ADDENDUM TO THE CONTRACT DOCUMENTS

SOLANO COMMUNITY COLLEGE	ADDENDUM NO. 002
	Project: Solano Community College District **Central Plant Replacement Project** Project Number: 23-005
	Date: March 28th, 2023

Addendum No. 002 – The following clarifications are provided and must be added/considered when completing your bid: Acknowledgement of receipt of this ***Addendum No. 002***, is required on the Bid Form. Please clearly note the addendum date and number.

ITEM NO. 1 – GENERAL INFORMATION

1.1. See Spec Section 00910 attached, dated March 27th, 2023

ITEM NO. 2 – DRAWINGS

2.1. See Spec Section 00910 attached, dated March 27th, 2023.

ITEM NO. 3 – RESPONSES TO QUESTIONS SUBMITTED

3.1. *None at this time.*

List of Attachments:

- Specification Section 00910, dated March 27th, 2023
- Specification Section 23 64 16, dated March 27th, 2023
- Drawing Sheet G-0.0 Cover Sheet, dated March 27th, 2023
- Drawing Sheet G-0.1 General Notes, dated March 27th, 2023
- Drawing Sheet M-1.1.1 Mechanical Chiller and Boiler Equipment and Pad Layout, dated March 27th, 2023
- Drawing Sheet MI-6.2 Controls Point List, dated March 27th, 2023
- Drawing Sheet MI-6.3 Controls Point List, dated March 27th, 2023
- Drawing Sheet P-5.1 Plumbing Details, dated March 27th, 2023

END OF DOCUMENT

SECTION 00910

ADDENDUM #2

PARTICULARS

1.01 DATE: March 27, 2023

1.02 PROJECT: Fairfield Central Plant Modernization

1.03 PROJECT NUMBER: 2200689

1.04 OWNER: Solano CCD

1.05 ARCHITECT: Salas O'Brien Engineers, Inc.

TO: PROSPECTIVE BIDDERS

2.01 This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated 2/1/2023, with amendments and additions noted below.

2.02 Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

2.03 This Addendum consists of 25 pages and the following Drawings:

CHANGES TO THE PROJECT MANUAL

3.01 DIVISION 23 – SECTION 23 64 16 – MAGNETIC BEARING CENTRIFUGAL WATER-COOLED CHILLER

A. Revise Paragraph 2.10-D. to read as follows: Power Factor: At all loads and speeds, provide a minimum of a **0.95** power factor**. (ADDENDUM #2)**

CHANGES TO THE DRAWINGS

4.01 DRAWING G-0.0

A. Replace Sheet G-0.0 in its entirety, reflecting the following modifications:
   1. Summary of Work, Architectural: Note #4 and #5 were added to indicate firestopping penetrations through fire rated walls and a roof access ladder, hatch, and guardrail system are within project scope.
   2. Summary of Work, Mechanical: Note #2 was revised to reflect the scheduled gas boiler outputs and correction was made clarifying that the gas boilers are to comply with the Bay Area Air Quality Management District (BAAQMD) Reg. 9, Rule 7.
   3. Summary of Work, Mechanical: Bid Alternate #2 was added. Bid Alternate #2 defines requirements for temporary heating via temporary boilers.

4.02 DRAWING G-0.1

A. Replace Sheet G-0.1 in its entirety, reflecting the following modifications:
   1. General Notes, Electric Boiler Start-Up: Section has been added to define that electric boiler start-up activities are to occur after hours over a one week time period.
   2. General Notes, Bid Alternate #2 – Temporary Equipment: Section has been added to define Bid Alternate #2. Bid Alternate #2 includes provisions for temporary heating via temporary boilers with total heating output of 6,000 MBH for a four month duration between November 2024 and February 2025.
   3. General Notes, Commissioning: Section has been added to define the commissioning phases and commissioning responsibilities. Commissioning shall occur in two phases with the first phase including the cooling systems. The second phase shall include the heating systems once the Substation #3 and #4 Replacement project has been completed. A list of responsible parties has been defined for bidders to consider.
   4. Suggested Construction Sequencing, Note #2: First two paragraphs have been revised. In

the first paragraph, the months in which the boiler plant construction shall occur was revised to the hot months of May – October. In the second paragraph, revisions were made to require the contractor to provide temporary heating between November – February with temporary boilers with a heating capacity (output) of 6,000 MBH (Bid Alt #2), and; the statement suggesting to use the existing boiler as temp equipment was removed.

4.03 DRAWING M-1.1.1

A. Replace M-1.1.1 in its entirety, reflecting the following modifications:
   1. 2/M-1.1.1 – Chiller and Boiler Floor Plan - New: Temporary fence enclosure for temporary boiler(s), with 4’-0” wide access gates, has been specified as Bid Alternate #2 between grid lines 2 and 4.

4.04 DRAWING MI-6.2

A. Replace MI-6.2 in its entirety, reflecting the following modifications:
   1. DDC Points List, Boiler Plant Area, Gas Fired Boilers: DDC points for RWF55 controller(s) has been revised.
   2. DDC Points List, Boiler Plant Area, Electric Boilers: DDC points for RWF55 controller(s) has been revised.

4.05 DRAWING MI-6.3

A. Replace MI-6.3 in its entirety, reflecting the following modifications:
   1. DDC Points List, Totals: DDC point totals have changed due to the modifications described above on MI-6.2.

4.06 DRAWING P-5.1

A. Replace P-5.1 in its entirety, reflecting the following modifications:
   1. Detail 5/P-5.1: Strainer moved from downstream to upstream of the RPBFP.

SECTION 23 64 16

MAGNETIC BEARING CENTRIFUGAL WATER-COOLED CHILLER

PART 1: GENERAL

1.01 SECTION INCLUDES

A. Centrifugal compressor water chillers as indicated on the schedules and shown on the drawings.

B. Water connections (chilled water, condenser water and auxiliary water connections)

C. Motor starters and variable frequency drives

D. Electrical Connections

E. Controls and control accessories

F. Charge of refrigerant and oil (if applicable)

G. Refrigerant purge system (if applicable)

1.02 REFERENCES

A. AHRI 550/590 – Standard for Water Chilling Packages Using the Vapor Compression Cycle

B. AHRI 575 – Method of Measuring Machinery Sound within an Equipment Space

C. AHRI 580 – Non-Condensable Gas Purge Equipment for Low Pressure Centrifugal Chillers

D. AHRI 740 – Refrigerant Recovery / Recycling Equipment

E. ASHRAE 15 – Safety Standard for Refrigeration Systems

F. ASHRAE 34 – Designation and Safety Classification of Refrigerants

G. ASHRAE 90.1 – Energy Standard for Buildings except Low-Rise Residential Buildings

H. ASME Boiler and Pressure Vessel Code: Section VIII, Division 1

I. NFPA 70 / NEC – National Electrical Code

J. OSHA – Occupational Safety and Health Act

K. UL 465 – Construction of Centrifugal Chillers

L. UL 508 – Industrial Control Equipment (Short Circuit Current Rating)

M. UL 1995 – Standard for Safety for Heating and Cooling Equipment

N. IBC 2009 - International Building Code, 2009 Edition.

O. AC-156, Acceptance Criteria for Seismic Certification by Shake-Table

1.03 QUALITY ASSURANCE

A. Manufacturers: Manufacturer shall have a minimum of 30 years of experience in designing, manufacturing, and servicing centrifugal chillers, and a minimum of 15 years of experience designing and manufacturing with lubrication free or magnetic bearing chillers.

B. Comply with codes and standards in Article 1.02.

1.04 RATINGS AND CERTIFICATIONS

A. Chiller rating and testing: AHRI 550/590 or AHRI 551/591 – Provide conformance certification statement on ratings

B. Modular chiller packages must include AHRI certified ratings for the entire chiller package, not the individual module. Ratings shall include all electrical losses associated with VFD and integral harmonic filter.

C. Chiller energy efficiency requirements: ASHRAE 90.1 – Affix compliance label to chiller

D. Safety: UL 465 and UL 1995 – Provide UL / CUL label

E. Motor manufacturing and performance: NEMA MG1

F. Pressure vessel construction and testing: ASME Boiler and Pressure Vessel Code: Section VIII, Division 1 – Provide ASME 'U' Stamp

G. Electrical and control wiring: NEC codes & ETL requirements – Affix certification labels to control panel and starter

H. Refrigeration system design, construction, installation and operation: ASHRAE 15

1.05 SUBMITTAL DOCUMENTATION REQUIRED

A. Chiller performance ratings conforming to and reported in accordance with AHRI-550/590 [capacity (tons), energy efficiency (kW/ton), water pressure drop (ft of water), Integrated Part Load Value (IPLV) efficiency or Non-Standard Part Load Value (NPLV)].

B. Include additional power or water sources for auxiliaries (water for oil coolers, etc. if applicable) and field installed harmonic filters (if applicable) in all rating calculations.

C. NPLV calculated to AHRI Standard 550/590 equation.

D. Statement of Compliance with ASHRAE 90.1-2016.

E. Part Load Performance: Efficiencies at 10% load increments at the following entering condenser water temperatures (ECWTs): 85 °F, 80, 75, 70, 65, 60, 55, 50, 45, 40 (29.4 °C, 26.7, 23.9, 21.1, 18.3, 15.6, 12.8, 10.0, 7.2, 4.4) or lowest minimum possible with design condenser water flow at each load. Demonstrate that chiller will provide 100% design capacity at the minimum possible ECWT. Clearly note any points where continuous, stable operation may not be achievable. Hold condenser water flow constant for all points.

F. Manufacturer's required maintenance schedule.

G. Manufacturer's recommended driveline teardown inspection intervals and estimated labor costs

H. List of components not designed for the life of the chiller including expected replacement intervals and replacement part including labor costs (VSD capacitors, oil filters, bearings).

I. Acoustics:
   1. Sound pressure levels are required from measurements performed in accordance with AHRI-575. Include estimates for each octave band and A-Weighted values at each of the four standard AHRI points.
   2. Manufacturer sound levels shall not exceed an A-weighted sound pressure of 84 dBA at all load points when measured in accordance with AHRI-575-08. Active sound control devices and attenuation should be supplied if required.

J. Unit Drawing: Indicate overall unit dimensions, key component locations and dimensions, and field connection details for piping and electrical wiring.

K. Floor layout drawing: indicate centerlines; indicate locations and dimensions of chiller points of contact with the floor.

L. Other Diagrams: thermal insulation requirements diagram and vibration isolator diagrams.

M. Weights: shipping weight, operating weight, weight of each major component, weight load at each vibration isolator.

N. Capacities and Charges: refrigerant and oil (if applicable).

O. Wiring Diagram: including main power connections, control wiring connections (contacts and terminations), internal wiring schematic including transformers and other devices.

P. Electrical data: job full load amperage, minimum circuit ampacity, max fuse size / breaker size.

Q. Electrical requirements for power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
   1. Only single point chiller wiring is acceptable.

R. Control Panel Details: system operating data points, status messages, safety shutdowns, cycling shutdowns, trending capability, programmable set points, interface capability for data transfer.

S. Material Safety Data Sheet (MSDS) for any refrigerants used that is NOT classified as 'A1' for flammability and toxicity by ASHRAE 34.

T. Manufacturer's warranty certificate.

U. Performance rating noting chiller compliance with the United States Green Building Council's LEED Enhanced Refrigerant Management Credit (EAc4).

1.06 SHIPMENT

A. Protect, pack and secure loose-shipped items and attach to chiller. Include detailed packing list of loose-shipped items, including illustrations and instructions for application.

B. Cap and seal water nozzle openings to prevent moisture, foreign materials and other objects from entering heat exchangers.

C. Provide reinforced shrink-wrap around each component of the chiller. The membrane shall cover the entire top, sides and ends to fully protect the component during shipping and storage. Cover equipment, regardless of size or shape.

D. Ship units that are not shrink wrapped in an enclosed truck or shipping container. Tarping is not acceptable.

E. Ship chiller in one major assembly.

F. Ship refrigerant in the condenser barrel of the chiller.

G. If refrigerant is shipped separately. Mechanical contractor shall rig refrigerant into equipment room and place adjacent to the chiller. Manufacturer's technician shall charge unit at startup. Mechanical contractor shall remove and return empty refrigerant vessels.

1.07 DELIVERY, STORAGE AND HANDLING (ALSO SEE SPEC ITEM 2.12 AND 2.14, BELOW)

A. Follow manufacturer's recommendations for storage, handling and unloading.

B. Do not store equipment in wet or damp areas even when sealed and secured.

C. Unit to be shipped with Form 7 shipment.

1.08 WARRANTY

A. Provide manufacturer's warranty for 18 months from the date of shipment from the factory or 12 months from commissioning; whichever comes first. Warranty shall cover parts, refrigerant and labor required to remedy defects in materials or workmanship for the entire chiller. Perform warranty work with manufacturer's factory-trained and factory-employed service technician.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Basis of Design: YORK YZ, Johnson Controls, Inc.

B. The design scheduled and shown on the drawing are based upon products manufactured by Johnson Controls. Alternate equipment from the other acceptable manufacturers must meet the scheduled performance and comply with these specifications. If equipment manufactured by another manufacturer is utilized, then the Mechanical Contractor shall be responsible for coordinating with the General Contractor and all affected Subcontractors to insure proper provisions for installation of the furnished unit. This coordination shall include, but is not limited to, the following:
   1. Structural supports for units
   2. Piping size and connection/header location
   3. Electrical power requirements and wire, conduit and overcurrent protection sizes

4. The Mechanical Contractor shall be responsible for all costs incurred by the General Contractor, Subcontractors, and Consultants to modify the building provisions (ductwork, piping, and wiring) to accept the furnished units
5. Any costs to relocate other items to work to accomodate the substituted equipment.
6. Any resubmittals required to DSA including any and all structural calculations and back-up documentation for any changes from contract documents

C. Approved Equal (Prior written approval by engineer of record is required)

2.02 GENERAL DESCRIPTION

A. Packaged centrifugal chiller including the following: evaporator, motor and compressor, capacity control device, condenser with integral sub cooler, variable refrigerant metering device, motor starter, control panel with user interface, and a refrigerant purge system.

B. Provide chiller utilizing a refrigerant that has an Ozone Depletion Potential (ODP) of ZERO, and a Global Warming Potential (GWP) of 1 with an assurance from the manufacturer that the refrigerant has no production phase-out date and no phase out date for equipment that uses that refrigerant. Additionally, the refrigerant must be available from local refrigerant suppliers other than the chiller manufacturer.

C. Provide chiller to meet or exceed the scheduled performance within the limits of the scheduled parameters.

D. Chillers shall be able to start up with tower water temperatures as low as 40°F (4.4°C) entering condenser water or 30°F (16.7°C) below the design leaving chilled water temperature or they shall include field installed tower bypass lines to increase head pressure to an acceptable temperature. Contractor shall include all necessary piping and BAS modifications to ensure cold tower water start up.

1. Chiller shall be capable of continuous operation with 40°F (4.4°C) entering condenser water temperature at design condenser water flows. Chillers not capable operating with 40°F (4.4°C) entering condenser water temperature at design condenser water flows shall include field installation of water-to-water heat exchangers sized to provide sufficient cooling capacity for the chilled water system. Contractor is responsible for sizing, purchasing, and installing the heat exchanger including all piping and controls to ensure stable system operation when transitioning from chiller operation to water-to-water heat exchangers. Additional pump HP sizing shall also be calculated and included in the installation (if applicable). Water-to-water heat exchanger submittals shall include additional pumping and tower power consumption costs in addition to the required maintenance schedule and yearly costs to clean and maintain the heat exchanger (if applicable).

E. Performance Requirements: Must be capable of running at any of the conditions, below for minimum of 24 hours.

Part Load Performance Requirements										
CEFT [°F]	Percent Load									
	100	90	80	70	60	50	40	30	20	10
78.00	0.4244	0.4015	0.3858	0.3804	0.3865	0.4059	0.4332	0.5258	0.7414	1.155
75.00	0.4002	0.3727	0.3631	0.3544	0.3502	0.3679	0.3959	0.4684	0.6496	0.9337
70.00	0.3622	0.3416	0.3286	0.3138	0.3053	0.3080	0.3315	0.3838	0.5292	0.7915
65.00	0.3435	0.3159	0.2963	0.2742	0.2569	0.2481	0.2584	0.2918	0.3705	0.6542
60.00	0.3280	0.2963	0.2643	0.2377	0.2116	0.2085	0.2151	0.2249	0.2490	0.4671
55.00	0.3142	0.2823	0.2448	0.2100	0.1902	0.1766	0.1609	0.1816	0.2188	0.2923
50.00	0.3009	0.2681	0.2268	0.1861	0.1759	0.1473	0.1487	0.1823	0.2230	0.2963
45.00	0.3011	0.2677	0.2260	0.1913	0.1830	0.1517	0.1600	0.1998	0.2526	0.3547
44.00	0.2984	0.2648	0.2232	0.1898	0.1840	0.1580	0.1563	0.1964	0.2495	0.3504
43.00	0.2956	0.2618	0.2204	0.1905	0.1857	0.1649	0.1525	0.1931	0.2464	0.3460
42.00	0.2928	0.2599	0.2284	0.1935	0.1873	0.1727	0.1485	0.1897	0.2432	0.3418
41.00	0.2925	0.2688	0.2366	0.2011	0.1887	0.1796	0.1442	0.1862	0.2400	0.3375
40.00	0.2993	0.2774	0.2448	0.2091	0.1900	0.1817	0.1407	0.1827	0.2367	0.3331
* Values are in kW/Ton.										

F. Provide neoprene isolators.

G. Provide refrigerant isolation valves: two butterfly valves, one on the compressor discharge line and one on the liquid line.

2.03 HEAT EXCHANGERS

A. General requirements: evaporator and condenser
   1. Heat exchanger type:
      a. Evaporator: Shell and tube, hybrid falling film design or flooded
      b. Condenser: Shell and tube, flooded design
   2. Construct in accordance with the current ANSI/ASHRAE-15 Safety Code for Mechanical Refrigeration and ASME Pressure Vessels Code and shall bare the ASME stamped nameplate.
   3. Shells: Carbon steel with fusion welded seams
   4. Tubes: Internally rifled, externally enhanced, individually cleanable and individually replaceable from either chiller end, and roller expanded into tube sheets.
   5. Tube supports: Carbon steel, 3/8” (9.5mm) thick minimum, no more than 4 feet (1.22 m) apart, self-supporting and welded to the shell.
   6. End sheets: Carbon steel, 1” (25.4 mm) thick minimum.
   7. Water boxes: Marine and compact type, steel, bolted to end sheet, with hinged cover plates on any end that allows full opening access to tubesheets and tubes; taps for vent and drain.
   8. Pressure Relief: automatically reseating relief valves. Rupture discs are not acceptable.

B. Evaporator
   1. Waterside working pressure: 150 psig (1034 kPa).
   2. Water boxes: Marine (side nozzle locations) with grooved connections; compact bolted to end sheet (blind side). Provide hinged cover plates lthat allows full opening access to tubesheets and tubes.
   3. Tubes: Copper, removable from either end, minimum tube wall thickness of 0.035” (0.889 mm) at the plain lands contacting the intermediate tube supports and end sheets.
   4. Suction baffle: Installed along the entire length of the evaporator.
   5. Sight glass: Located such that the proper refrigerant charge is near the center of the glass when the machine is off.

C. Condenser
   1. Waterside working pressure: 150 psig (1034 kPa).

2. Water boxes: Marine (side nozzle locations) with grooved connections; compact bolted to end sheet (blind side). Provide hinged cover plates that allows full opening access to tubesheets and tubes.
3. Tubes: Copper, removable from either end, minimum tube wall thickness of 0.035” (0.889 mm) at the plain lands contacting the intermediate tube supports and end sheets.

2.04 REFRIGERANT FLOW CONTROL

A. Variable orifice

B. Refrigerant level sensing: Monitor refrigerant level in the condenser; report refrigerant level back to unit control panel and control chiller accordingly.

