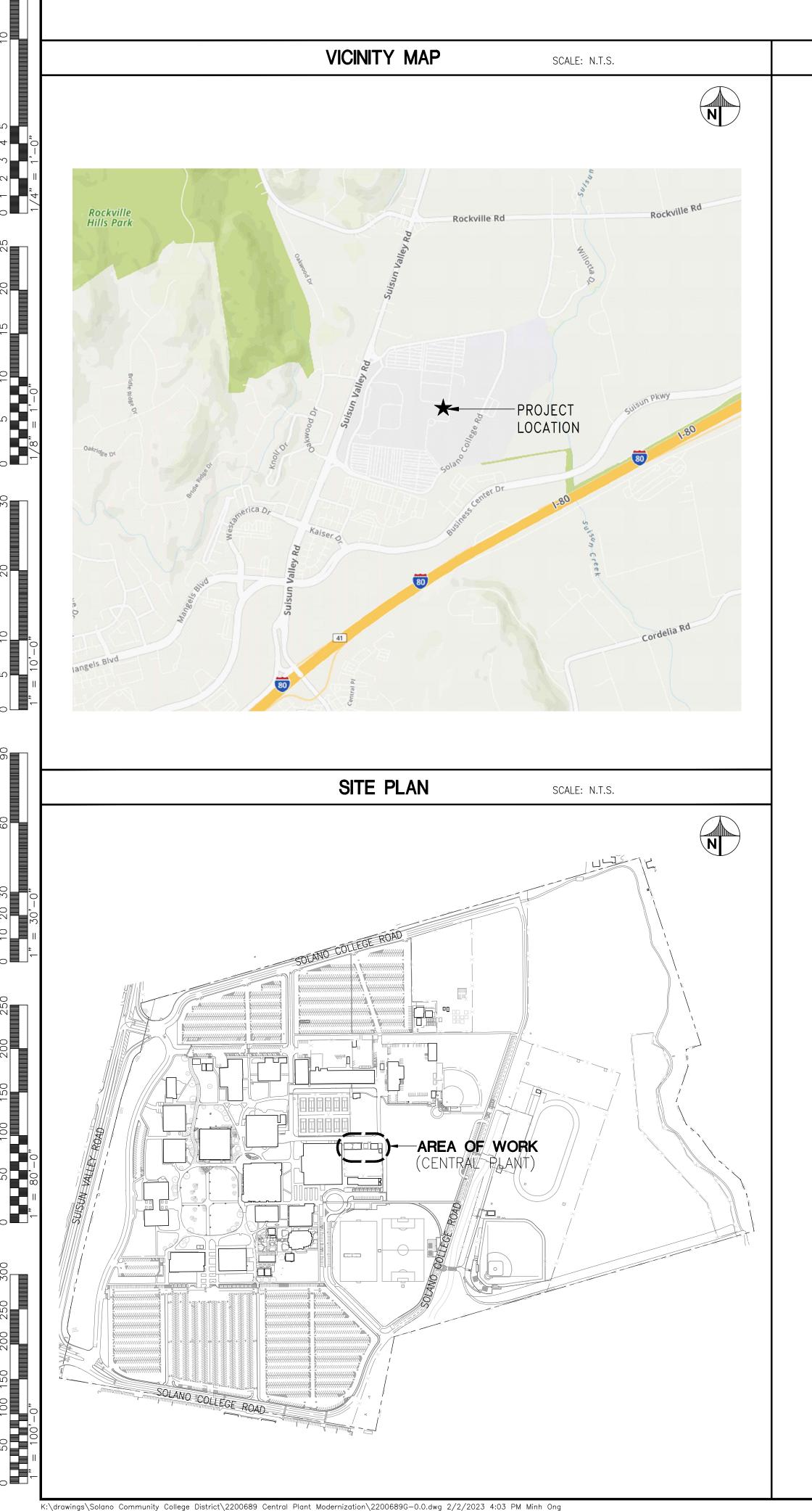
SOLANO COMMUNITY COLLEGE DISTRICT





4000 SUISUN VALLEY RD FAIRFIELD, CA 94534

CENTRAL PLANT MODERNIZATION

DSA APPL #02-120584

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.

MECHANICAL:

- 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. XISTING HOUSEKEEPING PADS TO REMAIN. CH-3 AND CHWP-3 TO REMAIN
- 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) 2,750 MBH OUTPUT GAS-FIRED BOILERS. GAS-FIRED BOILERS SHALL NOT EXCEED 30 PPM NOX AND 400 PPM CO, CORRECTED TO 3% O2 (YOLO-SOLANO AQMD, REG II, RULE 2.45 FOR BOILERS >=1,000,000 AND < 5,000,000 BTU/HR INPUT). FOR EACH GAS FIRED BOILER, PROVIDE INDIVIDUAL GAS METERS, OR HOUR METERS (AQMD 2.45, SECTION 303), AND PROVIDE INITIAL COMBUSTION ANALYZER TEST (AQMD 2.45, SECTION 302). 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.
- 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.
- . 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.

<u>PLUMBING:</u>

- 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.
- 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.
- 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
•	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.
ŀ.	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.
5.	INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANICE WITH SECTION $4-333(B)$. THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH SECTION $4-342$, PAF 1, TITLE 24.
	SUPERVISION OF CONSTRUCTION BY DSA SHAL BE IN ACCORDANCE WITH SECTION 4-334, PART TITLE 24.
3.	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.
).	THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH SECTION 4-343, PART 1, TITLE 24.
0.	ALL WORK SHALL CONFORM TO 2019 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
1.	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.
2.	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.
3.	A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
4.	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 AN 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. (SECTIO 4-317(c), PART 1, TITLE 24, CCR).
5.	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.
6.	LIGHTING CONTROLS ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROL ACCEPTANCE TEST TECHNICIAN (ATT).
7.	MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.
3.	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.
).	THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATIO OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.
).	PROJECT INSPECTOR WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.
•	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.
, 	GRADING PLAN, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTA HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.

BUILDING AREA: SINGLE STORY-NON SPRINKLERED TOTAL AREA: 6,293 S.F.

