

ADDENDUM NO. 1

BIDDING AND CONTRACT DOCUMENTS

FOR

SRC NORTH COOLING TOWER REPLACEMENT

PROJECT NO. 957448

CONTRACT NO. 956448-LF-2020-52



December 19, 2019

The following changes, additions, or deletions shall be made to the following documents as indicated for this Project; and all other terms and conditions shall remain the same. Each bidder is responsible for transmitting this information to all affected subcontractors and suppliers before the Bid Deadline.

1. SPECIFICATIONS TABLE OF CONTENTS

Replace existing Specification Table of Contents with the one issued in this Addendum.

2. SPECIFICATIONS

Replace existing Specification Section 23 6500, Cooling Towers, with the one issued in this Addendum.

3. LIST OF DRAWINGS

Replace existing List of Drawings, with the one issued in this Addendum 1.

4. DRAWINGS

Replace existing Sheet M3.0, with the one issued in this Addendum 1.

Replace existing Sheet M5.0, with the one issued in this Addendum 1.

Add SK-3 included in this Addendum 1.

Add SK-4 included in this Addendum 1.

Add USB-015072-54 included in this Addendum 1.

Add USB-015072-55 included in this Addendum 1.

5. REQUESTS FOR CLARIFICATION

RFI No.	QUESTIONS / ANSWERS
1-1	<p>Question: Reference E0.1, E1.0, E3.1: Are cooling tower vibration switches going to be added to project for VFD/Fan shutdown?</p> <p>Answer: Yes, the cooling tower vibration switches are added to the project for VFD/Fan shutdown. Please refer to M5.0 for additional information.</p>
1-2	<p>Question: Reference E0.1, 1.0, 3.2: During job walk we did not see room below cooling tower – is it safe to assume vacated electrical conduits thru roof can be used for added cooling tower control points e.g. CWS/CWR temperature sensors?</p> <p>Answer: The existing condenser water system contains CWS/CWR temperature sensors. No need to provide additional temp sensors. Please refer to M5.0 for additional information.</p>
1-3	<p>Question: Reference E0.1,E1.0, E3.3: What is the scope for additional wiring to existing DDC panel?</p> <p>-Does existing panel have ample spare I/O for added points? -What type of control panel is it?</p>

	<p>one of the cooling tower piers protrudes less than 3" from the roof. The detail will not be able to be installed. Please advise. Additionally, during the pre-job conference, it was stated that no roofing was required / anticipated. The roofing currently proceeds up the sides of these piers. Roofing will need to be considered depending on the solution to this anchorage problem</p> <p>Answer: Please see the attached updated detail for the mounting of the towers.</p>
1-13	<p>Question: The existing concrete pillars supporting the existing cooling tower CT-1 are not tall enough to install saddle plates as shown in details. The pillars are shorter on this tower than the other. Concrete pillars are approximately 3" inches tall on one side and 6" inches tall on the other side. In lieu of side saddle plates, can we extend the top sub plate on each side of the isolator and add mounting holes on top for anchorage. Would this application be acceptable? Please see attached hand sketch of proposed application.</p> <p>Answer: Please see the attached updated detail for the mounting of the tower.</p>
1-14	<p>Question: Can you provide the name of the existing controls manufacture, I.E. Climatec, Siemens, Johnson, Carrier or??. We would need this information to be able to provide a Controls proposal for the project and / or address the re-configuration of the existing Building Automation system for the addition of control valves in the system.</p> <p>Answer: The current building automation system/contractor is Honeywell for this building. Refer to the attached sketches for additional information.</p>
1-15	<p>Question: Please Confirm that the existing concrete piers as shown on M3.0 detail E/M1.0 are to be reused for the anchorage of the new Cooling Towers.</p> <p>Answer: Confirmed, the existing concrete piers are to be used for the anchorage of the new towers. Refer to sketches for additional information.</p>
1-16	<p>Question: Please provide detail for Stainless steel Sheet metal Cap. At the job walk, it was confirmed that this cap does not need weatherproofing. Please confirm and provide a dimensional detail.</p> <p>Answer: The sheet metal cap shall span the width and length of the pier—14"W x 17' L. The contractor shall field verify the final dimensions during construction.</p>
1-17	<p>Question: It was determined at the Pre-Bid Meeting that all Crane activities will need to be done after or before normal working hours which are 7am-4pm. Please confirm overtime is the intent.</p> <p>Answer: No Overtime on This Job, plan shifts accordingly.</p>

END OF ADDENDUM

SPECIFICATIONS

TABLE OF CONTENTS

Division 01 – General Requirements

<u>Initial Issue</u>	<u>Revision</u>	<u>Section #</u>	<u>Title</u>
		01 1100	Summary of Work
		01 1400	Work Restrictions
		01 2500	Product Options, Requirements & Substitution Procedures
		01 2613	Requests for Information & Instructions (RFI) Procedures
		01 3113	Coordination
		01 3119	Project Meetings
		01 3200	Document Control
		01 3216	Schedules
		01 3280	Electronic Data Transfer
		01 3300	Submittals
		01 3543	Environmental Procedures
		01 3546	Indoor Air Quality Procedures & Requirements
		01 4100	Regulatory Requirements
		01 4200	References
		01 4300	Inspection of Work
		01 4500	Quality Control
		01 4516	Contractor's Quality Control Program
		01 5300	Temporary Construction
		01 5400	Construction Aids
		01 5500	Vehicular Access and Parking
		01 5600	Temporary Barriers and Enclosures
		01 5700	Temporary Controls
		01 6000	Product Requirements
		01 7100	Examination and Preparation

<u>Initial Issue</u>	<u>Revision</u>	<u>Section #</u>	<u>Title</u>
		01 7329	Cutting and Patching
		01 7400	Cleaning and Waste Management
		01 7700	Contract Closeout
		01 7839	As-Built Documents

DIVISION 9 PAINTING AND COATING

09 9600 High Performance Coatings

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

23 0500	Common Work Results For HVAC
23 0510	Variable Frequency Drives
23 0511	Welding Pressure Piping
23 0513	Motors For HVAC
23 0519	Thermometers and Gages for HVAC
23 0529	Hangers and Supports for HVAC
23 0548	Vibration and Seismic Controls for HVAC
23 0553	Identification for HVAC
23 0593	Testing, Adjusting, and Balancing for HVAC
23 2113	Hydronic Piping and Valves

23 6500 **Cooling Towers** **Addendum 1, December 19, 2019**

DIVISION 26 – ELECTRICAL

26 0500	Common Work Results for Electrical
26 0519	Low-voltage Electrical Power Conductors and Cables
26 0526	Grounding and Bonding for Electrical Systems
26 0529	Hangers and Supports for Electrical Systems
26 0533	Raceway and Boxes for Electrical Systems
26 0553	Identification for Electrical Systems

END OF SPECIFICATIONS
 TABLE OF CONTENTS

SECTION 23 6500

COOLING TOWERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Open-circuit, forced-draft, counter-flow cooling towers.

1.02 RELATED REQUIREMENTS

- A. Section 23 0513 - Common Motor Requirements for HVAC Equipment.
- B. Section 23 0548 - Vibration and Seismic Controls for HVAC.
- C. Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.
- D. Section 23 2113 - Hydronic Piping.

1.03 REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings 2015.
- B. ABMA STD 11 - Load Ratings and Fatigue Life for Roller Bearings 2014.
- C. ASME B31.5 - Refrigeration Piping and Heat Transfer Components 2016.
- D. ASME PTC 23 - Atmospheric Water Cooling Equipment 2003, Reaffirmed 2014.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2018.
- G. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus 2018.
- H. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) 1993 (Reapproved 2010).
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2018b.
- J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi 2015.
- K. CTI ATC-105 - Acceptance Test Code 2000.
- L. CTI STD-201 OM - Operations Manual for Thermal Performance Certification of Evaporative Heat Rejection Equipment 2017.
- M. CTI STD-201 RS - Performance Rating of Evaporative Heat Rejection Equipment 2017.
- N. CTI STD-111 - Gear Speed Reducers for Application on Industrial Water Cooling Towers; 2009.
- O. ISO 9001 - Quality management systems -- Requirements 2015.
- P. NEMA MG 1 - Motors and Generators 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, dimensions, weights and point loadings, accessories, required clearances, electrical requirements and wiring diagrams, and location and size of field connections. Submit schematic indicating capacity controls.
- C. Shop Drawings: Indicate suggested structural steel supports including dimensions, sizes, and locations for mounting bolt holes.
- D. Manufacturer's Certificate: Certify that cooling tower performance, based on ASME PTC 23 meets or exceeds specified requirements and submit performance curve plotting leaving water temperature against wet bulb temperature.
- E. Manufacturer's Instructions: Submit manufacturer's complete installation instructions.
- F. Operation and Maintenance Data: Include start-up instructions, maintenance data, parts lists, controls, and accessories.
- G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner 's name and registered with manufacturer.
- H. Maintenance Materials: Furnish the following for Owner 's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Fan Belts: One set, matched, for each unit.
 - 3. Extra Spray Nozzles: One nozzle kits for each cell.
 - 4. Extra Access Door Gaskets: One for each door.
 - 5. Extra Valve Seats: One for each make-up valve and control valve.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum twenty years of documented experience and ISO 9001 certification.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum 30 years of experience and approved by manufacturer.

1.06 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Factory assemble entire unit. For shipping, disassemble into as large as practical sub-assemblies so that minimum amount of field work is required for re-assembly.
- B. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Submit a written warranty executed by the manufacturer, agreeing to repair or replace components of the unit that fail in materials and workmanship within the specified warranty period.
 - 1. The Entire Unit shall have a comprehensive five (5) year warranty against defects in materials and workmanship from date of shipment.
 - 2. Fan Motor/Drive System: Warranty Period shall be Five (5) years from date of unit shipment from Factory (fan motor(s), fan(s), fan shaft(s), bearings, mechanical support, sheaves, bushings and belt(s)).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
 - 1. Evapco Model LPT-849
 - 2. BAC Model VTL-272
 - 3. Marley
 - 4. Or Equal.