C. Refrigerant level control: Adjust valve position via control panel to optimize refrigerant level.

2.05 COMPRESSOR

A. Single stage or multi-stage

B. Capacity control achieved with variable speed and mechanical flow regulation to provide fully modulating control from maximum to minimum load. The chiller shall be able to adjust capacity from 100% to 15% of design without the use of hot gas bypass (HGBP). Plastic is not an acceptable material for internal compressor components.

C. Fully accessible housing with vertical circular joints.

D. Direct driven

E. Magnetic bearings.
1. Levitated shaft position shall be actively controlled and monitored by an X-, Y-, and Z-axis digital position sensor.
2. The compressor shall be capable of coming to a controlled, safe stop in the event of a power failure by utilizing back up power storage to the Magnetic Bearing Control System.

F. Mechanical linkage system that continuously monitors compressor-discharge gas characteristics and optimizes diffuser spacing to minimize impeller gas-flow disruptions.

G. The driveline (compressor and motor) and chiller starter shall be individual unit assemblies allowing for independent inspection, service, and repair/replacement. If an integrated driveline and starter package is utilized which is not fully field repairable, the supplier must provide one spare package with the unit.

2.06 MOTOR

A. Hermetic permanent magnet or high speed induction motor supported by active magnetic bearings.

B. Electrical connection: Steel terminal box with gasketed front access cover; overload and overcurrent transformers.

2.07 REFRIGERANT PURGE SYSTEM (NEGATIVE PRESSURE MACHINES) (IF APPLICABLE)

A. Refrigerant purge system is required if negative pressure machines are proposed.

B. Operates automatically at all load and head pressure conditions, independently of the chiller.

C. Purge unit is designed to meet ASHRAE Standard 147 where at the most one unit mass of refrigerant is purged per one unit mass of air removed by the unit.

D. Purge unit is factory assembled, unit mounted, piped and wired and is capable of operating while the chiller is off.

E. Purge exhaust cycles are monitored, and if excessive, provide warning of a potential system leak through Chiller Control Panel.

2.08 SOURCE QUALITY CONTROL: TESTS AND INSPECTIONS

A. Heat Exchangers (evaporator and condenser):

1. Design and test in full conformance to the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.
2. Hydrostatically test evaporator and condenser refrigerant side at 1.3 times design working pressure AFTER tubing using LIQUID REFRIGERANT.
3. Alternately to item ‘2’ above, test at 1.1 times design working pressure AFTER tubing, using an approved air/gas mixture, per ASME Code.

B. Compressor Components:
1. Leak tested at design working pressure using air under water.
2. Hydrostatic strength test at 1.5 times design working pressure.
3. To ensure UL label qualification, manufacturer shall perform a hydrostatic strength test at 3 times design working pressure every year on the compressor castings.
4. Statically and dynamically balance each impeller.
5. Overspeed test each impeller at 120% of its maximum design RPM.

C. Motor
1. Balance rotor in accordance with ISO 1940 G2.5 (performed by motor manufacturer).
2. High-potential test stator for dielectric strength for 60 seconds per UL1995 and 984 and the following formula: 2 * RATED VOLTAGE + 1000 (performed by chiller manufacturer).

D. Chiller air run test:
1. Measure current and voltage across each phase.
2. Operate control panel, test functionality and log instrument readings.
3. Operate oil pump motor and search lubrication system for leaks (if applicable).
4. Check compressor oil pressure (if applicable).
5. Full spectrum vibration analysis factory performed with baseline report provided with chiller delivery for chillers not equipment with magnetic bearings.
6. After the test, remove and replace oil filter (if applicable).

E. Chiller leak integrity testing: Pressurize entire system to design working pressure. Leak test using soap and water. Repair any leaks and repeat test until leak tight.

F. Vacuum hold testing: Evacuate system to 500 microns and hold for one hour. Ensure that pressure does not rise more than 150 microns during the hour. Repair and repeat until passes.

2.09 CONTROL PANEL

A. Type: Microprocessor based, stand alone

B. Scope: Chiller operation, monitoring of chiller sensors, actuators, relays and switches, and display of all operating parameters.

C. Capability: Stable chiller operation at 40°F (4.4°C) leaving chilled water temperature without warnings or shutdowns; no freezing or slushing of chilled water.

D. Enclosure: Lockable, NEMA 1

E. Information Display: 10.4” (264 mm) (minimum) color liquid crystal display (LCD) mounted on control panel enclosure door. All warning and safety faults shall include a text description. Panels with numerical codes requiring reference manuals for fault codes are not acceptable.

F. User interface: Operating parameters displayed in a user-friendly, color and graphical format.

G. Keypad: Universal type with soft-keys

H. Temperature rating: 32 to 104°F (0 to 40°C)

I. System status information: Displayed on screen at all times, including the following as a minimum:
1. System status
2. System details
3. Control source (remote or local)

4. User access level
5. Date and time
6. Startup sequence timer
7. Shutdown sequence timer

J. Status messages: In color according to importance, indicate the following as a minimum:
1. Ready to start
2. Cycling shutdown – chiller will automatically restart
3. Safety shutdown – chiller requires manual restart
4. Soft shutdown – chiller requires manual restart
5. System run (with countdown timers)
6. Systems coast down (with countdown timers)
7. Start inhibit and inhibit mode (anti-recycle, vane motor switch open (if applicable), excess motor current)
8. VGD closing before shutdown (if applicable)

K. System operating information, including the following as a minimum:
1. Return and leaving chilled water and condenser water
2. Evaporator and condenser refrigerant saturation temperatures
3. Sub-cooling refrigerant temperature
4. Evaporator and condenser pressure
5. Evaporator tube and condenser tube small temperature difference
6. Compressor discharge temperature
7. Percent of motor full load current
8. Input power
9. Kilowatt hours
10. Operating hours
11. Refrigerant level position (condenser)
12. Motor winding temperature (each phase)
13. Average motor winding temperature
14. VSD – Output frequency
15. VSD – Output voltage (each phase)
16. VSD – Current (each phase)
17. VSD – Input current limit setpoint
18. VSD – Total supply KVA
19. VSD – Total power factor
20. VSD - Voltage total harmonic distortion (each phase)
21. VSD – Current total demand distortion (each phase)
22. VSD – DC bus voltage
23. VSD – DC bus current
24. VSD – Input and output Peak and RMS voltages and currents (each phase)
25. VSD – Internal ambient temperature
26. UPS Battery voltage
27. VGD Position
28. Discharge Pressure
29. Motor Housing and Winding Temperatures
30. MBC – Positions
31. MBC – Currents
32. MBC – Temperatures
33. MBC – Motor Speed

L. Programmable setpoints including the following, as a minimum:
1. Chilled liquid temperature (setpoint and range)

2. Chilled liquid temperature cycling offset (shutdown and restart)
3. Motor current limit (%)
4. Pull-down demand (limit and time)

M. Schedule function: Programmable six week schedule for starting and stopping the chiller, pumps and cooling tower.

N. Regional functionality: System language and units selection

O. Warning messages including the following, as a minimum:
1. Real time clock failure
2. Condenser or evaporator transducer error
3. Setpoint override
4. Condenser high pressure limit
5. Evaporator low pressure limit
6. Excess Surge Detection
7. Motor – High Housing, Rotor, and Winding Temperatures
8. Motor – High Current Limit
9. VSD – DC Bus Active
10. Liquid Level Setpoint Not Achieved
11. Loss of Subcooler Liquid Seal
12. Condenser – Freeze Threat From Low Pressure
13. MBC – Speed Signal Fault
14. MBC – Low Amplifier Resistance
15. MBC – High Amplifier Resistance
16. MBC – Low Amplifier Current
17. MBC – High Amplifier Current
18. MBC – Position Sensor Error
19. UPS – Not Charging
20. UPS – Line Low Battery Voltage
21. UPS – Battery Not Connected
22. UPS – Check Battery Connection
23. Purge – High Coil Temperature
24. Purge – High Coil Temperature Inhibit
25. Purge – High Regen Tank Temperature
26. Purge – High Level
27. Purge – Excess Purge
28. Purge – Equalization Low Suction Temperature
29. Purge – Possible Air in system
30. Purge – Operation Inhibited

P. Safety Shutdowns: Trigger a safety shutdown for any of the following, as a minimum:
1. Evaporator – low pressure
2. Condenser – high pressure contacts open
3. Expansion I/O – Serial Communications
4. Thrust Bearing – Limit Switch Open
5. Auxiliary safety – contacts closed
6. Compressor discharge – high or low refrigerant temperature
7. Roller element bearing excessive vibration/wear (if applicable)
8. Control panel – power failure
9. Motor or starter – current imbalance
10. Motor – high housing, winding, and rotor temperatures
11. Motor – Low winding Temperature
12. Watchdog – software reboot

13. Sensor – failure or out of range
14. Transducer – failure or out of range
15. Surge Protection – Excess Surge
16. MBC – internal fault
17. MBC – Power Supply Fault
18. MBC – High Heatsink Temperature
19. MBC – DC Bus Fuse
20. MBC – high bearing temperature or current
21. MBC – System startup failure
22. MBC – speed signal fault
23. MBC – overspeed fault
24. MBC – communication
25. MBC – rotor elongation
26. MBC – oscillator fault
27. MBC – rotor contraction
28. MBC – unauthorized rotation
29. MBC – high and low voltage
30. MBC – Ground Fault
31. MBC – High amplifier Temperature & Voltage
32. MBC – Radial Positions
33. MBC – Fault Contacts open
34. MBC – Initialization Failure
35. MBC – Serial Communications
36. VSD – shutdown, requesting fault data
37. VSD – stop contacts open
38. VSD – 105% motor current overload
39. VSD – input current overload
40. VSD – high phase input and motor baseplate temperatures (each phase)
41. VSD – precharge lockout
42. VSD – ground fault
43. VSD – motor current total harmonic distortion (THD) fault
44. VSD – inverter or rectifier program fault
45. VSD – phase motor and input DCCT (each phase)
46. VSD – high total demand distortion
47. VSD – high phase input and motor current (each phase)
48. VSD – line voltage phase rotation
49. VGD Actuator – Limit Switch Open
50. VGD Actuator – Stroke Not Calibrated
51. VGD Actuator – Feedback not Calibrated
52. VGD Actuator - Positioning Fault
53. VGD Actuator – Serial Communications
54. UPS – Inverter Low Battery Voltage
55. Safety Stop

Q. Safety Shutdowns: For each safety shutdown, indicate the following, as a minimum:
    1. System status and details
    2. Day and time of shutdown
    3. Cause of shutdown with text description
    4. Type of restart required

R. Cycling Shutdowns: For each cycling shutdown, indicate the following, as a minimum:
    1. Multiunit cycling – contacts open

2. System cycling – contacts open
3. Control panel – power failure
4. Leaving chilled liquid – low temperature
5. Leaving chilled liquid – flow switch open
6. Condenser – flow switch open
7. Control panel – schedule
8. VGD Actuator – serial communications
9. Evaporator – low pressure
10. Condenser – freeze threat – flow switch open
11. Control Panel – loss of control voltage
12. MBC - position
13. MBC – low frequency displacement
14. MBC – vibration
15. MBC – speed signal fault
16. MBC – startup failure
17. MBC – serial communications fault
18. VSD shutdown – requesting fault data
19. VSD – fault contacts open
20. VSD – initialization failed
21. VSD – gate driver (indicate phase)
22. VSD – single phase input power
23. VSD – high or low DC bus voltage
24. VSD – pre charge: low DC bus voltage
25. VSD – pre charge: DC bus voltage imbalance
26. VSD – high internal ambient temperature
27. VSD – logic board power supply
28. VSD – low phase input and motor baseplate temperatures (each phase)
29. VSD – logic board processor
30. VSD – run signal
31. VSD – high phase input and motor current (each phase)
32. VSD – DC bus pre-regulation
33. VSD – input DCCT offset (each phase)

S. Security Access: Through ID and password recognition defined by a minimum of three different levels of user capability:
   1. View: prevent unauthorized changing of setpoints.
   2. Operator: allow local or remote control of chiller.
   3. Service: In the event that advanced diagnostics are necessary for qualified service personnel.

T. Chiller information screen including on-screen display of the following, as a minimum:
   1. Model number
   2. Chiller serial number
   3. Control panel serial number
   4. Manufacturer contract number
   5. Design voltage
   6. Refrigerant type
   7. Starter type
   8. Original factory chiller rating information, including water temperatures, pressure drops and capacity

U. Data tracking and trend display including on-screen graphical display of the following, as a minimum:

1. Parameters selected from a list of a minimum of 140 possibilities
2. Data collected once per second up to once per hour for each parameter
3. Data trend lines displayed for a minimum of 5 parameters at once

V. History: Store last ten shutdowns with text description and display all system parameters at the time of shutdown.

W. Memory: Non-volatile type containing operating program and setpoints, capable of retention for 10 years without memory loss, despite AC or backup battery power loss.

X. Terminal strip has be clearly numbered to accept field interlock wiring.

Y. Remote communications: Via electrical contacts, control panel capability to indicate the following as a minimum:
1. Ready to start contacts
2. Safety shutdown contacts
3. Cycling shutdown contacts
4. Running contacts

Z. Remote communications: Via 4-20 mA or 0-10V analog signals, control panel capability to adjust the following as a minimum:
1. Leaving chilled liquid setpoint
2. Current limit setpoint
3. Chiller start and stop

AA. Data logging and printing: Via RS-232 or similar, control panel capability for exporting at user-programmable intervals:
1. All system operating data
2. Shutdown and cycling messages
3. Operating details of last 10 cycling or safety shutdowns
4. 5D Card – Panel Data

2.10 COMPRESSOR MOTOR STARTER: VARIABLE SPEED DRIVE

A. General: Variable Speed Drive (VSD) compressor motor starter to start motor and control motor speed by controlling the frequency and voltage of the electrical power supplied to the motor.

B. Drive type: Pulse width modulated (PWM) utilizing insulated gate bipolar transistors (IGBTs)

C. Control Logic: independently control motor speed and variable geometry diffuser (VGD) position for optimum efficiency and operational stability. Base motor speed and VGD position on a minimum of 4 inputs: leaving chilled water temperature, return chilled water temperature, evaporator refrigerant pressure, condenser refrigerant pressure; Verify motor speed and VGD position and also use as inputs to the control logic.

D. Power Factor: At all loads and speeds, provide a minimum of a **0.95** power factor. **(Addendum #2)**

E. Enclosure: NEMA-1; hinged access door with door interlock; lock and keys; pad lockable.

F. Packaging: Factory mounted on chiller, piped to cooling circuit; wired to control panel, compressor motor, oil pump and purge; entire package (including active harmonic filter) shall be UL listed

G. Cooling: cool drive and harmonic attenuation components and internal ambient air via fluid-cooled, closed loop; all starter components accessible for service and replacement without opening the chiller's main refrigerant circuit. Air-cooled VSD's requiring repeated air-filter replacement are not acceptable.

H. Factory run test: Perform an electrical and mechanical run test of VSD starter prior to shipment to verify proper wiring and phasing. If harmonic filter is not integral to VSD, the factory run test

must be run with the remote, shipped loose harmonic filter installed to verify operation and compatibility.

I. Factory settings: Set starting design current and current overload settings prior to shipment

J. Inrush amperage: limited to the design full load amperage of the chiller.

K. Protective devices: provide the following, as a minimum:
   1. Electronic current-sensing overloads (1 per phase) – with indicating message on the control panel and reset button; shut down chiller upon detection of operating current exceeding 105% full load amperage.
   2. High instantaneous current overload – with indicating message on the control panel and reset button; shut down chiller upon detection of starting current exceeding 115% of design inrush starting current for 1 second
   3. Phase rotation insensitivity
   4. Single phase failure protection circuit with indicating light – shut unit down if power loss occurs in any phase at startup.
   5. High temperature safety protection system on IGBTs with indicating light and reset button; via thermistors embedded on IGBT heat sinks – shut unit down if IGBT temperature exceeds acceptable limits.
   6. Power fault protection for momentary power interruptions – interrupt power to the compressor motor within 4 line cycles upon detection of power interruptions longer than ¾ of a line cycle.
   7. High and low line voltage protection

L. Features: factory mount and wire the following as a minimum:
   1. Control transformer: 115volt, sized to power control panel and all unit controls
   2. Electrical lugs: tin plated, sized to accept the copper power lines required by the chiller
   3. Single point power: from electrical lugs at starter, power all powered devices on the chiller including control panel, control devices, line reactor circuitry, active harmonic filter, oil pump and refrigerant purge
   4. Circuit-breaker disconnect: door interlocked; ground fault protection; minimum 65,000A short circuit withstand capacity per UL 508.

M. Control panel readouts: display on the control panel and provide to BAS via communication port the following as a minimum:
   1. Output frequency
   2. Output voltage
   3. Three phase current
   4. Input power (kW)
   5. Energy consumption (kWh)
   6. Elapsed running time
   7. Three phase voltage total harmonic distortion (THD).
   8. Three phase current total demand distortion (TDD)
   9. Total unit power factor

2.11 FINISHES

A. Dry chiller components for shipment, including inside of water boxes and tubes.

B. Blast and clean chiller surfaces thoroughly. Apply prime coat for painting.

C. Paint all exposed surfaces with alkyd-modified, vinyl enamel machinery paint, including all factory-applied insulation for consistent color matching. If not painted in the factory, paint over insulation in the field with manufacturer’s standard paint and color.

2.12 OPTIONS

A. Form 7 Shipment:

1. Prior to shipping, the unit is completely assembled at the factory. Interconnecting piping is assembled and the complete unit is wired and leak-tested.
2. The unit is dismantled and shipped as follows:
    a. The compressor (motor and stage)
    b. The evaporator
    c. The condenser
    d. The VSD
    e. Refrigerant charges shipped separately
    f. Miscellaneous shipped loose items

A. Insulation package: Unit to be shipped with Form 7 shipment. Provide insulation and field insulate evaporator, end sheets, suction line, liquid line and other cold surfaces with 3/4" (19 mm) closed-cell neoprene foam insulation. Adhere with vapor-proof cement. (Water boxes and nozzles must be field insulated with removable covers over bolts).

B. Flow Sensors, thermal type: Unit to be shipped with Form 7 shipment. Ship loose and field install in chilled and condenser water nozzles and factory wired to chiller control panel.

C. Control System Interface: DDC type and shall provide the following, as a minimum:
1. Export system operating data.
2. Accept setpoint adjustments for chilled water setpoint and demand limit.
3. RS-232 communication: BACNet MS/TP is the default communication protocol unless otherwise noted.
4. Field commissioning assistance by manufacturer's technician.

2.13 SMART EQUIPMENT SUPPORT PACKAGE SPECIFICATIONS

A. Remote Chiller Monitoring System
1. The manufacturer shall furnish, install and maintain a remote chiller monitoring system for a period of one year (12 months) after chiller startup on each water-cooled chiller installed on this project.
2. The system shall function through a secure network without requiring an interface with the control system currently installed at the location or with the project.
3. The manufacturer shall provide 24x7 monitoring of critical control panel-generated diagnostic codes by monitoring available operation, safety, cycling, and warning codes by the manufacturer's UL-certified central station alarm monitoring and operations center. The center's operators shall have the capability to notify the manufacturer's local branch of these faults during normal working hours, and to dispatch on-call technicians during non-working hours, and to capture these events in the manufacturer's electronic service management system.
4. The system shall continuously record operating data at 1, 5, or 15 minute intervals and store that operating data for a minimum of 12 months, and allow the manufacturer's local, regional and national personnel to access operating data through a mobile device.
5. The system shall use advanced algorithm to continuously compare chiller performance against key design specifications and detect potential performance issues.
6. A daily assessment of critical system functions shall be performed using these algorithms. The system shall allow the manufacturer's local, regional and national personnel to run reports on the operating parameters collected by the system using these algorithms.
7. A customer of the system shall be accessible by the customer's designated staff through a secure web-based portal on a computer, tablet or mobile phone. No additional software ("apps") shall be required to access the system.
8. The manufacturer shall perform four (4) remote operational inspections including the following activities:
    a. Use the remote monitoring system to review control panel for proper operation and recorded fault histories, verify oil heater operation (as applicable), and record and log all operating parameters.

b. Generate and review appropriate chiller reports remotely through the system.
c. Review the remote monitoring system dashboard reports and operating data with appropriate customer representative

9. If the manufacturer is not able to meet the above system requirements, manufacturer must provide twelve (12) monthly onsite operating inspections and quarterly vibration analysis reports. During monthly inspections, check for overall condition of unit, unusual noise and vibration, proper condenser and chilled water flow, system pressures and temperatures, capacity control and linkage, and refrigerant levels. Record and archive all diagnostic codes generated since the last monthly inspection. Additionally, record evaporator and condenser tube approaches (small temperature differences). Provide annual summary report to appropriate customer representative including all diagnostic codes as well as trend graph of monthly tube approach data. Alert appropriate customer representative immediately to unexpected increases or if any tube approach is more than 1.5 degrees above baseline.