BUILDING HEIGHT: 21'±

EXISTING CHILLER ROOM:

OCCUPANCY: CONSTRUCTION TYPE: V-B SQ. FT.: 1.548

SEPARATION REQUIRED: TABLE 509 INCIDENTAL USES:

1–HR SEPARATION AT BOILER AND CHILLER ROOM

	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 2010 CA AMENDMENTS
	 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24): 2017 NEC WITH 2019 CA AMENDMENTS CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24): 2018 UMC WITH 2019 CA AMENDMENTS CALIFORNIA PLUMBING CODE (PART 5, TITLE 24): 2018 UPC WITH 2019 CA AMENDMENTS CALIFORNIA ENERGY CODE (PART 6, TITLE 24): 2018 UPC WITH 2019 CA AMENDMENTS CALIFORNIA FIRE CODE (PART 9, TITLE 24): 2018 IFC WITH 2019 CA AMENDMENTS CALIFORNIA EXISTING BUILDING CODE (PART 10, TITLE 24): (2018 INTERNATIONAL EXISTING BUILDING CODE WITH 2019 CA AMENDMENTS) CALIFORNIA GREEN BUILDING STANDARDS CODE OR CAL GREEN (PART 11, TITLE 24): 2019 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24): 2019 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24): 2019 CALIFORNIA CODE OF REGULATIONS PUBLIC SAFETY (TITLE 19), STATE FIRE MARSHAL: CURRENT EDITIO NFPA 72 NATIONAL FIRE ALARM CODE, WITH CA AMENDMENTS: 2016 EDITION (CA AMENDED) NFPA 170 STANDARD FOR FIRE SAFETY AND EMERGENCY SYMBOLS: 2018 EDITION SFM 12-10-2 SINGLE POINT LATCHING OR LOCKING DEVICES SFM 12-10-3 EMERGENCY EXIT & PANIC HARDWARE UL 305-2012 PANIC HARDWARE WITH REVISIONS THRU AUG. 2014 UL 464 AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES, 2003 EDITION UL 864-03 CONTROL UNITS AND ACCESSORIES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES, 2003 EDITION UL 864-03 CONTROL UNITS AND ACCESSORIES FOR FIRE ALARM SYSTEMS, WITH REVISIONS THF 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 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION UL 1971 – STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED 2002 (R2010)
E REQUIREMENT	FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.
C.C.R. SHALL BE KEPT ON THE JOB SITE AT ALL	SEE CALIFORNIA BUILDING CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.
DDENDA TO BE SIGNED BY THE ARCHITECT AND ICTION CHANGE DOCUMENTS ARE NOT VALID UNTIL	STATEMENT OF GENERAL CONFORMANCE
1, TITLE 24. OF SECTION 4-335, PART 1, TITLE 24, AND	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 BEE EXAMINED BY ME FOR DESIGN INTENT AND HAVE BEEN FOUND TO MEET THE APPROPRIATE
SHALL BE IN ACCORDANCE WITH SECTION 4-335 EMPLOY AND PAY THE LABORATORY. COSTS OF RACTOR.	REQUIREMENTS OF TITLE-24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIO PREPARED BY ME.
STRUCTION AND PRIOR TO THE PLACEMENT OF 24. PECTION SHALL BE IN ACCORDANICE WITH SECTION	THE LIST DRAWING INDEX HAVE BEEN COORDINATED WITH MY PLANS AND SPECIFICATIONS AND AF 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)
L BE IN ACCORDANCE WITH SECTION 4-342, PART	Euron 02/01/2023
BE IN ACCORDANCE WITH SECTION 4-334, PART 1,	Signature of the Architect/Engineer Date
IEERS SHALL SUBMIT VERIFIED REPORTS (FORM AND 4–343, PART 1, TITLE 24.	Print Name M40066 09/30/2024
IN ACCORDANCE WITH SECTION 4-343, PART 1,	License Number Expiration Date
CALIFORNIA CODE OF REGULATIONS (CCR). ECIFICATIONS SHALL BE MADE BY AN ADDENDUM) APPROVED BY THE DIVISION OF THE STATE	DEFERRED APPROVAL
PART 1, TITLE 24, CCR. R EMPLOYED BY THE DISTRICT (OWNER) AND UOUS INSPECTION OF THE WORK. THE DUTIES OF	NONE
2, PART 1, TITLE 24, CCR.	DRAWING INDEX (52 Sheets)
ATIONS IS THAT THE WORK OF THE ALTERATION, IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY OR NON-COMPLYING CONSTRUCTION BE ONTRACT DOCUMENTS WHEREIN THE FINISHED A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A DETAILING AND SPECIFYING THE REQUIRED WORK IA BEFORE PROCEEDING WITH THE WORK. (SECTION	SHEET NO.DESCRIPTIONG-0.0COVER SHEETG-0.1GENERAL NOTESG-0.2OVERALL SITE PLANG-1.1CENTRAL PLANT AND POOL EQUIPMENT BUILDING EGRESS ANALYSIS
3 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY STEM, ENVELOPES, AND PROCESS EQUIPMENT IPLETION, AN ACCEPTANCE TEST IS A FUNCTIONAL INSTALLED EQUIPMENT IS OPERATING AND IN	 M-0.1 MECHANICAL SYMBOLS & ABBREVIATIONS M-1.1.1 MECHANICAL CHILLER AND BOILER EQUIPMENT AND PAD LAYOUT M-1.2.1 MECHANICAL CHILLER AND BOILER FLOOR PLAN M-1.2.2 MECHANICAL COOLING TOWER EQUIPMENT AND PAD LAYOUT M-1.3 MECHANICAL COOLING TOWER FLOOR PLAN M-3.1 MECHANICAL CENTRAL PLANT SECTIONS – CHW

BUILDING DATA

	OCCUPANCY: CONSTRUCTION TYP SQ. FT.:	U E: V-B 1,938
EXIS	STING POOL EQUIPME	INT ROOM:
	OCCUPANCY: CONSTRUCTION TYP SQ. FT.:	U E: V-B 952
EXIS	STING BOILER ROOM:	
	OCCUPANCY: CONSTRUCTION TYPI SQ. FT.:	U E: V-B 1,507
<u>EXIS</u>	STING POOL STORAGE	E ROOM:
	OCCUPANCY: CONSTRUCTION TYP SQ. FT.:	S-2 E: V-B 348

FA-1.0 FIRE ALARM SITE PLAN FA-1.1 FIRE ALARM CHILLER AND BOILER FLOOR PLAN FA-5.1 FIRE ALARM DETAILS, BATTERY CALCULATION & VOLTAGE DROP FA-7.1 FIRE ALARM RISER DIAGRAM S–0.1 STRUCTURAL GENERAL NOTES & MATERIAL GRADES S-1.1 STRUCTURAL CHILLER AND BOILER FLOOR PLAN S-1.2 STRUCTURAL COOLING TOWER FLOOR PLAN S-5.1 STRUCTURAL DETAILS S-5.2 STRUCTURAL DETAILS