2.02 MANUFACTURED UNITS

- 1. Provide units for outdoor use, factory-assembled, sectional, vertical discharge, blow through design, with fan assemblies built into pan and casing.

2.03 COMPONENTS

- A. Description: Factory assembled and tested, forced draft counterflow cooling tower.
- B. Cold Water Basin:
 - 1. Sloped with depressed section with drain/clean-out connection. Type 304 bolted stainless steel panels and structural members.
- C. Casing panels, framework, and fasteners will be constructed of Type 304 stainless steel.
 - 1. Fans: Forward curved centrifugal type mounted on steel shaft, with belt drive 304 Stainless steel drive shaft
 - 2. 304 Stainless steel fan wheels with stainless steel clamp on hubs or fans shall be epoxy coated steel construction. The fans shall be factory installed, and statically and dynamically balanced for vibration free operation.
- D. Motors and Drives:
 - 1. Single speed (1800 rpm) mounted on adjustable steel base. Refer to Section 23 0513.

- E. Fan Drive System: Belt Drive designed for minimum 150 percent motor nameplate power.
- F. Fan Guard: Welded steel rod and wire guard, hot dipped galvanized after fabrication.
- G. Distribution Section: Polyvinyl chloride piping header and branches with ABS plastic spray nozzles.
- H. Fill:
 - 1. Polyvinyl chloride plastic with flame spread index of 25 or less, when tested in accordance with ASTM E84.
 - 2. Fungal Resistance: No growth when tested according to ASTM G21.
- I. Drift eliminators shall be constructed entirely of Polyvinyl Chloride (PVC) in easily handled sections. Design shall incorporate three changes in air direction and limit the water carryover to a maximum of 0.001% of the recirculating water rate.
- J. Make up float assembly shall be a mechanical brass valve with an adjustable plastic float.
- K. Hardware: stainless steel nuts, bolts, washers, and tappers;
- L. Galvanized Steel Sheet Components: Hot-dipped galvanized, ASTM A653/A653M, with G235/Z700 coating, and finished with zinc chromated aluminum paint.

2.04 PERFORMANCE REQUIREMENTS

- A. Condition 1 Capacity:
- B. Water Flow: 728 gpm per tower
- C. Entering Water Temperature: 95 degrees F.
- D. Leaving Water Temperature: 85 degrees F.
- E. Entering Air WB Temperature: 75 degrees F.
- F. Electrical Characteristics:
 - 1. 15 hp.
 - 2. 460 volts, single phase, 60 Hz.
- G. Motor: Refer to Section 23 0513.
- H. Condition 2 Capacity:
- I. Water Flow: 680 gpm per tower
- J. Entering Water Temperature: 85 F
- K. Leaving Water Temperature: 78 F
- L. Entering Air WB Temperature : 70 F

2.05 ACCESSORIES

- A. Vibration Switch: Provide a mechanical local reset vibration switch. The mechanical vibration cutout switch will be guaranteed to trip at a point so as not to cause damage to

the cooling tower. To ensure this, the trip point will be set in a frequency range of 0 to 3,600 RPM and a trip point of 0.2 to 2.0 g's.

- B. 3" Equalizer connection on blank off side of the tower.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide the services of the manufacturer's field representative to supervise rigging, hoisting, and installation, allowing for minimum of one eight-hour day per tower.
- C. Install tower on structural steel beams as instructed by manufacturer.
- D. Install tower on vibration isolators. Refer to Section 23 0548.
- E. Connect condenser water piping with flanged connections to tower. Pitch condenser water supply to tower and condenser water suction away from tower.
- F. Connect make-up water piping with flanged or union connections to tower. Pitch to tower.
- G. Connect overflow, bleed, and drain, to floor drain.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Provide the services of the manufacturer's field representative to inspect tower after installation and submit report prior to start-up, verifying installation is in accordance with specifications and manufacturer's recommendations.

3.03 SYSTEM STARTUP

- A. Start-up tower in presence of and instruct Owner 's operating personnel.

3.04 SCHEDULES

- A. See plans for equipment schedule.

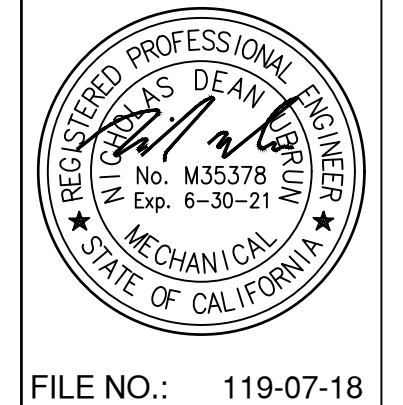
END OF SECTION

LIST OF DRAWINGS

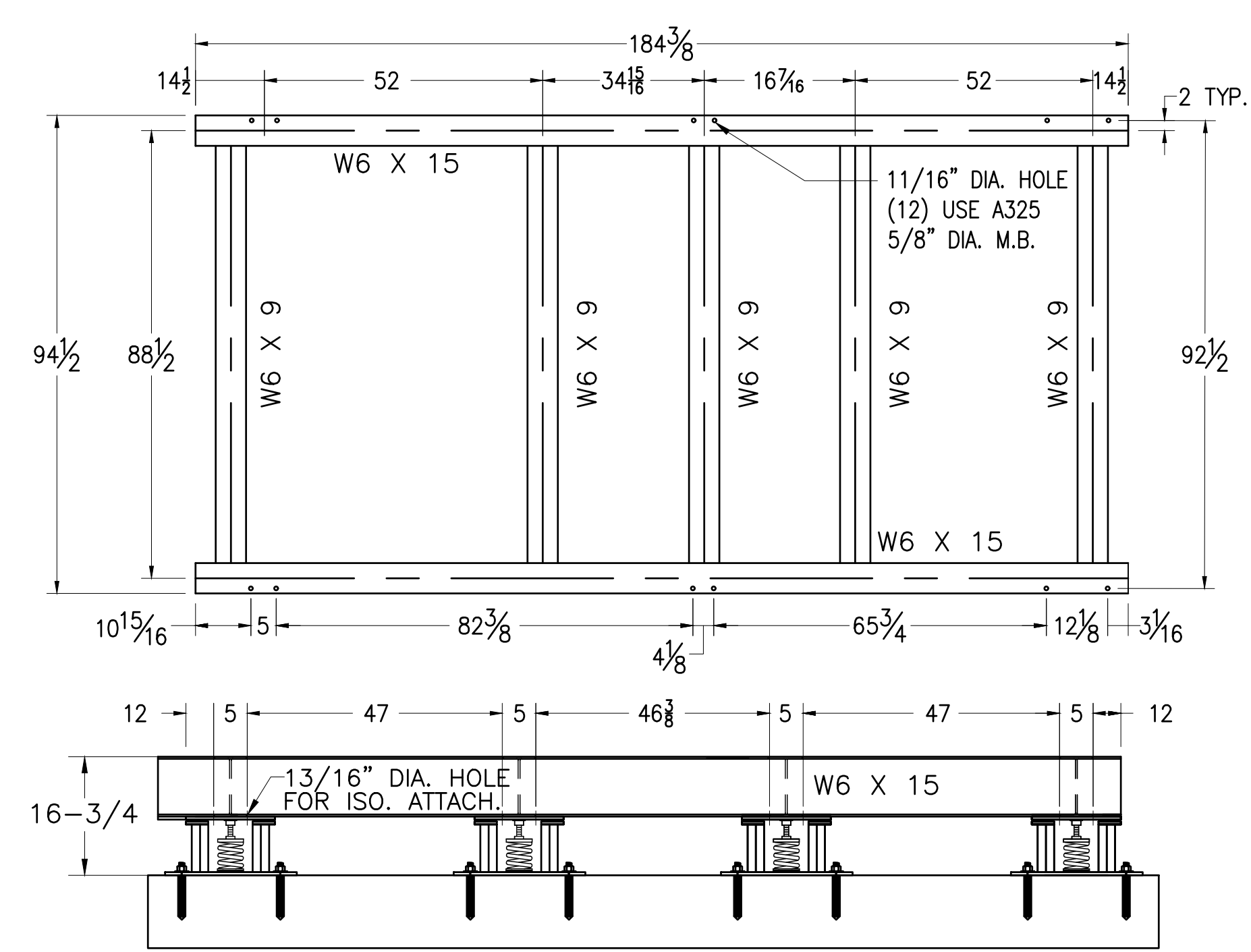
SHEET NO.	TITLE	DATE
T0.1	TITLE SHEET, INDEX OF DRAWINGS, GENERAL NOTES, AND LOCATION MAP	11/12/19
M0.1	SYMBOLS, DESIGNATIONS, AND ABBREVIATIONS	11/12/19
M0.2	MECHANICAL EQUIPMENT SCHEDULES	11/12/19
M1.0	MECHANICAL ROOF PLAN	11/12/19
<u>M3.0</u>	<u>MECHANICAL DETAILS AND SECTIONS</u>	11/12/19 <u>Addendum 1</u> <u>12/16/19</u>
<u>M5.0</u>	<u>CONTROLS DIAGRAM & SEQUENCE OF OPERATIONS</u>	11/12/19 <u>Addendum 1</u> <u>12/16/19</u>
E0.1	ELECTRICAL SYMBOLS, LEGEND, AND GENERAL NOTES	11/12/19
E1.0	POWER ROOF PLANS	11/12/19
E3.1	SINGLE LINE DIAGRAM AND SCHEDULES	11/12/19
<u>SK-3</u>	<u>EXISTING HONEYWELL CONTROLLER, LOCATED IN CHILLER ROOM</u>	<u>Addendum 1</u> <u>12/16/19</u>
<u>SK-4</u>	<u>PARTIAL FIRST FLOOR PIPING PLAN – SECTOR B</u>	<u>Addendum 1</u> <u>12/16/19</u>
<u>USB-015072-54</u>	<u>EXISTING CONDENSER WATER SYSTEM CONTROL PANEL LAYOUT (FOR REFERENCE ONLY)</u>	<u>Addendum 1</u> <u>12/16/19</u>
<u>USB-015072-55</u>	<u>EXISTING CONDENSER WATER SYSTEM CONTROL DIAGRAM</u>	<u>Addendum 1</u> <u>12/16/19</u>

