson Products Corporation, or Engineer approved equal, to allow the Owner to measure and set each fan blade angle of the cooling tower cell. Furnish complete with required batteries for fully operating units.
  - a. Note: Cooling tower blades shall be factory set to comply with unit scheduled performance requirements prior to their shipment from the factory. Setting by Owner is for future use as desired/required by Owner.

Under Article 3.07 “DEMONSTRATION AND TRAINING”, Paragraph A, **ADD** the following sub-paragraph:

5. Training shall include, at a minimum, how to address motor/belt issues, including, but not limited to, how to use the crane to remove/reinstall motors, how to remove/reinstall motors, how to remove/reinstall fan blades as required to remove motors, how to adjust the angle/pitch of fan blades to match the original factory set positions, how to use the fan blade protractor, how to replace belts, etc.

### 1.04 SECTION 312000 “EARTH MOVING”

In 1.09 “GENERAL REQUIREMENTS” **REPLACE** paragraph A with the following:

- A. **Work within the excavation areas is considered a Time Restricted Activity and shall occur only within the time periods allowed for Time Restricted Activities as noted on the Drawings.** The Contractor shall coordinate a minimum of four (4) weeks in advance with the Owner, including local facility personnel, to determine what times are available to conduct all Work related activities, including, but not limited to, excavation, trenching, conduit duct bank construction, backfill, asphalt/concrete repairs, etc. required for this Work.

### 1.05 GENERAL PLANS

- A. SHEET G-GEN-02: **REPLACE** with the attached sheet noted with “6/20/2019 ADDENDUM 3” in the Issues and Revisions portion of the title block.

### 1.06 MECHANICAL PLANS

- A. SHEET M-GEN-02: **REPLACE** with the attached sheet noted with “6/20/2019 ADDENDUM 3” in the Issues and Revisions portion of the title block.



- B. SHEET M-GEN-03: **REPLACE** with the attached sheet noted with “6/20/2019 ADDENDUM 3” in the Issues and Revisions portion of the title block.
- C. SHEET M-FP-01: **REPLACE** with the attached sheet noted with “6/20/2019 ADDENDUM 3” in the Issues and Revisions portion of the title block.
- D. SHEET M-PSC-01: **REPLACE** with the attached sheet noted with “6/20/2019 ADDENDUM 3” in the Issues and Revisions portion of the title block.

**END OF ADDENDUM**

**GENERAL PROJECT NOTES (CONTINUED):**

- 20. 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.
- 21. 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.
- 22. PROTECT ALL FLOORS/WALLS FROM POSSIBLE DAMAGE WHEN CONDUCTING THIS 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.
- 23. SHOULD A POWER OUTAGE TO THE FACILITY BE REQUIRED, THE CONTRACTOR SHALL REQUEST SUCH AN OUTAGE IN WRITING NO LESS THAN FOUR (4) 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) AND THE LIBRARY HVAC SYSTEM AT THEIR FULL CAPACITY 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.
  - C. WHERE ANY DISRUPTION OF POWER IMPACTS ANY KITCHEN EQUIPMENT, INCLUDING, BUT NOT LIMITED, TO WALK-IN COOLERS AND FREEZERS, PORTABLE COOLERS AND OTHER KITCHEN EQUIPMENT, COORDINATE WITH THE OWNER AND SCHOOL KITCHEN PERSONNEL A MINIMUM OF FOUR (4) WEEKS PRIOR TO SUCH DISRUPTION OF POWER TO DETERMINE IF ANY ITEMS WITHIN THE KITCHEN NEED TO BE RELOCATED PRIOR TO ANY POWER DISRUPTIONS.
- 24. AN ATTEMPT IS MADE TO SHOW ALL EXISTING EQUIPMENT ON PLANS. REGARDLESS, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE APPLICABLE PIPING, ACCESSORIES, BUILDING ELEMENTS, AND PENETRATIONS TO EXISTING SYSTEMS WHETHER SHOWN HERE OR NOT. THE CONTRACTOR SHALL EXERCISE EVERY PRECAUTION TO ELIMINATE HAZARDS IN DISCONNECTING/REMOVING ANY DEVICE. THE CONTRACTOR IS TO EXERCISE EXTREME CARE AND VERIFY EXISTING DEVICES PRIOR TO COMMENCING FULL SCALE DEMOLITION OR RENOVATION ACTIVITIES. FOLLOWING THE DISCOVERY VERIFICATION OF THE EXISTING FIELD CONDITIONS, SHOULD ADJUSTMENTS BECOME A NECESSITY TO THE EXISTING OR PROPOSED SYSTEM (AS APPLICABLE), THE EXISTING DISCOVERED FIELD CONDITIONS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION.
- 25. 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.

**GENERAL PROJECT NOTES (CONTINUED):**

- 26. COMPLY WITH THE MINIMUM REQUIREMENTS OF THE AISD SUSTAINABILITY SCORECARD. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 27. WHERE ANY WORK IS REQUIRED BELOW AN EXISTING CONCRETE SLAB AND/OR THE CUTTING/PATCHING OF AN EXISTING CONCRETE SLAB, INCLUDE IN WORK, AT NO ADDITIONAL COST TO OWNER, ALL CUTTING/PATCHING OF EXISTING SLAB TO MATCH EXISTING CONDITIONS. PROVIDE/SPACE/FASTEN IRON REINFORCEMENT BARS IN CONCRETE FORM PRIOR TO POURING CONCRETE, AND FORM/POUR/SET CONCRETE TO MATCH EXISTING. FOR CONCRETE SLABS LOCATED ON THE FIRST FLOOR OF THE BUILDING, PROVIDE FILL MATERIAL BELOW THE CONCRETE SLAB TO MATCH EXISTING. COMPACT FILL MATERIAL TO A DENSITY OF 95 TO 100 PERCENT, AND PROVIDE 6-MIL MINIMUM THICKNESS COMPLETE VAPOR RETARDER PLASTIC BARRIER BETWEEN FILL MATERIAL AND SLAB UNLESS NOTED OTHERWISE ON A DRAWING FOR A SPECIFIC AREA/APPLICATION. FOR ALL WORK REQUIRING THE CUTTING OF AN EXISTING CONCRETE SLAB, ALLOW FOR A MINIMUM OF 12-INCH THICK EXISTING CONCRETE SLAB. ALL STEEL REINFORCEMENTS FOR CONCRETE INSTALLED AS PART OF THIS WORK SHALL BE #5 MINIMUM DIAMETER STEEL REINFORCEMENT BARS SPACED IN A GRID PATTERN OF 12-INCHES BY 12-INCHES MAXIMUM IN PLAN VIEW UNLESS SPECIFICALLY NOTED OTHERWISE ON A DRAWING FOR A SPECIFIC AREA/APPLICATION. DOWEL ALL STEEL REINFORCEMENTS INTO EXISTING CONCRETE SLABS AND FASTEN STEEL REINFORCEMENTS INTO EXISTING CONCRETE SLABS WITH EPOXY FOR A FIRM/SECURE CONNECTION. REFER TO THE SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, TESTING REQUIREMENTS.
- 28. THE CONTRACTOR SHALL BE AWARE THAT WHEN ANY EXISTING EQUIPMENT IS DISCONNECTED, REMOVED, RELOCATED OR OTHERWISE MODIFIED, THE POSSIBILITY MAY EXIST FOR SUCH ACTION TO LEAD TO INTERRUPTION OF OPERATION OF THE FACILITY IF EXTREME CARE, VERIFICATION, AND VALIDATION IS NOT CAREFULLY EXERCISED PRIOR TO COMMENCEMENT OF SUCH DEMOLITION/MODIFICATION ACTIVITY. THE CONTRACTOR SHALL KNOW THAT ANY INTERRUPTION TO THE CONTINUITY OF FACILITY OPERATION IS UNACCEPTABLE DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. HOWEVER, SHOULD ANY INTERRUPTION TO OCCUR FOR ANY UNFORESEEN REASON, WHETHER TOTALLY ACCIDENTAL OR DUE TO IMPROPER FIELD INVESTIGATION AND IMPROPER PLANNING PRIOR TO COMMENCEMENT OF THE DEMOLITION/MODIFICATION EFFORT, THE RESPONSIBLE CONTRACTOR SHALL DETERMINE THE PROBLEM, CORRECT IT, AND START UP THE INTERRUPTED EQUIPMENT WITHIN A CERTAIN TIME PERIOD AS DETERMINED BY THE OWNER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL PROVIDE CONTINUOUS, 24-HOUR, LABOR, EQUIPMENT, MATERIAL, AND ACCESSORIES UNTIL SUCH TIME THAT ANY EFFECTED EQUIPMENT OPERATES AS PREVIOUSLY OPERATED, AT NO ADDITIONAL COST TO THE OWNER AND TO THE OWNER'S SATISFACTION.
- 29. 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.
- 30. 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 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. COORDINATE AND SUBMIT ALL PAINT COLORS TO OWNER/ENGINEER PRIOR TO PAINTING/COATING APPLICATIONS. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 31. ALL OUTDOOR/EXTERIOR SUPPORT SYSTEMS FOR PIPING AND CONDUITS, WITH EXCEPTION TO SUCH SUPPORT SYSTEM ELEMENTS THAT ARE FABRICATED ENTIRELY OF TYPE 304 OR TYPE 316 STAINLESS STEEL, SHALL BE PAINTED IN ACCORDANCE TO THE DIVISION 9 SPECIFICATION SECTION "HIGH-PERFORMANCE COATINGS". COORDINATE ALL COLOR REQUIREMENTS WITH OWNER AND ENGINEER A MINIMUM OF FOUR (4) WEEKS PRIOR TO PAINTING.

**COOLING TOWER PLATFORM RENOVATIONS GENERAL REQUIREMENTS:**

- 1. REFER TO THE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR GENERAL STRUCTURAL REQUIREMENTS FOR THE RENOVATIONS OF THE EXISTING PLATFORM SERVING THE COOLING TOWER, INCLUDING BUT NOT LIMITED TO THE PROPOSED STEEL GRATING SYSTEM/SECTIONS TO BE PROVIDED/INSTALLED ALONG THE EAST AND WEST SIDES OF THE NEW PROPOSED COOLING TOWER.
- 2. THE PROPOSED STEEL GRATING SYSTEM SHALL BE DESIGNED AND FABRICATED IN SECTIONS THAT SHALL BE REMOVABLE TO ALLOW THE COMPLETE SERVICE OF THE COOLING TOWER SYSTEM, INCLUDING, BUT NOT LIMITED TO, TEMPORARILY REMOVING A PORTION OF THE GRATES AS REQUIRED DURING COOLING TOWER SERVICE TO ALLOW THE LOWERING/RAISING OF THE COOLING TOWER ELEMENTS (SUCH AS MOTORS, ETC.) THROUGH THE EXISTING CONCRETE PLATFORM WHERE THE PROPOSED GRATES ARE SHOWN. EACH GRATE SECTION SHALL BE INDIVIDUALLY REMOVABLE TO ALLOW PASSAGE OF COOLING TOWER ELEMENTS THROUGH THE EXISTING COOLING TOWER PLATFORM FOR SERVICE. EACH GRATE SECTION SHALL BE NO GREATER THAN 3- FEET IN PLAN VIEW IN THE DIMENSION SPANNING ALONG THE PERIMETER OF THE COOLING TOWER. COORDINATE ALL GRATE DIMENSIONS WITH THE MECHANICAL COOLING TOWER INSTALLER PRIOR TO SUBMISSION OF GRATE SHOP DRAWINGS TO ALLOW A FULLY SERVICEABLE COOLING TOWER SYSTEM.

**COOLING TOWER PLATFORM RENOVATIONS GENERAL REQUIREMENTS (CONTINUED):**

- 3. THE PROPOSED STEEL GRATING SYSTEM ON THE EXISTING PLATFORM SHALL BE SLEEVED AS REQUIRED TO ALLOW PASSAGE OF THE PROPOSED PIPING/CONDUITS AS SHOWN/REQUIRED PER THE MECHANICAL AND ELECTRICAL DRAWINGS/SPECIFICATIONS AND ALSO TO ALLOW THE GRATE SECTIONS TO BE REMOVED. EACH GRATE SECTION SHALL BE SIZED AND NOTCHED AS REQUIRED SUCH THAT THE GRATE SECTION DOES NOT FULLY ENCLOSE ANY PIPE/CONDUIT PASSING THROUGH THE GRATE, BUT SHALL BE NOTCHED TO ALLOW REMOVAL OF THE GRATE SECTION WITHOUT REMOVING ANY PIPES/CONDUITS. THE NOTCHED OPENINGS IN THE GRATES SHALL EACH BE SIZED TO ALLOW A 1" GAP BETWEEN THE GRATE NOTCHED OPENING AND THE OUTER FINISHED SURFACE OF THE PROPOSED PIPING/CONDUIT SYSTEMS PASSING THROUGH THE GRATING. PLEASE NOTE THE OUTER SURFACE OF PIPES MAY BE INSULATED/JACKETED AND/OR FLANGED ELEMENTS. THE GRATE FABRICATOR SHALL SUBMIT SHOP DRAWINGS OF THE PROPOSED GRATES, SHOWING THE LOCATIONS OF THE PROPOSED NOTCHED OPENING AND THEIR INNER CLEAR DIMENSIONS, AND SUCH LOCATIONS AND SIZES SHALL HAVE BEEN REVIEWED AND APPROVED BY ALL APPLICABLE INSTALLING MECHANICAL AND ELECTRICAL TRADES PRIOR TO SUBMISSION OF GRATE SHOP DRAWINGS FOR REVIEW BY THE ENGINEER.
- 4. THE TWO (2) STRUCTURAL I-BEAMS, SPANNING EAST-WEST, ONTO WHICH THE PROPOSED COOLING TOWER SHALL BE DIRECTLY INSTALLED/FASTENED SHALL BE PAINTED IN ACCORDANCE TO THE DIVISION 9 SPECIFICATION SECTION "HIGH-PERFORMANCE COATINGS". COORDINATE ALL COLOR REQUIREMENTS WITH OWNER AND ENGINEER A MINIMUM OF FOUR (4) WEEKS PRIOR TO PAINTING.
- 5. ALL PROPOSED HAND RAIL SYSTEMS AND THEIR ELEMENTS TO BE INSTALLED AROUND THE PROPOSED COOLING TOWER ON THE EXISTING CONCRETE PLATFORM SHALL BE PAINTED IN ACCORDANCE TO THE DIVISION 9 SPECIFICATION SECTION "HIGH-PERFORMANCE COATINGS". COORDINATE ALL COLOR REQUIREMENTS WITH OWNER AND ENGINEER A MINIMUM OF FOUR (4) WEEKS PRIOR TO PAINTING.