M-3.2 MECHANICAL CENTRAL PLANT SECTIONS – HHW

M-7.1 MECHANICAL CHILLED & CONDENSER WATER SYSTEM SCHEMATIC

MI-1.1 REFRIGERANT MONITORING SYSTEM CHILLER PLANT FLOOR PLAN

M-7.2 MECHANICAL HEATING HOT WATER SYSTEM SCHEMATIC

M-3.3 MECHANICAL CENTRAL PLANT SECTIONS

MI-6.1 CONTROLS SEQUENCE OF OPERATION

P-0.1 PLUMBING SYMBOLS & ABBREVIATIONS

P-1.2 PLUMBING COOLING TOWER FLOOR PLAN

P-1.1 PLUMBING CHILLER AND BOILER FLOOR PLAN

E-1.3 ELECTRICAL CHILLER AND BOILER ROOF PLAN

ED-7.1 ELECTRICAL SINGLE LINE DIAGRAM – DEMO

E-7.1 ELECTRICAL SINGLE LINE DIAGRAM - NEW

FA-0.2 FIRE ALARM LEGEND & NOTES

E-6.1 ELECTRICAL PANEL SCHEDULES & LOAD CALCULATION

FA-0.1 FIRE ALARM GENERAL NOTES, SYMBOLS & ABBREVIATIONS

E-0.1 ELECTRICAL GENERAL NOTES, SYMBOLS & ABBREVIATIONS

E-1.1.1 ELECTRICAL CHILLER AND BOILER FLOOR PLAN - POWER AND LIGHTING

E-1.2.2 ELECTRICAL COOLING TOWER AND POOL EQUIPMENT ROOM FLOOR PLANS

E-1.2.1 ELECTRICAL COOLING TOWER FLOOR PLAN - POWER AND LIGHTING

E-1.1.2 ELECTRICAL CHILLER AND BOILER FLOOR PLAN (MECHANICAL POWER PLAN)

MECHANICAL DETAILS

M-5.1 MECHANICAL DETAILS

M-5.3 MECHANICAL DETAILS

M-5.4 MECHANICAL DETAILS

M-6.1 MECHANICAL SCHEDULES

MI-6.2 CONTROLS POINTS LIST

MI-6.3 CONTROLS POINTS LIST

P-5.1 PLUMBING DETAILS

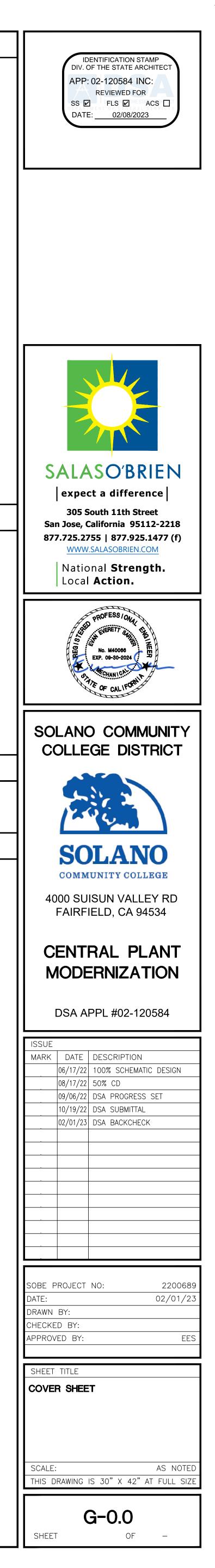
E-0.2 ELECTRICAL TITLE 24

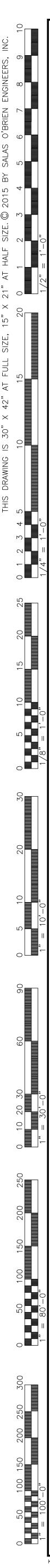
E–0.3 ELECTRICAL TITLE 24

E-5.1 ELECTRICAL DETAILS

S-5.3 STRUCTURAL DETAILS

M-5.2





	GENERAL NOTES
1.	ALL WORK, MATERIALS, AND METHODS TO BE USED FOR SEISMIC RESTRAINTS SHAPPROVED DRAWINGS.
2.	ALL WORK SHALL CONFORM WITH ALL APPLICABLE LOCAL, STATE, AND NATIONAL
3. 4.	PIPE HANGERS AND SUPPORTS SHALL BE SUPERSTRUT OR EQUAL INCLUDING CH. ISOLATORS, INSULATION, SHAW PIPE SHIELDS, INC., PORTABLE PIPE HANGERS, INC. PATCH EXISTING AND NEW OPENINGS SO FINISH PROFILES, FIXTURES, ETC. MATCH
5.	ALL DIMENSIONS ARE APPROXIMATE. THE DRAWINGS ARE DIAGRAMMATIC TO THE E ETC. ARE NOT SHOWN. THESE DRAWINGS ARE FOR THE GUIDANCE OF THE CONTR ALL DIMENSIONS IN THE FIELD FOR FABRICATION OF THE PIPING, PENETRATIONS, COMPONENTS INTO A COMPLETE AND OPERABLE SYSTEM.
6.	ALL WORK MUST BE SCHEDULED WITH THE PROJECT MANAGER TO MINIMIZE DISTICOORDINATE WORK WITH PROJECT MANAGER.
7.	WHERE DISCREPANCIES OCCUR BETWEEN THE PLANS AND SPECIFICATIONS CONTRADISCREPANCIES IN WRITING. ANY ADJUSTMENT OF THE CONTRACT DOCUMENTS WIT OWNER SHALL BE AT THE CONTRACTOR'S OWN RISK AND EXPENSE. THE MOST S APPLY AS DETERMINED BY THE OWNER.
8.	CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH MANUFACTURERS
9.	PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION SITE. HE SHALL BE FAMILIAR WITH THE EXISTING HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS ALLOWANCE WILL BE MADE IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR ON HIS PART.
10.	THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTO REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACE
11.	THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING BUILDING CONDITIONS AND REPRESENTATIVE IN WRITING OF ANY DISCREPANCIES BETWEEN THE CONTRACT DC
12.	THE CONTRACTOR SHALL, DURING THE COURSE OF CONSTRUCTION, PROTECT ADJ CONSTRUCTION, AIRBORNE DUST AND FUMES AS A RESULT OF THE WORK.
13.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS, ME AND PROCEDURES IN ACCORDANCE WITH THE GENERAL CONDITIONS OF THE CON
14.	IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE OWNER WITH A DRAWING, INCLUDING THE WORK OF ALL SUBCONTRACTORS.
15.	ALL PRODUCTS AND MATERIALS USED ON THIS PROJECT SHALL BE FREE OF ASE
16.	NO PRODUCT WILL BE ACCEPTED ON THE JOB SITE WITHOUT PRIOR REVIEW BY T SHALL SUBMIT CATALOG SHEETS OF ALL FIXTURES, PIPING, VALVES AND ETC., FO
17.	ALL PRODUCT SUBSTITUTIONS SHALL HAVE PRIOR REVIEW BEFORE INSTALLATION. COSTS INCURRED FOR REVIEW, DESIGN AND INSTALLATION OF SUBSTITUTIONS. A THE OWNER'S REPRESENTATIVE DOES NOT ALTER THE REVIEW REQUIREMENT.
18.	PENETRATIONS OF DUCTS, PIPES, CONDUITS, ETC. IN WALLS AND FLOOR-CEILING OPENINGS SHALL BE FIRE STOPPED, PER THE U.L. FIRE LISTINGS. FIRE STOP M ASSEMBLY. SEE PLANS FOR ADDITIONAL REQUIREMENTS. SUBMIT U.L. FIRE RATE FOR APPROVAL.
19.	THE INSTALLATION OF PIPING AND EQUIPMENT SHALL BE MADE IN SUCH A MANN OBSTRUCTIONS. DO NOT CUT INTO OR REDUCE THE SIZE OF PLATES OR ANY L APPROVAL OF THE ARCHITECT AND ENGINEER OF RECORD. COORDINATE WITH WO INTERFERENCE.
20.	ALL LOCATIONS OF PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY TO THOFFSETS, ETC. ARE NOT SHOWN. ADHERE TO LOCATIONS AS CLOSELY AS POSSI OF PIPING CAN VARY, AS REQUIRED TO MEET FOUNDATION, STRUCTURAL AND OTI SHALL VERIFY ALL DIMENSIONS IN THE FIELD FOR FABRICATION OF THE PIPING, FOR COMPONENTS INTO A COMPLETE AND OPERABLE SYSTEM.
21.	SUPPORT AND RESTRAIN PIPING PER CALIFORNIA MECHANICAL CODE AND ACCORE RECOMMENDATIONS. ALL SUPPORTING RODS, STRUT AND OTHER HARDWARE SHAI UNLESS OTHERWISE SPECIFIED.
22.	ALL SOLDER AND PLUMBING FIXTURES SHALL CONFORM TO NON LEAD STANDARD
23.	PROVIDE ACCESS PANELS WHERE SHUT OFF VALVES AND WATER HAMMER ARREST ABOVE HARD CEILINGS.
24.	ALL PIPING IN THIS CONTRACT SHALL BE LABELED ACCORDING TO ANSI A13.1, C FURNISH FLOW ARROWS INDICATING DIRECTION OF FLOW FOR LIQUID PHASE MATE VISIBLE FROM FLOOR LEVEL. ALL VALVES IN THIS CONTRACT OTHER THAN MEDICA BRASS TAGS. ALL MEDICAL VACUUM VALVES SHALL BE LABELED PER CHAPTER 13
25.	EXACT LOCATION OF EXISTING UTILITIES HAVE NOT BEEN INDEPENDENTLY VERIFIED ALL CONNECTION POINTS AND LOCATIONS. VERIFICATION OF ADEQUATE FALL FOR TO BEGINNING WORK OF THIS CONTRACT.
26.	ALL TEMPORARY AND REMODELING WORK SHALL BE CONSIDERED A PART OF THIS CHARGES WILL BE ALLOWED. THIS SHALL INCLUDE MINOR ITEMS OF MATERIAL OR THE REQUIREMENTS AND INTENT OF THE PROJECT.
27.	EXAMINE MECHANICAL & STRUCTURAL DRAWINGS AND SPECIFICATIONS TO DETERM CONSTRUCTION THROUGHOUT THE PROJECT, INCLUDING EXISTING, TEMPORARY, RE
28.	CONTRACTOR TO LEGALLY DISPOSE OF OR RECYCLE PROJECT DEBRIS.
	ALL DEVICES & EQUIPMENT ARE NEW, UNLESS OTHERWISE NOTED.
	SALVAGED EQUIPMENT SHALL BE TURNED OVER TO OWNER. COORDINATE WITH OV MAINTAIN FIRE RATING OF ALL ASSEMBLIES PENETRATED.
	SEAL ALL EXTERIOR PENETRATIONS WATER-TIGHT.
33.	UNLESS OTHERWISE NOTED, ARRANGE, PAY FOR, COORDINATE AND PROVIDE ALL COMPLETE AND OPERABLE SYSTEM.
34.	WORK SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 33 OF THE CBC & CF CONSTRUCTION AND DEMOLITION".
ואוד	
	ERRUPTIONS TO EXISTING SYSTEMS: THE CONTRACT REQUIRES THAT ALL ELECTRICAL CONNECTIONS REQUIRING AN OUT OR BETWEEN THE HOURS OF 10PM AND 7AM, MONDAY THROUGH FRIDAY. OUTAT APPROVED IN ADVANCE AND IN WRITING AT LEAST 10 DAYS PRIOR TO THE OUTAT SUCH THAT AT NO TIME WILL ANY EMERGENCY FEEDER, CIRCUIT OR FIRE ALARM