END OF LIST OF DRAWINGS

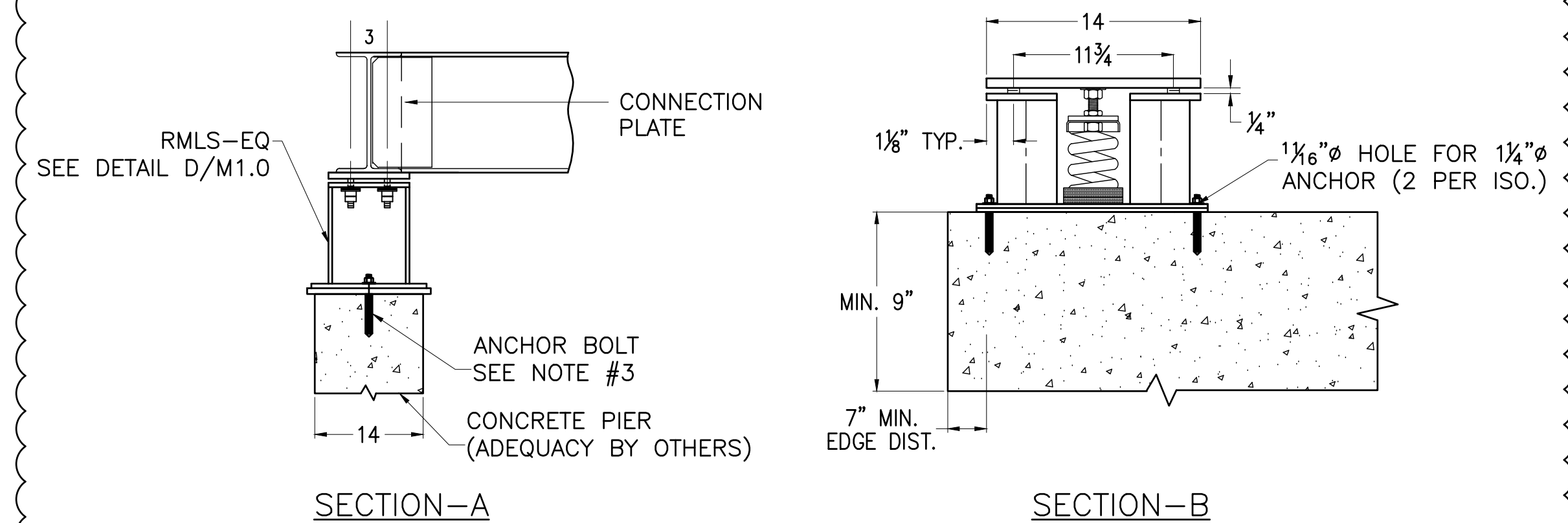
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Architect's Stamp:
Consultant's Stamp:



FILE NO.: 119-07-18



ELEVATION VIEW



SECTION-A

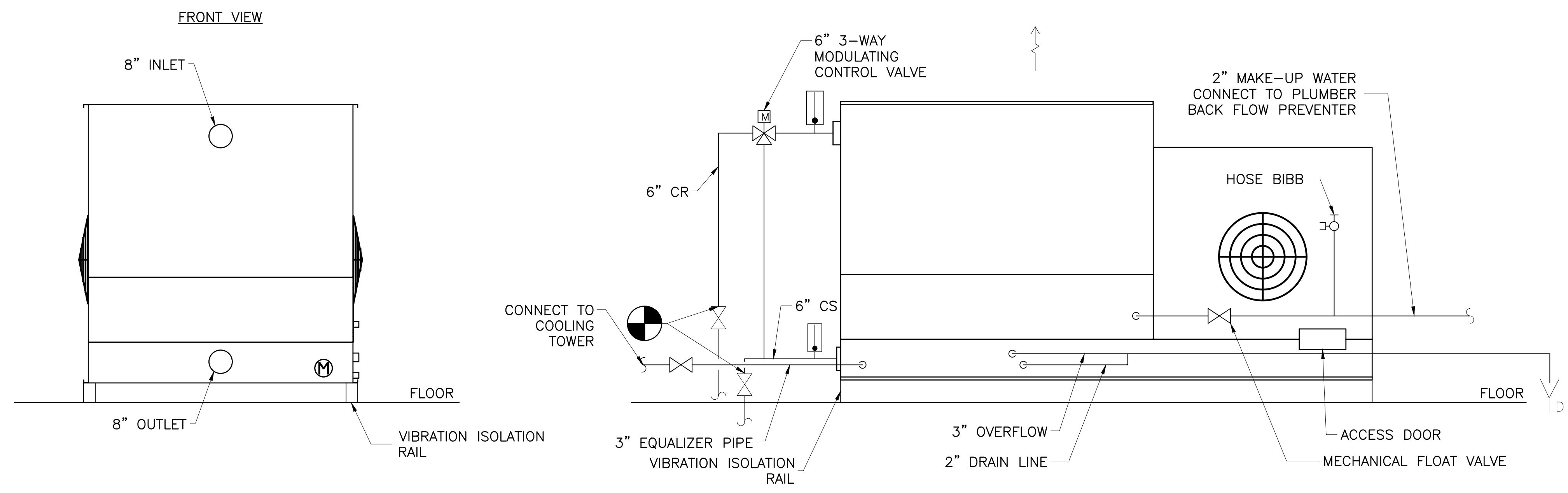
SECTION-B

- NOTES:
- APPROXIMATE ISOLATION BASE WEIGHT & ISOLATORS = 1,600 LBS.
 - FOR ISOLATOR DETAIL, SEE DETAIL D/M1.0.
 - NOT FOR CONSTRUCTION, ALL DIMENSIONS REQUIRE FINAL REVIEW AT COMMENCEMENT OF PROJECT.
 - USE 1-1/4" ASTM A 193 GR B7 CARBON STEEL THREADED ROD W/A-194 NUT, MIN. 4-3/4" EMBED., MIN 7" EDGE DIST., & MIN. 9" CONC. THICKNESS IN MIN. 3000 PSI HARDROCK CONC. INSTALL W/HAMMER DRILL & CARBIDE BIT & SET W/HIT-RE 500V3 ADHESIVE AS PER THE ICC ESR-3814. INSTALL WITH SPECIAL INSPECTION PER THE ICC-3814.

VIBRATION ISOLATION RAIL DETAIL

DETAIL **(E)**
M1.0

NOT TO SCALE



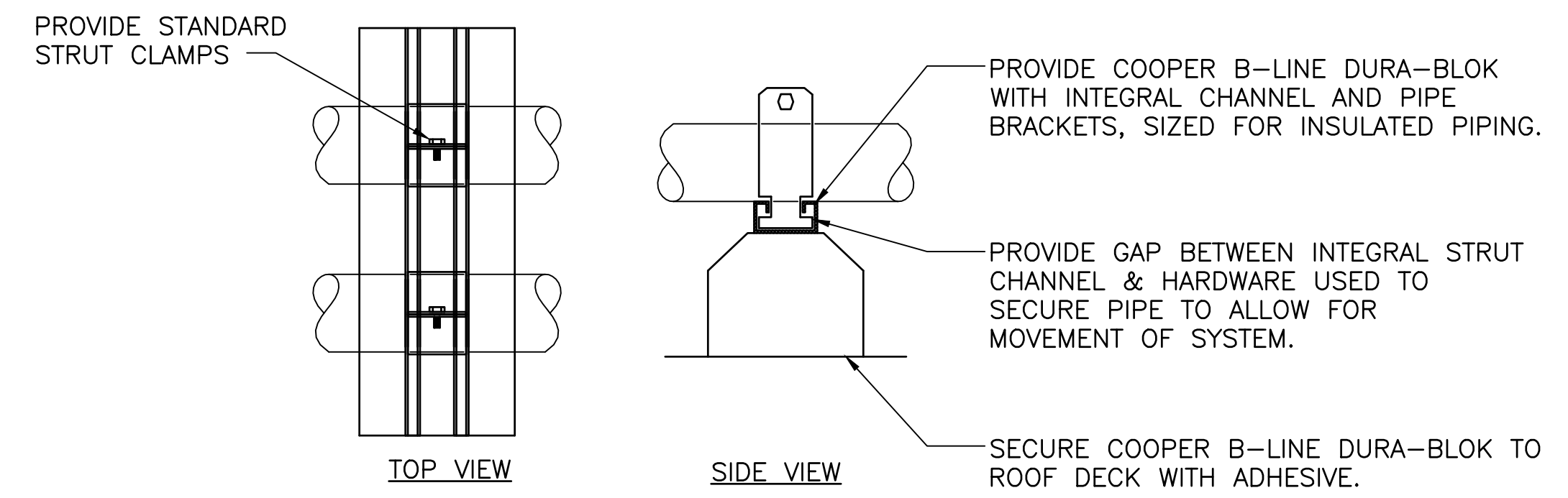
NOTE:

- PROVIDE PRESSURE GAUGES AT THE INLET AND OUTLET PIPING AT EACH COOLING TOWER.
- PROVIDE P/T PORTS AT THE INLET AND OUTLET PIPING AT EACH COOLING TOWER.