**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. THE LOSS OF ANY HVAC HEATING CAPACITY, POWER/CAPACITY TO KITCHEN COOLERS/FREEZERS, ELECTRICAL POWER TO MDF AND IDF ROOMS, COOLING TO ME & IDF ROOMS, AND COOLING TO THE LIBRARY IS NOT ALLOWED ANYTIME DURING THIS WORK. **NO EXCEPTIONS.** REFER TO THE TIME RESTRICTIONS ON THIS SHEET FOR WHEN WORK MAY OCCUR ON SITE.
- 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 BUILDING SYSTEMS IN SERVICE AT THE SCHEDULED PERIODS, THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, PROVIDE THE APPLICABLE TEMPORARY BUILDING SYSTEMS, INCLUDING BUT NOT LIMITED TO, TEMPORARY ELECTRICAL POWER, TEMPORARY HVAC COOLING/HEATING AND TEMPORARY DOMESTIC WATER HEATING EQUIPMENT TO PROVIDE THE NECESSARY BUILDING SYSTEMS OF THE SAME OR GREATER PERFORMANCE OF THE BUILDING SYSTEMS TAKEN OUT OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATION/CONNECTION, ELECTRICAL CONNECTIONS, NATURAL GAS CONNECTIONS, 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. THE RENOVATION WORK SHALL BE SCHEDULED SUCH THAT THERE IS NO IMPACT ON THE BUILDING SYSTEMS AND THE ABILITY OF THE BUILDING SYSTEMS TO FUNCTION WHILE THE CAMPUS AND BUILDINGS ARE OCCUPIED OR OTHERWISE IN USE.
- 8. THE CONTRACTOR SHALL INSTALL TEMPORARY AIR-COOLED CHILLERS/PLANT AND MAKE ALL ASPECTS OF THE TEMPORARY SYSTEM FULLY FUNCTIONAL BY **NO LATER THAN MONDAY, FEBRUARY 3, 2020.**
- 9. PRIOR TO PROVIDING THE TEMPORARY AIR-COOLED CHILLERS/PLANT, THE CONTRACTOR SHALL CAREFULLY COORDINATE ALL ASPECTS OF THE TEMPORARY AIR-COOLED CHILLERS/PLANT INSTALLATION WITH THE TEMPORARY EQUIPMENT PROVIDER, INCLUDING, BUT NOT LIMITED TO, TEMPORARY ELECTRICAL CONNECTIONS, TEMPORARY HYDRONIC PIPING CONNECTIONS, AND TEMPORARY CONTROL SYSTEMS AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. PROVIDE ALL REQUIRED HYDRONIC CHILLED WATER TEMPORARY TAPS/CONNECTIONS AS SHOWN ON THE DRAWINGS PRIOR TO INSTALLING THE TEMPORARY COOLING EQUIPMENT. COORDINATE THE TIME AND DURATION OF THE SHUTDOWNS REQUIRED FOR THE INSTALLATION OF THE TEMPORARY HYDRONIC PIPING TAPS/CONNECTIONS AND THE ELECTRICAL CONNECTIONS/SWAP-OVER FOR THE TEMPORARY EQUIPMENT INSTALLATION/REMOVAL WITH AISD AND THE LOCAL SCHOOL PERSONNEL A MINIMUM OF FOUR (4) WEEKS IN ADVANCE.

**SEQUENCE OF CONSTRUCTION (CONTINUED):**

- 10. THE CONTRACTOR SHALL COMPLETE THE PRE-FABRICATION AT THEIR SHOPS SECTIONS OF HVAC HYDRONIC PIPING AND HVAC CONTROL PANELS/CONTROLLERS AS MUCH AS POSSIBLE PRIOR TO THEIR FIELD INSTALLATION.
- 11. NO BUILDING SYSTEM/COMPONENT THAT SERVES THE BUILDING OCCUPANTS MAY BE DEMOLISHED OR IN ANY WAY TAKEN OUT OF SERVICE IF THE TEMPORARY EQUIPMENT TO REPLACE THE EXISTING SYSTEM IS NOT IN-PLACE AND MADE FULLY FUNCTIONAL TO COMPLETE SATISFACTION OF THE OWNER.
- 12. THE CONSTRUCTION SCHEDULE OF WHEN ANY EXISTING HVAC UNIT/EQUIPMENT, PLUMBING EQUIPMENT, ELECTRICAL DISTRIBUTION EQUIPMENT (DISTRIBUTION PANELBOARD, MOTOR CONTROL CENTER, PANELBOARD, TRANSFORMER, ETC.) SHALL BE OUT OF SERVICE SHALL BE APPROVED BY AISD AND THE LOCAL SCHOOL PERSONNEL **A MINIMUM OF FOUR (4) WEEKS** PRIOR TO TAKING ANY SUCH EQUIPMENT OUT OF SERVICE.
- 13. 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 **BY FRIDAY, APRIL 17, 2020.**
- 14. ALL SYSTEMS IN THE SCOPE OF WORK SHALL BE INSTALLED, COMPLETED STARTUP, MADE FULLY FUNCTIONAL AND READY FOR TESTING AND BALANCING **BY FRIDAY, MAY 1, 2020.**
- 15. 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.
- 16. ALL WORK MUST BE SUBSTANTIALLY COMPLETED **NO LATER THAN MONDAY, MAY 25, 2020.**

**TIME RESTRICTIONS:**

- 1. THE FOLLOWING ON-SITE CONSTRUCTION ACTIVITIES ARE CONSIDERED TIME RESTRICTED ACTIVITIES AND SHALL ONLY OCCUR WITHIN THE TIME PERIODS ALLOWED FOR TIME RESTRICTED ACTIVITIES AS NOTED IN THE FOLLOWING PARAGRAPHS:
  - A. ANY ACTIVITY THAT RESULTS IN AN ELECTRICAL SHUTDOWN TO ANY POWER DISTRIBUTION EQUIPMENT AND/OR PANELBOARD.
  - B. ANY ACTIVITY THAT RESULTS IN THE LOSS OF ANY HVAC COOLING CAPACITY.
  - C. ANY ACTIVITY THAT RESULTS IN THE SHUTDOWN OF THE HVAC HYDRONIC CHILLED WATER LOOP, INCLUDING, BUT NOT LIMITED TO, THE DRAINING/FILLING OF THE CHILLED WATER LOOP.
  - D. ANY ACTIVITY THAT RESULTS IN THE DISRUPTION OF ANY TYPE OF BUILDING SERVICE/FUNCTION/OPERATION OUTSIDE OF THE IMMEDIATE MECHANICAL ROOM OR COOLING TOWER AREA AT WHICH THE WORK IS BEING CONDUCTED.
  - E. THE DELIVERY OF EQUIPMENT AND/OR MATERIALS TO/FROM THE CAMPUS.
  - F. THE COMPLETE BLOCKING OF ANY ROADWAY ON CAMPUS THAT PREVENTS VEHICLES, INCLUDING EMERGENCY VEHICLES, FROM PASSING THROUGH THE ROADWAY, INCLUDING, BUT NOT LIMITED TO, THE ROADWAY AT THE REAR OF THE SCHOOL BETWEEN THE MAIN MECHANICAL ROOM AND THE COOLING TOWER.
  - G. ANY ACTIVITY WITHIN AN EXCAVATION AREA, INCLUDING, BUT NOT LIMITED TO, TRENCHING, INSTALLATION OF UNDERGROUND CONDUITS, FORMING DUCT BANKS, POURING DUCT BANK CONCRETE, BACKFILLING, ASPHALT/CONCRETE REPAIR, ETC.
  - H. ANY ACTIVITY THAT CREATES OBJECTIONABLE NOISE AUDIBLE INSIDE THE BUILDING, OUTSIDE OF THE MECHANICAL ROOMS.
- 2. **TIME RESTRICTED WORK MAY ONLY BE SCHEDULED DURING THE FOLLOWING TIME PERIODS:**
  - A. SATURDAYS, FROM 12:01 AM TO 9:00 PM.
  - B. WEEKDAYS (MONDAY THROUGH FRIDAY) STARTING FROM 9:00 PM THROUGH 5:00 AM ON THE IMMEDIATELY FOLLOWING DAY (TUESDAY THROUGH SATURDAY, RESPECTIVELY).
  - C. HOLIDAY WEEKDAYS (MONDAY THROUGH FRIDAY) DURING WHICH TIME TEACHERS AND STUDENTS ARE NOT ON CAMPUS. REFER TO THE CURRENT AISD SCHOOL CALENDAR AVAILABLE ON THE AISD WEB-SITE FOR REFERENCE.

NOTE: MOST SATURDAYS AND HOLIDAY PERIODS MAY HAVE SCHEDULED SCHOOL EVENTS. ALLOW FOR ONLY UP TO 25% OF THE SATURDAYS AND ONLY UP TO 25% OF THE TOTAL HOLIDAY DAYS MAY BE AVAILABLE FOR TIME RESTRICTED ACTIVITIES WITHIN THE HOURLY TIME LIMITATIONS NOTED ABOVE. THESE AVAILABLE DAYS MAY NOT BE CONSECUTIVE. PLAN ACCORDINGLY.
- 3. ALL TIME RESTRICTED ACTIVITIES SHALL BE SCHEDULED WITH AND APPROVED BY AISD AND THE LOCAL SCHOOL PERSONNEL IN WRITING **A MINIMUM OF FOUR (4) WEEKS** PRIOR TO COMMENCEMENT OF SUCH WORK TO ENSURE THERE ARE NO CONFLICTS WITH ANY PROGRAMS OR SCHOOL FUNCTIONS SCHEDULED AT THE SCHOOL.

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

**REUSE OF DOCUMENTS**

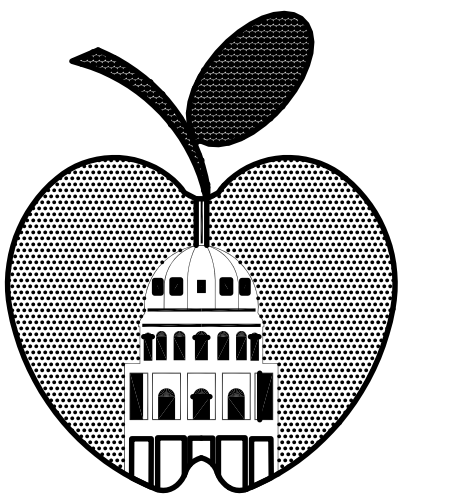
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**HVAC IMPROVEMENTS AT AUSTIN HIGH SCHOOL**

**AUSTIN HIGH SCHOOL**  
1715 W. CESAR CHAVEZ ST.  
AUSTIN, TEXAS 78703

**ISSUES AND REVISIONS**

NO.	DATE	DESCRIPTION
Δ	6/20/2019	ADDENDUM 3

**SHEET TITLE**

**GENERAL NOTES (SHEET 2 OF 2)**

DATE: AUGUST 01, 2018  
PROJECT NO.: 19-0041-AUSTN  
HEI PROJECT NO.: 2018-100  
SCALE: AS NOTED  
DRAWN BY: HEI  
CHECKED BY: HEI