2.14 RIGGING AND INSTALLATION

A. Chiller manufacturer shall factory disassemble the chiller at the factory to fit thru the existing chiller plant doorway. Manufacturer shall ship components from the factory with each item sealed, capped and include a N2 blanket charge with N2 pressure gages to prove there is a positive N2 charge at all times, this is to prevent moisture intrusion during shipping and storage.

B. Mechanical contractor shall receive, offload, store, then move and rig the chiller components into the chiller room, to locations determined and approved by the chiller manufacturer.

C. Chiller manufacturer shall move and rig the chiller components within the chiller room to re-assemble, pressure and leakage test per 2.08 E and F after reassembly, then charge with refrigerant and pressure test the chiller.

D. Manufacturer to reconnect and test all control wiring and sensors on reassembled chiller.

PART 3 EXECUTION

3.01 INSTALLATION

A. Rig in re-assemble and test the chiller in place per Article 2.14.

B. General Requirements: Install per industry standards, applicable building codes and manufacturer’s written instructions.

C. Insulation: Field install insulation on evap, suction line, compressor, and water boxes with 3/4" closed cell foam, painted to match factory chiller color.

D. Painting: Field paint chiller/insulation wherever finish was affected during shipping, rigging, assembly and piping. Use factory provided touch up paint to match chiller color and finish. Restore chiller paint and finish to factory-like condition.

E. Refrigerant: Rig refrigerant into equipment room and place next to what will be the final location of the chiller. Manufacturer will be responsible for charging the machine.

F. Temporary use: Use of any chiller for temporary heating, cooling or ventilation is strictly prohibited unless a complete inspection and startup has been performed by manufacturer’s factory-trained and factory-employed service personnel.

G. Level the chiller to within ¼” (6.35 mm) in both directions (end-to-end and side-to-side).

H. Access clearance: For regular service and tube pull clearances, install chiller with the following minimum recommended clearances:
1. End of unit: distance equal to the length of the heat exchanger shell
2. Front of unit (control panel side): 3 feet (0.91 m) minimum
3. Rear of unit: 2 feet (0.61 m) minimum
4. Top of unit: 2 feet (0.61 m) minimum

3.02 FIELD QUALITY CONTROL

A. Storage: Store per chiller manufacturer's written recommendations. Store chiller indoors in a warm, clean, dry place where the chiller will be protected from weather, construction traffic, dirt, dust, water and moisture. If chiller will sit idle for more than 3 months, purchase long-term storage service from the manufacturer to ensure warranty coverage.

B. Rigging: Follow manufacturer's written instructions for rigging, off-loading, and use of rigging tools such as spreader bars, forklifts, come-a-longs, and shackles.

C. Manufacturer shall be present and shall direct rigging the knocked down components into position with installing contractor.

3.03 STARTUP SERVICE

A. Provide two weeks' notice to chiller manufacturer's service department for startup.

B. Notify chiller manufacturer's service department once chiller has been fully piped and wired for primary power and controls, including flow switches. Confirm that sufficient load will be available for starting the chiller on the desired date.

C. Manufacturer to provide factory-trained and factory-employed service technician for a minimum of two days to startup, test, check and adjust each chiller.

D. Technician shall perform the following steps as a minimum:
   1. Check chiller installation.
   2. Charge the machine with refrigerant.
   3. Energize the machine disconnect switch.
   4. Confirm purge system is active and chiller is holding required vacuum.
   5. Verify correct voltage, phases and cycles.
   6. Energize motor briefly and verify correct direction of rotation.
   7. Start the chiller.
   8. Test machine for performance within design rating parameters.
   9. Make adjustments as required.

E. Submit a startup report summarizing findings and activities performed.

3.04 OWNER INSTRUCTION

A. Provide training of the owner's personnel. Cover startup, shutdown, general maintenance and troubleshooting. Review operating and maintenance manual and familiarize personnel with control panel, including its special features and capabilities.

B. Provide a minimum of 4 hours of training for owner's personnel by manufacturer's factory-trained and factory-employed service technician.

C. Training shall include control panel, motor starter / VSD, lubrication system (if applicable), operation, maintenance requirements and AHU.

D. Training shall include startup and shutdown procedures as well as regular operation and maintenance requirements.

3.05 CLEANING

A. Clean exterior prior to transfer to owner.

3.06 MAINTENANCE CONTRACT

A. Chiller manufacturer shall provide a 3-year maintenance contract to include 3 quarterly inspections and an annual service all performed by JCI Certified Chiller Techs, including CW tube brushing using Solano CC provided water. Cost of the Maintenance Contract shall be included in the price of the chiller.

3.07 DOCUMENTATION

A. Provide Installation, Operation & Maintenance Manual(s) in each chiller's control panel door. Provide six additional copies for owner's project system manual.

B. Provide six copies of Spare Parts Manual for owner's project system manual.

END OF SECTION

SOLANO COMMUNITY COLLEGE DISTRICT

SOLANO COMMUNITY COLLEGE

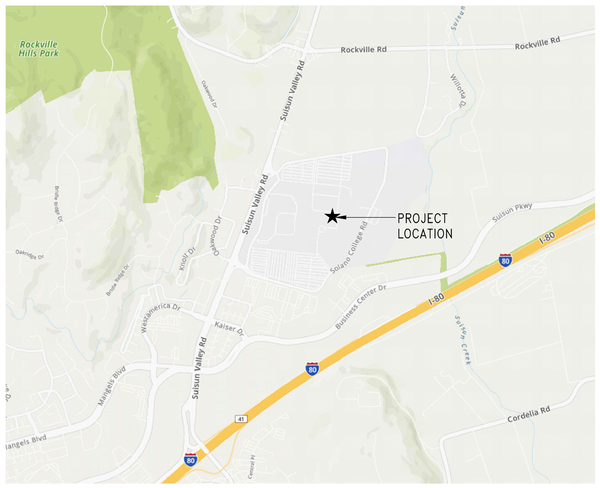
4000 SUISUN VALLEY RD
FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

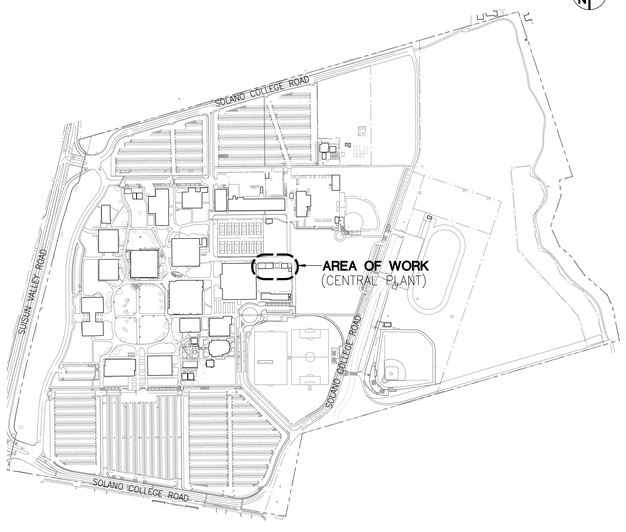
VICINITY MAP

SCALE: N.T.S.



SITE PLAN

SCALE: N.T.S.



SUMMARY OF WORK

ARCHITECTURAL:

1. PATCH AND REPAIR ROOFING AT EXISTING BOILER FLUE DUCT PENETRATIONS.
2. PROVIDE ROOF PATCHING AND TRANSITIONS AT NEW ROOF MOUNTED EXHAUST FANS.
3. PROVIDE ROOF FLASHING AND WEATHER PROOFING AT PIPE AND DUCT PENETRATIONS (INCLUDING BOILER FLUES) THROUGH ROOF.

A
4. PROVIDE FIRESTOP SEALANT SYSTEM FOR PIPE PENETRATIONS THROUGH FIRE RATED WALL ASSEMBLIES.
5. PROVIDE ROOF ACCESS LADDER, HATCH, AND GUARDRAIL SAFETY SYSTEM IN COMPLIANCE WITH OSHA STANDARD.

MECHANICAL:

1. EXISTING 750 TON CH-1 AND CH-2 TO BE REPLACED WITH MODERN, HIGH EFFICIENCY CHILLERS EACH HAVING 650 TONS OF COOLING CAPACITY. EXTEND EXISTING CHILLER HOUSEKEEPING PAD FOR NEW CH-1 AND CH-2. PROVIDE REFRIGERANT PIPING AND REFRIGERANT RELIEF VALVES FOR THE NEW CH-1 AND CH-2. REFRIGERANT PURGE PIPING TO BE ROUTED AND TERMINATED OUTDOORS. EXISTING CHWP-1 AND CHWP-2 SHALL BE REPLACED IN KIND, EXISTING HOUSEKEEPING PADS TO REMAIN. CH-3 AND CHWP-3 TO REMAIN.

A
2. EXISTING 16,000 MBH OUTPUT B-1 AND B-2 TO BE REPLACED WITH A HYBRID GAS BOILER AND ELECTRIC BOILER PLANT. THE "HYBRID" PLANT WILL CONSIST OF THREE (3) 840KW ELECTRIC BOILERS AND THREE (3) 2,505 MBH OUTPUT GAS-FIRED BOILERS. GAS-FIRED BOILERS SHALL NOT EXCEED 30 PPM NOX AND 400 PPM CO, CORRECTED TO 3% O2 (BAY AREA AQMD, REG 9, RULE 7 FOR BOILERS >=2,000,000 AND < 5,000,000 BTU/HR INPUT). FOR EACH GAS FIRED BOILER, PROVIDE INDIVIDUAL GAS METERS, OR HOUR METERS (BAAQMD 9-7, SECTION 500), AND PROVIDE INITIAL COMBUSTION ANALYZER TEST (BAAQMD 9-7, SECTION 403). EXISTING B-1 HOUSEKEEPING PAD SHALL REMAIN. EXISTING B-2 HOUSEKEEPING PAD SHALL BE DEMOLISHED AND EXTENDED AS NECESSARY TO SQUARE OFF NEW EQUIPMENT PAD DESIGN. ALL EXISTING HHW PUMPS TO BE REPLACED, EXISTING HOUSEKEEPING PADS TO BE DEMOLISHED AS NECESSARY TO ACCOMMODATE NEW EQUIPMENT PAD DESIGN.
3. EXISTING COOLING TOWER CELLS CT-1 AND CT-2 TO BE REPLACED IN KIND, WITH INDUCED DRAFT, COUNTERFLOW, COOLING TOWERS. IN ADDITION, PROVIDE A CENTRIFUGAL SEPARATOR AND COLD WATER BASIN SWEEPER SYSTEM TO EXTEND TOWER LIFE. NEW TOWERS TO BE INSTALLED ON EXISTING CONCRETE PIERS AND STEEL I-BEAMS. ALL EXISTING CWP'S TO BE REPLACED WITH THREE CWP'S SIZED FOR THE NEW CH-1 AND CH-2, AND THE EXISTING CH-3 DESIGN REQUIREMENTS. REWORK EXISTING CWP HOUSEKEEPING PADS AS REQUIRED FOR NEW PUMPS.
4. ON THE ROOFTOP, THE EXISTING BOILER FLUES WILL BE DEMOLISHED AND NEW FLUE DUCT TO BE INSTALLED FOR THE NEW GAS-FIRED BOILERS. THE REFRIGERANT PURGE EXHAUST FAN ON THE ROOF, AND INLET DUCTWORK EXTENDED TO FLOOR LEVEL, TO BE REPLACED.
5. CONTROL AND MONITOR ALL PLANT OPERATIONS THROUGH THE EXISTING DELTA BUILDING MANAGEMENT SYSTEM (BMS) AND REPORT ALL DATA TO FRONT END. NEW MECHANICAL EQUIPMENT TO BE EQUIPPED WITH CONTROLS COMPATIBLE WITH THE DELTA BMS. ELECTRIC METERS TO BE INSTALLED AT EACH CHILLER ELECTRICAL FEED, EACH ELECTRIC BOILER FEED, THE COOLING TOWERS, AND THE CENTRAL PLANT AT LARGE. NEW TOTALIZING WATER METERS TO BE INSTALLED AT THE HHW, CHW, AND CW MAKE-UP WATER ASSEMBLIES. BTU METERS TO BE INSTALLED AT THE CHW, CW, AND HHW HEADERS TO MEASURE INSTANTANEOUS COOLING/HEATING LOAD AS WELL AS TOTALIZATION. ALL EQUIPMENT OPERATIONS TO FOLLOW THE SEQUENCES OF OPERATION PROVIDED. TREND POINTS AS DIRECTED FOR COMMISSIONING ASSISTANCE.
6. EXISTING REFRIGERANT MONITORING SYSTEM TO BE REPLACED WITH NEW, INCLUDING REFRIGERANT SENSORS FOR CHILLER, AND CALIBRATED FOR BOTH REFRIGERANTS USED TO MONITOR FOR LEAKS AND INTERFACE TO NOTIFICATION SYSTEMS AND PURGE FANS.

A
BID ALTERNATE #2:

1. PROVIDE TEMPORARY HEATING VIA TEMPORARY BOILERS WITH A TOTAL HEATING CAPACITY OF 6,000 MBH (OUTPUT) FOR A DURATION OF FOUR MONTHS FROM NOVEMBER 2024 THROUGH FEBRUARY 2025. TEMPORARY BOILERS TO BE LOCATED IN A TEMPORARY FENCED ENCLOSURE (BY CONTRACTOR) AS INDICATED ON PLANS.

PLUMBING:

1. RECONFIGURE MAKE-UP WATER ASSEMBLY PIPING FOR HHW AND CHW SYSTEMS TO SEPARATE THE MAKE-UP WATER SYSTEMS TO SERVE EACH SYSTEM INDEPENDENTLY.
2. DEMOLISH EXISTING GAS MANIFOLDS AT THE EXISTING BOILERS B-1 AND B-2 AND GAS PIPING IN THE BOILER PLANT AREA. INSTALL NEW GAS PIPING TO NEW GAS-FIRED BOILER GAS MANIFOLDS WITH DEDICATED GAS METER TO EACH BOILER .
3. DEMOLISH DRAIN PIPING TO/FROM EXISTING MECHANICAL EQUIPMENT TO BE DEMOLISHED. PROVIDE NEW DRAIN PIPING FROM NEW MECHANICAL EQUIPMENT AS APPROPRIATE TO EXISTING FLOOR DRAINS.
4. ABANDONED AIR COMPRESSOR, COMPRESSED AIR MANIFOLD, AND COMPRESSED AIR PIPING TO BE DEMOLISHED.
5. DEMOLISH EXISTING CONCRETE SLAB (DO NOT CUT REBAR) AS INDICATED IN PLANS TO EXPOSE SANITARY SEWER AND VENT PIPING TO EXISTING FLOOR SINK. EXISTING FLOOR SINK TO BE PLUGGED AND FILLED WITH CONCRETE. INTERCEPT EXISTING SANITARY SEWER AND VENT PIPING AND INSTALL NEW FLOOR SINK AND CLEANOUTS AS INDICATED ON PLANS.

ELECTRICAL:

1. REMOVE EXISTING ELECTRICAL EQUIPMENT, FEEDERS, AND WIRING WHERE IDENTIFIED.
2. PROVIDE AND INSTALL NEW LIGHTING & POWER SYSTEMS WHERE IDENTIFIED.
3. PROVIDE AND INSTALL NEW ELECTRICAL EQUIPMENT, FEEDERS, AND WIRING WHERE IDENTIFIED.

BID ATERNATE #1: (REFER TO E-1.2.2, ED-7.1, E-7.1)

1. REMOVE EXISTING POOL EQUIPMENT PANELBOARDS AND TRANSFORMER WHERE IDENTIFIED.
2. PROVIDE AND INSTALL NEW POOL EQUIPMENT PANELBOARDS AND TRANSFORMER WHERE IDENTIFIED.
3. INTERCEPT AND EXTEND EXISTING WIRING AND FEEDERS AS NECESSARY. PROVIDE AND INSTALL NEW WIRING AND FEEDERS WHERE IDENTIFIED.

STRUCTURAL:

1. PROVIDE STRUCTURAL ANCHORAGE AND SEISMIC RESTRAINT FOR ALL MECHANICAL AND ELECTRICAL EQUIPMENT, PIPE AND CONDUIT HANGERS/SUPPORTS.
2. DEMOLISH EXISTING B-2 HOUSEKEEPING PAD, EXISTING HHWP HOUSEKEEPING PADS, AND EXISTING CWP HOUSEKEEPING PADS TO EXTENT SHOWN IN PLANS. EXTEND EXISTING CH-1 AND CH-2 HOUSEKEEPING PAD.
3. EXTEND EXISTING CH-1 AND CH-2 COMMON HOUSEKEEPING PAD ON EACH SIDE. EXTEND EXISTING B-1 AND B-2 HOUSEKEEPING PADS. EXTEND CWP HOUSEKEEPING PAD. REFER TO MECHANICAL AND STRUCTURAL PLANS.

PROJECT COORDINATION AND CONSTRUCTION SEQUENCING:

1. THIS CENTRAL PLANT MODERNIZATION PROJECT WILL BE ONGOING DURING A CONCURRENT "SUBSTATION #3 AND #4 REPLACEMENT" PROJECT. FIELD VERIFICATION AND PROJECT COORDINATION IS NECESSARY FOR CONSTRUCTION ACTIVITIES, LAY DOWN AREAS, AND ELECTRIC UTILITY ACTIVITIES INVOLVING THE ELECTRICAL INFRASTRUCTURE SERVING THE CENTRAL PLANT FACILITIES.
2. CENTRAL PLANT MODERNIZATION PROJECT WILL UTILIZE THE EXISTING SUBSTATION #3 INSIDE THE CHILLER PLANT AND EXISTING CENTRAL PLANT ELECTRICAL EQUIPMENT WILL BE UPGRADED AS NECESSARY TO ACCOMMODATE THE NEW MECHANICAL EQUIPMENT. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS WITHIN THIS PACKAGE FOR ADDITIONAL INFORMATION ON ELECTRICAL WORK.

   EXISTING SUBSTATION #3 AND EXISTING ELECTRICAL INFRASTRUCTURE WILL NOT BE ABLE TO HANDLE THE LOAD OF THE ELECTRIC BOILERS. ELECTRIC BOILERS SHALL NOT BE ENERGIZED AS PART OF THE CENTRAL PLANT MODERNIZATION PROJECT.
3. "SUBSTATION #3 AND #4 REPLACEMENT" PROJECT WILL BE RESPONSIBLE FOR THE INSTALLATION OF THE NEW SUBSTATION #3, THE DEMOLITION OF THE EXISTING SUBSTATION #3 IN THE CHILLER PLANT, CONNECTING AND ENERGIZING THE ELECTRIC BOILERS, AND THE ELECTRICAL SWITCH OVER OF ALL EQUIPMENT FROM THE EXISTING SUBSTATION #3 AND THE NEW SUBSTATION #3 INSTALLED OUTDOORS. HOWEVER, THIS DOES NOT ALLEVIATE CONTRACTOR ON THIS PROJECT FROM PROVIDING A COMPLETE AND OPERABLE ELECTRICAL INSTALLATION FOR THE NEW CENTRAL PLANT EQUIPMENT, AS SHOWN HEREIN, EXCEPT THE ELECTRIC BOILERS DELINEATED ABOVE.