COOLING TOWER PIPING

DETAIL **(A)**
M1.0

NOT TO SCALE



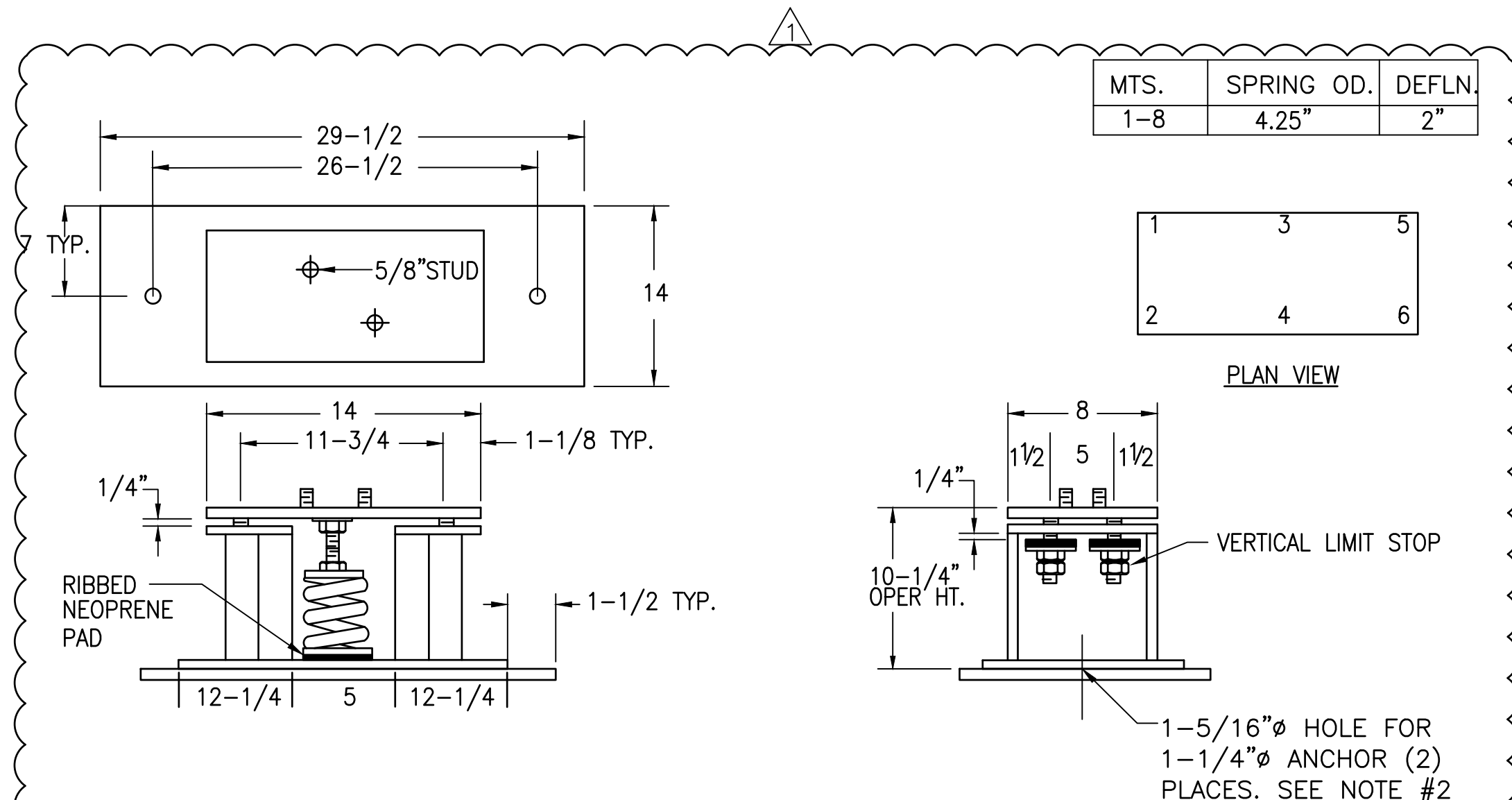
NOTE:

- FOR SINGLE PIPE APPLICATIONS USING STEEL PIPE OR COPPER TUBING, PROVIDE A MAXIMUM OF 6'-0" BETWEEN SUPPORT BLOCKS. ADDITIONALLY, PROVIDE SUPPORT BLOCK WITHIN 2'-0" OF ANY CHANGE IN DIRECTION. REFER TO MANUFACTURER'S DATA FOR BLOCK SPACING OF MULTIPLE PIPES & PIPES OF DIFFERENT COMPOSITION THAN LISTED ABOVE.

ROOFTOP PIPING SUPPORT DETAIL

DETAIL **(C)**
M1.0

NOT TO SCALE

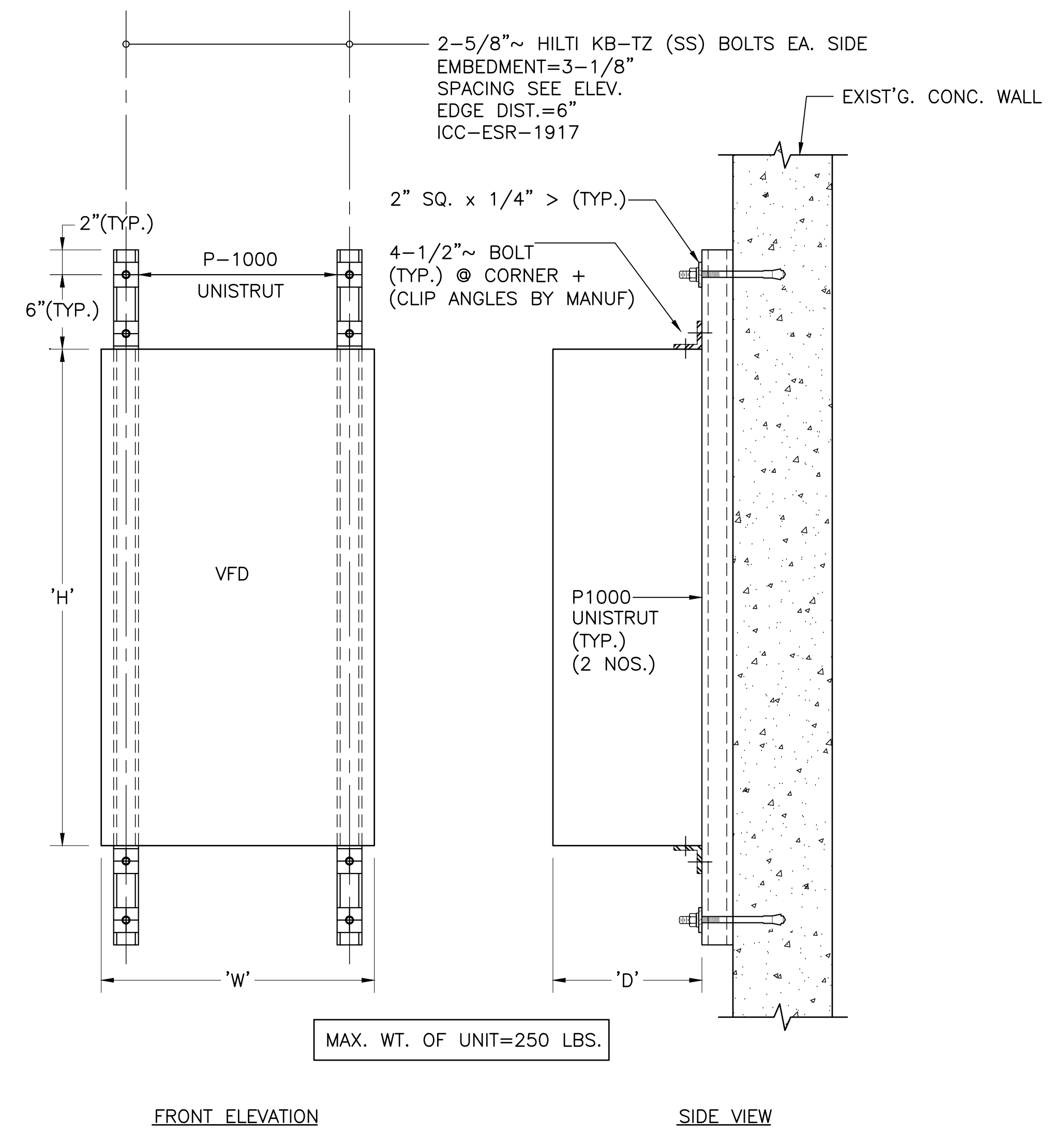


- NOTES:
- NOT FOR CONSTRUCTION, ALL DIMENSIONS REQUIRE FINAL REVIEW AT COMMENCEMENT OF PROJECT.
 - USE 1-1/4" ASTM A 193 GR B7 CARBON STEEL THREADED ROD W/A-194 NUT, MIN. 4-3/4" EMBED., MIN 7" EDGE DIST., & MIN. 9" CONC. THICKNESS IN MIN. 3000 PSI HARDROCK CONC. INSTALL W/HAMMER DRILL & CARBIDE BIT & SET W/HIT-RE 500V3 ADHESIVE AS PER THE ICC ESR-3814. INSTALL WITH SPECIAL INSPECTION PER THE ICC-3814.