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:

THIS REQUIREMENT.

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.

HALL BE AS DETAILED ON THE

CODES. HANNEL, HANGERS, STRAPS,

CH ADJACENT UNDISTURBED WORK.

EXTENT THAT ALL FITTINGS, OFFSETS, TRACTOR. CONTRACTOR SHALL VERIFY CONDUIT, WIRING, AND ALL

STURBANCE OF NORMAL ACTIVITIES.

RACTOR SHALL NOTIFY OWNER OF ANY VITHOUT A DETERMINATION BY THE STRINGENT REQUIREMENTS SHALL

RECOMMENDATIONS.

RUCTION DRAWINGS AND SHALL HAVE NG CONDITIONS UNDER WHICH HE WILL S CONTRACT. NO SUBSEQUENT OR FOR ANY ERROR OR NEGLIGENCE

ORATION OF ALL EXISTING SURFACES HE INSTALLATION OF WORK UNDER CES, ETC., AS REQUIRED.

NOTIFY THE OWNER'S DOCUMENT AND EXISTING CONDITIONS. DJACENT AREAS FROM DAMAGE. NOISE.

LL SUB-CONTRACTORS AND SHALL BE ETHODS, TECHNIQUES, SEQUENCES NTRACT. A COMPLETE SET OF RECORD

SBESTOS.

THE OWNER. THE CONTRACTOR FOR REVIEW. THE CONTRACTOR SHALL PAY ALL

ACCEPTANCE OF SUBSTITUTIONS BY

G ASSEMBLIES REQUIRING PROTECTED MATERIAL SHALL BE A TESTED ED ASSEMBLIES TO FIRE MARSHALL

NER TO CLEAR BEAMS AND LOAD CARRYING MEMBERS WITHOUT WORK OF OTHERS TO PREVENT

THE EXTENT THAT ALL FITTINGS, SIBLE. HOWEVER, RUNS OR SHAPE THER INTERFERENCES. CONTRACTOR PENETRATIONS, AND ALL

RDING TO MANUFACTURER'S HALL BE HOT DIPPED GALVANIZED

RDS.

STERS ARE LOCATED IN WALLS OR CHAPTER 13, CPC AND NFPA 99. FERIALS. PIPE LABELS SHALL BE CAL VACUUM, SHALL BE LABELED WITH

13, CPC AND NFPA 99. ED. CONTRACTOR SHALL FIELD VERIFY

R WASTE LINE SHALL BE DONE PRIOR

HIS CONTRACT AND NO EXTRA OR EQUIPMENT NECESSARY TO MEET

MINE THE SEQUENCE OF REMODELED AND NEW AREAS.

OWNER FOR STORAGE LOCATION.

PERMITS NECESSARY FOR A

CFC, "FIRE SAFETY DURING

OUTAGE SHALL OCCUR ON A WEEKEND FAGES SHALL BE SCHEDULED AND TAGE. WORK SHALL BE SCHEDULED I ZONE BE OUT OF SERVICE. THIS MEANS THAT CONTRACTOR, SHALL INCLUDE ALL PROVISIONS FOR TEMPORARY FEEDERS IN ORDER TO ACCOMPLISH

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.