DSA ADMINISTRATIVE REQUIREMENT

1. A COPY OF PARTS 1 TO 5 AND 9, TITLE 24, C.C.R. SHALL BE KEPT ON THE JOB SITE AT ALL TIMES.
2. ALL CONSTRUCTION CHANGE DOCUMENTS AND ADDENDA TO BE SIGNED BY THE ARCHITECT AND THE OWNER AND APPROVED BY DSA. CONSTRUCTION CHANGE DOCUMENTS ARE NOT VALID UNTIL APPROVED BY DSA PER SECTION 4-338, PART 1, TITLE 24.
3. ALL TESTS TO CONFORM TO THE REQUIREMENTS OF SECTION 4-335, PART 1, TITLE 24, AND APPROVED T & I SHEET.
4. TESTS OF MATERIAL SAND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335 OF PART 1, TITLE 24, AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
5. DSA SHALL BE NOTIFIED AT THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24.
6. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH SECTION 4-333(B). THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH SECTION 4-342, PART 1, TITLE 24.
7. SUPERVISION OF CONSTRUCTION BY DSA SHAL BE IN ACCORDANCE WITH SECTION 4-334, PART 1, TITLE 24.
8. CONTRACTOR, INSPECTOR, ARCHITECT AND ENGINEERS SHALL SUBMIT VERIFIED REPORTS (FORM SSS-6) IN ACCORDANCE WITH SECTION 4-336 AND 4-343, PART 1, TITLE 24.
9. THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH SECTION 4-343, PART 1, TITLE 24.
10. ALL WORK SHALL CONFORM TO 2019 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
11. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR A CONSTRUCTION CHANGED DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
12. A "DSA CERTIFIED" CLASS 3 PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.
13. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
14. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(c), PART 1, TITLE 24, CCR).
15. THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEM, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION, AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.
16. LIGHTING CONTROLS ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).
17. MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.
18. A LISTING OF CERTIFIED ATT CAN BE FOUND AT HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDE-PROGRAM/ACCEPTANCE.
19. THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.
20. PROJECT INSPECTOR WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.
21. SUBSTITUTIONS AFFECTING DSA REGULATED ITEMS SHALL BE CONSIDERED AS A CONSTRUCTION CHANGE DOCUMENT OR ADDENDUM, AND SHALL BE APPROVED BY DSA PRIOR TO FABRICATION AND INSTALLATION PER DSA IR A-6 AND SECTION 338(c) PART 1, TITLE 24 CCR.
22. GRADING PLAN, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.

BUILDING DATA

BUILDING AREA: SINGLE STORY-NON SPRINKLERED

TOTAL AREA: 6,293 S.F.

BUILDING HEIGHT:
21'±

EXISTING CHILLER ROOM:

OCCUPANCY:	U
CONSTRUCTION TYPE:	V-B
SQ. FT.:	1,548

SEPARATION REQUIRED:
- TABLE 509 INCIDENTAL USES: 1-HR SEPARATION AT BOILER AND CHILLER ROOM

EXISTING COOLING TOWER YARD:

OCCUPANCY:	U
CONSTRUCTION TYPE:	V-B
SQ. FT.:	1,938

EXISTING POOL EQUIPMENT ROOM:

OCCUPANCY:	U
CONSTRUCTION TYPE:	V-B
SQ. FT.:	952

EXISTING BOILER ROOM:

OCCUPANCY:	U
CONSTRUCTION TYPE:	V-B
SQ. FT.:	1,507

EXISTING POOL STORAGE ROOM:

OCCUPANCY:	S-2
CONSTRUCTION TYPE:	V-B
SQ. FT.:	348

APPLICABLE CODES

UNLESS OTHERWISE INDICATED OR SPECIFIED, PERFORM THE WORK IN CONFORMANCE WITH THE LATEST EDITIONS OF ALL APPLICABLE REGULATORY REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24): 2022
2. CALIFORNIA BUILDING CODE (PART 2, TITLE 24): 2018 IBC WITH 2019 CA AMENDMENTS
3. CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24): 2017 NEC WITH 2019 CA AMENDMENTS
4. CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24): 2018 UMC WITH 2019 CA AMENDMENTS
5. CALIFORNIA PLUMBING CODE (PART 5, TITLE 24) 2018 UPC WITH 2019 CA AMENDMENTS
6. CALIFORNIA ENERGY CODE (PART 6, TITLE 24): 2019
7. CALIFORNIA FIRE CODE (PART 9, TITLE 24): 2018 IFC WITH 2019 CA AMENDMENTS
8. CALIFORNIA EXISTING BUILDING CODE (PART 10, TITLE 24): (2018 INTERNATIONAL EXISTING BUILDING CODE WITH 2019 CA AMENDMENTS)
9. CALIFORNIA GREEN BUILDING STANDARDS CODE OR CAL GREEN (PART 11, TITLE 24): 2019
10. CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24): 2019
11. CALIFORNIA CODE OF REGULATIONS PUBLIC SAFETY (TITLE 19), STATE FIRE MARSHAL: CURRENT EDITION
12. NFPA 72 NATIONAL FIRE ALARM CODE, WITH CA AMENDMENTS: 2016 EDITION (CA AMENDED)
13. NFPA 170 STANDARD FOR FIRE SAFETY AND EMERGENCY SYMBOLS: 2018 EDITION
14. SFM 12-10-2 SINGLE POINT LATCHING OR LOCKING DEVICES
15. SFM 12-10-3 EMERGENCY EXIT & PANIC HARDWARE
16. UL 38-99 AMENDMENTS MANUAL OPERATED SIGNAL BOXES, WITH REVISIONS, THRU FEB.2, 2005, WITH CA
17. UL 305-2012 PANIC HARDWARE WITH REVISIONS THRU AUG. 2014
18. UL 464 AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES, 2003 EDITION
19. UL 864-03 CONTROL UNITS AND ACCESSORIES FOR FIRE ALARM SYSTEMS, WITH REVISIONS THRU DEC, 2014 AND CA AMENDMENTS

AMERICANS WITH DISABILITIES ACT (A.D.A.) FEDERAL ACCESSIBILITY STANDARDS

ACI 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

AISC MANUAL OF STEEL CONSTRUCTION

ASCE/SEJ 7-16, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES WITH SUPPLEMENT NO. 1

NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION

UL 1971 – STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED 2002 (R2010)

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.

SEE CALIFORNIA BUILDING CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

STATEMENT OF GENERAL CONFORMANCE

THESE DRAWINGS AND/OR SPECIFICATIONS AND/OR CALCULATIONS FOR THE ITEMS LISTED BELOW HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. THESE DOCUMENTS HAVE BEEN EXAMINED BY ME FOR DESIGN INTENT AND HAVE BEEN FOUND TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE-24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME.

THE LIST DRAWING INDEX HAVE BEEN COORDINATED WITH MY PLANS AND SPECIFICATIONS AND ARE ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT FOR WHICH I AM THE INDIVIDUAL DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE (OR FOR WHICH I HAVE BEEN DELEGATED RESPONSIBILITY FOR THIS PORTION OF THE WORK)

Signature of the Architect/Engineer — Date: 02/01/2023

Print Name: EVAN EVERETT SARVER

License Number: M40066 — Expiration Date: 09/30/2024

DEFERRED APPROVAL

NONE

DRAWING INDEX (52 Sheets)

SALAS O'BRIEN
expect a difference
305 South 11th Street
San Jose, California 95112-2218
877.725.2755 | 877.925.1477 (f)
WWW.SALASOBRIEN.COM
National Strength.
Local Action.

REGISTERED PROFESSIONAL ENGINEER — EVAN EVERETT SARVER — No. M40066 EXP. 09-30-2024 — MECHANICAL — STATE OF CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT

SOLANO COMMUNITY COLLEGE

4000 SUISUN VALLEY RD
FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

ISSUE

MARK	DATE	DESCRIPTION
	06/17/22	100% SCHEMATIC DESIGN
	08/17/22	50% CD
	09/06/22	DSA PROGRESS SET
	10/19/22	DSA SUBMITTAL
	02/01/23	DSA BACKCHECK
A	03/27/23	ADDENDUM #2

SOBE PROJECT NO:	2200689
DATE:	03/27/23
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	EES

SHEET TITLE: COVER SHEET

SCALE: AS NOTED
THIS DRAWING IS 30" X 42" AT FULL SIZE

G-0.0
SHEET OF –

GENERAL NOTES

1. ALL WORK, MATERIALS, AND METHODS TO BE USED FOR SEISMIC RESTRAINTS SHALL BE AS DETAILED ON THE APPROVED DRAWINGS.
2. ALL WORK SHALL CONFORM WITH ALL APPLICABLE LOCAL, STATE, AND NATIONAL CODES.
3. PIPE HANGERS AND SUPPORTS SHALL BE SUPERSTRUT OR EQUAL INCLUDING CHANNEL, HANGERS, STRAPS, ISOLATORS, INSULATION, SHAW PIPE SHIELDS, INC., PORTABLE PIPE HANGERS, INC.
4. PATCH EXISTING AND NEW OPENINGS SO FINISH PROFILES, FIXTURES, ETC. MATCH ADJACENT UNDISTURBED WORK.
5. ALL DIMENSIONS ARE APPROXIMATE, THE DRAWINGS ARE DIAGRAMMATIC TO THE EXTENT THAT ALL FITTINGS, OFFSETS, ETC. ARE NOT SHOWN. THESE DRAWINGS ARE FOR THE GUIDANCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD FOR FABRICATION OF THE PIPING, PENETRATIONS, CONDUIT, WIRING, AND ALL COMPONENTS INTO A COMPLETE AND OPERABLE SYSTEM.
6. ALL WORK MUST BE SCHEDULED WITH THE PROJECT MANAGER TO MINIMIZE DISTURBANCE OF NORMAL ACTIVITIES. COORDINATE WORK WITH PROJECT MANAGER.
7. WHERE DISCREPANCIES OCCUR BETWEEN THE PLANS AND SPECIFICATIONS CONTRACTOR SHALL NOTIFY OWNER OF ANY DISCREPANCIES IN WRITING. ANY ADJUSTMENT OF THE CONTRACT DOCUMENTS WITHOUT A DETERMINATION BY THE OWNER SHALL BE AT THE CONTRACTOR'S OWN RISK AND EXPENSE. THE MOST STRINGENT REQUIREMENTS SHALL APPLY AS DETERMINED BY THE OWNER.
8. CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
9. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS AND SHALL HAVE HAD VISITED THE CONSTRUCTION SITE. HE SHALL BE FAMILIAR WITH THE EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
10. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE INSTALLATION OF WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED.
11. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING BUILDING CONDITIONS AND NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING OF ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENT AND EXISTING CONDITIONS.
12. THE CONTRACTOR SHALL, DURING THE COURSE OF CONSTRUCTION, PROTECT ADJACENT AREAS FROM DAMAGE, NOISE, CONSTRUCTION, AIRBORNE DUST AND FUMES AS A RESULT OF THE WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL SUB-CONTRACTORS AND SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES IN ACCORDANCE WITH THE GENERAL CONDITIONS OF THE CONTRACT.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE OWNER WITH A COMPLETE SET OF RECORD DRAWING, INCLUDING THE WORK OF ALL SUBCONTRACTORS.
15. ALL PRODUCTS AND MATERIALS USED ON THIS PROJECT SHALL BE FREE OF ASBESTOS.
16. NO PRODUCT WILL BE ACCEPTED ON THE JOB SITE WITHOUT PRIOR REVIEW BY THE OWNER. THE CONTRACTOR SHALL SUBMIT CATALOG SHEETS OF ALL FIXTURES, PIPING, VALVES AND ETC., FOR REVIEW.
17. ALL PRODUCT SUBSTITUTIONS SHALL HAVE PRIOR REVIEW BEFORE INSTALLATION. THE CONTRACTOR SHALL PAY ALL COSTS INCURRED FOR REVIEW, DESIGN AND INSTALLATION OF SUBSTITUTIONS. ACCEPTANCE OF SUBSTITUTIONS BY THE OWNER'S REPRESENTATIVE DOES NOT ALTER THE REVIEW REQUIREMENT.
18. PENETRATIONS OF DUCTS, PIPES, CONDUITS, ETC. IN WALLS AND FLOOR-CEILING ASSEMBLIES REQUIRING PROTECTED OPENINGS SHALL BE FIRE STOPPED, PER THE U.L. FIRE LISTINGS. FIRE STOP MATERIAL SHALL BE A TESTED ASSEMBLY. SEE PLANS FOR ADDITIONAL REQUIREMENTS. SUBMIT U.L. FIRE RATED ASSEMBLIES TO FIRE MARSHALL FOR APPROVAL.
19. THE INSTALLATION OF PIPING AND EQUIPMENT SHALL BE MADE IN SUCH A MANNER TO CLEAR BEAMS AND OBSTRUCTIONS. DO NOT CUT INTO OR REDUCE THE SIZE OF PLATES OR ANY LOAD CARRYING MEMBERS WITHOUT APPROVAL OF THE ARCHITECT AND ENGINEER OF RECORD. COORDINATE WITH WORK OF OTHERS TO PREVENT INTERFERENCE.
20. ALL LOCATIONS OF PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY TO THE EXTENT THAT ALL FITTINGS, OFFSETS, ETC. ARE NOT SHOWN. ADHERE TO LOCATIONS AS CLOSELY AS POSSIBLE. HOWEVER, RUNS OR SHAPE OF PIPING CAN VARY, AS REQUIRED TO MEET FOUNDATION, STRUCTURAL AND OTHER INTERFERENCES. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD FOR FABRICATION OF THE PIPING, PENETRATIONS, AND ALL COMPONENTS INTO A COMPLETE AND OPERABLE SYSTEM.
21. SUPPORT AND RESTRAIN PIPING PER CALIFORNIA MECHANICAL CODE AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ALL SUPPORTING RODS, STRUT AND OTHER HARDWARE SHALL BE HOT DIPPED GALVANIZED UNLESS OTHERWISE SPECIFIED.
22. ALL SOLDER AND PLUMBING FIXTURES SHALL CONFORM TO NON LEAD STANDARDS.
23. PROVIDE ACCESS PANELS WHERE SHUT OFF VALVES AND WATER HAMMER ARRESTERS ARE LOCATED IN WALLS OR ABOVE HARD CEILINGS.
24. ALL PIPING IN THIS CONTRACT SHALL BE LABELED ACCORDING TO ANSI A13.1, CHAPTER 13, CPC AND NFPA 99. FURNISH FLOW ARROWS INDICATING DIRECTION OF FLOW FOR LIQUID PHASE MATERIALS. PIPE LABELS SHALL BE VISIBLE FROM FLOOR LEVEL. ALL VALVES IN THIS CONTRACT OTHER THAN MEDICAL VACUUM, SHALL BE LABELED WITH BRASS TAGS. ALL MEDICAL VACUUM VALVES SHALL BE LABELED PER CHAPTER 13, CPC AND NFPA 99.
25. EXACT LOCATION OF EXISTING UTILITIES HAVE NOT BEEN INDEPENDENTLY VERIFIED. CONTRACTOR SHALL FIELD VERIFY ALL CONNECTION POINTS AND LOCATIONS. VERIFICATION OF ADEQUATE FALL FOR WASTE LINE SHALL BE DONE PRIOR TO BEGINNING WORK OF THIS CONTRACT.
26. ALL TEMPORARY AND REMODELING WORK SHALL BE CONSIDERED A PART OF THIS CONTRACT AND NO EXTRA CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR EQUIPMENT NECESSARY TO MEET THE REQUIREMENTS AND INTENT OF THE PROJECT.
27. EXAMINE MECHANICAL & STRUCTURAL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE SEQUENCE OF CONSTRUCTION THROUGHOUT THE PROJECT, INCLUDING EXISTING, TEMPORARY, REMODELED AND NEW AREAS.
28. CONTRACTOR TO LEGALLY DISPOSE OF OR RECYCLE PROJECT DEBRIS.
29. ALL DEVICES & EQUIPMENT ARE NEW, UNLESS OTHERWISE NOTED.
30. SALVAGED EQUIPMENT SHALL BE TURNED OVER TO OWNER. COORDINATE WITH OWNER FOR STORAGE LOCATION.
31. MAINTAIN FIRE RATING OF ALL ASSEMBLIES PENETRATED.
32. SEAL ALL EXTERIOR PENETRATIONS WATER-TIGHT.
33. UNLESS OTHERWISE NOTED, ARRANGE, PAY FOR, COORDINATE AND PROVIDE ALL PERMITS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
34. WORK SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 33 OF THE CBC & CFC, "FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION".

INTERRUPTIONS TO EXISTING SYSTEMS:

1. THE CONTRACT REQUIRES THAT ALL ELECTRICAL CONNECTIONS REQUIRING AN OUTAGE SHALL OCCUR ON A WEEKEND OR BETWEEN THE HOURS OF 10PM AND 7AM, MONDAY THROUGH FRIDAY. OUTAGES SHALL BE SCHEDULED AND APPROVED IN ADVANCE AND IN WRITING AT LEAST 10 DAYS PRIOR TO THE OUTAGE. WORK SHALL BE SCHEDULED SUCH THAT AT NO TIME WILL ANY EMERGENCY FEEDER, CIRCUIT OR FIRE ALARM ZONE BE OUT OF SERVICE. THIS MEANS THAT CONTRACTOR, SHALL INCLUDE ALL PROVISIONS FOR TEMPORARY FEEDERS IN ORDER TO ACCOMPLISH THIS REQUIREMENT.

INTENT:

"THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITION SUCH AS DETERIORATION OR NONCOMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CCD OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE DIVISION OF STATE ARCHITECT BEFORE PROCEEDING WITH THE WORK".

LAYING OUT THE WORK:

ACCURATELY LAYOUT INSTALLATION OF EQUIPMENT PRIOR TO BEGINNING WORK. LAYOUT WORK SHALL INCLUDE PROVISIONS FOR CONNECTIONS TO <E>SERVICES, NECESSARY TURN & CHANGES IN ELEVATION, BYPASSING OBSTRUCTIONS, AND ANY OTHER IMPEDIMENT ASSOCIATED WITH THE BELOW GRADE PIPING INSTALLATIONS.

A

ELECTRIC BOILER START-UP:

AFTER THE GAS BOILERS, HHWP'S AND HHW SYSTEM HAS BEEN START-UP PER SPECIFICATIONS, AND ONCE THE ELECTRIC BOILERS HAVE BEEN INSTALLED AND PIPED TO THE HHW SYSTEM, THE ELECTRIC BOILERS SHALL BE START-UP INDIVIDUALLY BY MANUFACTURER APPROVED SERVICE TECHNICIAN AFTER HOURS. AFTER HOURS WORK IS NECESSARY SO AS NOT TO OVERLOAD THE EXISTING SUBSTATION #3. ELECTRICAL CONTRACTOR TO CONDUCT LOAD VERIFICATION PRIOR TO CONDUCTING WORK. PROVIDE DISTRICT TWO WEEK NOTICE PRIOR TO CONDUCTING OVERNIGHT WORK. COORDINATE WITH ELECTRIC UTILITY AND SUBSTATION #3 AND #4 REPLACEMENT PROJECT.

BIDDERS TO ACCOUNT FOR ONE WEEK OF AFTER HOUR WORK FOR ELECTRIC BOILER START-UP ACTIVITIES, INCLUDING TIME FOR MANUFACTURER APPROVED SERVICE TECHNICIAN, MECHANICAL CONTRACTOR, AND CONTROLS CONTRACTOR.