**SHEET NUMBER**

**G-GEN-02**

**GENERAL RENOVATION/DEMOLITION NOTES:**

- LOCATION AND SIZES OF EQUIPMENT SHOWN ON DRAWINGS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ACTUAL CONDITIONS PRIOR TO COMMENCING CONSTRUCTION.
- NOT ALL ELECTRICAL/MECHANICAL/STRUCTURAL/CIVIL COMPONENTS ARE SHOWN ON DRAWINGS.
- REFER TO ELECTRICAL/STRUCTURAL/CIVIL/ARCHITECTURAL DRAWINGS, AS APPLICABLE, FOR ADDITIONAL INFORMATION.
- ROUTE ALL PROPOSED PIPING AND DUCTWORK AS HIGH AS POSSIBLE.
- CAREFULLY COORDINATE/VERIFY ALL POINTS OF CONNECTION PRIOR TO COMMENCING DEMOLITION/MODIFICATION ACTIVITIES.
- TAKE EXTRA CARE NOT TO DAMAGE EXISTING PIPING/EQUIPMENT/CONDUITS/WIRING/TUBING SHOWN AND/OR NOT SHOWN ON THIS SHEET THAT IS NOT TO BE DEMOLISHED.
- AN ATTEMPT IS MADE TO SHOW ALL EXISTING EQUIPMENT ON PLANS. REGARDLESS, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE APPLICABLE PIPING, ACCESSORIES, BUILDING ELEMENTS, AND PENETRATIONS TO EXISTING SYSTEMS WHETHER SHOWN HERE OR NOT. THE CONTRACTOR SHALL EXERCISE EVERY PRECAUTION TO ELIMINATE HAZARDS IN DISCONNECTING/REMOVING ANY DEVICE. THE CONTRACTOR IS TO EXERCISE EXTREME CARE AND VERIFY EXISTING DEVICES PRIOR TO COMMENCING FULL SCALE DEMOLITION OR RENOVATION ACTIVITIES. FOLLOWING THE DISCOVERY VERIFICATION OF THE EXISTING FIELD CONDITIONS, SHOULD ADJUSTMENTS BECOME A NECESSITY TO THE EXISTING OR PROPOSED SYSTEM (AS APPLICABLE), THE EXISTING DISCOVERED FIELD CONDITIONS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION.
- CROSS-HATCHED LINE WORK ON DEMOLITION DRAWINGS DENOTES EQUIPMENT TO BE DEMOLISHED UNLESS OTHERWISE NOTED. ALL DEMOLITION/MODIFICATION ACTIVITIES SHALL ALSO BE FULLY COORDINATED WITH MECHANICAL/STRUCTURAL/CIVIL/ETC., DEMOLITION/MODIFICATION ACTIVITIES. ALL DEMOLISHED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER. RELOCATE ALL DEMOLISHED ITEMS TO LOCATION(S) SPECIFIED BY THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- FOR ALL SYSTEMS THAT ARE TO BE DEMOLISHED, REMOVE ALL UNIT SUPPORT SYSTEMS, HYDRONIC WATER PIPING, ELECTRICAL/CONDUIT CONNECTIONS, PNEUMATIC PIPING/TUBING, CONCRETE HOUSEKEEPING PADS, CONDENSATE PIPING, AND OTHER ANCILLARY SYSTEM CONNECTIONS. CLEAN THE AREA AND FILE ANY SHARP EDGES DUE TO ANY CUT ELEMENTS FOR A CLEAN AND SAFE DEMOLISHED AREA. WHERE ANY ITEMS ARE CUT AND/OR PAINT IS DAMAGED, PATCH AREA AND TOUCH-UP WITH PAINT TO MATCH EXISTING COLORS AND CONDITIONS. PATCH ALL WALL/CEILING PENETRATIONS THAT REMAIN AFTER SUPPORT SYSTEMS AND/OR ANY FASTENERS ARE REMOVED TO MATCH CONSTRUCTION AND COLOR OF ADJOINING WALL/CEILING.
- THE CONTRACTOR SHALL BE AWARE THAT WHEN ANY EXISTING EQUIPMENT IS DISCONNECTED, REMOVED, RELOCATED OR OTHERWISE MODIFIED, THE POSSIBILITY MAY EXIST FOR SUCH ACTION TO LEAD TO INTERRUPTION OF OPERATION OF THE FACILITY IF EXTREME CARE, VERIFICATION, AND VALIDATION IS NOT CAREFULLY EXERCISED PRIOR TO COMMENCEMENT OF SUCH DEMOLITION/MODIFICATION ACTIVITY. THE CONTRACTOR SHALL KNOW THAT ANY INTERRUPTION TO THE CONTINUITY OF FACILITY OPERATION IS UNACCEPTABLE DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. HOWEVER, SHOULD ANY INTERRUPTION TO OCCUR FOR ANY UNFORESEEN REASON, WHETHER TOTALLY ACCIDENTAL OR DUE TO IMPROPER FIELD INVESTIGATION AND IMPROPER PLANNING PRIOR TO COMMENCEMENT OF THE DEMOLITION/MODIFICATION EFFORT, THE RESPONSIBLE CONTRACTOR SHALL DETERMINE THE PROBLEM, CORRECT IT, AND START UP THE INTERRUPTED EQUIPMENT WITHIN A CERTAIN TIME PERIOD AS DETERMINED BY THE OWNER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL PROVIDE CONTINUOUS, 24-HOUR, LABOR, EQUIPMENT, MATERIAL, AND ACCESSORIES UNTIL SUCH TIME THAT ANY EFFECTED EQUIPMENT OPERATES AS PREVIOUSLY OPERATED, AT NO ADDITIONAL COST TO THE OWNER AND TO THE OWNER'S SATISFACTION.
- THE INTENT IS TO KEEP THE EXISTING FACILITY OPERATIONAL AT ALL TIMES. CAREFULLY COORDINATE ALL DEMOLITION AND MODIFICATION WORK WITH THE RECOMMENDED CONSTRUCTION SEQUENCE IN THE CONTRACT PLANS/SPECIFICATIONS FOR THIS FACILITY.
- COORDINATE ALL DEMOLITION AND RENOVATION WORK WITH SCHOOL PERSONNEL A MINIMUM OF FOUR (4) WEEKS PRIOR TO CONDUCTING ANY SUCH WORK. PROVIDE LABOR TO RELOCATE ALL REQUIRED EQUIPMENT AND FURNITURE AS DESIGNATED BY OWNER/SCHOOL STAFF FOR SAFE KEEPING PRIOR TO COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE APPLICATION PIPING, ACCESSORIES, BUILDING ELEMENTS, AND PENETRATIONS TO EXISTING SYSTEMS WHETHER SHOWN HERE OR NOT. THE CONTRACTOR SHALL EXERCISE EVERY PRECAUTION TO ELIMINATE HAZARDS IN DISCONNECTING/REMOVING ANY DEVICE. THE CONTRACTOR IS TO EXERCISE EXTREME CARE AND VERIFY EXISTING DEVICES PRIOR TO COMMENCING FULL SCALE DEMOLITION OR RENOVATION ACTIVITIES. FOLLOWING THE DISCOVERY VERIFICATION OF THE EXISTING FIELD CONDITIONS, SHOULD ADJUSTMENTS BECOME A NECESSITY TO THE EXISTING OR PROPOSED SYSTEM (AS APPLICABLE), THE EXISTING DISCOVERED FIELD CONDITIONS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION.
- FOR ALL EXTERIOR AND INTERIOR WALL PENETRATIONS WHERE PIPING AND/OR DUCTWORK IS SHOWN TO BE DEMOLISHED, REMOVE PIPING AND/OR DUCTWORK FROM WITHIN PENETRATION AND PATCH REMAINING HOLLOW WALL PENETRATION WITH SAME MATERIAL AS EXISTING WALL CONSTRUCTION AND FIRE RATING, INCLUDING EXTERIOR WALL VENEER MATERIAL, AND PROVIDE FINAL FINISH GROUT AND/OR PAINTING TO MATCH EXISTING MATERIAL AND COLOR AT NO ADDITIONAL COST TO OWNER.
- FOR PORTION OF DEMOLITION WORK CONDUCTED IN OCCUPIED SPACES INCLUDING BUT NOT LIMITED TO CORRIDORS, AND STORAGE SPACES, CONTRACTOR SHALL CAREFULLY INSTALL SHEETS OF 6 MIL THICKNESS MINIMUM PLASTIC PROTECTIVE COVERS OVER ALL FURNITURE, EQUIPMENT, 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.

**GENERAL RENOVATION/DEMOLITION NOTES (CONTINUED):**

- SHOULD A POWER OUTAGE TO THE FACILITY BE REQUIRED, THE CONTRACTOR SHALL REQUEST SUCH AN OUTAGE IN WRITING NO LESS THAN FOUR (4) 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.
  - 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) AND THE LIBRARY HVAC SYSTEM 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.
  - 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.
  - WHERE ANY DISRUPTION OF POWER IMPACTS ANY KITCHEN EQUIPMENT, INCLUDING, BUT NOT LIMITED, TO WALK-IN COOLERS AND FREEZERS, PORTABLE COOLERS AND OTHER KITCHEN EQUIPMENT, COORDINATE WITH THE OWNER AND SCHOOL KITCHEN PERSONNEL A MINIMUM OF FOUR (4) WEEKS PRIOR TO SUCH DISRUPTION OF POWER TO DETERMINE IF ANY ITEMS WITHIN THE KITCHEN NEED TO BE RELOCATED PRIOR TO ANY POWER DISRUPTIONS.
- FOR ANY GIVEN BANK OF PIPES, THE RELATIVE POSITION/ORDER OF HYDRONIC PIPES IS SCHEMATIC. THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL POSITION OF THE PIPES AND INSTALL NEW PIPING TO MATCH EXISTING RELATIVE TO THE ORDER OF PIPES IN THE EXISTING BANKS.
- THE POSITION OF THE HYDRONIC PIPE CONNECTIONS AT THE UNIT IN PLAN VIEW IS SCHEMATIC. PROVIDE CONNECTION AT THE LOCATION AS REQUIRED AT THE INSTALLED UNITS.
- ROUTE HYDRONIC PIPING ADJACENT TO UNIT SO THAT THEY DO NOT INTERFERE TO UNIT COMPONENTS INCLUDING BUT NOT LIMITED TO FILTERS, MOTORS, ACCESS PANELS, WIRING TERMINATION BOXES, AND OTHER COMPONENTS.
- THE SIZES SHOWN FOR HYDRONIC PIPING AND DUCTWORK ARE SCHEMATIC AND ARE BASED ON OWNER RECORD DOCUMENTS WHICH ARE NOT COMPLETE AND MAY NOT BE ACCURATE. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE AND DUCTWORK DIMENSIONS AS PART OF THIS WORK AND SHALL PROMPTLY INFORM THE ENGINEER IF THERE IS ANY DISCREPANCY.
- WHERE EXISTING EQUIPMENT CONTAINING REFRIGERANT IS BEING DEMOLISHED AS PART OF THIS WORK (CHILLERS, DX UNITS, ETC.), THE CONTRACTOR SHALL REMOVE ALL THE REFRIGERANT FROM THE EXISTING EQUIPMENT AND TRANSFER TO OWNER PROVIDED CANISTERS. COORDINATE WITH OWNER TO SCHEDULE AND TRANSFER REFRIGERANT A MINIMUM OF FOUR (4) WEEKS PRIOR TO WHEN EQUIPMENT SHALL BE DEMOLISHED.
- LOCATION OF EXISTING EQUIPMENT, DUCTWORK, PIPING, AND OTHER ELEMENTS IS SCHEMATIC ONLY. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS. NOT ALL PIPING (CHILLED, HOT, ETC.) OR DUCTWORK (SUPPLY, RETURN, OUTSIDE AIR, EXHAUST, ETC.) AND OTHER COMPONENTS ARE SHOWN ON THESE DRAWINGS.
- WHERE THE DEMOLITION AND/OR RENOVATION WORK IN AN AREA IS NEAR EXISTING EQUIPMENT BELONGING TO THE OWNER, INCLUDING BUT NOT LIMITED TO, FURNITURE, SHELVES, TOOLS, OR OTHER OWNER BELONGINGS, AND SUCH ITEMS HINDER THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER A MINIMUM OF FOUR (4) WEEKS IN ADVANCE TO WHEN SUCH DEMOLITION/RENOVATION WORK IS SCHEDULED TO BE PERFORMED AND SHALL ASK THE OWNER TO PLEASE RELOCATE SUCH BELONGINGS AWAY FROM THE PROPOSED AREA OF WORK.
- WHERE EXISTING CONTROL SENSORS, PANELS, CONTROLLERS, ETC. ARE SHOWN TO BE DEMOLISHED AND/OR TEMPORARILY REMOVED, SUCH ELEMENTS SHALL ONLY BE HANDLED BY THE FACILITY MANAGEMENT SYSTEM CONTROL CONTRACTOR THE CONTRACTOR HAS SELECTED FOR THIS WORK. SUCH ACTIVITIES SHALL NOT BE PROVIDED BY ANY OTHER ENTITY, INCLUDING, BUT NOT LIMITED TO, A GENERAL DEMOLITION CONTRACTOR. ALL CONTROL DEVICES/ELEMENTS/CONTROLLERS/ETC. THAT ARE SHOWN TO BE DEMOLISHED SHALL BE HANDED TO THE OWNER SERVICE CENTER PERSONNEL. CAREFULLY MARK AND PACKAGE SUCH ELEMENTS TO ENSURE THEY ARE NOT DAMAGED DURING THE HANDLING PROCESS TO THE OWNER. IF UPON REVIEW OF THE EXISTING/DEMOLISHED CONTROL ELEMENTS, THE OWNER DECIDES TO NOT KEEP ANY OR ALL OF THE DEMOLISHED CONTROL ELEMENTS, THE CONTRACTOR SHALL DISPOSE OF THESE ELEMENTS AT NO ADDITIONAL COST TO THE OWNER.
- THE EXISTING CHILLED WATER SYSTEM SERVING THE MAIN BUILDING IS SET BY THE OWNER TO NOT OPERATE WHEN THE OUTDOOR AIR TEMPERATURE IS 40-DEGREES FAHRENHEIT OR BELOW. THE EXISTING HYDRONIC AIR HANDLING UNIT SERVING THE LIBRARY CONSISTS OF A CHILLED WATER COIL HAVING COOLING DESIGN LOAD OF APPROXIMATELY 38 TONS BASED ON OWNER RECORD DOCUMENTS. THE CONTRACTOR SHALL PROVIDE TEMPORARY COOLING EQUIPMENT HAVING A CAPACITY OF 38 TONS, AT A MINIMUM, TO SERVE THE LIBRARY ANY TIME WHEN THE CONTRACTOR HAS TAKEN OUT OF SERVICE THE CHILLED WATER SYSTEM WHEN THE OUTDOOR AIR TEMPERATURE IS GREATER THAN 40-DEGREES FAHRENHEIT. TEMPORARY COOLING EQUIPMENT FOR THE LIBRARY IS NOT REQUIRED WHEN THE OUTDOOR AIR TEMPERATURE IS 40-DEGREES FAHRENHEIT OR BELOW.

**GENERAL PROPOSED RENOVATION NOTES:**

- LOCATIONS OF PROPOSED EQUIPMENT, AND PIPING ARE SCHEMATIC ONLY. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE PROPER MODIFICATIONS TO SUIT EXISTING CONDITIONS. LOCATIONS OF EQUIPMENT SUPPORTS, AND REQUIRED PIPE/DUCT SUPPORTS SHALL BE ADJUSTED TO AVOID CONFLICT WITH EXISTING CONDITIONS, INCLUDING BUT NOT LIMITED TO STRUCTURAL JOISTS/MEMBERS SPANNING BELOW ROOF DECK. DO NOT MODIFY EXISTING STRUCTURAL MEMBERS WITHOUT WRITTEN APPROVAL FROM OWNER. ADJUST PROPOSED ROUTE OF PIPING TO AVOID CONFLICTS WITH EXISTING CONDUITS, PLUMBING PIPING, LIGHTING FIXTURES, DATA/FIRE CABLES, STRUCTURAL ELEMENTS, AND OTHER EXISTING CONDITIONS.
- ON RENOVATION DRAWINGS, SHADED LINEWORK DEPICTS EXISTING CONDITIONS; DARK LINEWORK DEPICTS RENOVATED CONDITIONS.
- AFTER INSTALLING PROPOSED SYSTEMS, PATCH AND/OR REINSTALL BUILDING AND SITE ELEMENTS INCLUDING, BUT NOT LIMITED TO, WALLS, CEILINGS SYSTEMS, TRIMS, DOORS, FLOORING, CONCRETE SLABS, PAVING/SIDEWALKS, AND GRAVEL ROADS/DRIVES TO MATCH EXISTING AND TO THE OWNER'S SATISFACTION. ALL DAMAGED COMPONENTS SHALL BE REPAIRED AND/OR REPLACED WITH NEW TO MATCH EXISTING AND TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST TO OWNER.
- ALL SPECIFIED EQUIPMENT, INCLUDING BUT NOT LIMITED TO, CHILLERS, COOLING TOWERS, ELECTRIC ACTUATORS, HEAT TRACE SYSTEMS, DIGITAL CONTROLLERS AND REFRIGERANT MONITORING UNITS SHALL INCLUDE FACTORY START-UP SERVICES BY A FACTORY TRAINED TECHNICIAN.
- LOCATIONS OF NEW ELECTRICAL PANELS, FACILITY MANAGEMENT SYSTEM CONTROLLERS AND OTHER PANELS SHOWN ON DRAWINGS ARE SCHEMATIC ONLY. FINAL LOCATIONS SHALL BE COORDINATED BY CALLING AN ON-SITE MEETING WITH THE OWNER PRIOR TO INSTALLATION OF ANY PANELS. CONTACT AISD BUILDING AUTOMATION SYSTEM REPRESENTATIVE TO SCHEDULE COORDINATION MEETING AND COPY THE PROJECT MANAGER AND ENGINEER. TRACE-OUT EXTENTS OF PANELBOARDS ON PROPOSED LOCATION ON WALL WITH TEMPORARY MASKING TAPE FOR OWNER TO REVIEW PROPOSED LOCATION. ALL LOCATIONS SHALL BE APPROVED BY AISD PRIOR TO INSTALLATION OF PANELS.
- REFER TO THE SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO, DIVISION 9, FOR PAINTING REQUIREMENTS OF PROPOSED PIPING, CONDUITS, ASSOCIATED SUPPORT SYSTEMS, PATCHING OF BUILDING ELEMENTS AND OTHER SURFACES AS SPECIFIED. REFER TO APPLICABLE DIVISION 9 INTERIOR AND EXTERIOR PAINTING SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. COORDINATE AND SUBMIT ALL PAINT COLORS TO OWNER/ENGINEER PRIOR TO PAINTING/COATING APPLICATIONS. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