VIBRATION ISOLATION SPRING DETAIL

DETAIL **(D)**
M1.0

NOT TO SCALE



FRONT ELEVATION

SIDE VIEW

VFD MOUNTING DETAIL

DETAIL **(B)**
M1.0

NOT TO SCALE

REVISIONS		
REV #	DESCRIPTION	DATE
1	95% DESIGN	10/10/19
2	100% DESIGN	11/12/19
Δ	BID ADDENDUM 1	12/16/19

SRC NORTH COOLING
TOWER REPLACEMENT
P5511

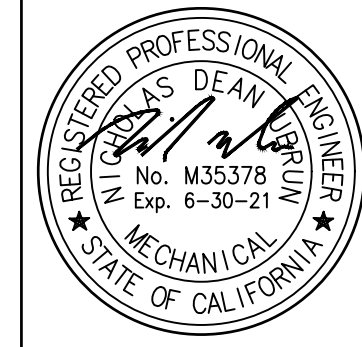
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GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 F 951.340.1090
www.gossengineering.com

UCR Project Manager:
JOHN FRANKLIN

Scale: NONE SD Approval: N/A
Drawn By: A. E. PEREZ DD Approval: NDJ
Checked By: N. D. UBRUN CD Approval:
Project No.: 957448 Construction
DSA No.: Release:

Drawing Title: **MECHANICAL
DETAILS +
SECTIONS** Sheet No. **M3.0**

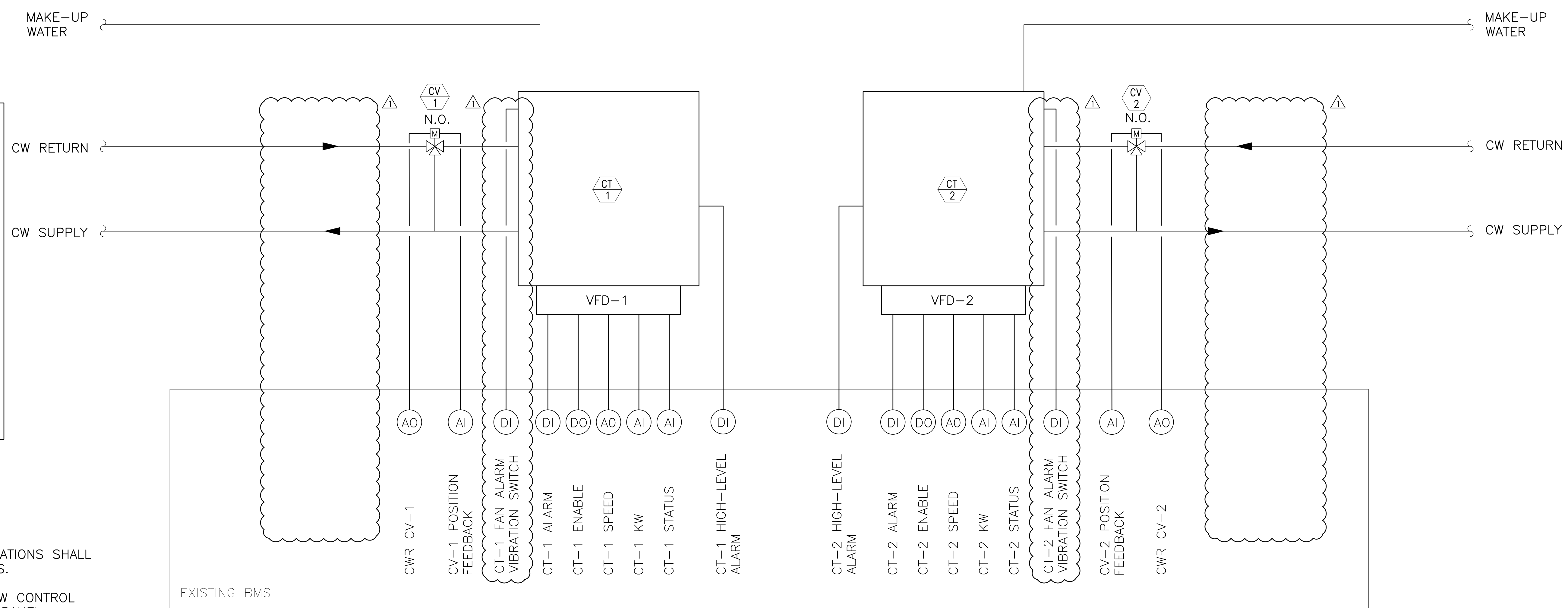
Architect's Data:

Architect's Stamp:  Consultant's Stamp:

FILE NO.: 119-07-18

LEGEND:

N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
(AI)	ANALOG INPUT
(AO)	ANALOG OUTPUT
(DI)	DIGITAL INPUT
(DO)	DIGITAL OUTPUT
(TS)	TEMPERATURE SENSOR



- NOTES:**
1. COOLING TOWER SEQUENCE OF OPERATIONS SHALL REMAIN AS PROGRAMMED IN THE BMS.
 2. THE CONTRACTOR IS TO PROVIDE NEW CONTROL POINTS BACK TO THE EXISTING BMS PANEL. REUSE EXISTING CONTROL CONDUIT WHERE FEASIBLE AND PULL NEW WIRE FOR EACH POINT. MATCH AND INTEGRATE INTO THE EXISTING CONTROL SYSTEM.
 3. THE EXISTING BMS PANEL IS LOCATED IN THE CHILLER ROOM BELOW THE CT YARD.

COOLING TOWERS CONTROL DIAGRAM

REVISIONS

REV #	DESCRIPTION	DATE
1	95% DESIGN	10/10/19
2	100% DESIGN	11/12/19
Δ	BID ADDENDUM 1	12/16/19

SRC NORTH COOLING
TOWER REPLACEMENT
P5511

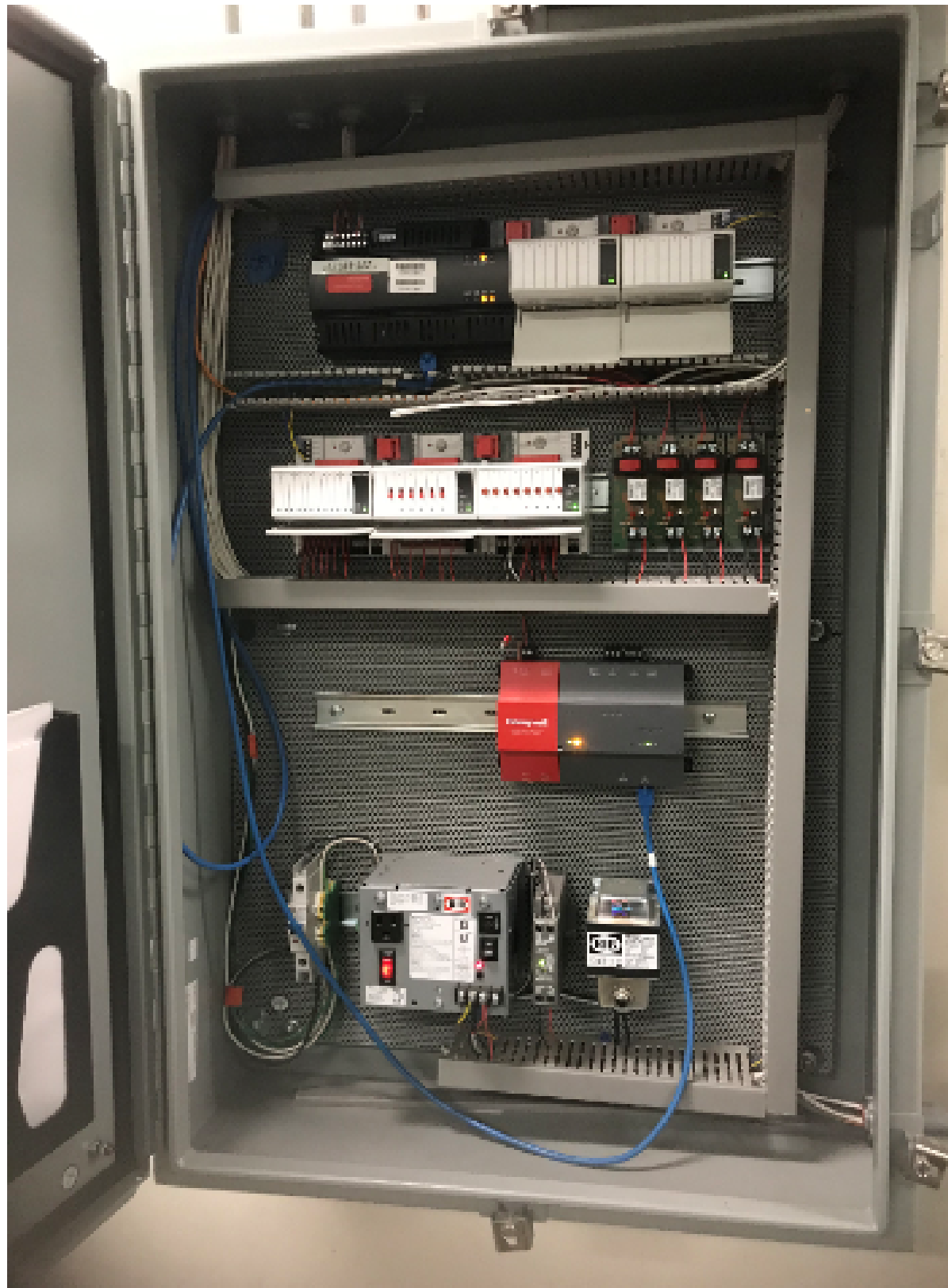
Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
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P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager:
JOHN FRANKLIN