MP 🗆 MD 🛛 PP 🖾 E 🗖

OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) # 0043-13

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.
- 2. BOILER PLANT CONSTRUCTION SHALL OCCUR BETWEEN THE HOT MONTHS OF JULY 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 DETERMINE TEMPORARY MEANS OF HEATING THAT ALLOWS THE CENTRAL PLANT

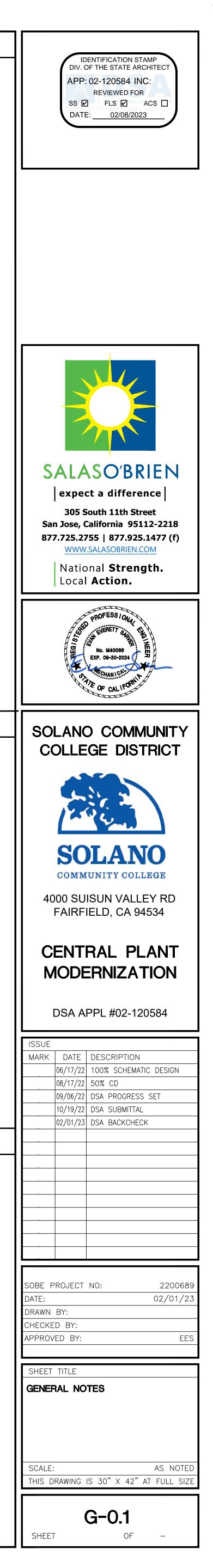
FACILITY TO SATISFY THE CAMPUS HEATING LOAD THROUGH THE COLD MONTHS OF NOVEMBER -APRIL. EXISTING BOILER B-1 MAY BE USED AS A TEMPORARY BOILER IF CONFIRMED TO BE OPERATIONAL, OTHERWISE CONTRACTOR TO PROVIDE TEMPORARY GAS BOILER(S) WITH A TOTAL HEATING CAPACITY OF NOT LESS THAN 7,000 MBH.

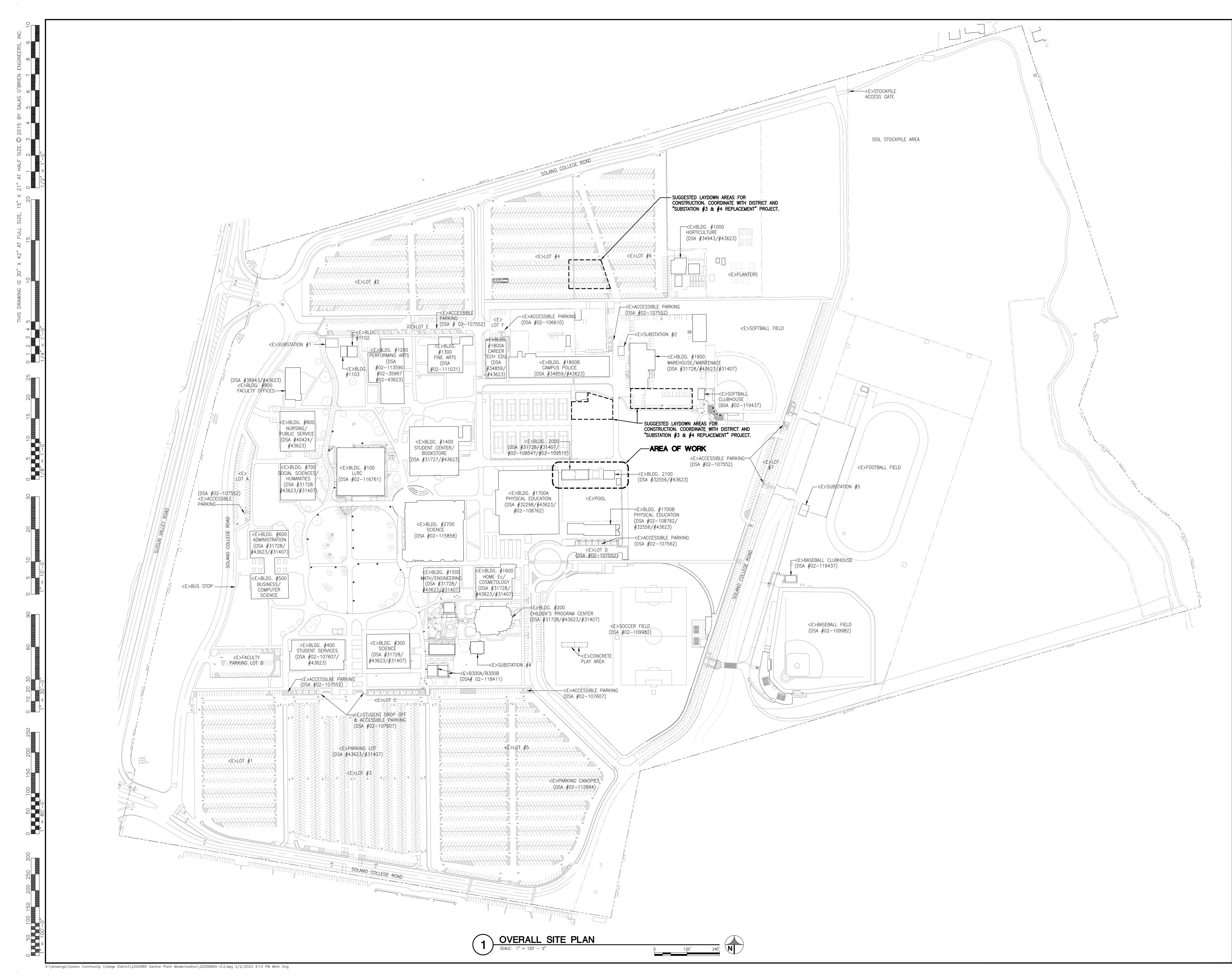
NEW GAS BOILERS SHALL BE INSTALLED AS A PRIORITY. NEW ELECTRIC BOILERS AND REMAINING NEW BOILER PLANT DESIGN SHALL BE INSTALLED AFTER THE COLD MONTHS OF NOVEMBER -APRIL. ELECTRIC BOILERS SHALL BE INSTALLED/ANCHORED PER PLANS AND SHALL NOT BE ENERGIZED. CONTRACTOR TO DETERMINE MEANS FOR TEMPORARY POWER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