**GENERAL REQUIREMENTS FOR RENTAL EQUIPMENT:**

- TEMPORARY COOLING EQUIPMENT AND ASSOCIATED EQUIPMENT PROVISION/INSTALLATION/CONNECTION AND REMOVAL SERVICES SHALL BE OBTAINED FROM CHILLER RENTALS BY CTCA (CONTACT PERSON: ROBERT EVERETT 512 923-5003) OR ENGINEER APPROVED EQUAL.
- THE RENTAL PERIOD SHALL COMMENCE UPON SUCCESSFUL INSTALLATION AND OPERATION OF THE RENTAL EQUIPMENT. OWNER SHALL REVIEW TEMPORARY EQUIPMENT INSTALLATION AND CONTRACTOR SHALL DEMONSTRATE TEMPORARY EQUIPMENT IS IN COMPLETE OPERATION, INCLUDING DEMONSTRATION OF POWER CONNECTIONS, CONTROLS, AND CHILLED WATER ENTERING AND LEAVING WATER CONDITIONS. ONLY UPON OWNER APPROVAL THAT RENTAL EQUIPMENT IS SATISFACTORY, SHALL THE RENTAL PERIOD BEGIN AND SHALL THE CONTRACTOR BEGIN DEMOLITION OF EXISTING CHILLERS AND COOLING TOWER AND COMMENCE THE STRUCTURAL, ELECTRICAL AND MECHANICAL EFFORTS ASSOCIATED WITH THE NEW EQUIPMENT INSTALLATIONS.
- RENTAL EQUIPMENT SHALL INCLUDE INTEGRAL CONTROLS/CONTROLLERS TO CYCLE AND SEQUENCE EQUIPMENT TO ACHIEVE DESIRED SETPOINT.
- PROPOSED LOCATION OF TEMPORARY RENTAL EQUIPMENT IS AT THE REAR OF THE SCHOOL. THE CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF RENTAL EQUIPMENT WITH THE OWNER PRIOR TO INSTALLATION. CONTRACTOR SHALL VERIFY THAT THE TEMPORARY LOCATION OF THE RENTAL EQUIPMENT DOES NOT CONFLICT WITH FIRE LANES AND OTHER EXISTING CONDITIONS AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. THE RENTAL EQUIPMENT PROVIDER SHALL PROVIDE ALL REQUIRED PERMITS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION AT NO ADDITIONAL COST TO THE OWNER.
- THE RENTAL SERVICE PROVIDER SHALL PROVIDE ALL REQUIRED ELECTRICAL POWER CABLES/PANELS TO CONNECT TO ALLOWED ELECTRICAL CIRCUIT(S) AS NOTED HEREIN FOR A COMPLETE AND FUNCTIONAL SYSTEM.
- THE RENTAL SERVICE PROVIDER SHALL PROVIDE ALL EQUIPMENT, HOSES, AND ACCESSORIES REQUIRED FOR THE COMPLETE OPERATION OF THE COOLING EQUIPMENT TO THE TEMPORARY HYDRONIC CONNECTION POINTS AS SHOWN ON THE DRAWINGS.
- PROVIDE TEMPORARY CHAIN LINK FENCING MINIMUM 6 FEET TALL AROUND COMPLETE PERIMETER OF RENTAL EQUIPMENT. FENCE SHALL INCLUDE A PERSONNEL ACCESS GATE. ALL GATES THROUGH FENCE AREA SHALL BE LOCKED VIA CHAIN/PAD LOCK TO SECURE FENCED AREA.
- RENTAL TEMPORARY COOLING EQUIPMENT SHALL REMAIN ON-SITE AND ELECTRICAL CONNECTIONS TERMINATED AND READY FOR IMMEDIATE USE UNTIL SUBSTANTIAL COMPLETION IS AWARDED FOR THIS WORK.
- DUE TO LIMITED AVAILABLE POWER CAPACITY AT EACH FACILITY POWER DISTRIBUTION SYSTEM, CONTRACTOR SHALL NOT ENERGIZE EXISTING COOLING TOWERS AND CHILLERS WHEN RENTAL EQUIPMENT AIR COOLED CHILLERS ARE ENERGIZED. PROPERLY SEQUENCE EVENTS TO LOCK-OUT/TAG-OUT RESPECTIVE CIRCUIT BREAKERS FOR SAFETY WHEN EQUIPMENT IS NOT TO BE ENERGIZED.
- THE TEMPORARY COOLING EQUIPMENT SHALL INCLUDE A DIGITAL CONTROL PANEL WITH A BACNET CONTROLLER THAT SHALL COMMUNICATE WITH THE EXISTING FACILITY MANAGEMENT SYSTEM (FMS) TRIDUIM JACE WEBSEVER. REFER TO THE SPECIFICATIONS FOR DIVISION 23 CONTROL SYSTEM REQUIREMENTS. PROVIDE ALL REQUIRED HARDWARE, CABLES/RACEWAYS, AND CONTROLLER/GRAPHICS PROGRAMMING TO PROVIDE CONTROL AND MONITORING OF THE FOLLOWING POINTS AT THE FMS AT NO ADDITIONAL COST TO THE OWNER. AT A MINIMUM, THE EXISTING FMS SHALL BE ABLE TO CONTROL/ADJUST EACH OF THE FOLLOWING TEMPORARY COOLING PLANT CONTROL POINTS: PLANT ENABLE/DISABLE, OUTDOOR AIR TEMPERATURE PLANT LOCK OUT (PREVENT PLANT FROM OPERATING BELOW USER DEFINED OUTDOOR AIR TEMPERATURE), AND PLANT CHILLED WATER SUPPLY TEMPERATURE SETPOINT. THE FMS SHALL MONITOR A GENERAL PLANT FAULT ALARM. PROVIDE ADDITIONAL POINTS AS REQUIRED FOR THE PROPER REMOTE CONTROL/OPERATION/MONITORING OF THE TEMPORARY COOLING PLANT.

**PERFORMANCE REQUIREMENTS FOR RENTAL EQUIPMENT:**

- THE CONTRACTOR SHALL INCLUDE IN THE PROPOSAL PRICE THE COMPLETE COST FOR THE INSTALLATION, RENTAL, AND REMOVAL OF TWO (2) AIR COOLED RENTAL CHILLERS EACH HAVING THE PERFORMANCE NOTED BELOW, ASSOCIATED CHILLED WATER PUMPS TO PROVIDE WATER TO THE EXISTING CHILLED WATER PIPING TAPS/CONNECTION POINTS, CONTROLS, PIPING, HOSES, ETC. FOR A MINIMUM RENTAL PERIOD FOR ALL LISTED RENTAL EQUIPMENT OF FIVE (5) MONTHS AND ADDITIONAL TIME AS MAY BE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THIS WORK AND THE PROJECT SCHEDULE AT NO ADDITIONAL COST TO THE OWNER.
- THE PROPOSED TWO (2) RENTAL AIR-COOLED CHILLERS SHALL HAVE THEIR CHILLED WATER PIPING PIPED IN SERIES TO ONE ANOTHER SIMILAR TO THE EXISTING CHILLERS. THE EVAPORATOR WATER CONDITIONS SHALL BE AS FOLLOWS, AT A MINIMUM, WHEN THE OUTDOOR AIR AMBIENT TEMPERATURE IS UP TO 105 °F:
  - AIR-COOLED RENTAL CHILLER SYSTEM #1 MINIMUM PERFORMANCE REQUIREMENTS:
    - REFRIGERATION COOLING CAPACITY: 315 TONS
    - RENTAL CHILLER #1 EVAPORATOR ENTERING FLUID TEMPERATURE: 52.23 °F
    - RENTAL CHILLER #1 EVAPORATOR LEAVING FLUID TEMPERATURE: 46.85 °F
    - RENTAL CHILLER #1 EVAPORATOR FLOW RATE: 1400 GPM
  - AIR-COOLED RENTAL CHILLER SYSTEM #2 MINIMUM PERFORMANCE REQUIREMENTS:
    - REFRIGERATION COOLING CAPACITY: 285 TONS
    - RENTAL CHILLER #2 EVAPORATOR ENTERING FLUID TEMPERATURE: 46.86 °F
    - RENTAL CHILLER #2 EVAPORATOR LEAVING FLUID TEMPERATURE: 42 °F
    - RENTAL CHILLER #2 EVAPORATOR FLOW RATE: 1400 GPM
- FOR EACH RENTAL CHILLER, PROVIDE A TEMPORARY RENTAL ELECTRICAL DISTRIBUTION POWER PANEL BOARD AND ASSOCIATED POWER DISTRIBUTION EQUIPMENT/RACK/SKID AND TRANSFORMERS TO SERVE ALL REQUIRED COOLING EQUIPMENT, INCLUDING BUT NOT LIMITED TO CHILLER, CHILLED WATER PUMPS AND ASSOCIATED SAFETY/MONITORING AND CONTROLS.
- FOR EACH RENTAL CHILLER, THE TEMPORARY RENTAL POWER DISTRIBUTION PANEL BOARD REQUIRES A SERVICE CONNECTION HAVING 480 VOLTS, 3 PHASE, 60 HZ POWER AND SHALL REQUIRE A SINGLE POINT POWER CONNECTION HAVING NO MORE THAN A SINGLE CIRCUIT RATED AT 600 AMPS, 480 VOLTS, 3 PHASE, 60 HZ.

**GENERAL MECHANICAL EQUIPMENT DEMOLITION NOTES (COOLING TOWER, CHILLERS, ETC.) AS APPLICABLE TO THE TYPE OF EQUIPMENT:**

- FOR THE EXISTING MECHANICAL EQUIPMENT/PIPING TO BE REPLACED, DEMOLISH THE EXISTING UNIT/PIPING, ASSOCIATED SUPPORT PIPE SUPPORT ELEMENTS, CHILLER HOUSEKEEPING PADS, AND OTHER ELEMENTS AS SHOWN ON THE PLANS.
- FOR ALL EXISTING EQUIPMENT THAT SHALL BE REPLACED AS PART OF THIS PROJECT, DEMOLISH EXISTING HYDRONIC/DRAIN PIPING AS REQUIRED TO INSTALL NEW PROPOSED PIPING AS SHOWN.
- COORDINATE DEMOLITION OF ELECTRICAL CONNECTIONS WITH ELECTRICAL RENOVATION WORK. DEMOLISH EXISTING CONTROL SYSTEM RACEWAYS/CABLES/INSTRUMENTS/CONTROLLERS/PANELS IN THE MECHANICAL ROOM SERVING THE EXISTING COOLING PLANT, INCLUDING BUT NOT LIMITED TO, THE EXISTING CHILLERS, CHILLED WATER PUMPS, CONDENSER WATER PUMPS, REFRIGERANT MONITORING SYSTEM, ETC. IN THE MECHANICAL ROOM AND OUTDOOR SERVING THE EXISTING COOLING TOWER.
- THE CONTRACTOR PERFORMING THE CONTROL SYSTEM COMPONENT DEMOLITION SHALL BE A CONTROL CONTRACTOR PRE-QUALIFIED TO PERFORM SERVICES ON THE EXISTING CONTROL SYSTEM. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A QUALIFIED CONTROL SYSTEM CONTRACTOR TO DEMOLISH THE EXISTING CONTROL COMPONENTS, AND RETURN THEM IN GOOD CONDITION TO THE OWNER. THE SCHOOL HAS AN EXISTING SCHNEIDER I/NET AND/OR VISTA SYSTEM AND AISD DESIRES TO RECOVER THE EXISTING COMPONENTS FOR USE AS SPARE PARTS. THE CONTRACTOR SHALL, VIA A CONTROL CONTRACTOR THAT IS QUALIFIED TO HANDLE SCHNEIDER I/NET AND/OR VISTA SYSTEMS, SHALL CAREFULLY REMOVE ALL EXISTING CONTROL COMPONENTS INCLUDING, BUT NOT LIMITED TO, ALL EXISTING SENSORS, CONTROLLERS, CONTROL PANELS, AND ACTUATORS TO BE DEMOLISHED, AND CAREFULLY TRANSPORT THESE EXISTING CONTROL SYSTEM COMPONENTS TO AISD IN GOOD WORKING ORDER. COORDINATE THE TIME AND LOCATION OF TRANSMISSION OF COMPONENTS DIRECTLY WITH THE AISD BUILDING AUTOMATION CONTACT PERSON. IF UPON REVIEW OF THE EXISTING/DEMOLISHED CONTROL ELEMENTS, THE OWNER DECIDES TO NOT KEEP ANY OR ALL OF THE DEMOLISHED CONTROL ELEMENTS, THE CONTRACTOR SHALL DISPOSE OF THESE ELEMENTS AT NO ADDITIONAL COST TO THE OWNER.