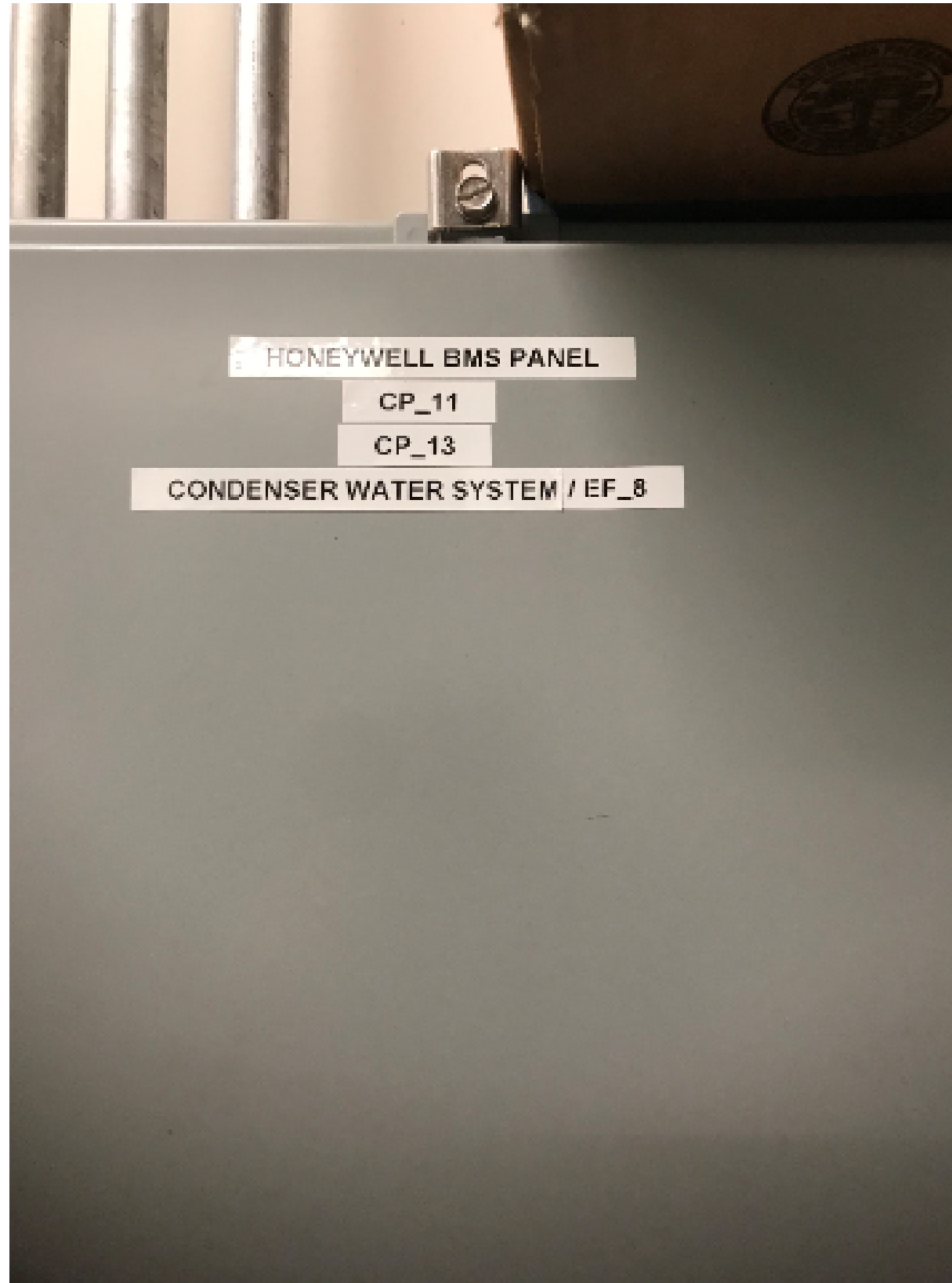
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Drawn By: A. E. PEREZ DD Approval: NDJ
Checked By: N. D. UBRUN CD Approval:

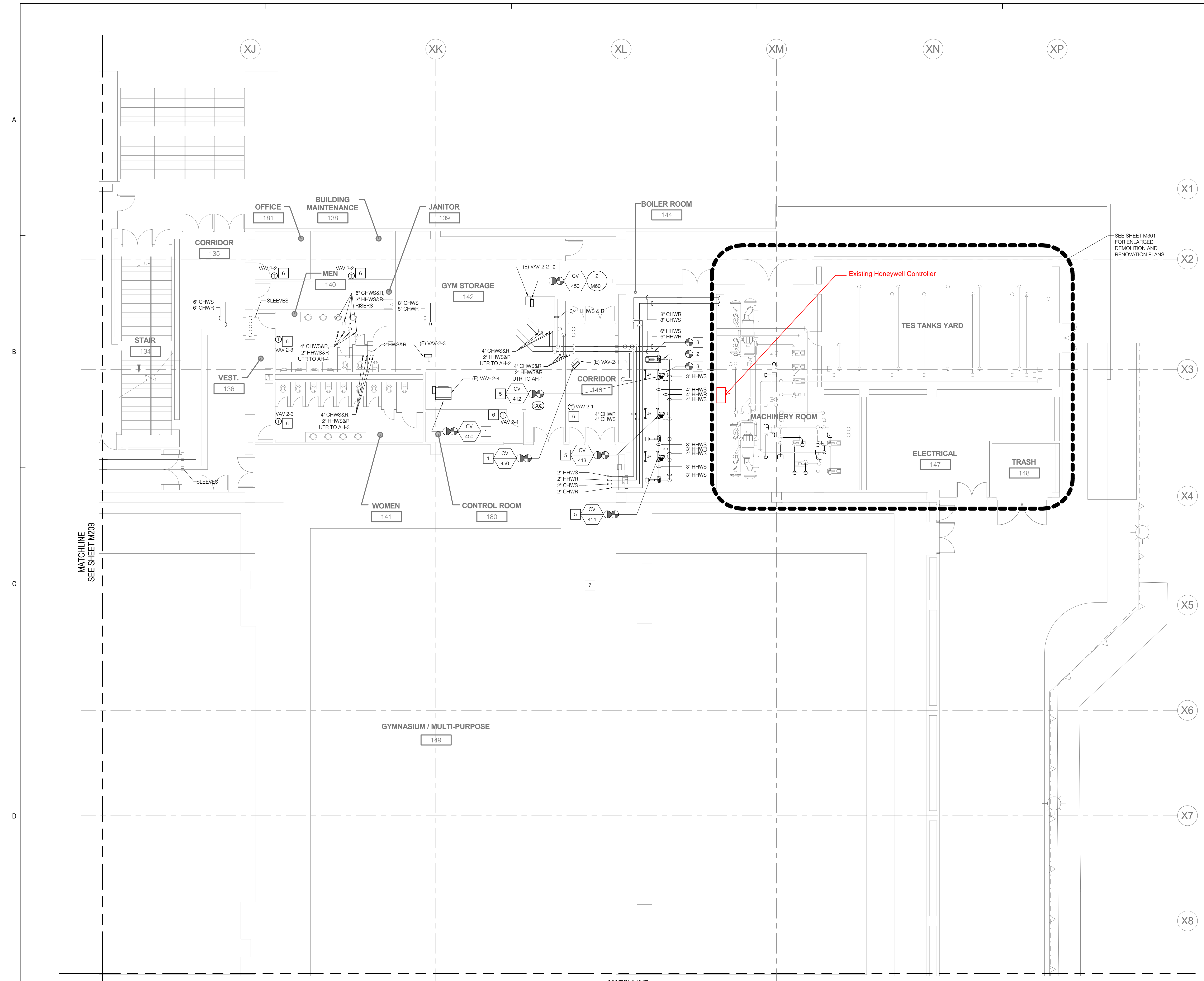
Project No.: 957448 Construction Release:
DSA No.:

Drawing Title: **CONTROLS DIAGRAM + SEQUENCE OF OPERATIONS** Sheet No. **M5.0**



Existing Honeywell controller,
located in the chiller room.





- NOTES**
- DISCONNECT & REMOVE EXISTING REHEAT CONTROL VALVE. INSTALL NEW 2-WAY VALVE CV-450. PROVIDE TRANSITIONS AS REQUIRED.
 - INLINE FLOW METER FOR HHW USE MANUFACTURER UP & DOWN STREAM DISTANCES.
 - LOCATION OF HHWS & R TEMP SENSORS.
 - SEE CONTROL DIAGRAM SPECS & SEQUENCE FOR RETROFIT OF HHW CONTROL SYSTEM.
 - REPLACE CONTROL ISOLATION VALVES FOR BOILERS 1, 2 & 3.
 - PROVIDE THERMOSTAT FOR VAV CONTROL.
 - PROVIDE 6" STAINLESS WALL PLATE TEMPERATURE SENSORS ON EACH WALL AND ACCOMMODATING TO SEATING LOCATIONS TO BE SELECTED BY UCR STAFF AND ENGINEER OF RECORD DURING JOB WALK. AVERAGED TO CONTROL AH-1, 2 & 3.

p2s

P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
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Consultant

Project Title
Recreation Center Control Upgrades

UC RIVERSIDE

UNIVERSITY OF CALIFORNIA
UCRIVERSIDE

900 University Ave
 Riverside, CA 92521



Revisions

Number	Description	Date
1	100%CD FOR BID	06/07/17

Designed C Miller
 Drawn G Jacob
 Checked J Del Monaco
 Approved -

Date 06/07/2017

Submittal BID SET

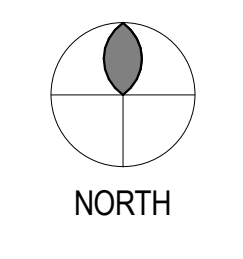
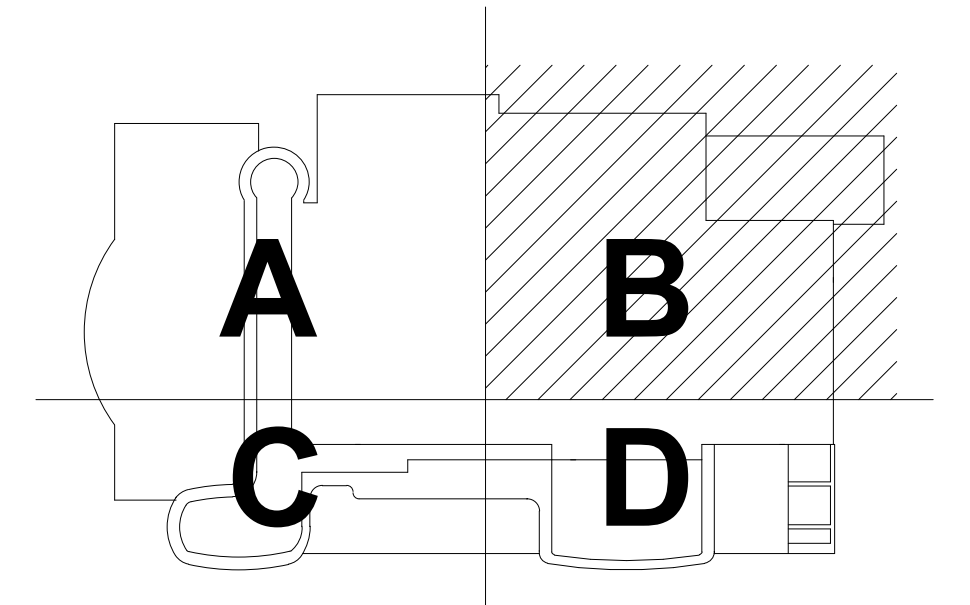
Scale 1/8" = 1'-0"