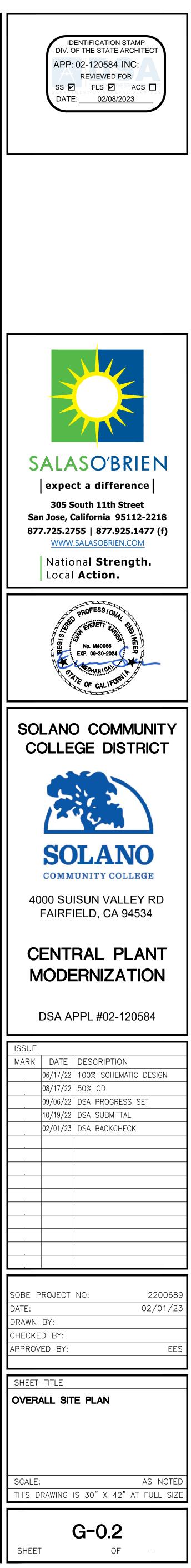
3. CHILLER PLANT AND COOLING TOWER YARD CONSTRUCTION SHALL OCCUR BETWEEN THE COLD MONTHS OF NOVEMBER – APRIL. CHILLERS AND COOLING TOWERS HAVE LEAD TIMES THAT RANGE BETWEEN 18 – 29 WEEKS (SUBJECT TO CHANGE BY MANUFACTURER). CHILLER PLANT AND COOLING TOWER CONSTRUCTION SHALL COMMENCE BETWEEN THE MONTHS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

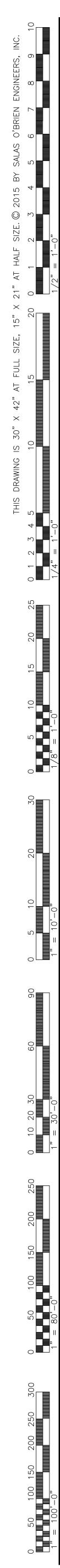
CONTRACTOR SHALL PRIORITIZE CONSTRUCTION TO ALLOW THE EXISTING CHILLER (CH–3) TO BE ONLINE FOR SMALL CAMPUS COOLING LOADS AS SOON AS PRACTICALLY POSSIBLE. THIS INCLUDES PRIORITIZING CONSTRUCTION FOR THE COOLING TOWERS TO ALLOW CHILLERS TO BE ENABLED.

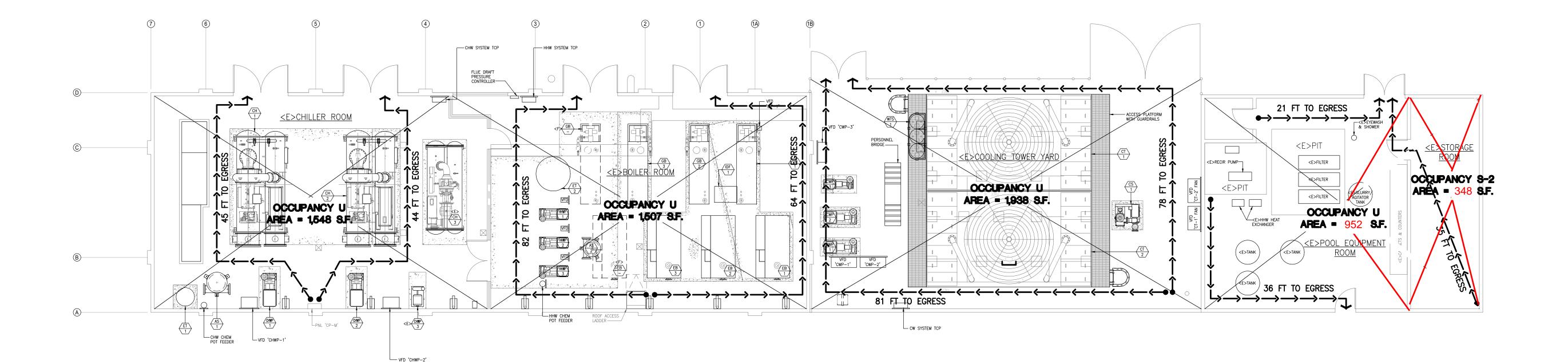
CHILLER PLANT AND COOLING TOWER YARD CONSTRUCTION SHALL BE COMPLETED AND EQUIPMENT SHALL BE FACTORY STARTED BEFORE THE MONTH OF MAY TO ENSURE CAMPUS COOLING LOADS CAN BE SATISFIED DURING THE SUMMER.