BID ALTERNATE #2 - TEMPORARY EQUIPMENT:

TEMPORARY HEATING WILL BE NECESSARY PENDING THE COMPLETION DATE OF THE SUBSTATION #3 AND #4 REPLACEMENT PROJECT. COORDINATE WITH ELECTRIC UTILITY AND SUBSTATION #3 AND #4 REPLACEMENT PROJECT.

BIDDERS TO ACCOUNT FOR TEMPORARY BOILERS WITH A TOTAL HEATING CAPACITY OF 6,000 MBH (OUTPUT) FOR A DURATION OF FOUR MONTHS FROM NOVEMBER 2024 THROUGH FEBRUARY 2025. TEMPORARY BOILERS TO BE LOCATED IN A TEMPORARY FENCED ENCLOSURE (BY CONTRACTOR) AS INDICATED ON PLANS. COORDINATE WITH DISTRICT FOR PROPER SECURITY PROTOCOLS. SEE ALSO SPECIFICATION 01 51 00.

A

COMMISSIONING:

1. COMMISSIONING, INCLUDING FUNCTIONAL TESTS, O&M DOCUMENTATION REVIEW, AND TRAINING, IS TO OCCUR IN TWO SEPARATE PHASES; ONE PHASE FOR THE CHILLED WATER SYSTEM (I.E. CHILLERS, CHWP'S, ETC.) AND THE CONDENSER WATER SYSTEM (I.E., COOLING TOWERS, CWP'S, ETC.), AND A SECOND PHASE FOR THE BOILER PLANT AND HEATING HOT WATER SYSTEMS (I.E., GAS BOILERS, ELECTRIC BOILERS, HHWP'S, ETC.):
   A. FOR CHILLER PLANT AND COOLING TOWER YARD: COMMISSIONING TO TAKE PLACE AFTER EQUIPMENT STARTUP AND INITIAL CHECKOUT AND TO BE COMPLETED BEFORE SUBSTANTIAL COMPLETION. COMMISSIONING FUNCTIONAL TESTING SHALL OCCUR ONCE CONTROLS SCOPE OF WORK HAS BEEN COMPLETED AND WHEN LOAD IS AVAILABLE (I.E., WARM WEATHER, SUMMER 2024).
   B. FOR HYBRID GAS/ELECTRIC BOILER PLANT: COMMISSIONING TO TAKE PLACE AFTER EQUIPMENT STARTUP, INITIAL CHECKOUT, AND AFTER THE COMPLETION OF THE SUBSTATION #3 AND #4 REPLACEMENT PROJECT. COORDINATION WITH DISTRICT, ELECTRIC UTILITY PROVIDER, AND SUBSTATION #3 & #4 REPLACEMENT PROJECT IS NECESSARY PRIOR TO ENERGIZING ELECTRIC BOILERS. COMMISSIONING FUNCTIONAL TESTING SHALL OCCUR ONCE CONTROLS SCOPE OF WORK HAS BEEN COMPLETED AND WHEN LOAD IS AVAILABLE (I.E., COLD WEATHER, WINTER 2024/'25). ANTICIPATE THIS EFFORT TO TAKE PLACE NO LATER THAN FEBRUARY 2025.
2. THE COMMISSIONING PROCESS WILL REQUIRE THE ACTIVE PARTICIPATION OF PERSONS QUALIFIED TO REPRESENT THE DISTRICT, MECHANICAL ENGINEER, ELECTRICAL ENGINEER, GENERAL CONTRACTOR, EQUIPMENT MANUFACTURERS' REPRESENTATIVES, MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR, TAB CONTRACTOR, ELECTRICAL CONTRACTOR, AND OTHER SPECIFIC SUBCONTRACTORS, AS DEEMED APPROPRIATE. THE CXA WILL WITNESS THE FINAL FUNCTIONAL PERFORMANCE COMMISSIONING PROCESS. PARTICIPANTS SHALL INCLUDE IN THEIR CONTRACTS ALL COSTS NECESSARY TO PARTICIPATE IN AND COMPLETE THE COMMISSIONING PROCESS.
3. REFER TO DIVISION 1 SECTION 01 91 00 FOR ADDITIONAL INFORMATION FOR THE REQUIRED COMMISSIONING SERVICES FOR THIS PROJECT.

EQUIPMENT ANCHORAGE NOTES

M/E/P COMPONENT ANCHORAGE NOTE:

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON-THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTION 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☒ MD ☐ PP ☐ E ☒ OPTION 1: DETAIL ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

PHOTOGRAPHIC CONSTRUCTION RECORDS

THE CONTRACTOR SHALL PROVIDE PRECONSTRUCTION DIGITAL PHOTOGRAPHS AND VIDEO RECORDINGS PRIOR TO COMMENCEMENT OF WORK ON THE SITE. BEFORE CONSTRUCTION MAY START, CONTRACTOR SHALL DOCUMENT ANY EXISTING CONDITIONS THAT ARE NOT COVERED BY THE CONTRACT DOCUMENTS (DAMAGED CONCRETE, WALLS, LANDSCAPE, ETC.). FAILURE TO DOCUMENT EXISTING DAMAGE WILL RESULT IN CONTRACTOR REPAIRS TO SURFACE TO MATCH ADJACENT AFTER CONSTRUCTION ACTIVITIES. ADDITIONAL PRECONSTRUCTION PHOTOGRAPHS/VIDEOS SHALL BE TAKEN AT LOCATIONS TO BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.

CONTRACTOR SHALL MAKE A VIDEO RECORDING OF ALL PROPOSED ROUTINGS FOR INFRASTRUCTURE WORK, NOTING CONDITIONS OF EXISTING SURFACES AND ADJACENT IMPROVEMENTS. ONE COPY OF COMPLETE VIDEO SHALL BE TRANSMITTED TO THE OWNER'S REPRESENTATIVE.

CONSTRUCTION PHOTOGRAPHS

THE CONTRACTOR SHALL PROVIDE CONSTRUCTION PHOTOGRAPHS SHOWING THE PROGRESS OF THE WORK AND AS MAY BE DIRECTED BY THE OWNER'S REPRESENTATIVE. PHOTOGRAPHS/VIDEOS SHALL BE FORMATTED, IDENTIFIED, AND DELIVERED AS DESCRIBED ABOVE FOR DIGITAL PHOTOS AND VIDEOS. STARTING ONE MONTH AFTER THE DATE OF THE PRECONSTRUCTION PHOTOGRAPHS AND CONTINUING AS LONG AS THE WORK IS IN PROGRESS, APPROXIMATELY 40 MONTHLY PHOTOGRAPHS SHALL BE TAKEN, CATALOGED AND CROSS REFERENCED TO DRAWINGS/PLANS.

ANY WORK TO BE CONCEALED (BURIED, BEHIND WALLS, ABOVE CEILING, BELOW SLAB, ETC.) SHALL BE PHOTO DOCUMENTED AFTER ANY TESTING AND INSPECTION AND PRIOR TO CONCEALING TO CLEARLY INDICATE THE WORK. DOCUMENT ON PLANS THE LOCATION AND ORIENTATION FOR EACH PHOTO DOCUMENTING CONCEALED WORK.

FOR FINAL COMPLETION, DOCUMENT ALL PUNCH LIST ITEM COMPLETION BY PHOTOGRAPH OR VIDEO.

DELIVER CONSTRUCTION PHOTOGRAPHS AND VIDEOS WITHIN 10 DAYS OF CREATION. ALL PHOTOS AND VIDEOS SHALL BE OF SUFFICIENT QUALITY TO CLEARLY DEPICT WORK.

SUGGESTED CONSTRUCTION SEQUENCING

1. CONTRACTOR SHALL SUBMIT EQUIPMENT SUBMITTALS TO THE ENGINEER OF RECORD FOR REVIEW UPON RECEIPT OF THE NOTICE TO PROCEED. ALL PIECES OF EQUIPMENT HAVE EXTENDED LEAD TIMES. THE SUBMITTAL PROCESS SHALL START AS SOON AS PRACTICALLY POSSIBLE TO ENSURE PROJECT SCHEDULE IS NOT DELAYED.

A

2. BOILER PLANT CONSTRUCTION SHALL OCCUR BETWEEN THE HOT MONTHS OF MAY – OCTOBER. GAS AND ELECTRIC BOILERS HAVE LEAD TIMES THAT RANGE BETWEEN 12 – 18 WEEKS (SUBJECT TO CHANGE BY MANUFACTURER). BOILER PLANT CONSTRUCTION SHALL COMMENCE BETWEEN THE MONTHS DESCRIBED ABOVE AND WHEN THE GAS BOILERS HAVE A SCHEDULED DELIVERY DATE.

   CONTRACTOR TO PROVIDE TEMPORARY MEANS OF HEATING THAT ALLOWS THE CENTRAL PLANT FACILITY TO SATISFY THE CAMPUS HEATING LOAD THROUGH THE COLD MONTHS OF NOVEMBER – FEBRUARY. CONTRACTOR TO PROVIDE TEMPORARY GAS BOILER(S) WITH A TOTAL HEATING CAPACITY OF NOT LESS THAN 6,000 MBH OUTPUT (BID ALT #2).

   NEW GAS BOILERS SHALL BE INSTALLED AS A PRIORITY. NEW ELECTRIC BOILERS AND REMAINING NEW BOILER PLANT DESIGN SHALL BE INSTALLED AFTER THE COLD MONTHS OF NOVEMBER – APRIL. ELECTRIC BOILERS SHALL BE INSTALLED/ANCHORED PER PLANS AND SHALL NOT BE ENERGIZED. CONTRACTOR TO DETERMINE MEANS FOR TEMPORARY POWER FOR FACTORY START-UP OF ELECTRIC BOILERS.

3. CHILLER PLANT AND COOLING TOWER YARD CONSTRUCTION SHALL OCCUR BETWEEN THE COLD MONTHS OF NOVEMBER – APRIL. CHILLERS AND COOLING TOWERS HAVE LEAD TIMES THAT RANGE BETWEEN 18 – 29 WEEKS (SUBJECT TO CHANGE BY MANUFACTURER). CHILLER PLANT AND COOLING TOWER CONSTRUCTION SHALL COMMENCE BETWEEN THE MONTHS DESCRIBED ABOVE AND WHEN THE CHILLER AND COOLING TOWER DELIVERY DATES HAVE BEEN SCHEDULED.

   CONTRACTOR SHALL PRIORITIZE CONSTRUCTION TO ALLOW THE EXISTING CHILLER (CH-3) TO BE ONLINE FOR SMALL CAMPUS COOLING LOADS AS SOON AS PRACTICALLY POSSIBLE. THIS INCLUDES PRIORITIZING CONSTRUCTION FOR THE COOLING TOWERS TO ALLOW CHILLERS TO BE ENABLED.

   CHILLER PLANT AND COOLING TOWER YARD CONSTRUCTION SHALL BE COMPLETED AND EQUIPMENT SHALL BE FACTORY STARTED BEFORE THE MONTH OF MAY TO ENSURE CAMPUS COOLING LOADS CAN BE SATISFIED DURING THE SUMMER.

SALAS O'BRIEN
expect a difference
305 South 11th Street
San Jose, California 95112-2218
877.725.2755 | 877.925.1477 (f)
WWW.SALASOBRIEN.COM
National Strength. Local Action.

REGISTERED PROFESSIONAL ENGINEER
KEN EVERETT SWENSEN
No. M40086
EXP. 09-30-2024
MECHANICAL
STATE OF CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT

SOLANO COMMUNITY COLLEGE

4000 SUISUN VALLEY RD
FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

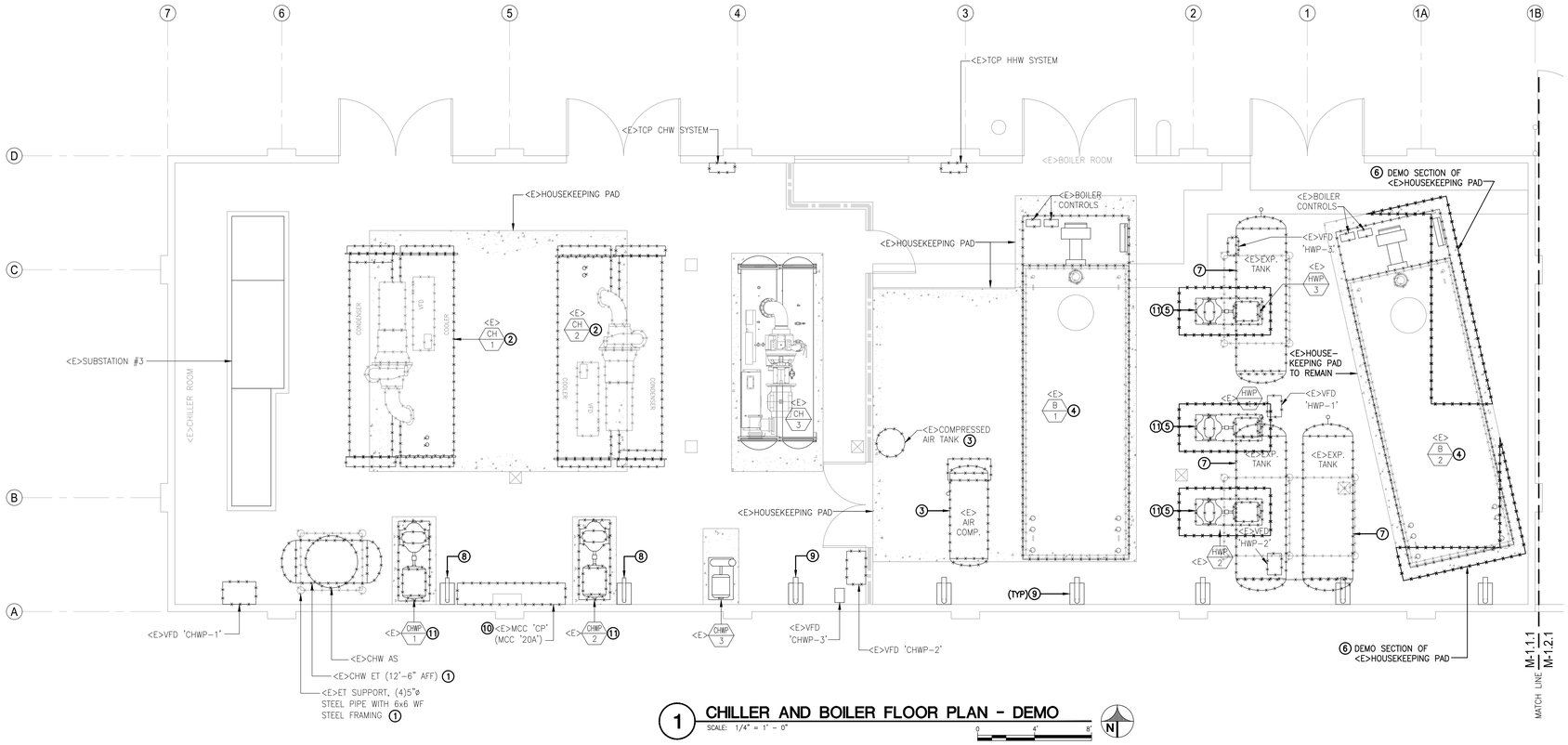
ISSUE		
MARK	DATE	DESCRIPTION
	06/17/22	100% SCHEMATIC DESIGN
	08/17/22	50% CD
	09/06/22	DSA PROGRESS SET
	10/19/22	DSA SUBMITTAL
	02/01/23	DSA BACKCHECK
A	03/27/23	ADDENDUM #2

SOBE PROJECT NO:	2200689
DATE:	03/27/23
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	EES

SHEET TITLE
GENERAL NOTES

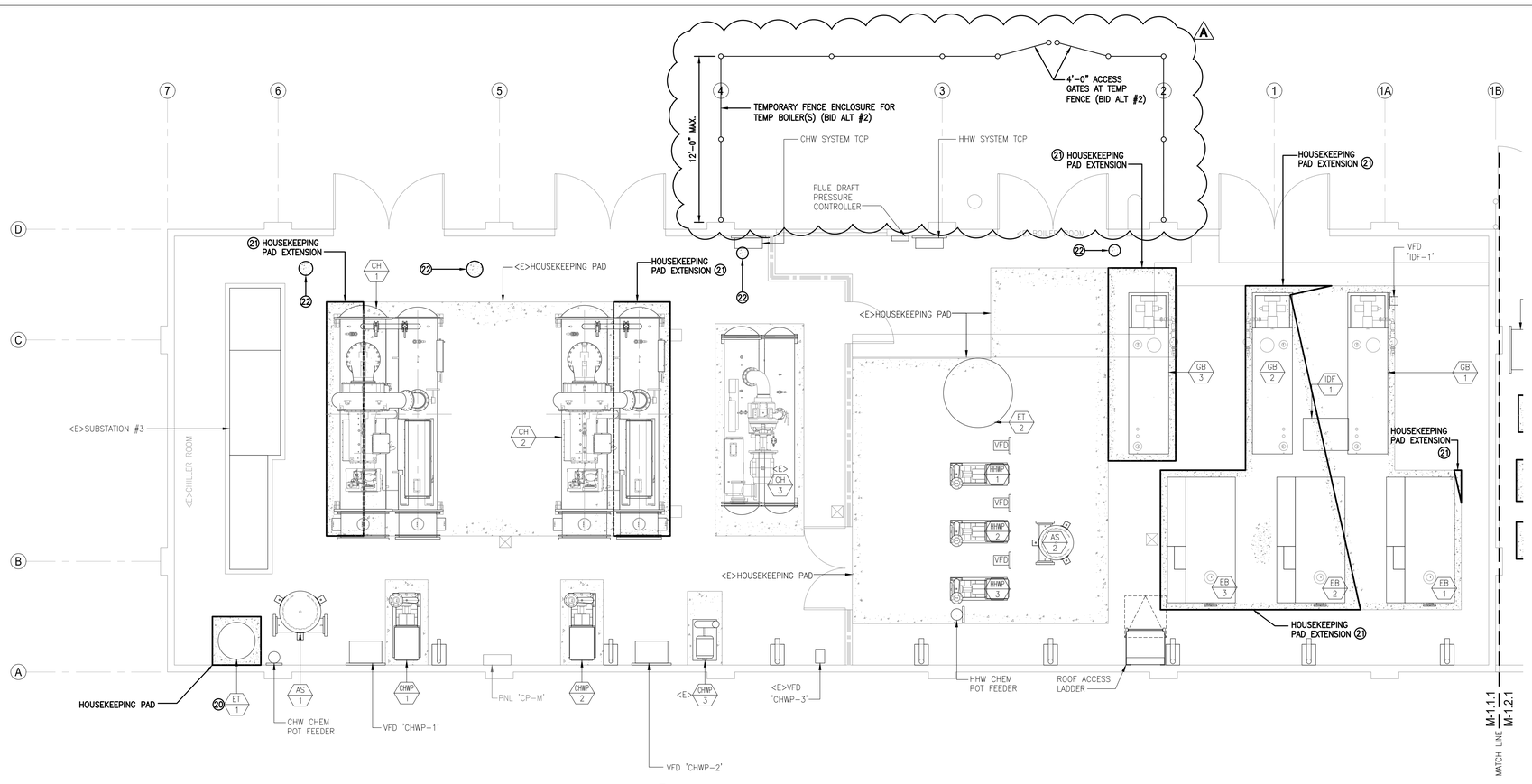
SCALE: AS NOTED
THIS DRAWING IS 30" X 42" AT FULL SIZE

G-0.1
SHEET OF –



1 CHILLER AND BOILER FLOOR PLAN - DEMO

SCALE: 1/4" = 1' - 0"



2 CHILLER AND BOILER FLOOR PLAN - NEW

SCALE: 1/4" = 1' - 0"

REFERENCE SHEET NOTES

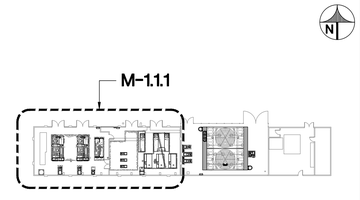
DEMO:

1. DEMOLISH EXISTING CHW EXPANSION TANK, AND STEEL STRUCTURAL SUPPORT FRAMING TO SLAB. CUT STEEL SUPPORT PIPES (IF NECESSARY). FILL ANCHOR HOLES AND OPENINGS WITH GROUT AND FINISH TO MATCH EXISTING CONCRETE SLAB.
2. SEE M-1.1.2 FOR DEMOLITION OF <E> CHILLER EQUIPMENT, PIPING AND ACCESSORIES. CUT CH-1 AND CH-2 ANCHOR POSTS AND GRIND SMOOTH TO FINISHED CONCRETE PAD OR SLAB.
3. SEE M-1.1.2 FOR DEMOLITION OF <E> AIR COMPRESSOR EQUIPMENT, PIPING AND ACCESSORIES. CUT ABANDONED AIR COMPRESSOR ANCHOR POSTS AND GRIND SMOOTH TO FINISHED CONCRETE PAD. SEE PLUMBING DRAWING 1/P-1.1.
4. SEE M-1.1.2 FOR DEMOLITION OF <E> BOILER EQUIPMENT, PIPING AND ACCESSORIES. CUT BOILER ANCHOR POSTS AND GRIN SMOOTH TO FINISHED CONCRETE PAD.
5. DEMOLISH EXISTING HOUSEKEEPING PAD TO THE EXTENT NECESSARY FOR NEW EQUIPMENT LAYOUT AND PAD DESIGN. SEE STRUCTURAL DRAWINGS.
6. DEMOLISH EXISTING HOUSEKEEPING PAD TO THE EXTENT NECESSARY TO SQUARE OFF THE NEW EQUIPMENT PAD DESIGN.
7. DEMOLISH EXISTING HHW EXPANSION TANK, AND STEEL STRUCTURAL SUPPORT FRAMING TO SLAB. CUT STEEL SUPPORT PIPES (IF NECESSARY). FILL ANCHOR HOLES AND OPENINGS WITH GROUT AND FINISH TO MATCH EXISTING CONCRETE SLAB.
8. EXISTING PIPE SUPPORT TO REMAIN. 3"ø PIPE WELDED TO 18"x12" BASE PLATE WITH 3"ø x18" LONG CANTILEVER ARMS.
9. EXISTING PIPE SUPPORT TO REMAIN. 4"ø PIPE WELDED TO 18"x12" BASE PLATE WITH 4"ø x18" LONG CANTILEVER ARMS.
10. EXISTING MCC TO BE REMOVED. SEE ELECTRICAL DRAWING 1/E-1.1.2.
11. SEE M-1.1.2 FOR DEMOLITION OF <E> PUMP EQUIPMENT, PIPING, AND ACCESSORIES. CUT ANCHOR POSTS AND GRIND SMOOTH TO FINISHED CONCRETE PAD OR SLAB.