Sheet Title
Partial First Floor Piping Plan - Sector B

SK-4

KEY PLAN

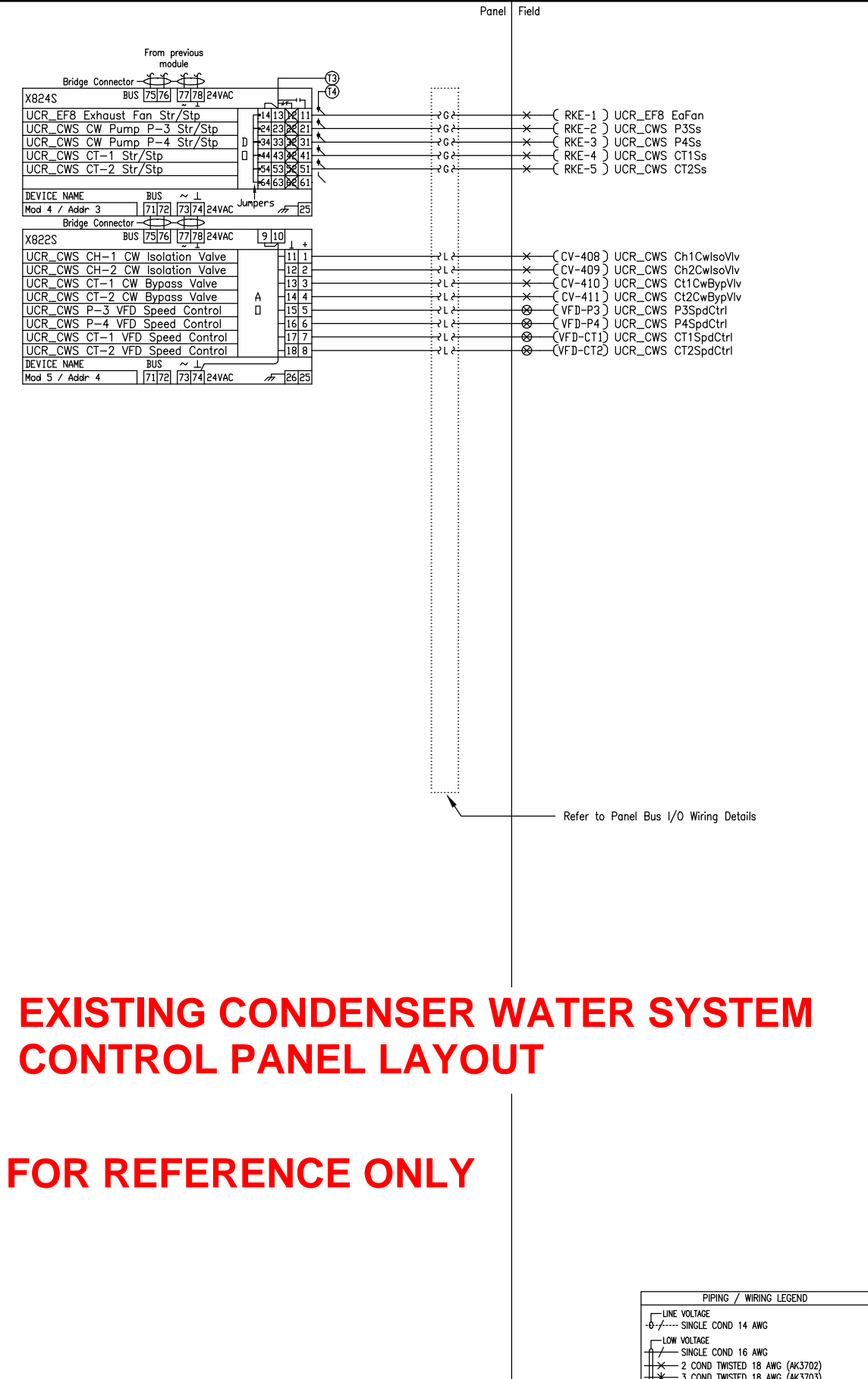
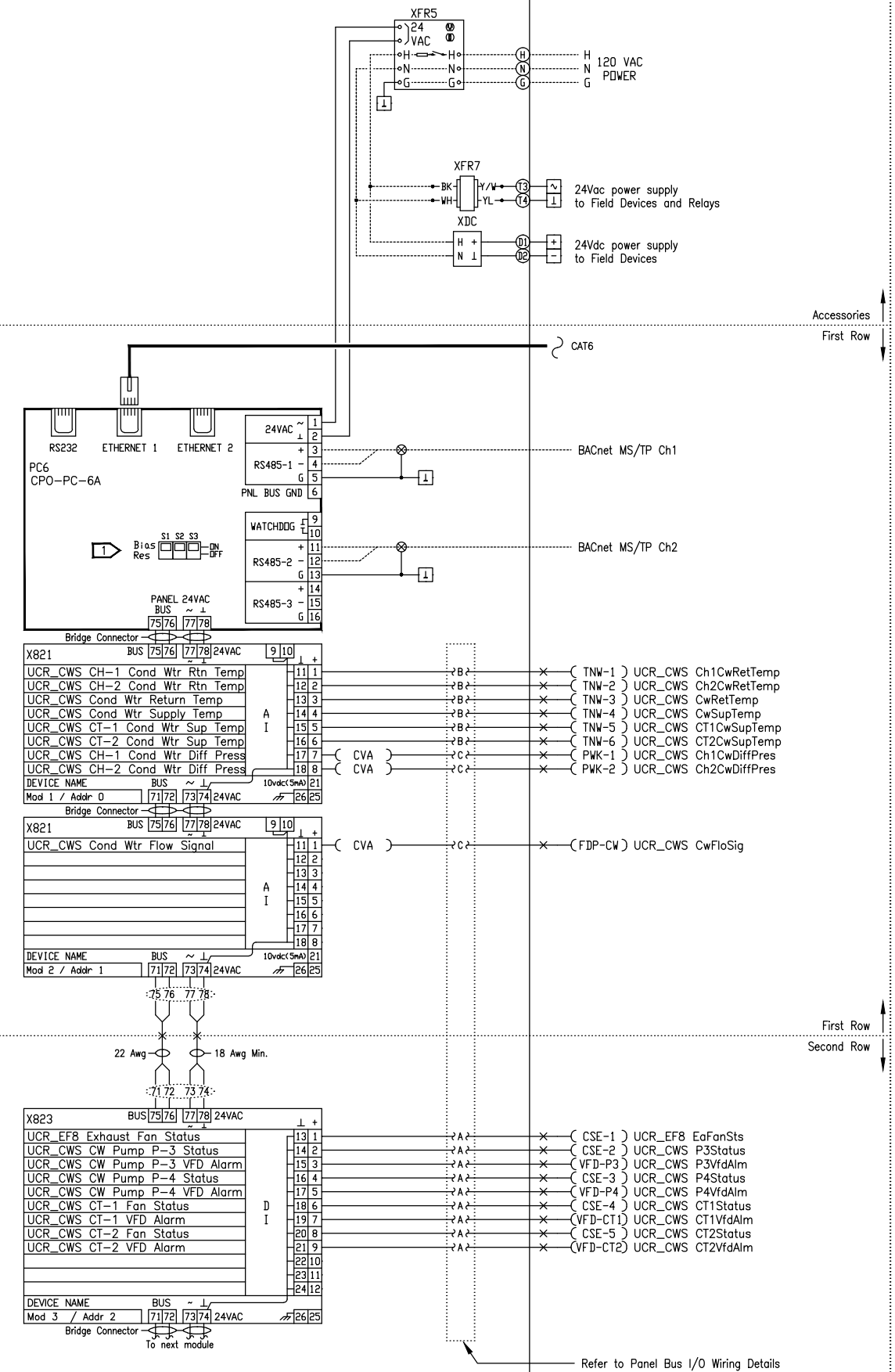
LEGEND
 [Hatched Box] AREA OF WORK



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CP11: Panel Layout

Location: First Floor Machinery Room



Panel Layout

EC5B

Notes

- Turn "ON" bias resistor dip-switch for each RS-485 MSTP BUS to make controller a MASTER.