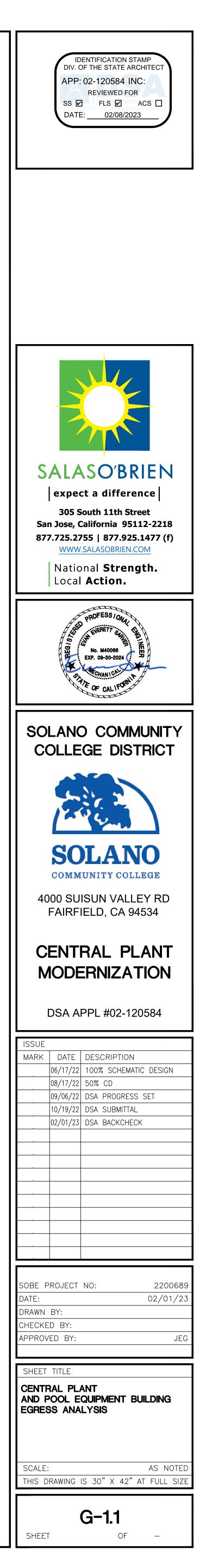




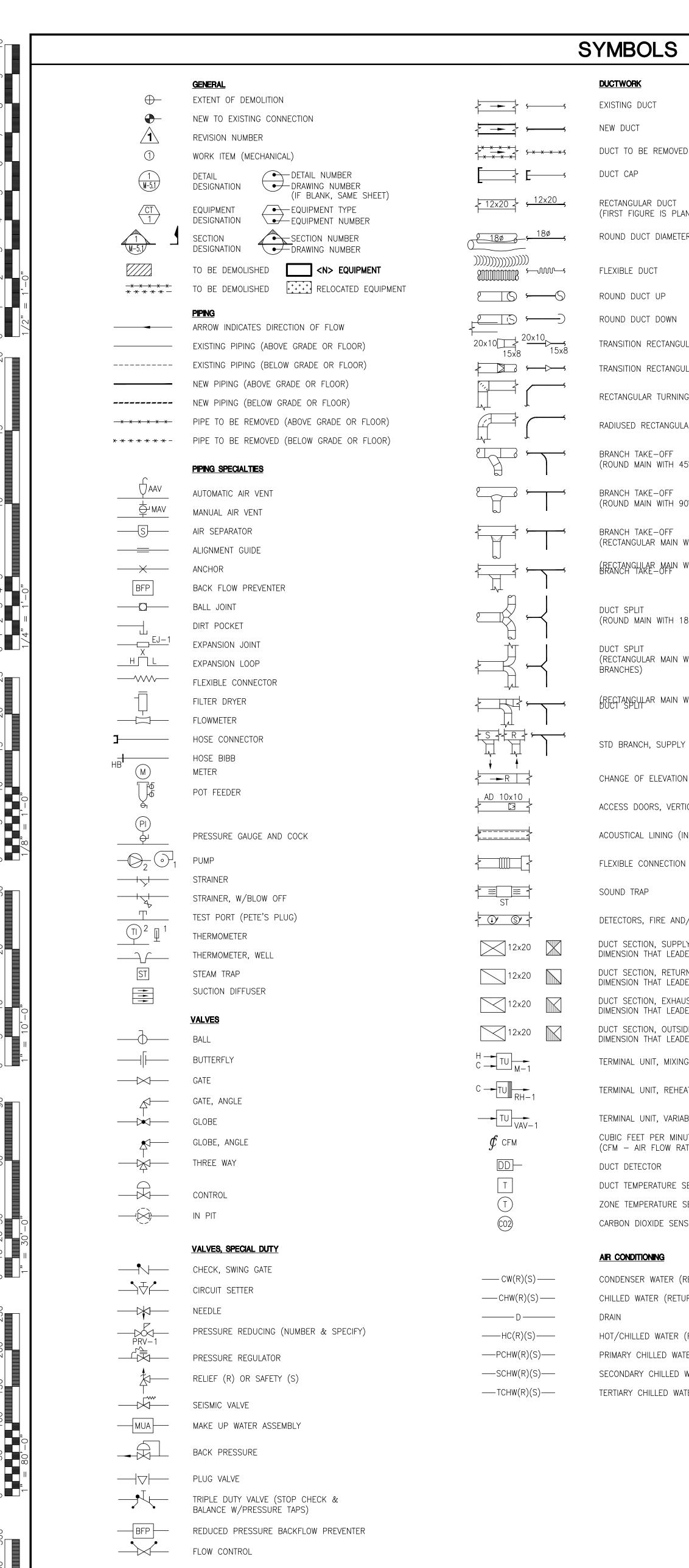


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1) CENTRAL PLANT AND POOL EQUIPMENT BUILDING PLAN SCALE: 1/8" = 1' - 0" 0 8'