NEW:

20. PROVIDE AND INSTALL EXPANSION TANK PAD. SEE DETAIL 11/S-1.2.
21. EXTEND EXISTING HOUSEKEEPING PAD. PROVIDE CONCRETE, DOWELS, AND REBAR FOR EXTENSION. REFER TO STRUCTURAL DRAWINGS.
22. FILL WITH GROUT, AND FINISH TO MATCH EXISTING CONCRETE SLAB.

KEY PLAN



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CENTRAL PLANT MODERNIZATION

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ISSUE MARK	DATE	DESCRIPTION
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SOBE PROJECT NO:	2200689
DATE:	03/27/23
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	EES

SHEET TITLE

MECHANICAL CHILLER AND BOILER EQUIPMENT AND PAD LAYOUT

SCALE: AS NOTED

THIS DRAWING IS 30" X 42" AT FULL SIZE

M-1.1.1

SHEET OF –

DDC POINTS LIST

POINT I.D.	POINT TYPE	CONTROL DEVICE	CONTROL DESCRIPTION	CONTROL LOCATION	AI	AO	DI	DO	B	T	NOTES
MECHANICAL PLANT											
CHILLER PLANT AREA											
CHILLERS											
CH-X START/STOP CMD	DO	RELAY	CHILLER START/STOP COMMAND	CHILLER PLANT				2			5
CH-X CHW ISO VLV OPN/CLD	DO	RELAY	CHILLER CHW ISOLATION VALVE OPEN/CLOSE	CHILLER PLANT				2			5
CH-X CHW ISO VLV OPN	DI	END SWITCH	CHILLER CHW ISOLATION VALVE OPEN	CHILLER PLANT			2				5
CH-X CHW ISO VLV CLD	DI	END SWITCH	CHILLER CHW ISOLATION VALVE CLOSE	CHILLER PLANT			2				5
CH-X CW ISO VLV OPN/CLD	DO	RELAY	CHILLER CW ISOLATION VALVE OPEN/CLOSE	CHILLER PLANT				2			5
CH-X CW ISO VLV OPN	DI	END SWITCH	CHILLER CW ISOLATION VALVE OPEN	CHILLER PLANT			2				5
CH-X CW ISO VLV CLD	DI	END SWITCH	CHILLER CW ISOLATION VALVE CLOSE	CHILLER PLANT			2				5
CHW CONDFS	DI	FLOW SWITCH	CHW CONDENSER FLOW SENSOR	CHILLER PLANT			2				5
CHW EVAPFS	DI	FLOW SWITCH	CHW EVAPORATOR FLOW SENSOR	CHILLER PLANT			2				5
CH-X PUMP ENABLE/DISABLE	DO	RELAY	CHILLER PUMP COMMAND DISABLE/ENABLE	CHILLER PLANT				2			5
CH-X MAPPED BACNET POINTS FROM CONTROLS INTERFACE I/O											
REM LEAVING CHL TEMP SP	T	TRANSLATOR POINT	REMOTE LEAVING CHILLED LIQUID SETPOINT	CHILLER PLANT						2	1, 4
REMOTE INPUT CURRENT SP	T	TRANSLATOR POINT	REMOTE INPUT CURRENT LIMIT SETPOINT	CHILLER PLANT						2	1, 4
REM HEATING SP	T	TRANSLATOR POINT	REMOTE HEATING SETPOINT	CHILLER PLANT						2	1, 4
REM RUN STOP CMD	T	TRANSLATOR POINT	REMOTE RUN/STOP [0=STOP, 1=RUN]	CHILLER PLANT						2	1, 4
UNITS	T	TRANSLATOR POINT	UNITS	CHILLER PLANT						2	1, 4
COMPR MOTOR RUN	T	TRANSLATOR POINT	MOTOR RUN [0=OFF, 1=ON]	CHILLER PLANT						2	1, 4
CH LIQ PUMP STAT	T	TRANSLATOR POINT	CHILLED LIQUID PUMP [0=OFF, 1=ON]	CHILLER PLANT						2	1, 4
CND LIQ PUMP STAT	T	TRANSLATOR POINT	CONDENSER LIQUID PUMP [0=OFF, 1=ON]	CHILLER PLANT						2	1, 4
CH LIQ FLOW SWITCH STAT	T	TRANSLATOR POINT	CHILLED LIQUID FLOW SWITCH [0=OPEN, 1=CLOSED]	CHILLER PLANT						2	1, 4
CND FLOW SWITCH STAT	T	TRANSLATOR POINT	CONDENSER LIQUID FLOW SWITCH [0=OPEN, 1=CLOSED]	CHILLER PLANT						2	1, 4
START STOP SWITCH STATUS	T	TRANSLATOR POINT	PANEL STOP SWITCH [0=OFF, 1=ON]	CHILLER PLANT						2	1, 4
VSD COOLING SYS STAT	T	TRANSLATOR POINT	VSD COOLING SYSTEM [0=OFF, 1=ON]	CHILLER PLANT						2	1, 4
VSD HARMONIC FILTER INST	T	TRANSLATOR POINT	HARMONIC FILTER INSTALLED [0=FALSE, 1=TRUE]	CHILLER PLANT						2	1, 4
COND REF LEVEL CNTRL MODE	T	TRANSLATOR POINT	CONDENSER LEVEL CONTROL VALVE MODE [0=AUTO,1=MANUAL]	CHILLER PLANT						2	1, 4
PURGE TANK HIGH LEVEL SW	T	TRANSLATOR POINT	PURGE TANK HIGH LEVEL SWITCH	CHILLER PLANT						2	1, 4
LEAVING CH LIQ TEMP SEL SP	T	TRANSLATOR POINT	LEAVING CHILLED LIQUID SETPOINT - SELECTED	CHILLER PLANT						2	1, 4
LEAVING CH LIQ TEMP	T	TRANSLATOR POINT	LEAVING CHILLED LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
ENTERING CH LIQ TEMP	T	TRANSLATOR POINT	ENTERING CHILLED LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
ENTERING COND LIQ TEMP	T	TRANSLATOR POINT	ENTERING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
LEAVING COND LIQ TEMP	T	TRANSLATOR POINT	LEAVING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
EVAPORATOR PRESSURE	T	TRANSLATOR POINT	EVAPORATOR PRESSURE	CHILLER PLANT						2	1, 4
CONDENSER PRESSURE	T	TRANSLATOR POINT	CONDENSER PRESSURE	CHILLER PLANT						2	1, 4
EVAP SATURATION TEMP	T	TRANSLATOR POINT	EVAPORATOR SATURATION TEMPERATURE	CHILLER PLANT						2	1, 4
COND SATURATION TEMP	T	TRANSLATOR POINT	CONDENSER SATURATION TEMPERATURE	CHILLER PLANT						2	1, 4
EVAP REFRIGERANT TEMP	T	TRANSLATOR POINT	EVAPORATOR REFRIGERANT TEMPERATURE	CHILLER PLANT						2	1, 4
DISCHARGE TEMP	T	TRANSLATOR POINT	DISCHARGE TEMPERATURE	CHILLER PLANT						2	1, 4
INPUT CURRENT ACT LIMIT	T	TRANSLATOR POINT	ACTIVE INPUT CURRENT LIMIT	CHILLER PLANT						2	1, 4
INPUT CURRENT PCT FLA	T	TRANSLATOR POINT	INPUT % FULL LOAD AMPS	CHILLER PLANT						2	1, 4
MOTOR CURRENT PCT FLA	T	TRANSLATOR POINT	MOTOR % FULL LOAD AMPS	CHILLER PLANT						2	1, 4
VSD INPUT CURRENT	T	TRANSLATOR POINT	VSD INPUT CURRENT (RMS)	CHILLER PLANT						2	1, 4
VSD PHASE A OUTPUT CURRENT	T	TRANSLATOR POINT	VSD PHASE A OUTPUT CURRENT (RMS)	CHILLER PLANT						2	1, 4
VSD PHASE B OUTPUT CURRENT	T	TRANSLATOR POINT	VSD PHASE B OUTPUT CURRENT (RMS)	CHILLER PLANT						2	1, 4
VSD PHASE C OUTPUT CURRENT	T	TRANSLATOR POINT	VSD PHASE C OUTPUT CURRENT (RMS)	CHILLER PLANT						2	1, 4
VSD OUTPUT VOLTAGE	T	TRANSLATOR POINT	VSD OUTPUT VOLTAGE	CHILLER PLANT						2	1, 4
INPUT POWER	T	TRANSLATOR POINT	INPUT POWER	CHILLER PLANT						2	1, 4
INPUT KWH	T	TRANSLATOR POINT	INPUT KILOWATT HOURS	CHILLER PLANT						2	1, 4
INPUT KWH LO	T	TRANSLATOR POINT	INPUT KILOWATT HOURS LOW	CHILLER PLANT						2	1, 4
INPUT KWH OFFSET	T	TRANSLATOR POINT	INPUT KILOWATT HOURS OFFSET	CHILLER PLANT						2	1, 4
VSD DC BUS VOLTAGE	T	TRANSLATOR POINT	VSD DC BUS VOLTAGE	CHILLER PLANT						2	1, 4
VSD DC BUS CURRENT	T	TRANSLATOR POINT	VSD DC BUS CURRENT	CHILLER PLANT						2	1, 4
SURGE COUNT	T	TRANSLATOR POINT	SURGE COUNT	CHILLER PLANT						2	1, 4
VSD OUTPUT FREQUENCY	T	TRANSLATOR POINT	VSD OUTPUT FREQUENCY	CHILLER PLANT						2	1, 4
VSD INTERNAL AMBIENT TEMP	T	TRANSLATOR POINT	VSD INTERNAL AMBIENT TEMP	CHILLER PLANT						2	1, 4
VSD CONVERTER HSINK TEMP	T	TRANSLATOR POINT	VSD CONVERTER HEATSINK TEMP	CHILLER PLANT						2	1, 4
VSD BASEPLATE TEMP	T	TRANSLATOR POINT	VSD BASEPLATE TEMPERATURE	CHILLER PLANT						2	1, 4
VSD PH A HEATSINK TEMP	T	TRANSLATOR POINT	VSD PHASE A HEATSINK TEMPERATURE	CHILLER PLANT						2	1, 4
VSD PH B HEATSINK TEMP	T	TRANSLATOR POINT	VSD PHASE B HEATSINK TEMPERATURE	CHILLER PLANT						2	1, 4
VSD PH C HEATSINK TEMP	T	TRANSLATOR POINT	VSD PHASE C HEATSINK TEMPERATURE	CHILLER PLANT						2	1, 4
FILTER BASEPLATE TEMP	T	TRANSLATOR POINT	HARMONIC FILTER BASEPLATE TEMPERATURE	CHILLER PLANT						2	1, 4
FILTER MAX VOLTAGE THD	T	TRANSLATOR POINT	HARMONIC FILTER MAX VOLTAGE TOTAL HARMONIC DISTORTION	CHILLER PLANT						2	1, 4
FILTER MAX CURRENT TDD	T	TRANSLATOR POINT	HARMONIC FILTER MAX CURRENT TOTAL DEMAND DISTORTION	CHILLER PLANT						2	1, 4
FILTER SUPPLY KVA	T	TRANSLATOR POINT	HARMONIC FILTER TOTAL SUPPLY KVA	CHILLER PLANT						2	1, 4
MTR WINDING AVG TEMP	T	TRANSLATOR POINT	AVERAGE WINDING TEMPERATURE	CHILLER PLANT						2	1, 4
COND REFRIGERANT LEVEL SP	T	TRANSLATOR POINT	CONDENSER REFRIGERANT LEVEL SETPOINT	CHILLER PLANT						2	1, 4
COND REFRIGERANT LEVEL	T	TRANSLATOR POINT	CONDENSER REFRIGERANT LEVEL	CHILLER PLANT						2	1, 4
COND LVL CTRL VLV CMD	T	TRANSLATOR POINT	CONDENSER LEVEL CONTROL VALVE COMMAND	CHILLER PLANT						2	1, 4
DROP LEG REFRIG TEMP	T	TRANSLATOR POINT	DROP LEG REFRIGERANT TEMPERATURE	CHILLER PLANT						2	1, 4
HOT GAS BYPASS COMMAND	T	TRANSLATOR POINT	HOT GAS BYPASS COMMAND	CHILLER PLANT						2	1, 4
OPERATING HOURS	T	TRANSLATOR POINT	OPERATING HOURS	CHILLER PLANT						2	1, 4
OPERATING HOURS LO	T	TRANSLATOR POINT	OPERATING HOURS LOW	CHILLER PLANT						2	1, 4
OPERATING HOURS OFFSET	T	TRANSLATOR POINT	OPERATING HOURS OFFSET	CHILLER PLANT						2	1, 4
NUMBER OF STARTS	T	TRANSLATOR POINT	NUMBER OF STARTS	CHILLER PLANT						2	1, 4
UNIT OPERATION CODE	T	TRANSLATOR POINT	UNIT OPERATION CODE	CHILLER PLANT						2	1, 4
UNIT OPERATION CODE AV	T	TRANSLATOR POINT	UNIT OPERATION CODE AV	CHILLER PLANT						2	1, 4
UNIT SAFETY FAULT CODE	T	TRANSLATOR POINT	UNIT SAFETY FAULT CODE	CHILLER PLANT						2	1, 4
UNIT SAFETY FAULT CODE AV	T	TRANSLATOR POINT	UNIT SAFETY FAULT CODE AV	CHILLER PLANT						2	1, 4
UNIT CYCLING FAULT CODE	T	TRANSLATOR POINT	UNIT CYCLING FAULT CODE	CHILLER PLANT						2	1, 4
UNIT CYCLING FAULT CODE AV	T	TRANSLATOR POINT	UNIT CYCLING FAULT CODE AV	CHILLER PLANT						2	1, 4
UNIT WARNING CODE	T	TRANSLATOR POINT	UNIT WARNING CODE	CHILLER PLANT						2	1, 4
UNIT WARNING CODE AV	T	TRANSLATOR POINT	UNIT WARNING CODE AV	CHILLER PLANT						2	1, 4
UNIT CONTROL SOURCE	T	TRANSLATOR POINT	UNIT CONTROL SOURCE [0=LOCAL, 1=BAS, 2=ANALOG, 3=DIGITAL, 5=REMOTE]	CHILLER PLANT						2	1, 4
UNIT CONTROL SOURCE AV	T	TRANSLATOR POINT	UNIT CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=ANALOG, 3=DIGITAL, 5=REMOT	CHILLER PLANT						2	1, 4
UNIT MODIFIED RUN CODE	T	TRANSLATOR POINT	UNIT MODIFIED RUN CODE	CHILLER PLANT						2	1, 4
UNIT MODIFIED RUN CODE AV	T	TRANSLATOR POINT	UNIT MODIFIED RUN CODE AV	CHILLER PLANT						2	1, 4
UNIT START INHIBIT CODE	T	TRANSLATOR POINT	UNIT START INHIBIT CODE	CHILLER PLANT						2	1, 4
UNIT START INHIBIT CODE AV	T	TRANSLATOR POINT	UNIT START INHIBIT CODE AV	CHILLER PLANT						2	1, 4
UNIT INTERNAL FAULT CODE	T	TRANSLATOR POINT	UNIT INTERNAL FAULT CODE	CHILLER PLANT						2	1, 4
UNIT INTERNAL FAULT CODE AV	T	TRANSLATOR POINT	UNIT INTERNAL FAULT CODE AV	CHILLER PLANT						2	1, 4
ACTIVE PURGE MODE	T	TRANSLATOR POINT	ACTIVE PURGE MODE	CHILLER PLANT						2	1, 4
ACTIVE PURGE MODE AV	T	TRANSLATOR POINT	ACTIVE PURGE MODE AV	CHILLER PLANT						2	1, 4
PURGE CONTROL STATE	T	TRANSLATOR POINT	PURGE CONTROL STATE	CHILLER PLANT						2	1, 4
PURGE CONTROL STATE AV	T	TRANSLATOR POINT	PURGE CONTROL STATE AV	CHILLER PLANT						2	1, 4
MBC CONTROL MODE	T	TRANSLATOR POINT	MBC CONTROL MODE	CHILLER PLANT						2	1, 4
MBC CONTROL MODE AV	T	TRANSLATOR POINT	MBC CONTROL MODE AV	CHILLER PLANT						2	1, 4
RUN STOP CTRL SOURCE	T	TRANSLATOR POINT	RUN/STOP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=HARDWIRE]	CHILLER PLANT						2	1, 4
RUN STOP CTRL SOURCE AV	T	TRANSLATOR POINT	RUN/STOP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=HARDWIRE]	CHILLER PLANT						2	1, 4
COOL SETP CTRL SOURCE	T	TRANSLATOR POINT	COOLING SETP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=4	CHILLER PLANT						2	1, 4
COOL SETP CTRL SOURCE AV	T	TRANSLATOR POINT	COOLING SETP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS,	CHILLER PLANT						2	1, 4
HEAT SETP CTRL SOURCE	T	TRANSLATOR POINT	HEATING SETP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=4	CHILLER PLANT						2	1, 4
HEAT SETP CTRL SOURCE AV	T	TRANSLATOR POINT	HEATING SETP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS,	CHILLER PLANT						2	1, 4
CURR LIM CTRL SOURCE	T	TRANSLATOR POINT	CURRENT LIMIT CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=	CHILLER PLANT						2	1, 4
CURR LIM CTRL SOURCE AV	T	TRANSLATOR POINT	CURRENT LIMIT CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS,	CHILLER PLANT						2	1, 4
TOTAL PURGE COUNT	T	TRANSLATOR POINT	TOTAL PURGE COUNT	CHILLER PLANT						2	1, 4
EVAP SMALL TEMP DIFF	T	TRANSLATOR POINT	EVAPORATOR SMALL TEMP DIFFERENCE	CHILLER PLANT						2	1, 4
COND SMALL TEMP DIFF	T	TRANSLATOR POINT	CONDENSER SMALL TEMP DIFFERENCE	CHILLER PLANT						2	1, 4
DISCHARGE SUPERHEAT	T	TRANSLATOR POINT	DISCHARGE SUPERHEAT	CHILLER PLANT						2	1, 4
SUBCOOLER EFFECTIVENESS	T	TRANSLATOR POINT	SUBCOOLER EFFECTIVENESS	CHILLER PLANT						2	1, 4
SUBCOOLING TEMP	T	TRANSLATOR POINT	SUBCOOLING TEMPERATURE	CHILLER PLANT						2	1, 4
DELTA P DIV P	T	TRANSLATOR POINT	DELTA P / P	CHILLER PLANT						2	1, 4
HEAD PRESSURE	T	TRANSLATOR POINT	HEAD PRESSURE	CHILLER PLANT						2	1, 4
MOTOR SPEED	T	TRANSLATOR POINT	MOTOR SPEED	CHILLER PLANT						2	1, 4
AMB DEW POINT TEMP	T	TRANSLATOR POINT	AMBIENT DEW POINT TEMPERATURE	CHILLER PLANT						2	1, 4
MOTOR HOUSING TEMP	T	TRANSLATOR POINT	MOTOR HOUSING TEMPERATURE	CHILLER PLANT						2	1, 4
MOTOR COOL VLV CMD	T	TRANSLATOR POINT	MOTOR COOLING VALVE COMMAND	CHILLER PLANT						2	1, 4
UPS BATTERY VOLTAGE	T	TRANSLATOR POINT	UPS BATTERY VOLTAGE	CHILLER PLANT						2	1, 4
ACT ANTI-SURGE MIN FREQ	T	TRANSLATOR POINT	ACTIVE ANTI-SURGE MINIMUM FREQUENCY	CHILLER PLANT						2	1, 4
VGD POSITION	T	TRANSLATOR POINT	VGD POSITION	CHILLER PLANT						2	1, 4
ENTERING HEAT COND LIQ TEMP	T	TRANSLATOR POINT	ENTERING HEATING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
LEAVING HEAT COND LIQ TEMP	T	TRANSLATOR POINT	LEAVING HEATING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT						2	1, 4
HEATING ACTIVE SP	T	TRANSLATOR POINT	ACTIVE HEATING SETPOINT	CHILLER PLANT						2	1, 4
HEAT REC HEAD PRESS VLV CMD	T	TRANSLATOR POINT	HEAT RECOVERY/HEAD PRESSURE CONTROL VALVE CMD	CHILLER PLANT						2	1, 4
HEATING LOCAL SP	T	TRANSLATOR POINT	LOCAL HEATING SETPOINT	CHILLER PLANT						2	1, 4
STALL VOLTAGE	T	TRANSLATOR POINT	STALL VOLTAGE	CHILLER PLANT						2	1, 4