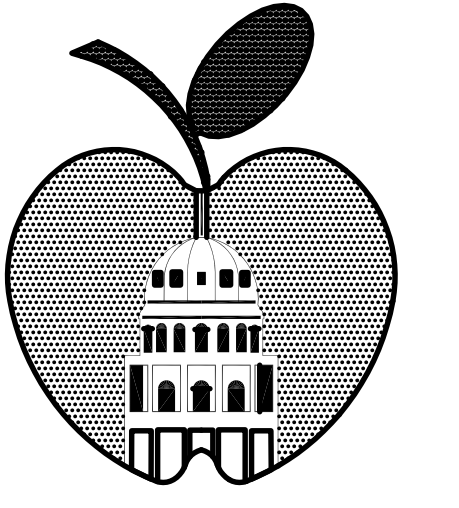
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**ISSUES AND REVISIONS**

NO.	DATE	DESCRIPTION
Δ	6/20/2019	ADDENDUM 3

**SHEET TITLE**

**MECHANICAL GENERAL NOTES (SHEET 1 OF 2)**

DATE: AUGUST 01, 2018  
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**SHEET NUMBER**

**M-GEN-02**

**GENERAL MECHANICAL EQUIPMENT RENOVATION NOTES  
(COOLING TOWER, CHILLERS, ETC.) AS APPLICABLE TO  
THE TYPE OF EQUIPMENT:**

- FOR EACH PROPOSED/SCHEDULED CHILLER, PROVIDE A NEW 8-INCH TALL CONCRETE HOUSEKEEPING PAD BELOW EACH OF THE TWO (2) ENDS OF THE UNIT. THE CONCRETE PAD SHALL HAVE A CHAMFERED 1" CORNER EDGE ON THE TOP PERIMETER OF THE PAD AND SIZED IN PLAN VIEW AS NOTED ON THE DRAWINGS.
- FOR ALL PROPOSED HYDRONIC UNITS THAT SHALL BE INSTALLED AS PART OF THIS PROJECT, PROVIDE HYDRONIC PIPING CONNECTIONS BETWEEN THE UNIT AND EXISTING HYDRONIC PIPING. REFER TO THE MECHANICAL DRAWINGS AND SPECIFICATIONS FOR PIPING ARRANGEMENT, SIZES, AND PIPING ACCESSORIES/VALVES AT UNIT COIL CONNECTIONS.
- HYDRONIC PIPE ROUTING SHOWN ON DRAWINGS IS SCHEMATIC. ALLOW FOR TWICE THE NUMBER OF HYDRONIC AND DRAIN PIPING ELBOWS ON PIPING AS SHOWN ON THE DRAWINGS TO ACCOUNT FOR JOGS TO AVOID EXISTING CONDITIONS.
- COAT/FINISH, INSULATE AND JACKET ALL PIPING PER THE SPECIFICATIONS.
- THE CONTRACTOR PERFORMING THE CONTROL SYSTEM RENOVATIONS SHALL BE A CONTROL CONTRACTOR PRE-QUALIFIED TO PERFORM SERVICES ON THE TYPE OF CONTROL SYSTEM. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- REFER TO THE ELECTRICAL DRAWINGS FOR THE PROVISION OF NEW UNDERGROUND ELECTRICAL CONDUIT RACEWAYS TO BE INSTALLED IN A NEW CONCRETE ENCASED DUCT BANK SPANNING FROM THE COOLING TOWER AREA TO THE NORTH EXTERIOR WALL OF THE BUILDING. THE ELECTRICAL DRAWINGS DO NOT SHOW/INCLUDE CONDUIT RACEWAYS REQUIRED FOR DIVISION 23 CONTROL CABLES. THE DIVISION 23 CONTROL CONTRACTOR SHALL PROVIDE ALL CONDUITS AND RACEWAYS TO SERVE THE DIVISION 23 CONTROL ELEMENTS, INCLUDING UNDERGROUND RACEWAY CONDUITS FROM THE COOLING TOWER AREA TO THE BUILDING TO SERVE THE DIVISION 23 POWER/CONTROL SIGNAL CABLE ELEMENTS. ALL DIVISION 23 RACEWAY CONDUITS FROM THE COOLING TOWER AREA TO THE BUILDING SHALL BE BURIED, CONCRETE ENCASED AND INSTALLED PER THE DIVISION 26 ELECTRICAL RACEWAY AND DUCT BANK REQUIREMENTS. REFER TO THE ELECTRICAL DRAWINGS, DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. CAREFULLY COORDINATE AND SCHEDULE THE INSTALLATION OF THE CONTROL RACEWAY CONDUITS WITH THE ELECTRICAL CONTRACTOR FOR A COMPLETE AND FUNCTIONAL SYSTEM.
- THE COOLING TOWER SYSTEM, INCLUDING THE PIPING, MAKE-UP WATER FLOW METER, BLOW-DOWN FLOW METER, CONTROL SYSTEM ELEMENTS, DATA-LOGGING, ETC. SHALL BE IN FULL COMPLIANCE WITH THE CURRENT CITY OF AUSTIN ORDINANCES, INCLUDING, BUT NOT LIMITED TO, THE CURRENT MECHANICAL CODE AND THE CURRENT CITY OF AUSTIN EVAPORATIVE LOSS ADJUSTMENT FOR EVAPORATIVE COOLING TOWERS REQUIREMENTS.

**SHOP DRAWINGS:**

- REFER TO SPECIFICATIONS FOR ADDITIONAL SHOP DRAWING REQUIREMENTS.
- CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF COOLING TOWER INSTALLATIONS, COOLING TOWER PLATFORM STRUCTURAL GRATE SYSTEM SLEEVED OPENING LOCATIONS FOR PIPE AND CONDUIT PENETRATIONS, CHILLERS, CHILLED WATER PIPING, REFRIGERANT RELIEF PIPING, REFRIGERANT MONITORING CONDENSER CHEMICAL FEED PIPING, CONDENSER WATER PIPING, COOLING TOWER MAKE-UP WATER PIPING, COOLING TOWER DRAIN PIPING, AND ALL ASSOCIATED PIPING CONNECTIONS FOR CHILLERS AND COOLING TOWER CELLS SHOWING TO-SCALE ROUTING FOR REVIEW PRIOR TO FABRICATION/INSTALLATION OF CHILLER AND COOLING TOWER PIPING AND NO LATER THAN 45 DAYS AFTER THE NOTICE TO PROCEED DATE. DRAWINGS SHALL INCLUDE PLAN VIEW AND A MINIMUM OF THREE SECTION VIEWS SHOWING ALL PIPE HEIGHTS RELATIVE TO FINISHED FLOOR AND FINISHED GRADE, SUPPORTS SYSTEM TYPES AND LOCATIONS, AND CLEARANCES TO EQUIPMENT. DRAWINGS SHALL BE DEVELOPED AT A SCALE OF 3/8" = 1'-0" AND/OR 1/2" = 1'-0" AND PRINTED ON 22" X 34" BOND PAPER AND SUBMITTED ELECTRONICALLY IN PDF FORMAT. DRAWINGS SHALL CLEARLY SHOW ALL PIPE MATERIALS, PIPE WALL THICKNESS SCHEDULES, EXTERIOR INSULATION, JACKETING, HEAT TRACE FREEZE PROTECTION, FLANGED JOINTS, WELDED JOINTS, THREADED JOINTS, VALVES, FITTINGS, ACCESSORIES, PIPE LABELS/MARKERS AND CONCRETE WALKING/STEP PADS.
- SUBMIT SHOP DRAWINGS OF ALL PROPOSED CONTROL SYSTEM RENOVATIONS AND COORDINATE ALL WORK WITH OWNER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. PROVIDE ALL REQUIRED CONTROLLERS, CABINETS, SENSORS, AND PROGRAMMING SERVICES FOR A COMPLETE AND FUNCTIONING SYSTEM AND AS SHOWN ON THE DRAWINGS AND PER THE CONTRACT SPECIFICATIONS. CONTRACTOR SHALL SUBMIT ALL CONTROL SYSTEM SHOP DRAWINGS AND EQUIPMENT DATA, INCLUDING BUT NOT LIMITED TO PROCESS FLOW DIAGRAMS, WIRING DIAGRAMS, INSTRUMENT LISTS, NETWORK ARCHITECTURE, CONNECTIONS TO EXISTING EQUIPMENT, CONTROL SEQUENCES, AND OTHER ELEMENTS AS REQUIRED PER THE CONTRACT DOCUMENTS. CONTROL SEQUENCES SHALL BE SUBMITTED AS THEY WILL ACTUALLY BE PROGRAMMED INTO THE EQUIPMENT/CONTROLLERS. UPDATE THE SHOP DRAWINGS TO REFLECT THE ACTUAL INSTALLED EQUIPMENT, NETWORK, AND/OR PROGRAMMED SEQUENCES AND INCLUDED UPDATED DOCUMENTS IN THE PROJECT CLOSE-OUT OPERATION AND MAINTENANCE SUBMITTALS.
- CONTRACTOR SHALL SUBMIT SUSTAINABILITY DOCUMENTATION, INCLUDING VOC CONTENT, FORMALDEHYDE CONTENT AND ALL INFORMATION REQUIRED PER THE CONTRACT DOCUMENTS.

**DRAINING & FILLING OF EXISTING CHILLED WATER  
AND WATER TREATMENT OF EXISTING CHILLED &  
HOT WATER HYDRONIC PIPING SYSTEMS:**

- THE CONTRACTOR SHALL DRAIN AND FILL THE ENTIRE FACILITY CHILLED WATER HYDRONIC PIPING SYSTEM AT LEAST ONCE AS REQUIRED TO COMPLETE THIS WORK. THERE ARE MINIMAL TO NO ISOLATION VALVES IN THE HYDRONIC CHILLED WATER PIPING SYSTEM TO ISOLATE THE PORTIONS REQUIRED FOR THIS WORK. SERVICES ASSOCIATED WITH DRAINING AND FILLING THE ENTIRE FACILITY HYDRONIC CHILLED WATER PIPING SYSTEM, INCLUDING, BUT NOT LIMITED TO, LABORATORY TESTING SERVICES FOR HYDRONIC TESTING AND DISCHARGE COMPLIANCE, ARE REQUIRED AND SHALL BE INCLUDED AS PART OF THE BASE CONTRACT PRICE AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL INCLUDE IN THE BASE CONTRACT PRICE THE NEED TO DRAIN AND FILL THE CHILLED WATER PIPING SYSTEMS DURING THE COURSE OF THIS WORK AS REQUIRED TO COMPLY WITH THE REQUIRED PHASING/COMPLETION OF THIS WORK. THE CONTRACTOR SHALL STAGE THE DRAINING AND FILLING OF THE CHILLED WATER PIPING SYSTEMS AS REQUIRED FOR THIS WORK AND TO COMPLY WITH THE CONTRACT SCHEDULE AND COMPLETION DATES.
- THE CONTRACTOR SHALL PROVIDE AND SCHEDULE THE DRAINING OF THE ENTIRE FACILITY HYDRONIC CHILLED WATER LOOP/PIPING SYSTEMS. COORDINATE WITH THE OWNER TECHNICAL/MECHANICAL AND TECHNICAL/PLUMBING DEPARTMENTS TO SCHEDULE DRAINING OF THE SYSTEMS AND TO IDENTIFY POINTS/MEANS OF DRAINING EXISTING SYSTEMS.
- THE CONTRACTOR SHALL COORDINATE THEIR SCHEDULE WITH THE OWNER TECHNICAL/MECHANICAL AND TECHNICAL/PLUMBING DEPARTMENTS. UPON EACH TIME THE SYSTEM IS FILLED WITH WATER, THE CONTRACTOR SHALL ENSURE PORTIONS OF THE FACILITY PIPING THAT WERE DRAINED ARE FREE OF ANY TRAPPED AIR. THE CONTRACTOR SHALL LOCATE AND OPEN MANUAL AIR RELEASE VALVES AS REQUIRED TO REMOVE AIR FROM THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH OWNER TO LOCATE ADDITIONAL AIR RELEASE VALVES THAT MAY NOT BE SHOWN ON THE DRAWINGS AND OPEN SUCH VALVES ACCORDINGLY TO RELEASE AIR IN EXISTING HYDRONIC PIPING SYSTEMS.
- FLUSH/CLEAN CHILLED AND CONDENSER WATER PIPING SYSTEMS AS FOLLOWS:
  - UPON COMPLETION OF THE CHILLED WATER HYDRONIC PIPING WORK, AND PRIOR TO ENERGIZING THE PROPOSED CHILLERS, CLEAN/FLUSH THE INTERIOR OF THE NEW/PROPOSED HYDRONIC PIPING SYSTEMS. DURING THIS PROCESS, THE PROPOSED PIPING AND EXISTING PIPING SHALL BE ISOLATED VIA THE PROPOSED ISOLATION VALVES. PROVIDE TEMPORARY PUMPING EQUIPMENT AS REQUIRED TO FLUSH THE PROPOSED PIPING AS REQUIRED FOR THIS WORK.
  - UPON COMPLETION OF THE HYDRONIC PIPING WORK, AND AFTER FLUSHING THE PROPOSED CHILLED WATER PIPING, CLEAN/FLUSH THE INTERIOR OF THE PROPOSED AND EXISTING CHILLED AND CONDENSER HYDRONIC PIPING SYSTEMS; THEN REMOVE AND CLEAN STRAINER SCREENS OF PROPOSED AND EXISTING STRAINERS. DURING THIS PROCESS, THE PROPOSED PIPING AND EXISTING PIPING SHALL NOT BE ISOLATED, BUT RATHER OPEN TO ONE ANOTHER. THE CONTRACTOR MAY MAKE USE OF THE EXISTING PUMPING UNITS WHEN FLUSHING/CLEANING BOTH EXISTING AND PROPOSED PIPING AT THE SAME TIME.
 