Bill of Material

Tag Name	Qty	Part Number	Description
CVA	3	1450030-050	499 Ohm, 1/2W precision resistor
EC5B	1	A-36H24BLP	Kele: Hoffman cabinet, 36x24x8, NEMA 4
PC6	1	CPO-PC-6A	Hon: ComfortPoint Open, plant controller, no I/O
X821	2	XF821A	Hon: Excel 800, 8 AI module, panel bus
X822S	2	XSUB21-22	Hon: Excel 800, screw terminal socket for XF821/B22
X823	1	XF823A	Hon: Excel 800, 12 DI module, panel bus
X824S	1	XF824A	Hon: Excel 800, 6 DO module, panel bus, w/man ovr
XDC	1	PS5R-SC24	Hon: Excel 800, screw terminal socket for XF824/B25
XFR5	1	PSH100AB10	Kele: DC power supply, 120vac to 24vac, 1.3A Funct Dev: Transformer, 120 to 24vac, 100va, 120vac/10A sw/bkr, 24vac sw/bkr
XFR7	1	TR100VA001	Funct Dev: Transformer, 120 to 24vac, 100va, circuit breaker, foot and single threaded hub mount

REV	BY	DATE	DESCRIPTION
REV F			CP11: Panel Layout
REV E			CWS, EF-8
REV D	AS-BUILT	July 11, 18	
REV C	Revised per Review	May 4, 18	Comments
REV B	Revised per Alternate 1	Dec 12, 17	Scope
REV A	Submit for Review	Nov 20, 17	

PIPING / WIRING LEGEND

- LINE VOLTAGE
- SINGLE COND 14 AWG
- LOW VOLTAGE
- SINGLE COND 16 AWG
- 2 COND TWISTED 18 AWG (AK3702)
- 3 COND TWISTED 18 AWG (AK3703)
- BIBNET (PAGE 740045 OR BELDEN 82760)
- PNEUMATIC PIPE

EXISTING CONDENSER WATER SYSTEM CONTROL PANEL LAYOUT

FOR REFERENCE ONLY

ARCHITECT: ENGINEER: P2S Engineering, Inc. CONTRACTOR: Liberty Climate Control, Inc. HONEYWELL DESIGN: Rong Li PROJECT MANAGER: Ronald Crowe DRAFTER: RL

REV D

Condenser Water System

Location: First Floor Machinery Room
Mech. Drawing Ref.: M202

Exhaust Fan EF-8

Location: Sector B
Mech. Drawing Ref.: M003, M504
Serving: Chiller Room

Sequence of Operation

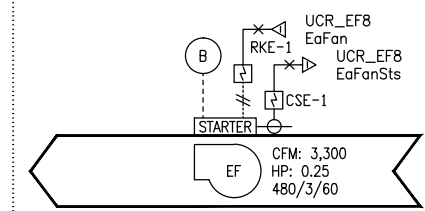
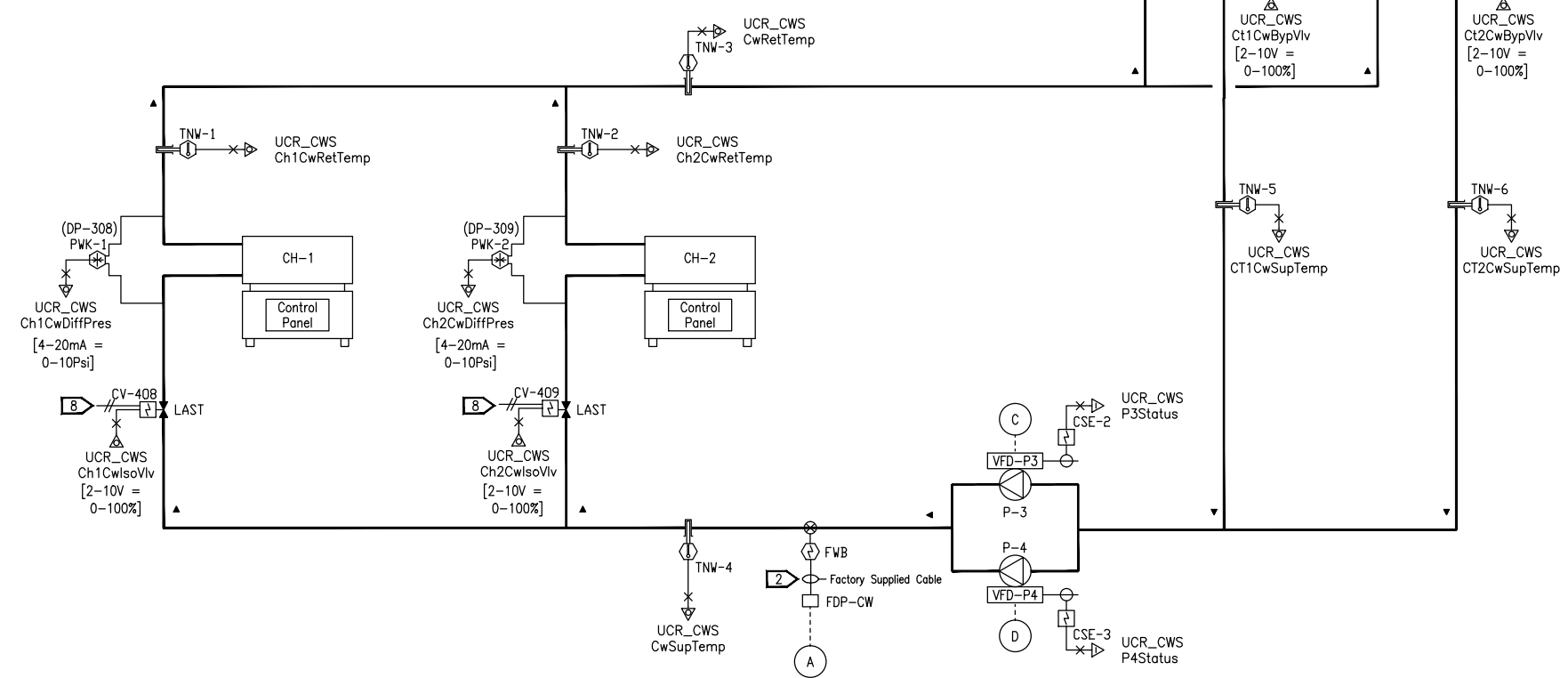
Refer to Sheet USB-015072-55.5 for CWS Sequence of Operation.

Exhaust Fan EF-8

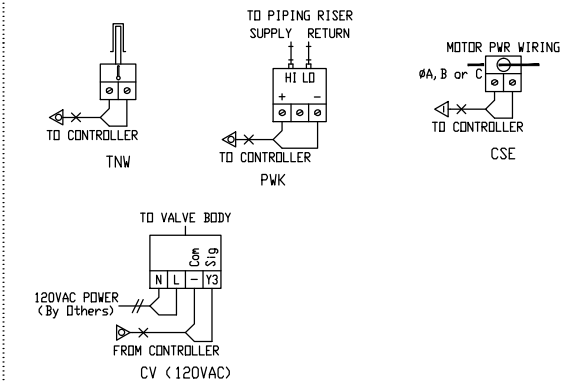
- The Direct Digital System (DDC) shall turn on and off, monitor, trend and sequence as follows:
 - EF-8 shall be interlocked with the AHU's that serve the area that EF-8 serve. Status/alarm of fan operation shall be available through EMS.

FOR REFERENCE ONLY

EXISTING CONDENSER WATER SYSTEM CONTROL DIAGRAM



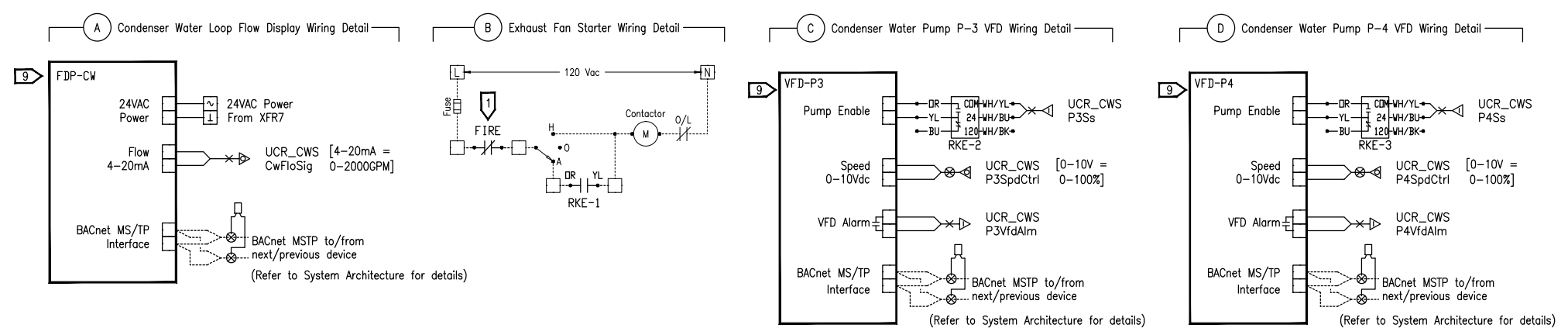
Field Termination Details



Notes

- 2 Flow meter to be connected to flow meter display through manufacturer supplied cable.
- 4 Fire contact from Fire Alarm system. By Others.
- 6 Not included in the based job scope.
- 8 120VAC power provided by others.
- 9 VFD provided by others.

Interlock/Wiring Details



Bill of Material

Tag Name	Qty	Part Number	Description
CSE	3	H608	Veris: Current switch, split core, adj, 0.5-175A
CV	4	----	See Valve Schedule
FDP	1	D-100-MS/TP	Onicon: Network interface w/display, BACnet MS/TP
FWB	1	F-3500	Onicon: Flow meter, insertion electromagnetic, 4-20ma, 24vac/dc pipe size=8"
PWK	2	2301-010PD-3V-11-B-C	Setra: Press, diff, wet, 0-10PSID, 4-20mA, 9-30vdc, with 3-valve manifold
RKE	3	RIBU1C	Funct Dev: Relay, 10-30vdc/ac/120vac, spdt/10A
TNW	6	C7041D2001	Hon: Temp, immersion, 20k, -40 to 250F, 5 in
VFD	2	50001774-001	Hon: Well, 5 in, s/s, 1/2 in NPT
	2	----	NOT SUPPLIED BY HONEYWELL

REV	BY	DATE	DESCRIPTION
REV F			
REV E			
REV D	AS-BUILT	Jul 11, 18	
REV C	Revised per Review	May 4, 18	
REV B	Revised per Alternate 1	Dec 12, 17	
REV A	Submit for Review	Nov 20, 17	

PIPING / WIRING LEGEND	
---	LINE VOLTAGE
○	SINGLE COND 14 AWG
---	LOW VOLTAGE
○	SINGLE COND 16 AWG
○	2 COND TWISTED 18 AWG (AK3702)
○	3 COND TWISTED 18 AWG (AK3703)
○	2 COND TWISTED SHIELDED 18 AWG (AK3740A)
---	PNEUMATIC PIPE



MCC-A

SK-5