DDC POINTS LIST

PUMPS											
PCHWP-X S/S	DO	RELAY	PRIMARY PUMP START/STOP	CHILLER PLANT				2			
PCHWP-X STS	DI	CURRENT SWITCH	PRIMARY PUMP STATUS	CHILLER PLANT			2				
PCHWP-X SPEED FB	AI	VFD	PRIMARY PUMP VFD SPEED FEEDBACK	CHILLER PLANT					2		1
PCHWP-X SPEED	AO	VFD	PRIMARY PUMP VFD SPEED	CHILLER PLANT		2					
PCHWP-X FLT	DI	VFD	PRIMARY PUMP VFD FAULT	CHILLER PLANT					2		1
PCHWP- DPT	AI	DPT	DIFFERENTIAL PRESSURE TRANSDUCER	CHILLER PLANT	1						
PCHWP- DPT SP	AO	VIRTUAL POINT	DIFFERENTIAL PRESSURE TRANSDUCER SETPOINT	CHILLER PLANT		1					
REFRIGERANT MONITORING SYSTEM											
RMS- LEVEL 1	DI	RELAY	REFRIGERANT MONITORING SYSTEM LOW LEVEL 1 ALARM	CHILLER PLANT			1				
RMS- LEVEL 2	DI	RELAY	REFRIGERANT MONITORING SYSTEM LOW LEVEL 2 ALARM	CHILLER PLANT			1				
RMS- PURGE (EF-1)	DI	RELAY	REFRIGERANT MONITORING SYSTEM PURGE (EF-1)	CHILLER PLANT			1				
RMS- MANUAL SHUTDOWN (EF-1)	DI	SWITCH	MANUAL SHUTDOWN (EF-1)	CHILLER PLANT			1				
RMS-FAULT	DI	RELAY	REFRIGERANT MONITORING SYSTEM FAULT	CHILLER PLANT			1				
RMS- MANUAL PURGE (EF-1)	DI	SWITCH	MANUAL PURGE (EF-1)	CHILLER PLANT			1				
RMS-OCC SENSOR (EF-2)	DI	OCCUPANCY SENSOR	OCCUPANCY SENSOR FOR VENTILATION (EF-2)	CHILLER PLANT			2				
RMS-TEMP TRANS (EF-2)	AI	TEMP TRANS	TEMPERATURE TRANSMITTER, SPACE TEMP (EF-2)	CHILLER PLANT	1						
CHW METERING											
FMER-X	AI	BTU METER	ENERGY RATE	CHILLER PLANT					1		1, 3
FMVR-X	AI	BTU METER	VOLUME RATE	CHILLER PLANT					1		1, 3
FMST-X	AI	BTU METER	SUPPLY TEMPERATURE	CHILLER PLANT					1		1, 3
FMRT-X	AI	BTU METER	RETURN TEMPERATURE	CHILLER PLANT					1		1, 3
FMDT-X	AI	BTU METER	DELTA TEMPERATURE	CHILLER PLANT					1		1, 3
FMPER-X	AI	BTU METER	PEAK ENERGY RATE	CHILLER PLANT					1		1, 3
FMADT-X	AI	BTU METER	AVERAGE DELTA TEMP	CHILLER PLANT					1		1, 3
FMTOT-X	AI	BTU METER	TOTALIZATION	CHILLER PLANT					1		1, 3
CHW-MU-GAL	DI	WATER METER	MAKE UP WATER GALLONS	CHILLER PLANT			1				2
CHW-MU-GPM	DI	WATER METER	MAKE UP WATER GPM	CHILLER PLANT			1				2
CHW-MU-TOT	AI	VIRTUAL POINT	MAKE UP WATER TOTALIZATION	CHILLER PLANT	1						
BOILER PLANT AREA											
GAS FIRED BOILERS											
GB-X START/STOP CDM	DO	RELAY	GAS BOILER HHW START/STOP	BOILER PLANT				3			
GB-X HHW ISO VLV OPN/CLD	DO	RELAY	GAS BOILER HHW ISOLATION VALVE OPEN/CLOSE	BOILER PLANT				3			
GB-X HHW ISO VLV OPN	DI	END SWITCH	GAS BOILER HHW ISOLATION VALVE OPEN	BOILER PLANT			3				
GB-X HHW ISO VLV CLD	DI	END SWITCH	GAS BOILER HHW ISOLATION VALVE CLOSE	BOILER PLANT			3				
GB-X HHW BYPASS VLV POS	AO	MODULATING	GAS BOILER HHW BYPASS VALVE POSITION	BOILER PLANT		1					
GB-X HHW BYPASS VLV FDBK	AI	FEEDBACK	GAS BOILER HHW BYPASS VALVE FEEDBACK	BOILER PLANT	1						
GB-X SUPTEMP	AI	TEMP SENSOR	GAS BOILER SUPPLY WATER TEMPERAURE	BOILER PLANT	3						
GB-X RETTEMP	AI	TEMP SENSOR	GAS BOILER RETURN WATER TEMPERAURE	BOILER PLANT	3						
GB-X FS	DI	FLOW SWITCH/SENSOR	GAS BOILER FLOW SWITCH/SENSOR	BOILER PLANT			3				
GB-X SUPSP	AO	VIRTUAL POINT	GAS BOILER SUPPLY SETPOINT	BOILER PLANT		1					
COM STATUS	T	TRANSLATOR POINT	LMV3 - COM STATUS	BOILER PLANT						3	1, 4
FLAME SIGNAL	T	TRANSLATOR POINT	LMV3 - FLAME SIGNAL	BOILER PLANT						3	1, 4
LOCKOUT ERROR CODE	T	TRANSLATOR POINT	LMV3 - LOCKOUT ERROR CODE	BOILER PLANT						3	1, 4
LOCKOUT DIAGNOSTIC CODE	T	TRANSLATOR POINT	LMV3 - LOCKOUT DIAGNOSTIC CODE	BOILER PLANT						3	1, 4
CONTROL MODE	T	TRANSLATOR POINT	LMV3 - CONTROL MODE	BOILER PLANT						3	1, 4
OPERATING MODE	T	TRANSLATOR POINT	LMV3 - OPERATING MODE	BOILER PLANT						3	1, 4
FUEL RATE	T	TRANSLATOR POINT	LMV3 - FUEL RATE	BOILER PLANT						3	1, 4
FUEL SELECTED	T	TRANSLATOR POINT	LMV3 - FUEL SELECTED	BOILER PLANT						3	1, 4
FIRING RATE	T	TRANSLATOR POINT	LMV3 - FIRING RATE	BOILER PLANT						3	1, 4
COM STATUS	T	TRANSLATOR POINT	RWF55 - COM STATUS	BOILER PLANT						3	1, 4
ANALOG INPUT INP1	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP1	BOILER PLANT						3	1, 4
ANALOG INPUT INP2	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP2	BOILER PLANT						3	1, 4
ANALOG INPUT INP3	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP3	BOILER PLANT						3	1, 4
ACTUAL SETPOINT	T	TRANSLATOR POINT	RWF55 - ACTUAL SETPOINT	BOILER PLANT						3	1, 4
SETPOINT 1	T	TRANSLATOR POINT	RWF55 - SETPOINT 1	BOILER PLANT						3	1, 4
SETPOINT 2	T	TRANSLATOR POINT	RWF55 - SETPOINT 2	BOILER PLANT						3	1, 4
ANALOG INPUT INP3	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP3	BOILER PLANT						3	1, 4
ACTUAL ANGULAR POSITIONING	T	TRANSLATOR POINT	RWF55 - ACTUAL ANGULAR POSITIONING	BOILER PLANT						3	1, 4
BURNER ALARM	T	TRANSLATOR POINT	RWF55 - BURNER ALARM	BOILER PLANT						3	1, 4
ACTIVATION REMOTE OPERATION	T	TRANSLATOR POINT	RWF55 - ACTIVATION REMOTE OPERATION	BOILER PLANT						3	1, 4
CONTROLLER OFF IN REMOTE SETPOINT	T	TRANSLATOR POINT	RWF55 - CONTROLLER OFF IN REMOTE SETPOINT	BOILER PLANT						3	1, 4
SETPOINT REMOTE	T	TRANSLATOR POINT	RWF55 - SETPOINT REMOTE	BOILER PLANT						3	1, 4
BURNER RELEASE REMOTE OPERATION	T	TRANSLATOR POINT	RWF55 - BURNER RELEASE REMOTE OPERATION	BOILER PLANT						3	1, 4
BOILER ENABLE	T	TRANSLATOR POINT	RWF55 - BOILER ENABLE	BOILER PLANT						3	1, 4
MODULATION	T	TRANSLATOR POINT	RWF55 - MODULATION	BOILER PLANT						3	1, 4
ELECTRIC BOILERS											
EB-X START/STOP CMD	DO	RELAY	ELECTRIC BOILER HHW START/STOP COMMAND	BOILER PLANT				3			
EB-X HHW ISO VLV OPN/CLD	DO	RELAY	ELECTRIC BOILER HHW ISOLATION VALVE OPEN/CLOSE	BOILER PLANT				3			
EB-X HHW ISO VLV OPN	DI	END SWITCH	ELECTRIC BOILER HHW ISOLATION VALVE OPEN	BOILER PLANT			3				
EB-X HHW ISO VLV CLD	DI	END SWITCH	ELECTRIC BOILER HHW ISOLATION VALVE CLOSE	BOILER PLANT			3				
EB-X SUPTEMP	AI	TEMP SENSOR	ELECTRIC BOILER SUPPLY WATER TEMPERAURE	BOILER PLANT	3						
EB-X FS	DI	FLOW SWITCH/SENSOR	ELECTRIC BOILER FLOW SWITCH/SENSOR	BOILER PLANT			3				
EB-X RETTEMP	AI	TEMP SENSOR	ELECTRIC BOILER RETURN WATER TEMPERAURE	BOILER PLANT	3						
EB-X OM	T	TRANSLATOR POINT	ELECTRIC BOILER OPERATION MODE	BOILER PLANT						3	1, 4
EB-X PE	T	TRANSLATOR POINT	ELECTRIC BOILER PROCESS ENABLE	BOILER PLANT						3	1, 4
EB-X PS	T	TRANSLATOR POINT	ELECTRIC BOILER PROCESS SETPOINT	BOILER PLANT						3	1, 4
EB-X EK1	T	TRANSLATOR POINT	ELECTRIC BOILER ENABLE K1	BOILER PLANT						3	1, 4
EB-X M	T	TRANSLATOR POINT	ELECTRIC BOILER MODULATION	BOILER PLANT						3	1, 4
EB-X CS	T	TRANSLATOR POINT	ELECTRIC BOILER COMMUNICATION STATUS	BOILER PLANT						3	1, 4
COM STATUS	T	TRANSLATOR POINT	RWF55 - COM STATUS	BOILER PLANT						3	1, 4
ANALOG INPUT INP1	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP1	BOILER PLANT						3	1, 4
ANALOG INPUT INP2	T	TRANSLATOR POINT	RWF55 - ANALOG INPUT INP2	BOILER PLANT						3	1, 4
ACTUAL SETPOINT	T	TRANSLATOR POINT	RWF55 - ACTUAL SETPOINT	BOILER PLANT						3	1, 4
SETPOINT 1	T	TRANSLATOR POINT	RWF55 - SETPOINT 1	BOILER PLANT						3	1, 4
ACTUAL ANGULAR POSITIONING	T	TRANSLATOR POINT	RWF55 - ACTUAL ANGULAR POSITIONING	BOILER PLANT						3	1, 4
ACTIVATION REMOTE OPERATION	T	TRANSLATOR POINT	RWF55 - ACTIVATION REMOTE OPERATION	BOILER PLANT						3	1, 4
CONTROLLER OFF IN REMOTE SETPOINT	T	TRANSLATOR POINT	RWF55 - CONTROLLER OFF IN REMOTE SETPOINT	BOILER PLANT						3	1, 4
SWITCH-ON THRESHOLD REMOTE	T	TRANSLATOR POINT	RWF55 - SWITCH-ON THRESHOLD REMOTE	BOILER PLANT						3	1, 4
SWITCH-OFF THRESHOLD DOWN REMOTE	T	TRANSLATOR POINT	RWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE	BOILER PLANT						3	1, 4
SETPOINT REMOTE	T	TRANSLATOR POINT	RWF55 - SETPOINT REMOTE	BOILER PLANT						3	1, 4
ANGULAR POSITION OUTPUT REMOTE OPERATION	T	TRANSLATOR POINT	RWF55 - ANGULAR POSITION OUTPUT REMOTE OPERATION	BOILER PLANT						3	1, 4
BINARY INPUT D1	T	TRANSLATOR POINT	RWF55 - BINARY INPUT D1	BOILER PLANT						3	1, 4
BINARY INPUT D2	T	TRANSLATOR POINT	RWF55 - BINARY INPUT D2	BOILER PLANT						3	1, 4
PUMPS											
PHHWP-X S/S	DO	RELAY	PRIMARY HHW PUMP PCHWP-X START/STOP	BOILER PLANT				3			
PHHWP-X STS	DI	CURRENT SWITCH	PRIMARY HHW PUMP PCHWP-X STATUS	BOILER PLANT			3				
PHHWP-X SPEED FB	AI	VFD	PRIMARY HHW PUMP PCHWP-X VFD SPEED FEEDBACK	BOILER PLANT					3		1
PHHWP-X SPEED	AO	VFD	PRIMARY HHW PUMP PCHWP-X VFD SPEED	BOILER PLANT		3					
PHHWP-X FLT	DI	VFD	PRIMARY HHW PUMP PHHWP-X VFD FAULT	BOILER PLANT					3		1
PHHWP- DPT	AI	DPT	DIFFERENTIAL PRESSURE TRANSDUCER	BOILER PLANT	1						
PHHWP- DPT SP	AO	VIRTUAL POINT	DIFFERENTIAL PRESSURE TRANSDUCER SETPOINT	BOILER PLANT		1					
FANS (EF-1, EF-2, IDF-1)											
EF-X S/S	DO	RELAY	EXHAUST FAN EF-X START/STOP	CHILLER PLANT				2			
EF-X STS	DI	CURRENT SWITCH	EXHAUST FAN EF-X STATUS	CHILLER PLANT			2				
EF-X SPEED FB	AI	ECM	EXHAUST FAN EF-X ECM SPEED FEEDBACK	CHILLER PLANT					2		1
EF-X SPEED	AO	ECM	EXHAUST FAN EF-X ECM SPEED	CHILLER PLANT		2					
EF-X FLT	DI	ECM	EXHAUST FAN EF-X ECM FAULT	CHILLER PLANT					2		1
IDF-X S/S	DO	RELAY	INDUCED DRAFT FAN IDF-X START/STOP	BOILER PLANT				1			
IDF-X STS	DI	CURRENT SWITCH	INDUCED DRAFT FAN IDF-X STATUS	BOILER PLANT			1				
IDF-X SPEED FB	AI	VFD	INDUCED DRAFT FAN IDF-X VFD SPEED FEEDBACK	BOILER PLANT					1		1
IDF-X SPEED	AO	VFD	INDUCED DRAFT FAN IDF-X VFD SPEED	BOILER PLANT		1					
IDF-X FLT	DI	VFD	INDUCED DRAFT FAN IDF-X VFD FAULT	BOILER PLANT					1		1
IDF-X MEASURED DRAFT	AI	VFD	INDUCED DRAFT FAN MEASURED DRAFT	BOILER PLANT	1						
IDF-X BOILER FAILURE	DI	VFD	INDUCED DRAFT FAN BOILER FAILURE ON DRAFT FAN	BOILER PLANT			1				

SALASO'BRIEN
expect a difference
305 South 11th Street
San Jose, California 95112-2218
877.725.2755 | 877.925.1477 (f)
WWW.SALASOBRIEN.COM
National Strength. Local Action.