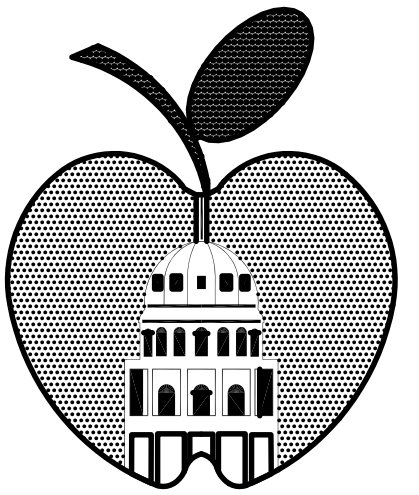
NOTE: FOR THE FLUSHING NOTED IN THE ABOVE PARAGRAPH, FLUSHING OF THE CHILLED WATER SYSTEM AND FLUSHING OF THE CONDENSER WATER SYSTEM ARE NOT CONSIDERED TIME RESTRICTED ACTIVITIES IF THE PERCENT FLOW RATE OF FRESH WATER INTO THE SYSTEM IS EQUAL TO OR LESS THAN 5-PERCENT OF THE TOTAL FLOW RATE CIRCULATED VIA THE RESPECTIVE EXISTING PUMP(S). THE CONTRACTOR SHALL FIELD VERIFY EXISTING PUMP FLOW RATES/OPERATIONS. IF THIS PERCENT AMOUNT IS EXCEEDED, FLUSHING OF THE RESPECTIVE SYSTEM IS CONSIDERED A TIME RESTRICTED ACTIVITY AND SHALL ONLY OCCUR WHEN TIME RESTRICTED ACTIVITIES ARE ALLOWED.
  - FOR THE ABOVE PROCEDURES, THE CLOSED LOOP WATER TREATMENT SERVICE PROVIDER AS PROVIDED FOR THIS WORK SHALL DETERMINE/ENSURE WHEN THE NEWLY INSTALLED PROPOSED HYDRONIC PIPING AND THE EXISTING HYDRONIC PIPING HAS BEEN SUFFICIENTLY FLUSHED/CLEANED. IF A CLOSED LOOP WATER TREATMENT SERVICE PROVIDER IS NOT PROVIDED AS PART OF THIS WORK, AS ELECTED BY THE OWNER PER THE CONTRACT ALTERNATES, THE OWNER WILL DETERMINE WHEN THE NEWLY INSTALLED PROPOSED HYDRONIC PIPING AND THE EXISTING HYDRONIC PIPING HAS BEEN SUFFICIENTLY FLUSHED/CLEANED.
  - THE CONTRACTOR SHALL CLEAN/BLOW-DOWN ALL CHILLED WATER AND CONDENSER WATER EXISTING AND PROPOSED STRAINERS AT EACH OF THE TWO (2) CHILLED WATER PUMPS AND TWO (2) CONDENSER WATER PUMPS LOCATED IN THE MAIN MECHANICAL ROOM AND EACH STRAINER IN THE CHILLED WATER SUPPLY PIPING FOR EACH OF THE EXISTING FIFTEEN (15) AIR HANDLING UNITS AHU-1 THROUGH AHU-15 LOCATED IN THE BUILDING AFTER EACH TIME THE SYSTEM IS FILLED WITH WATER TO HELP ENSURE ANY DEBRIS IN THE PIPING THAT MAY HAVE BEEN RELEASED DURING THE DRAINING/FILLING AND/OR RENOVATION PROCESSES IS REMOVED FROM THE PIPING SYSTEMS. COORDINATE WITH OWNER THE LOCATION OF EACH STRAINER.
  - COORDINATE WITH OWNER THE DESIRED DURATION OF PUMP OPERATION BETWEEN THE FILLING OF SYSTEMS AND THE CLEANING/BLOWING-DOWN OF STRAINERS.
  - REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENT.
- PROVIDE A WATER TREATMENT SERVICES COMPANY TO PROVIDE CHEMICAL TREATMENT OF THE CHILLED AND HOT WATER LOOPS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. THE WATER TREATMENT COMPANY SHALL OBTAIN ALL REQUIRED PERMITS WITH THE AUTHORITY HAVING JURISDICTION, LABORATORY TESTING OF EXISTING WATER PRIOR TO DRAINING, AND VERIFY CLEANING AND FLUSHING PRIOR TO TREATING. THE CONTRACTOR SHALL SHOW ALL WATER TREATMENT SERVICES/ACTIVITIES ON THE CONTRACTOR DEVELOPED PROJECT SCHEDULE.
- THE CONTRACTOR SHALL SCHEDULE ALL WATER TREATMENT SERVICES A MINIMUM OF FOUR (4) WEEKS IN ADVANCE OF WHEN SERVICES SHALL BE REQUIRED.
- FOR ALL THE ABOVE SERVICES, ALLOW FOR THE FOLLOWING HYDRONIC SYSTEM WATER VOLUMES, AS A MINIMUM:
  - HOT WATER HYDRONIC CLOSED-LOOP: 2,400 GALLONS.
  - CHILLED WATER HYDRONIC CLOSED-LOOP: 6,400 GALLONS.

**GENERAL MECHANICAL INSTALLATION REQUIREMENTS:**

- ALL PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A NEAT WORKMANSHIP-LIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED. REFER TO SUPPORT DETAILS. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PIPING HANGERS SHALL BE SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE. A HANGER SHALL BE PLACED WITHIN (1) FOOT OF EACH HORIZONTAL ELBOW. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- THE INSTALLATION OF ALL INSULATION SHALL BE PERFORMED BY AN EXPERIENCED CRAFTSMAN IN A NEAT WORKMANSHIP-LIKE MANNER AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE ALL HANGERS AND SUPPORTS REQUIRED FOR A COMPLETE INSTALLATION. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- WHERE PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY THE BUILDING DEPARTMENT AND FIRE DEPARTMENT AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOW CORNING CORP., SILICONE ELASTOMER, DOW CORNING 3-6548 SILICONE RTV FOAM, OR APPROVED EQUAL. THIS MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER TO MAINTAIN THE FIRE RATING OF THE PENETRATED WALL OR FLOOR. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING AS IT RELATES TO THEIR WORK. CORING THROUGH CONCRETE FLOORS/WALLS AND CMU WALLS SHALL EACH BE X-RAYED PRIOR TO CORING TO CONFIRM CORING WILL NOT CUT STEEL REINFORCEMENT/MEMBERS AND/OR RACEWAYS/PIPING.
- PIPING SYSTEM SHALL BE INSTALLED TO ALLOW THERMAL EXPANSION. INSTALL EXPANSION LOOPS FOR WHERE STRAIGHT RUN OF PIPE EXCEEDS 80 FEET IN LENGTH. PROVIDE TWO ELBOW TRANSITIONS WHERE REQUIRED TO ALLOW FREE EXPANSION OF PIPING WITHOUT STRESSING INSTALLATION AND EQUIPMENT. PROVIDE ROLLER HANGERS AT SUPPORTS TO ALLOW FREE EXPANSION OF PIPING. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- WHERE BUILDING STRUCTURAL BEAMS ARE SPACED BEYOND REQUIRED EQUIPMENT (PIPING, EQUIPMENT AND OTHER) SUPPORT REQUIREMENTS LISTED IN CONTRACT DOCUMENTS, CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORT BEAMS/CHANNELS SPANNING BETWEEN BUILDING STRUCTURAL BEAMS AND SHALL SUPPORT EQUIPMENT ONTO THE ADDITIONAL SUPPORT BEAMS/CHANNELS. REFERENCE CONTRACT DOCUMENT AND SPECIFICATIONS FOR ADDITIONAL SUPPORT REQUIREMENTS.

**GENERAL MECHANICAL INSTALLATION REQUIREMENTS  
(CONTINUED):**

- PAINT ALL PIPES IN ACCORDANCE WITH PAINTING SPECIFICATION REQUIREMENTS.
- SUPPORTS SHOWN ON PLANS ARE MINIMUM REQUIREMENTS ONLY. PROVIDE SUPPORTS SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE. REFERENCE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PAINT ALL PIPE SUPPORTS, INCLUDING BUT NOT LIMITED TO HANGERS, RODS, CHANNELS, FIELD ERECTED STRUCTURAL PIPE SUPPORT BEAMS, STRAPS, AND ELEMENTS IN ACCORDANCE WITH PAINTING SPECIFICATION REQUIREMENTS.
- PAINT ALL SURFACES OF PVC, CPVC AND OTHER FORMS OF PLASTIC PIPING EXPOSED TO SUN LIGHT AND/OR UV RADIATION.
- ROUTE ALL PROPOSED PIPING AND DUCTWORK HIDDEN ABOVE CEILING SYSTEM AND AS HIGH AS POSSIBLE AND TO NOT CONFLICT WITH REMOVAL OF CEILING TILES/SYSTEMS.
- WHEN PHASING HYDRONIC PIPING WORK, TEMPORARILY CAP PIPES TO PREVENT ENTRY OF DEBRIS INTO THE PIPING UNTIL WORK CONTINUES LATER IN THE CONSTRUCTION PROCESS.
- WHEN PHASING AIR DUCT WORK, TEMPORARILY WRAP TERMINAL ENDS OF DUCTS TO PREVENT ENTRY OF DEBRIS INTO THE DUCTS UNTIL WORK CONTINUES LATER IN THE CONSTRUCTION PROCESS.



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HVAC IMPROVEMENTS  
AT AUSTIN HIGH SCHOOL

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**ISSUES AND REVISIONS**

NO.	DATE	DESCRIPTION
1	6/20/2019	ADDENDUM 3

**SHEET TITLE**

MECHANICAL  
GENERAL NOTES  
(SHEET 2 OF 2)

DATE: AUGUST 01, 2018  
PROJECT NO.: 19-0041-AUSTN  
HEI PROJECT NO.: 2018-100  
SCALE: AS NOTED  
DRAWN BY: HEI  
CHECKED BY: HEI

**SHEET NUMBER**

M-GEN-03

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

**REUSE OF DOCUMENTS**

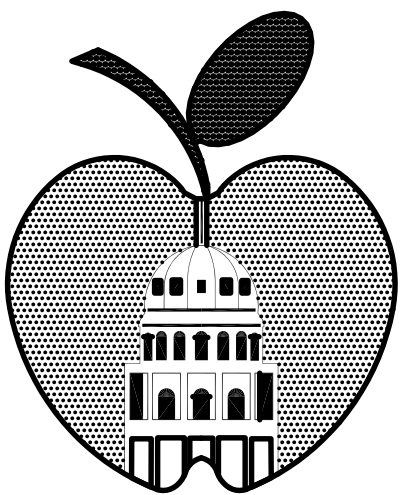
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ISSUES AND REVISIONS

NO.	DATE	DESCRIPTION
Δ	6/20/2019	ADDENDUM 3

SHEET TITLE

MECHANICAL ROOM  
EQUIPMENT LOCATION  
FLOOR PLAN

DATE: AUGUST 01, 2018  
PROJECT NO.: 19-0041-AUSTN  
HEI PROJECT NO.: 2018-100  
SCALE: AS NOTED  
DRAWN BY: HEI  
CHECKED BY: HEI

SHEET NUMBER

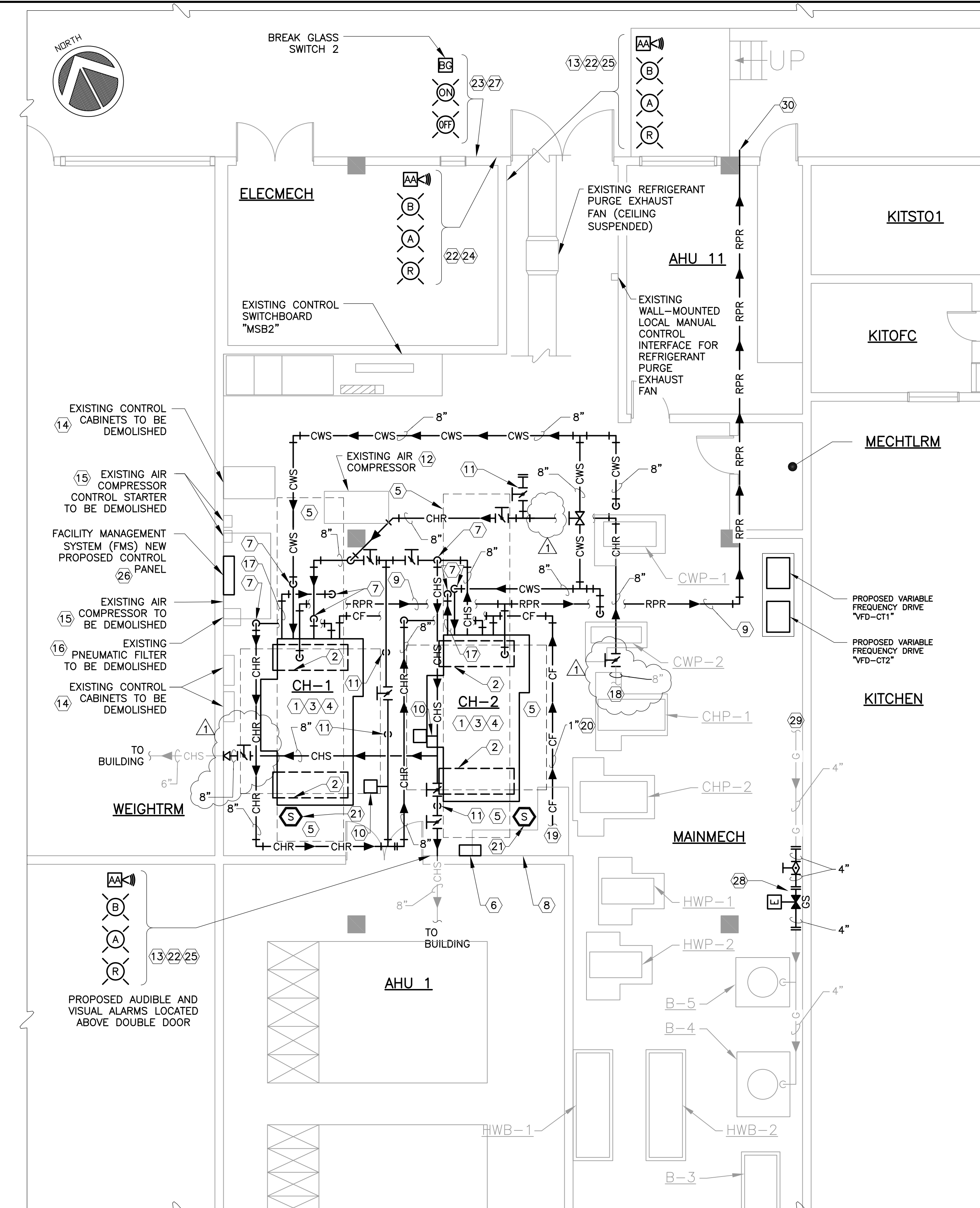
M-FP-01

KEY NOTES:

- DEMOLISH THE EXISTING CHILLER AND ASSOCIATED CONDENSER WATER RETURN (CWR), CONDENSER WATER SUPPLY (CWS), CHILLED WATER SUPPLY (CHS), AND CHILLED WATER RETURN (CHR) PIPING, AND ASSOCIATED ISOLATION VALVES, FITTINGS AND PIPE SUPPORTS AS REQUIRED TO PROVIDE NEW PROPOSED PIPING. DEMOLISH CWR AND CWS PIPING LOCATED 4-INCHES AND HIGHER ABOVE FINISHED FLOOR.
- DEMOLISH THE EXISTING CONCRETE HOUSEKEEPING PAD BELOW THE CHILLER AND PROVIDE A NEW CONCRETE HOUSEKEEPING PAD 8" HIGH X 60" WIDE X 24" LONG BELOW EACH OF 2 ENDS OF PROPOSED CHILLER. COORDINATE FINAL LOCATION WITH CHILLER MANUFACTURER. REFER TO DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- INSTALL PROPOSED CHILLERS "CH-1" AND CH-2" INCLUDING PROPOSED CONDENSER WATER RETURN (CWR), CONDENSER WATER SUPPLY (CWS), CHILLED WATER SUPPLY (CHS), AND CHILLED WATER RETURN (CHR) PIPING, ASSOCIATED ISOLATION VALVES, REFRIGERANT RELIEF PIPING, CONDENSER CHEMICAL FEED PIPING, FITTINGS AND PIPE SUPPORTS IN ACCORDANCE TO MANUFACTURER REQUIREMENTS FOR A COMPLETE, FUNCTIONAL, AND SERVICEABLE INSTALLATION. REFER TO THE MECHANICAL PIPING SCHEMATIC, MECHANICAL SCHEDULES, ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- THE CONTRACTOR SHALL OBTAIN THE SERVICES OF THE CHILLER MANUFACTURER TO TEMPORARILY REMOVE AND THEN FIELD REINSTALL THE COMPRESSOR, STARTER/DRIVE, ECONOMIZER AND OTHER COMPONENTS AS REQUIRED TO REDUCE THE OVERALL WIDTH OF THE CHILLER TO FIT THROUGH A 6'-4" WIDE AND 6'-4" TALL CLEARANCE. PROVIDE CHILLER MANUFACTURER COMPRESSOR DOWELING TO FACILITATE COMPRESSOR REMOVAL AND REINSTALLATION IN THE FIELD. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF THE CHILLER MANUFACTURER TO REMOVE AND REINSTALL THE CHILLER COMPRESSOR, STARTER/DRIVE, ECONOMIZER AND OTHER COMPONENTS AS REQUIRED FOR EACH SCHEDULED CHILLER, TEST EACH CHILLER AFTER THE COMPONENTS ARE REINSTALLED TO CONFIRM THE CHILLER IS WORKING PROPERLY TO MATCH FACTORY/SPECIFIED/SCHEDULED CONDITIONS. TO PROVIDE ALL OTHER LABOR AND SERVICES FOR A COMPLETE AND FUNCTIONAL CHILLER SYSTEM AND AS REQUIRED TO MAINTAIN THE CHILLER SYSTEM WARRANTIES PER THE DURATIONS NOTED IN THE SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.
- DASHED LINE INDICATES MINIMUM SERVICE CLEARANCE SPACE REQUIRED FOR PROPOSED CHILLERS. COORDINATE THE FINAL SERVICE CLEARANCE DIMENSIONS WITH THE CHILLER MANUFACTURER.
- DEMOLISH EXISTING REFRIGERANT MONITORING UNIT AND REPLACE WITH PROPOSED NEW REFRIGERANT MONITORING UNIT/SYSTEM. COORDINATE FINAL LOCATION OF THE PROPOSED REFRIGERANT MONITORING UNIT AND ALL SYSTEM ACCESSORY LIGHTS/HORNS ALARMS, BREAK GLASS SWITCHES, SIGNS, ETC. WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND THE OWNER PRIOR TO THEIR INSTALLATION FOR A COMPLETE AND FUNCTIONAL SYSTEM. THE CONTRACTOR SHALL VERIFY THE NEW LOCATIONS WILL NOT INTERFERE WITH AND/OR OBSTRUCT ANY EXISTING OR PROPOSED EQUIPMENT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE PROPOSED ISOLATION VALVES FOR THE CONDENSER WATER SUPPLY (CWS), CONDENSER WATER RETURN (CWR), CHILLED WATER SUPPLY (CHS), AND CHILLED WATER RETURN (CHR) PIPING. LOCATE PROPOSED ISOLATION VALVE IN VERTICAL PIPE CONNECTING TO EACH PROPOSED CHILLER. REFER TO THE MECHANICAL PIPE SCHEMATIC FOR ADDITIONAL REQUIREMENTS.
- EXISTING CHEMICAL TREATMENT EQUIPMENT FOR CONDENSER WATER, CHILLED WATER AND HOT WATER.
- PROPOSED REFRIGERANT RELIEF PIPING. DEMOLISH EXISTING REFRIGERANT RELIEF PIPING AND PROVIDE NEW PIPING AS SHOWN. ROUTE PIPE AS HIGH AS POSSIBLE. ALLOW UP TO FIVE (5) REFRIGERANT PIPE CONNECTIONS TO EACH PROPOSED CHILLER. ALLOW FOR A MINIMUM OF 2" NPS MAIN PIPE AND BRANCHES OR GREATER SIZE AS REQUIRED BY THE CHILLER MANUFACTURER FOR A COMPLETE FUNCTIONAL INSTALLATION.
- PROVIDE AUTOMATIC AIR VENT AT THE HIGHEST POINT. PROVIDE AN AUTOMATIC AIR VENT TO RELIEVE AIR AT EACH LOCAL HIGH POINT OF PIPING WHERE AIR CAN GET TRAPPED. REFER TO THE PIPE SCHEMATIC FOR ADDITIONAL INFORMATION.
- PROVIDE NEW T-FITTING TAP WITH 8" MANUAL ISOLATION BUTTERFLY VALVE AND BLIND FLANGE. TAP SHALL SERVE AS TEMPORARY EQUIPMENT CONNECTION. REFER TO MECHANICAL SCHEMATIC FOR ADDITIONAL REQUIREMENTS.
- DEMOLISH EXISTING FLOOR MOUNTED AIR COMPRESSOR AND ASSOCIATED CONCRETE HOUSEKEEPING PAD. DEMOLISH PNEUMATIC PIPING AND ASSOCIATED SUPPORTS AND PNEUMATIC DEVICES FROM AIR COMPRESSOR AND UP TO EXTENT OF EXISTING MECHANICAL ROOM WALL/CEILING. PATCH WALL/CEILING AS REQUIRED TO MATCH EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- DEMOLISH EXISTING WALL MOUNTED AUDIBLE ALARM AND REPLACE WITH PROPOSED AUDIBLE AND VISUAL ALARMS.

KEY NOTES (CONTINUED):

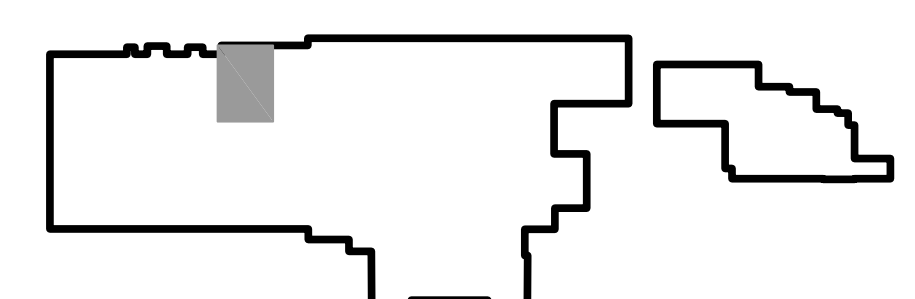
- DEMOLISH EXISTING CONTROL CABINETS. COORDINATE AND FIELD VERIFY WITH CONTROLS CONTRACTOR AND OWNER TO CONFIRM ALL EXISTING CABLES AND DEVICES IN CABINETS ARE ABANDONED. PATCH WALL/FLOOR AS REQUIRED TO MATCH EXISTING CONDITIONS. PATCH ANY WALL PENETRATION WITH SAME MATERIAL TO MATCH EXISTING WALL AT NO ADDITIONAL COST TO THE OWNER.
- DEMOLISH EXISTING AIR COMPRESSOR AND ASSOCIATED CONCRETE HOUSEKEEPING PAD AND ELECTRICAL WALL-MOUNTED STARTERS/CONTROLS. DEMOLISH PNEUMATIC PIPING AND ASSOCIATED SUPPORTS AND PNEUMATIC DEVICES FROM AIR COMPRESSOR TO CONTROL PANEL(S) AND UP TO EXTENT OF EXISTING MECHANICAL ROOM WALL/CEILING. PATCH WALL/CEILING AS REQUIRED TO MATCH EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- DEMOLISH EXISTING WALL-MOUNTED PNEUMATIC FILTER AND ASSOCIATED ELEMENTS. PATCH WALL AS REQUIRED TO MATCH EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- PROPOSED 8" CONDENSER WATER RETURN PIPING.
- PROPOSED 8" CHILLED WATER RETURN PIPING CONTINUES TO EXISTING CHILLED WATER PUMPS "CHP-1" AND "CHP-2."
- PROPOSED 1" NPS CHEMICAL FEED PIPING CONTINUES TO EXISTING CHEMICAL TREATMENT EQUIPMENT.
- PROVIDE 1" NPS SCHEDULE 80 PVC CHEMICAL FEED PIPING CONNECTED TO CONDENSER WATER PIPE. ROUTE CHEMICAL FEED PIPING AS HIGH AS POSSIBLE. PROVIDE 1" NPS ISOLATION BALL VALVE AT CONNECTION POINT TO THE CHILLER CONDENSER WATER PIPE.
- PROVIDE PROPOSED REFRIGERANT MONITORING SYSTEM REFRIGERANT SENSING TUBING SAMPLE POINT LOCATED AT 18" ABOVE FINISH FLOOR NEAR THE CONDENSER OF THE CHILLER. COORDINATE LOCATION/REQUIREMENTS THE EXACT LOCATION OF THE REFRIGERANT SENSOR WITH CHILLER MANUFACTURER TO OBTAIN THE BEST/EARLIEST DETECTION OF REFRIGERANT LEAK.
- PROVIDE ONE (1) AUDIBLE ALARM HORN, ONE (1) AMBER COLORED STROBE LIGHT, ONE (1) RED COLORED STROBE LIGHT, AND ONE (1) BLUE COLORED STROBE LIGHT. PROVIDE POWER AND CONTROLS TO PROPOSED AUDIBLE AND VISUAL ALARM THROUGH THE PROPOSED REFRIGERANT MONITORING UNIT LOCATED IN THE MECHANICAL ROOM. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION. INSTALL CENTER OF HORN AND LIGHTS AT 7'-4" ABOVE FINISHED FLOOR, ABOVE EXISTING MECHANICAL ROOM DOOR FRAME. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.
- PROVIDE PROPOSED BREAK GLASS SWITCH AND TWO LIGHTS, ONE LIGHT INDICATING THE "REFRIGERANT PURGE EXHAUST FAN IS ON" AND ONE LIGHT INDICATING THE "REFRIGERANT PURGE EXHAUST FAN IS OFF." MARK THE BREAK GLASS SWITCH "ACTIVATE TO SHUTDOWN REFRIGERANT EQUIPMENT" AND MARK EACH LIGHT "REFRIGERANT PURGE EXHAUST FAN IS ON" AND "REFRIGERANT PURGE EXHAUST FAN IS OFF" WITH LABELS WHOSE TEXT SIZE IS 1/2 - INCH MINIMUM HEIGHT. INSTALL THE CENTER OF THE BREAK GLASS SWITCH AND LIGHTS AT 48-INCHES ABOVE FINISHED FLOOR. INSTALL MARKS/LABELS BELOW/ADJACENT TO RESPECTIVE SWITCH/LIGHT. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.
- PROPOSED SIGN LOCATED OUTSIDE MECHANICAL ROOM NEXT TO THE SET OF AUDIBLE AND VISUAL ALARMS. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION. SIGN SHALL BE INSCRIBED AS FOLLOWS (ENTER THE APPLICABLE REFRIGERANT TYPE IN USE IN THE TEXT):
  - DANGER - REFRIGERANT R-\_\_\_\_\_
  - BLUE - REFRIGERANT LEAK DETECTION MALFUNCTION.
  - AMBER - CAUTION - REFRIGERANT LEAK DETECTED.
  - RED - DANGER - REFRIGERANT LEAK DETECTED. UNSAFE TO ENTER ROOM WITHOUT PROPER BREATHING APPARATUS.
  - DO NOT ENTER ROOM WITHOUT PROPER BREATHING APPARATUS IF HORN SOUNDS.
  - NOTIFY BUILDING ENGINEER OR SECURITY IMMEDIATELY UPON INDICATION OF ANY ALARM.
- PROPOSED SIGN LOCATED INSIDE MECHANICAL ROOM NEXT TO THE SET OF AUDIBLE AND VISUAL ALARMS. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION. SIGN SHALL BE INSCRIBED AS FOLLOWS (ENTER THE APPLICABLE REFRIGERANT TYPE IN USE IN THE TEXT):
  - DANGER - REFRIGERANT R-\_\_\_\_\_
  - BLUE - REFRIGERANT LEAK DETECTION MALFUNCTION.
  - AMBER - CAUTION - REFRIGERANT LEAK DETECTED.
  - RED - DANGER - LEAVE ROOM IMMEDIATELY.
  - LEAVE ROOM IMMEDIATELY IF HORN SOUNDS.
  - NOTIFY BUILDING ENGINEER OR SECURITY IMMEDIATELY UPON INDICATION OF ANY ALARM.
- FACILITY MANAGEMENT SYSTEM (FMS) PROPOSED NEW CONTROL PANEL TO SERVE COOLING PLANT. PANEL SHALL HOUSE ALL UNIT CONTROLLERS REQUIRED TO CONTROL/MONITOR ALL CENTRAL COOLING PLANT EQUIPMENT INCLUDING, BUT NO LIMITED TO, THE PROPOSED CHILLERS, PROPOSED REFRIGERANT MONITORING UNIT, EXISTING CHILLED WATER PUMPS, PROPOSED COOLING TOWER SYSTEM (FAN VFDs, BYPASS VALVE, MAKE-UP WATER VALVES, LEVEL CONTROLLERS, MAKE-UP WATER FLOW METER, BLOW-DOWN FLOW METERS, ETC.), EXISTING CONDENSER WATER PUMPS, AND EXISTING CONDENSER CHEMICAL TREATMENT SYSTEM. REFER TO THE PID SERIES DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE TWO (2) SELF CONTAINED BREATHING APPARATUS (SCBA) UNITS FOR THIS WORK. LOCATE ONE SCBA UNIT OUTSIDE THE EXTERIOR ENTRANCE TO THE MECHANICAL ROOM WHERE SHOWN. MOUNT EACH UNIT ON THE WALL. COORDINATE FINAL LOCATION WITH OWNER. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



BUILDING FIRST FLOOR PARTIAL FLOOR PLAN 1  
SCALE: 3/16"=1'-0"

KEY NOTES (CONTINUED):

- PROVIDE A NEW NORMALLY CLOSED 4" NPS SIZE NATURAL GAS AUTOMATIC ISOLATION VALVE AT EXISTING 4" NPS GAS LINE. PROVIDE FLANGED CONNECTIONS. REFER TO THE PID SERIES DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- EXISTING NATURAL GAS PIPING CONTINUES.
- PROVIDE STAINLESS STEEL 1/4" MESH SCREEN AT END OF PIPE AND SECURE WITH STAINLESS STEEL HOSE CLAMP ONTO PIPE. COORDINATE MESH SCREEN SIZE WITH CHILLER MANUFACTURER AND INSTALL IN STRICT ACCORDANCE WITH CHILLER MANUFACTURER REQUIREMENTS.



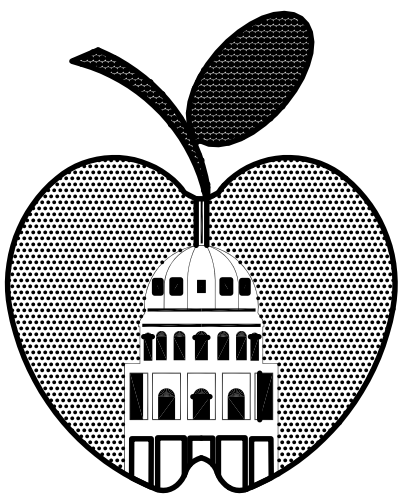
KEYPLAN

WARNING  
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6/20/2019



AUSTIN I.S.D.

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812 San Antonio St., Suite 200  
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HVAC IMPROVEMENTS  
AT AUSTIN HIGH SCHOOL

AUSTIN  
HIGH SCHOOL  
1715 W. CESAR CHAVEZ ST.  
AUSTIN, TEXAS 78703

ISSUES AND REVISIONS

NO.	DATE	DESCRIPTION
1	6/5/2019	ADDENDUM 2
2	6/20/2019	ADDENDUM 3

SHEET TITLE

MECHANICAL PIPING  
SCHEMATIC DEMOLITION

DATE: AUGUST 01, 2018  
PROJECT NO.: 19-0041-AUSTN  
HEI PROJECT NO.: 2018-100  
SCALE: AS NOTED  
DRAWN BY: HEI  
CHECKED BY: HEI

SHEET NUMBER

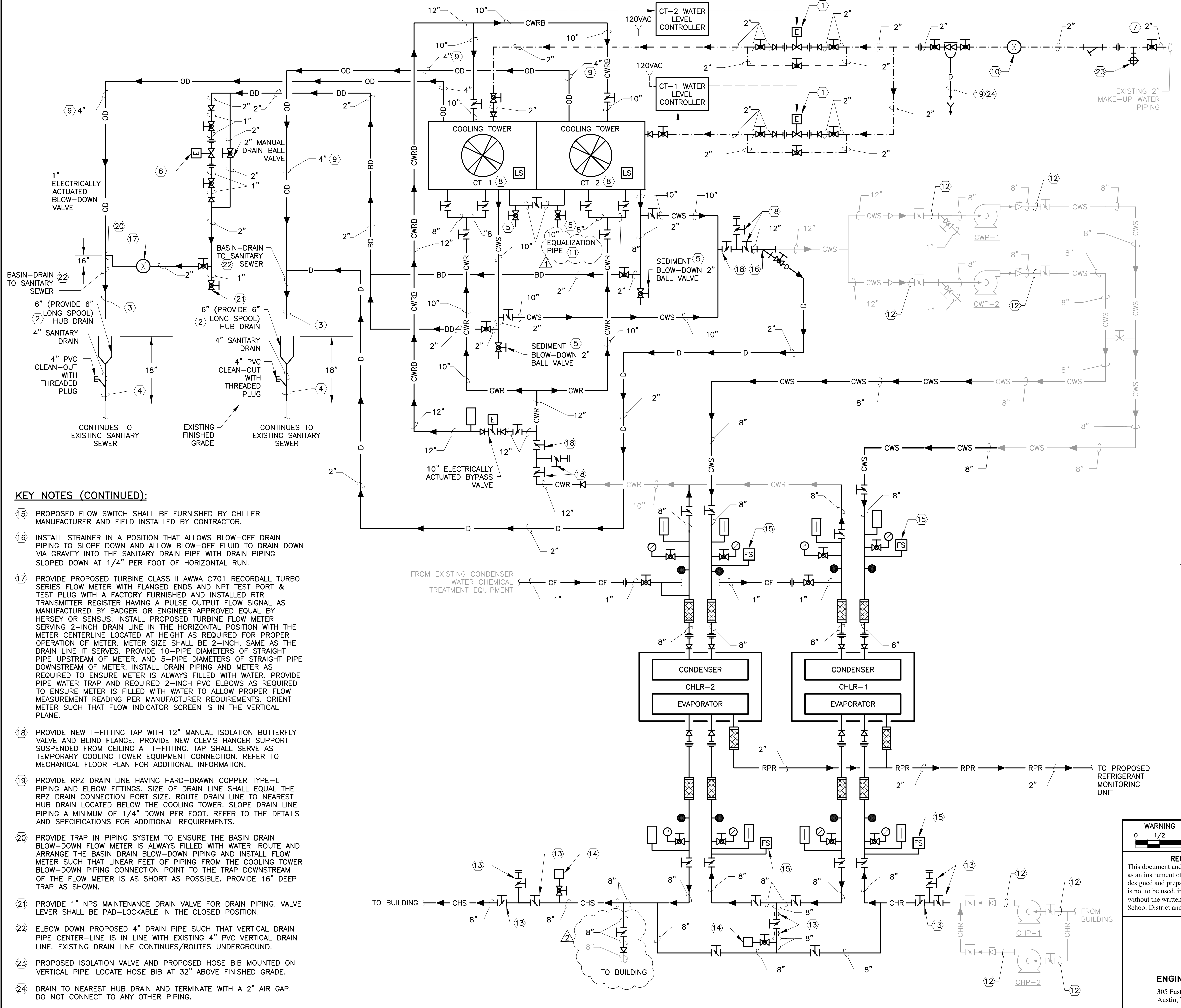
M-PSC-01

KEY NOTES:

- PROVIDE NEW MAKE-UP WATER ELECTRIC ACTUATED 1" DIAMETER BODY VALVE. LOCATE VALVE BELOW COOLING TOWER STRUCTURE METAL GRATES. PROVIDE UNION AND REDUCER UPSTREAM AND DOWNSTREAM OF VALVE.
- PROVIDE 4" X 6" REDUCER FITTING AT SANITARY DRAIN PIPE. PROVIDE 6" OF PVC SCHEDULE 40 STRAIGHT PIPING UPSTREAM OF REDUCER FITTING.
- TERMINATE 4" DRAIN PIPE 2" ABOVE RIM OF 6" PIPE TO PROVIDE REQUIRED AIR-GAP CONNECTION.
- PAINT ALL SURFACES OF PVC AND CPVC PIPING EXPOSED TO SUNLIGHT, INCLUDING, BUT NOT LIMITED TO, EXTERIOR OF DRAIN PIPING AND INTERIOR AND EXTERIOR OF HUB DRAINS. REFER TO DIVISION 9 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- INSTALL TAP FOR 2" SEDIMENT BLOW-OFF BALL VALVE AS CLOSE AS POSSIBLE TO BASIN CONNECTION. ORIENT VALVE DOWN SUCH THAT WATER FLOWS DOWN WHEN VALVE IS OPEN.
- PROVIDE NEW ELECTRIC ACTUATED 1" DIAMETER BODY BLOW-DOWN VALVE. PROVIDE UNION UPSTREAM AND DOWNSTREAM OF VALVE.
- CONNECT PROPOSED 2" MAKE-UP WATER PIPE TO EXISTING 2" MAKE-UP WATER PIPE.
- NEW TWO (2) CELL COOLING TOWER HAVING CELLS "CT-1" AND "CT-2". REFER TO MECHANICAL SCHEDULES.
- WITH EXCEPTION TO THE BASIN DRAIN BLOW-DOWN METER TRAP, ALL BASIN DRAIN AND OVERFLOW PIPING SHALL BE INSTALLED TO SLOPE DOWN 1/4" PER FOOT. WHEN ISOLATION VALVES ARE OPEN, ALL WATER SHALL DRAIN OUT OF PIPING. BASIN DRAIN AND OVERFLOW PIPING SHALL BE INSTALLED IN MANNER NOT INCLUDE TRAPS THAT WOULD RETAIN WATER.
- PROVIDE PROPOSED TURBINE CLASS II AWWA C701 RECORDALL TURBO SERIES FLOW METER WITH FLANGED ENDS AND NPT TEST PORT & TEST PLUG WITH A FACTORY FURNISHED AND INSTALLED RTR TRANSMITTER REGISTER HAVING A PULSE OUTPUT FLOW SIGNAL AS MANUFACTURED BY BADGER OR ENGINEER APPROVED EQUAL BY HERSEY OR SENSUS. INSTALL PROPOSED TURBINE FLOW METER SERVING 2-INCH DRAIN LINE IN THE HORIZONTAL POSITION WITH THE METER CENTERLINE LOCATED AT 40" ABOVE FINISHED GRADE. METER SIZE SHALL BE 2-INCH, SAME AS THE WATER LINE IT SERVES. PROVIDE 10-PIPE DIAMETERS OF STRAIGHT PIPE UPSTREAM OF METER, AND 5-PIPE DIAMETERS OF STRAIGHT PIPE DOWNSTREAM OF METER. ORIENT METER SUCH THAT FLOW INDICATOR SCREEN IS IN THE VERTICAL PLANE.
- 10" NPS EQUALIZATION PIPE WITH BUTTERFLY ISOLATION VALVE BELOW BASINS. PROVIDE 2" BALL DRAIN VALVE ON UNDERSIDE OF 10" PIPE ON EACH SIDE OF BUTTERFLY VALVE AS SHOWN WITH DISCHARGE OF BALL VALVES POINTING DOWN.
- EXISTING VALVES AND FITTINGS TO REMAIN ARE NOT SHOWN. FIELD VERIFY AS REQUIRED.
- PROVIDE NEW T-FITTING TAP WITH 8" MANUAL ISOLATION BUTTERFLY VALVE AND BLIND FLANGE. PROVIDE NEW CLEVIS HANGER SUPPORT SUSPENDED FROM CEILING AT T-FITTING. TAP SHALL SERVE AS TEMPORARY CHILLER EQUIPMENT CONNECTION. REFER TO MECHANICAL FLOOR PLAN FOR ADDITIONAL INFORMATION.
- PROVIDE AUTOMATIC AIR VENT AT THE HIGHEST POINT. PROVIDE AN AUTOMATIC AIR VENT TO RELIEVE AIR AT EACH LOCAL HIGH POINT OF PIPING WHERE AIR CAN GET TRAPPED. PROVIDE A 1/2" TYPE L COPPER DRAIN LINE FROM AIR VENT DISCHARGE. ROUTE DRAIN LINE TO THE NEAREST FLOOR DRAIN IN THE MECHANICAL ROOM. ALLOW FOR UP TO 60- FEET OF PIPING AND SIX (6) ELBOWS PER AIR VENT. REFER TO MECHANICAL FLOOR PLAN FOR LOCATION OF AIR VENT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

KEY NOTES (CONTINUED):

- PROPOSED FLOW SWITCH SHALL BE FURNISHED BY CHILLER MANUFACTURER AND FIELD INSTALLED BY CONTRACTOR.
- INSTALL STRAINER IN A POSITION THAT ALLOWS BLOW-OFF DRAIN PIPING TO SLOPE DOWN AND ALLOW BLOW-OFF FLUID TO DRAIN DOWN VIA GRAVITY INTO THE SANITARY DRAIN PIPE WITH DRAIN PIPING SLOPED DOWN AT 1/4" PER FOOT OF HORIZONTAL RUN.
- PROVIDE PROPOSED TURBINE CLASS II AWWA C701 RECORDALL TURBO SERIES FLOW METER WITH FLANGED ENDS AND NPT TEST PORT & TEST PLUG WITH A FACTORY FURNISHED AND INSTALLED RTR TRANSMITTER REGISTER HAVING A PULSE OUTPUT FLOW SIGNAL AS MANUFACTURED BY BADGER OR ENGINEER APPROVED EQUAL BY HERSEY OR SENSUS. INSTALL PROPOSED TURBINE FLOW METER SERVING 2-INCH DRAIN LINE IN THE HORIZONTAL POSITION WITH THE METER CENTERLINE LOCATED AT HEIGHT AS REQUIRED FOR PROPER OPERATION OF METER. METER SIZE SHALL BE 2-INCH, SAME AS THE DRAIN LINE IT SERVES. PROVIDE 10-PIPE DIAMETERS OF STRAIGHT PIPE UPSTREAM OF METER, AND 5-PIPE DIAMETERS OF STRAIGHT PIPE DOWNSTREAM OF METER. INSTALL DRAIN PIPING AND METER AS REQUIRED TO ENSURE METER IS ALWAYS FILLED WITH WATER. PROVIDE PIPE WATER TRAP AND REQUIRED 2-INCH PVC ELBOWS AS REQUIRED TO ENSURE METER IS FILLED WITH WATER TO ALLOW PROPER FLOW MEASUREMENT READING PER MANUFACTURER REQUIREMENTS. ORIENT METER SUCH THAT FLOW INDICATOR SCREEN IS IN THE VERTICAL PLANE.
- PROVIDE NEW T-FITTING TAP WITH 12" MANUAL ISOLATION BUTTERFLY VALVE AND BLIND FLANGE. PROVIDE NEW CLEVIS HANGER SUPPORT SUSPENDED FROM CEILING AT T-FITTING. TAP SHALL SERVE AS TEMPORARY COOLING TOWER EQUIPMENT CONNECTION. REFER TO MECHANICAL FLOOR PLAN FOR ADDITIONAL INFORMATION.
- PROVIDE RPZ DRAIN LINE HAVING HARD-DRAWN COPPER TYPE-L PIPING AND ELBOW FITTINGS. SIZE OF DRAIN LINE SHALL EQUAL THE RPZ DRAIN CONNECTION PORT SIZE. ROUTE DRAIN LINE TO NEAREST HUB DRAIN LOCATED BELOW THE COOLING TOWER. SLOPE DRAIN LINE PIPING A MINIMUM OF 1/4" DOWN PER FOOT. REFER TO THE DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE TRAP IN PIPING SYSTEM TO ENSURE THE BASIN DRAIN BLOW-DOWN FLOW METER IS ALWAYS FILLED WITH WATER. ROUTE AND ARRANGE THE BASIN DRAIN BLOW-DOWN PIPING AND INSTALL FLOW METER SUCH THAT LINEAR FEET OF PIPING FROM THE COOLING TOWER BLOW-DOWN PIPING CONNECTION POINT TO THE TRAP DOWNSTREAM OF THE FLOW METER IS AS SHORT AS POSSIBLE. PROVIDE 16" DEEP TRAP AS SHOWN.
- PROVIDE 1" NPS MAINTENANCE DRAIN VALVE FOR DRAIN PIPING. VALVE LEVER SHALL BE PAD-LOCKABLE IN THE CLOSED POSITION.
- ELBOW DOWN PROPOSED 4" DRAIN PIPE SUCH THAT VERTICAL DRAIN PIPE CENTER-LINE IS IN LINE WITH EXISTING 4" PVC VERTICAL DRAIN LINE. EXISTING DRAIN LINE CONTINUES/ROUTES UNDERGROUND.
- PROPOSED ISOLATION VALVE AND PROPOSED HOSE BIB MOUNTED ON VERTICAL PIPE. LOCATE HOSE BIB AT 32" ABOVE FINISHED GRADE.
- DRAIN TO NEAREST HUB DRAIN AND TERMINATE WITH A 2" AIR GAP. DO NOT CONNECT TO ANY OTHER PIPING.



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