No. M40066
EXP. 09-30-2024
MECHANICAL
STATE OF CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT

SOLANO COMMUNITY COLLEGE
4000 SUISUN VALLEY RD
FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

ISSUE		
MARK	DATE	DESCRIPTION
	06/17/22	100% SCHEMATIC DESIGN
	08/17/22	50% CD
	09/06/22	DSA PROGRESS SET
	10/19/22	DSA SUBMITTAL
	02/01/23	DSA BACKCHECK
A	03/27/23	ADDENDUM #2

SOBE PROJECT NO:	2200689
DATE:	03/27/23
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	EES

SHEET TITLE
CONTROLS POINTS LIST

SCALE: AS NOTED
THIS DRAWING IS 30" X 42" AT FULL SIZE

MI-6.2
SHEET OF –

DDC POINTS LIST

HHW METERING										
FMER-X	AI	BTU METER	ENERGY RATE	BOILER PLANT				1		1, 3
FMVR-X	AI	BTU METER	VOLUME RATE	BOILER PLANT				1		1, 3
FMST-X	AI	BTU METER	SUPPLY TEMPERATURE	BOILER PLANT				1		1, 3
FMRT-X	AI	BTU METER	RETURN TEMPERATURE	BOILER PLANT				1		1, 3
FMDT-X	AI	BTU METER	DELTA TEMPERATURE	BOILER PLANT				1		1, 3
FMTOT-X	AI	BTU METER	TOTALIZATION	BOILER PLANT				1		1, 3
FMPER-X	AI	BTU METER	PEAK ENERGY RATE	BOILER PLANT				1		1, 3
FMADT-X	AI	BTU METER	AVERAGE DELTA TEMP	BOILER PLANT				1		1, 3
GM-DMD	AI	GAS METER	MONITOR GAS DEMAND (SCFH)	BOILER PLANT	3					
GM-TOT	AI	GAS METER	GAS METER TOTALIZATION (SCF)	BOILER PLANT	3					
HHW-MU-GAL	DI	WATER METER	HHW MAKE UP WATER GALLONS	BOILER PLANT			1			2
HHW-MU-GPM	DI	WATER METER	HHW MAKE UP WATER GPM	BOILER PLANT			1			2
HHW-MU-TOT	AI	VIRTUAL POINT	MAKE UP WATER TOTALIZATION	BOILER PLANT	1					
COOLING TOWER YARD										
COOLING TOWERS										
CT-X S/S	DO	RELAY	COOLING TOWER START/STOP	COOLING TOWER YARD				2		
CT-X STS	DI	CURRENT SWITCH	COOLING TOWER STATUS	COOLING TOWER YARD			2			
CT-X SPEED FB	AI	VFD	COOLING TOWER VFD SPEED FEEDBACK	COOLING TOWER YARD				2		1
CT-X SPEED	AO	VFD	COOLING TOWER VFD SPEED	COOLING TOWER YARD		2				
CT-X FLT	DI	VFD	COOLING TOWER VFD FAULT	COOLING TOWER YARD				2		1
CT-X INLET VLV OPN/CLD	DO	RELAY	COOLING TOWER INLET VALVE OPEN/CLOSE	COOLING TOWER YARD			2			
CT-X INLET VLV OPN	DI	END SWITCH	COOLING TOWER INLET VALVE OPEN	COOLING TOWER YARD			2			
CT-X INLET VLV CLD	DI	END SWITCH	COOLING TOWER INLET VALVE CLOSE	COOLING TOWER YARD			2			
CT-X OUTLET VLV OPN/CLD	DO	RELAY	COOLING TOWER OUTLET VALVE OPEN/CLOSE	COOLING TOWER YARD				2		
CT-X OUTLET VLV OPN	DI	END SWITCH	COOLING TOWER OUTLET VALVE OPEN	COOLING TOWER YARD			2			
CT-X OUTLET VLV CLD	DI	END SWITCH	COOLING TOWER OUTLET VALVE CLOSE	COOLING TOWER YARD			2			
CT-X CWT	AI	TEMP SENSOR	COOLING TOWER CONDENSER WATER SUPPLY TEMPERAURE	COOLING TOWER YARD	2					
CTW-MU-GAL (WM-3)	DI	WATER METER	CW MAKE UP WATER GALLONS (WM-3)	COOLING TOWER YARD			1			
CTW-MU-GPM (WM-3)	AI	WATER METER	CW MAKE UP WATER GPM (WM-3)	COOLING TOWER YARD	1					
CT-WBT	AI	TEMP SENSOR	OUTDOOR WET BULB TEMERATURE	COOLING TOWER YARD	1					
CT-X HIGH LVL ALRM	DI	FLOAT	FLOAT ASSEMBLY HIGH LEVEL ALARM	COOLING TOWER YARD			2			
CT-X LOW LVL ALRM	DI	FLOAT	FLOAT ASSEMBLY LOW LEVEL ALARM	COOLING TOWER YARD			2			
CT-VIB	DI	VIBRATION SWITCH	COOLING TOWER VIBRATION SWITCH	COOLING TOWER YARD			2			
CENTRIFUGAL SEPARATOR										
CS-1 SS	DO	RELAY	CS-1 START/STOP	COOLING TOWER YARD				1		
CS-1 STS	DI	CURRENT SWITCH	CS-1 STATUS	COOLING TOWER YARD			1			
CS-1 PVSTS	DI	END SWITCH	PURGE VALVE OPEN/CLOSE INDICATOR	COOLING TOWER YARD			1			
PUMPS										
CWP-X S/S	DO	RELAY	CWP PUMP START/STOP	COOLING TOWER YARD				3		
CWP-X STS	DI	CURRENT SWITCH	CWP PUMP STATUS	COOLING TOWER YARD			3			
CWP-X SPEED FB	AI	VFD	CWP PUMP VFD SPEED FEEDBACK	COOLING TOWER YARD				3		1
CWP-X SPEED	AO	VFD	CWP PUMP VFD SPEED	COOLING TOWER YARD		3				
CWP-X FLT	DI	VFD	CWP PUMP VFD FAULT	COOLING TOWER YARD				3		1
CWP-DPT	AO	TRANSDUCER	CW DIFFERENTIAL PRESSURE TRANSDUCER	COOLING TOWER YARD	1					
CWP-DPT SP	AO	VIRTUAL POINT	CW DIFFERENTIAL PRESSURE SETPOINT	COOLING TOWER YARD		1				
WATER TREATMENT SYSTEM										
WTS-STS	AI	WTS PANEL	WTS PANEL STATUS SIGNAL	COOLING TOWER YARD	1					
WTS-FAULT	DI	WTS PANEL	WTS PANEL FAULT SIGNAL	COOLING TOWER YARD			1			
WTS-MU-FLOW (WM-3)	AI	WATER METER	WTS CW MAKE UP FLOW METER SIGNAL (WM-3)	COOLING TOWER YARD	1					
WTS-CONDUCTIVITY	AI	WTS PANEL	WTS PANEL CONDUCTIVITY SIGNAL	COOLING TOWER YARD	1					
WTS-PH	AI	WTS PANEL	WTS PANEL PH SIGNAL	COOLING TOWER YARD	1					
WTS-BLOWDOWN FM	AI	WTS PANEL	WTS PANEL BLOWDOWN FLOW METER	COOLING TOWER YARD	1					
WTS-BLOWDOWN TOT	AI	VIRTUAL POINT	WTS BLOWDOWN TOTALIZATION	COOLING TOWER YARD	1					
WTS-FLOW	AI	WTS PANEL	WTS PADDLEWHEEL FLOW METER SIGNAL	COOLING TOWER YARD	1					
WTS-DRUM LVL 1	DI	WTS PANEL	WTS LOW DRUM LEVEL ALARMS	COOLING TOWER YARD			1			
WTS-DRUM LVL 2	DI	WTS PANEL	WTS LOW DRUM LEVEL ALARMS	COOLING TOWER YARD			1			
WTS-DRUM LVL 3	DI	WTS PANEL	WTS LOW DRUM LEVEL ALARMS	COOLING TOWER YARD			1			
CW METERING										
FMER-X	AI	BTU METER	ENERGY RATE	COOLING TOWER YARD				1		1, 3
FMVR-X	AI	BTU METER	VOLUME RATE	COOLING TOWER YARD				1		1, 3
FMST-X	AI	BTU METER	SUPPLY TEMPERATURE	COOLING TOWER YARD				1		1, 3
FMRT-X	AI	BTU METER	RETURN TEMPERATURE	COOLING TOWER YARD				1		1, 3
FMDT-X	AI	BTU METER	DELTA TEMPERATURE	COOLING TOWER YARD				1		1, 3
FMPER-X	AI	BTU METER	PEAK ENERGY RATE	COOLING TOWER YARD				1		1, 3
FMADT-X	AI	BTU METER	AVERAGE DELTA TEMP	COOLING TOWER YARD				1		1, 3
FMTOT-X	AI	BTU METER	TOTALIZATION	COOLING TOWER YARD				1		1, 3
CT-X MUA VLV OPN/CLD	DO	RELAY	COOLING TOWER MUA VALVE OPEN/CLOSE	COOLING TOWER YARD				2		
CT-X MUA VLV OPN	DI	END SWITCH	COOLING TOWER MUA VALVE OPEN	COOLING TOWER YARD			2			
CT-X MUA VLV CLD	DI	END SWITCH	COOLING TOWER MUA VALVE CLOSE	COOLING TOWER YARD			2			
CW-MU-GAL	DI	WATER METER	HHW MAKE UP WATER GALLONS	BOILER PLANT			1			2
CW-MU-GPM	DI	WATER METER	HHW MAKE UP WATER GPM	BOILER PLANT			1			2
CW-MU-TOT	AI	VIRTUAL POINT	MAKE UP WATER TOTALIZATION	COOLING TOWER YARD	1					
				TOTAL	38	18	83	40	50	361

TOTAL POINTS 590
TOTAL SOFT POINTS 405
TOTAL HARD POINTS 179

A

NOTES:

1) **CONTROL POINTS FOR INTEGRATION ARE SHADED GRAY (I.E. MATERIAL PROVIDED, ONLY LABOR FOR INTEGRATION REQUIRED)**
2) **PULSE INPUT FROM WATER METER**
3) **MONITOR/LOG ENERGY/WATER USAGE HISTORY TRENDS**
4) **POINT I.D. FROM MANUFACTURER INPUT/OUTPUT POINTS LIST. TRANSLATOR POINTS SHALL BE MAPPED TO CAMPUS BMS, SEE MANUFACTURER'S IOM.**
5) **POINTS TO BE CONNECTED TO CH-1 CONTROL PANEL**

SALAS O'BRIEN
expect a difference
305 South 11th Street
San Jose, California 95112-2218
877.725.2755 | 877.925.1477 (f)
WWW.SALASOBRIEN.COM
National Strength.
Local Action.

REGISTERED PROFESSIONAL ENGINEER
JOHN EVERETT SWEET
No. M40086
EXP. 09-30-2024
MECHANICAL
STATE OF CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT

SOLANO COMMUNITY COLLEGE

4000 SUISUN VALLEY RD
FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

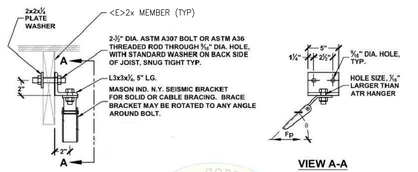
ISSUE MARK	DATE	DESCRIPTION
	06/17/22	100% SCHEMATIC DESIGN
	08/17/22	50% CD
	09/06/22	DSA PROGRESS SET
	10/19/22	DSA SUBMITTAL
	02/01/23	DSA BACKCHECK
A	03/27/23	ADDENDUM #2

SOBE PROJECT NO:	2200689
DATE:	03/27/23
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	EES

SHEET TITLE
CONTROLS POINTS LIST

SCALE: AS NOTED
THIS DRAWING IS 30" X 42" AT FULL SIZE

MI-6.3
SHEET OF –



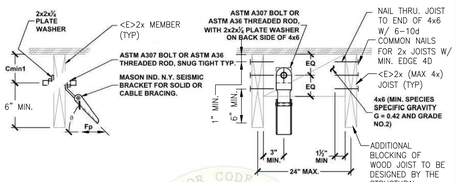
BRACE BRACKET ATTACHMENT TYPE	ALLOWABLE LATERAL LOAD Fp LBS	MAX BRACE RANGE θ	DIA. da INCH
38A TO 38E	420	30°-45°	⅜
38A TO 38D	300	46°-60°	
50A TO 50E	420	30°-45°	½
50A TO 50D	300	46°-60°	
63A TO 63E	420	30°-45°	⅝
63A TO 63D	300	46°-60°	

NOTE:

SEISMIC RESTRAINTS AND ATTACHMENTS SHALL BE IN ACCORDANCE WITH MASON WEST INC. SEISMIC RESTRAINT GUIDELINES FOR SUSPENDED DISTRIBUTION SYSTEM (OPM-0043-13)

10 SEISMIC BRACKET ATTACHMENT TO WOOD JOIST

SCALE: N.T.S.



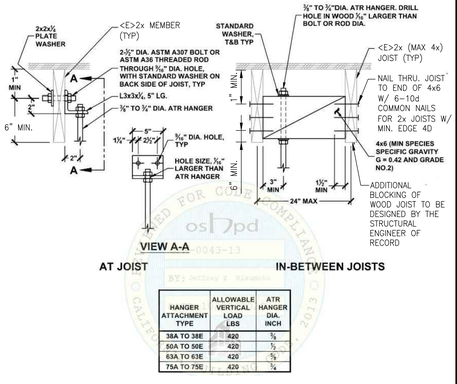
BRACE BRACKET ATTACHMENT TYPE	ALLOWABLE LATERAL LOAD Fp LBS	MAX BRACE RANGE θ	ASTM A307 BOLTS OR ASTM A36 THREADED ROD DIA. da INCH	MIN. EDGE Cmin1 INCH	MIN. EDGE Cmin2 INCH
38A TO 38D	250	30°-45°	⅜	1⅞	1½
38A TO 38B	150	46°-60°			
50A TO 50D	300	30°-45°	½	1⅞	2
50A TO 50B	170	46°-60°			
63A TO 63D	340	30°-45°	⅝	1⅞	2½
63A TO 63C	200	46°-60°			

NOTE:

SEISMIC RESTRAINTS AND ATTACHMENTS SHALL BE IN ACCORDANCE WITH MASON WEST INC. SEISMIC RESTRAINT GUIDELINES FOR SUSPENDED DISTRIBUTION SYSTEM (OPM-0043-13)

9 SEISMIC BRACKET ATTACHMENT TO STRUCTURAL TIMBER WITH (1) THRU BOLT OR THREADED ROD

SCALE: N.T.S.



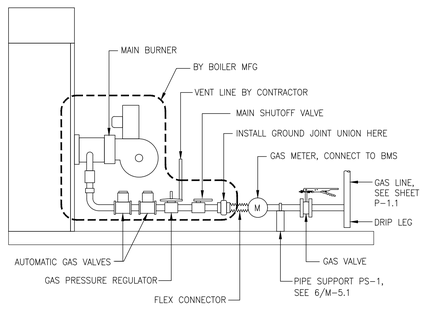
HANGER ATTACHMENT TYPE	ALLOWABLE VERTICAL LOAD LBS	ATR HANGER DIA. INCH
38A TO 38E	420	⅜
50A TO 50E	420	½
63A TO 63E	420	⅝
75A TO 75E	420	¾

NOTE:

SEISMIC RESTRAINTS AND ATTACHMENTS SHALL BE IN ACCORDANCE WITH MASON WEST INC. SEISMIC RESTRAINT GUIDELINES FOR SUSPENDED DISTRIBUTION SYSTEM (OPM-0043-13)

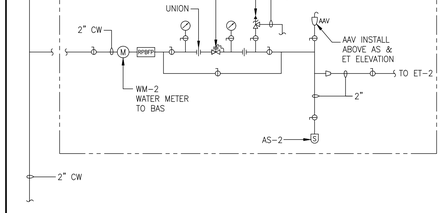
8 HANGER ATTACHMENT TO WOOD JOIST

SCALE: N.T.S.



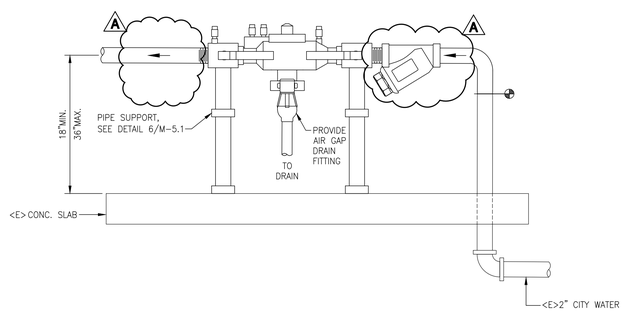
7 GAS BOILER GAS MANIFOLD

SCALE: N.T.S.



6 MAKE UP WATER ASSEMBLY

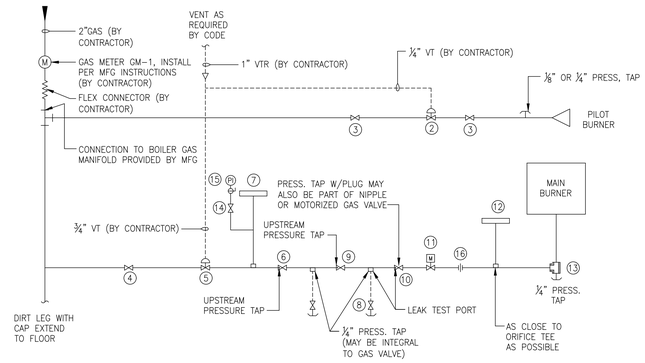
SCALE: N.T.S.



5 RPBFP DETAIL

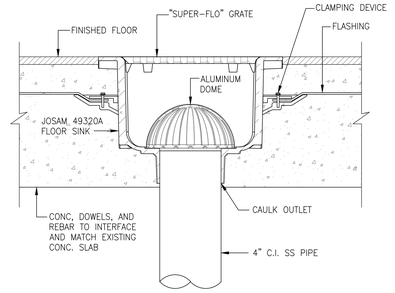
SCALE: N.T.S.

BY BOILER MFG	
ITEM	DESCRIPTION
1	PILOT SHUTOFF COCK
2	PILOT REGULATOR
3	PILOT VALVE
4	MAIN GAS SHUTOFF COCK
5	MAIN GAS PRESSURE REGULATOR
6	AUX. GAS VALVE
7	LOW GAS PRESS. SW.
8	LEAK TEST COCK
9	MAIN GAS VALVE W/ P.O.C.
10	MAIN GAS LEAK TEST COCK
11	BUTTERFLY VALVE
12	HIGH GAS PRESS. SW.
13	PIPE TEE
14	GAUGE COCK
15	GAUGE
16	UNION



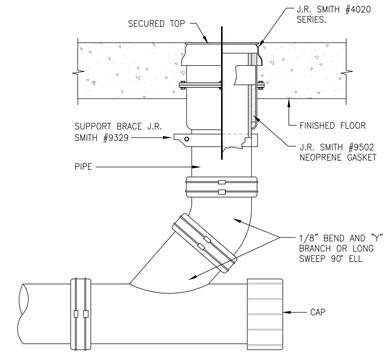
4 GAS METER & GAS BOILER MANIFOLD SCHEMATIC

SCALE: N.T.S.



3 FLOOR SINK

SCALE: N.T.S.

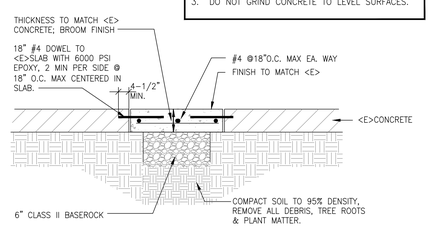


2 FLOOR/GRADE CLEANOUT

SCALE: N.T.S.

NOTES:

1. COORDINATE TRENCHING WITH MECHANICAL & ELECTRICAL
2. 2% MAX SLOPE CROSS SLOPE AT PATH OF TRAVEL AND 5% MAX RUNNING SLOPE ALONG PATH OF TRAVEL
3. DO NOT GRIND CONCRETE TO LEVEL SURFACES.



1 CONCRETE PATCH DETAIL

SCALE: N.T.S.

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SHEET TITLE

PLUMBING DETAILS

SCALE: AS NOTED

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P-5.1

SHEET OF –