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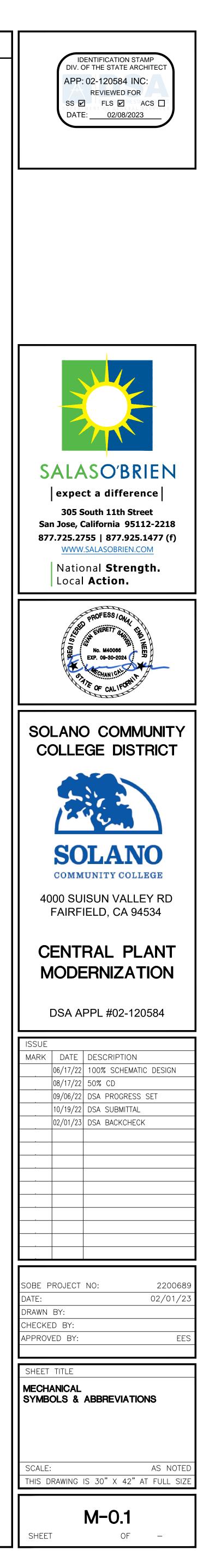
S						ABBREVIATIONS		
		CONTROLS	@ AAV	AT AUTOMATIC AIR VENT	FCU	FAN COIL UNIT	PSI(G) PS-N	POUNDS PE PIPE SUPPO
	AI	ANALOG INPUT	ABD	ABANDONED	FD FDC	FIRE DAMPER FIRE DEPARTMENTCONNECTION	PTDF	PRESSURE
	(AO)	ANALOG OUTPUT	AC ACC	AIR CONDITIONING UNIT DESIGNATION AIR COOLED CONDENSER	FDD FHC	FLUE DISCHARGE DEFLECTOR FIRE HOSE CABINET	PVC R	POLYVINYL (RELAY
OVED	BT (C)	BYPASS TIMER CONTROLLER	ACM	ASBESTOS CONTAINING MATERIAL	FLA	FULL LOAD AMPS	<re> <rr></rr></re>	REMOVE EX REMOVE/RE
	(DP)	DIFFERENTIAL PRESSURE TRANSMITTER	ACP AD	ASBESTOS CEMENT PIPE ACCESS DOOR	FLEX FLR	FLEXIBLE FLOOR	<rrn></rrn>	REMOVE &
СТ		DIGITAL (ON/OFF) INPUT	AFF	ABOVE FINISHED FLOOR AIR HANDLER	FM	FLOW METER	RA RAD	RETURN AIR RETURN AIR
PLAN DIMENSION)	DO	DIGITAL (ON/OFF) OUTPUT	AH AHU	AIR HANDLING UNIT	FMS FO(R)(S)	FACILITY MONITORING SYSTEM FUEL OIL (RETURN)(SUPPLY)	RAG	RETURN AIR
METER SIZE	(FE) (FT)	FLOW ELEMENT FLOW TRANSMITTER	AHUC AI	AIR HANDLING UNIT CONTROLLER ANALOG INPUT	FOV FPF	FUEL OIL VENT FINS PER FOOT	RA(T) RD	RETURN AIR ROOF DRAIN
	FS	FLOW SWITCH	ALM	ALARM	FRP	FIBER REINFORCED POLYMER	REQ'D RF	REQUIRED RETURN AIR
	(FM)	FLOWMETER	ANSI AO	AMERICAN NATIONAL STANDARDS INSTITUTE ANALOG OUTPUT	FS FSD	FLOW SWITCH COMBINATION FIRE AND SMOKE DAMPER	RH	RELATIVE HU
VN		FLOWMETER, ORIFICE	APD ARCH	AIR PRESSURE DROP (IN.W.G.) ARCHITECTURAL	FT	FLOW TRANSMITTER or FEET	RHC RIM	REHEAT COI RIM ELEVATI
NGULAR TO RECTANGULAR	H	HUMIDITY CONTROLLER	AS	AIR SEPARATOR	G	GAS	RIP RLA	RETIRED—IN RATED LOA
NGULAR TO ROUND	H	HUMIDITY TRANSMITTER	ASJ ASME	ALL SERVICE JACKET AMERICAN SOCIETY OF MECHANICAL ENGINEERS	GA GAL	GAUGE GALLONS	RO	REVERSE O
RNING VANES	M	MOTOR/ACTUATOR MOTOR STARTER	ASSY	ASSEMBLY	GALV GF	GALVANIZED GAS FURNACE	RPM RV	REVOLUTION RELIEF VAL
	PI	PRESSURE INDICATOR	ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS	GPM	GALLONS PER MINUTE	RW	RECLAIMED
IGULAR TURNING VANES	PID	PID CONTROL LOOP (REPRESENTATION)	BAS	BUILDING AUTOMATION SYSTEM	GSM GV	GALVANIZED SHEET METAL GATE VALVE	RWL	RAIN WATER
F H 45° ROUND TAKE–OFF)	P/S	PRESSURE SWITCH	BAV BDD	BALANCING VALVE BACKDRAFT DAMPERS	Н	HUMIDIFIER	SAD S.A.D.	SUPPLY AIF SEE ARCHIT
F	PT RHC	PRESSURE TRANSMITTER REHEAT COIL	BFP	BACKFLOW PREVENTER	HB HC	HOSE BIBB HEATING COIL	SAG SA(T)	SUPPLY AIF SUPPLY AIF
H 90° ROUND TAKE-OFF)	R	RELAY COIL	BFV BHP	BUTTERFLY VALVE BRAKE HORSEPOWER	HDR	HEADER	SCBA	SELF-CONT
F	S	SENSOR	BLDG BOD	BUILDING BOTTOM OF DUCT	HGR HHW(R)(S)(T)(P)	HANGER HEATING HOT WATER (RETURN)(SUPPLY)(PUMP)	S.C.D. SCHW(R)(S)(T)	SEE CIVIL I
AIN WITH 90° ROUNDTAKE-OFF)	T	TEMPERATURE SENSOR	ВОР	BOTTOM OF PIPE	HP	(TEMPERATURE) HORSE POWER	SCHWP	SECONDARY
N WITH RECTANGULAR TAKE—OFF)	TE (TI)	TEMPERATURE ELEMENT TEMPERATURE INDICATOR	BTU BTUH	BRITISH THERMAL UNIT BRITISH THERMAL UNIT PER HOUR	HPCR	HIGH PRESSURE CONDENSATE RETURN	SD SDCO	STORM DRA STORM DRA
	Π	TEMPERATURE TRANSMITTER	BUR	BUILT-UP ROOFING	HPS HT	HIGH PRESSURE STEAM HEIGHT	S.E.D. SEER	SEE ELECT SEASONAL
H 180° ROUND BRANCHES)	T	THERMOSTAT OR TEMPERATURE SENSOR (DDC) (36" TO 48" AFF.)	BV	BALL VALVE	HVAC	HEATING VENTILATING AND AIR CONDITIONING	SENS	SENSIBLE
	C H	HEATING COIL	Ф СА	CENTERLINE COMPRESSED AIR	HWP HX	HOT WATER PUMP HEAT EXCHANGER	SF SHHW(R)(S)(T)	SUPPLY FA
AIN WITH 180° RECTANGULAR	C	COOLING COIL	CC, C/C CD	COOLING COIL CONDENSATE DRAIN	ΗZ	HERTZ; CYCLES PER SECOND	SIM.	STEEMPERETI SIMILAR
AIN WITH 90° RECTANGULAR SPLIT)	\mathbb{Z}	DIRECT EXPANSION COIL	CFF	CAP FOR FUTURE	IA ICW	INSTRUMENT AIR INDUSTRIAL COLD WATER	S.L.D.	SEE LANDS
,		GAS FIRED HEAT EXCHANGER	CFM or ¢ CFT	CUBIC FEET PER MINUTE CHEMICAL FEED TANK	ID	INSIDE DIAMETER	SM SMD	SHEET MET SMOKE DAM
PPLY OR RETURN, NO SPLITTER	VFD	VARIABLE FREQUENCY DRIVE		CHILLER CONTROL PANEL	IE IN.	INVERT ELEVATION INCH	SMH SOVL	STEAM MAN SOLENOID
			CHW(R)(S)(T) CL	CHILLED WATER (RETURN)(SUPPLY)(TEMP) CENTER LINE	IN.W.G. IRL	INCHES WATER GAGE (PRESSURE) IRRIGATION LINE	SP	STATIC PRE
ATION RISE (R) DROP (D)			CLG CLR	CEILING CENTERLINE RADIUS	KW	KILOWATT	SPD S.P.D.	SUMP PUM SEE PLUME
/ERTICAL OR HORIZONTAL			CO	CLEAN-OUT	LAT	LEAVING AIR TEMPERATURE	SPECS	SPECIFICAT
G (INSULATION)			COL CONC	COLUMN CONCRETE	LAT	POUNDS	SRV SS	SAFETY REI SANITARY S
TION			CONN	CONNECT OR CONNECTION CONTINUATION	LPS LWCO	LOW PRESSURE STEAM LOW WATER CUT OFF	S/S S.S.D.	START/STO SEE STRUC
			CONT CONTR.	CONTRACTOR	LWT	LEAVING WATER TEMPERATURE	SST	STAINLESS
			CP CR	CONTROL PANEL CONDENSATE RETURN	MA(T)	MIXED AIR (TEMPERATURE)	ST STD	SOUND TRA STANDARD
AND/OR SMOKE			CRAC	COMPUTER ROOM AIR CONDITIONER	MAV MAX	MANUAL AIR VENT MAXIMUM	STM STRUCT	STEAM STRUCTURA
JPPLY, FIRST FIGURE IS EADER POINTS TO.			CT CTL	COOLING TOWER CONTROL	MBH MCA	1,000 BTU PER HOUR MINIMUM CIRCUIT AMPACITY	STS	STATUS
ETURN, FIRST FIGURE IS LEADER POINTS TO.			CU CV	COPPER CONTROL VALVE	MCC	MOTOR CONTROL CENTER	SW SXR	SWITCH SQUARE TO
(HAUST, FIRST FIGURE IS LEADER POINTS TO.			CW	CITY WATER	MD MECH	MANUAL VOLUME DAMPER MECHANICAL	Т	THERMOSTA
JTSIDE, FIRST FIGURE IS			CWP CW(R)(S)(T)	CONDENSER WATER PUMP CONDENSER WATER (RETURN)(SUPPLY)	MFR MH	MANUFACTURER MANHOLE	TBA	TO BE ABA
EADER POINTS TO.				(TEMPERATURE)	MIN	MINIMUM	TBR TCHW(R)(S)(T)	TO BE REN TERTIARY C
IIXING			D DA	DRAIN DEAERATOR	MMBTUH MOCP	MILLIONS BTU PER HOUR MAXIMUM OVER CURRENT PROTECTION	TCHWP TCP	TERTIARY C TEMPERATU
EHEAT			DB	DRY BULB	MOT	MOTORIZED	TDH	TOTAL DYN,
ARIABLE VOLUME			DCW DDC	DOMESTIC CITY WATER DIRECT DIGITAL CONTROL	MPG MR	MEDIUM PRESSURE GAS MECHANICAL ROOM	TDV TEMP	TRIPLE DUT TEMPERATU
MINUTE / RATE)			DHW(R) DI	DOMESTIC HOT WATER (RETURN) DISCRETE INPUT	MT, MTD, MTG MU	MOUNT, MOUNTED, MOUNTING MAKE-UP	TG T&G	TRANSFER TONGUE &
			DIA	DIAMETER	<n></n>	NEW	TH	THERMOME
RE SENSOR			DISC DN	DISCONNECT DOWN	N.C.	NORMALLY CLOSED	TI TOD	TEMPERATU TOP OF DU
RE SENSOR SENSOR			DO DP	DISCRETE OUTPUT DIFFERENTIAL PRESSURE	NFPA NIC	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT	TP	TEST PLUG
			DPS	DIFFERENTIAL PRESSURE SWITCH	NOX N.O.	NITROGEN OXIDE NORMALLY OPEN	TR TRANS	THROUGH F
			DPT DWDI	DIFFERENTIAL PRESSURE TRANSDUCER DOUBLE WIDTH, DOUBLE INLET	NPSH(R)	NET POSITIVE SUCTION HEAD (REQUIRED)	TS TSP	TEMPERATU TOTAL STAT
R (RETURN)(SUPPLY)			DWG DWH	DRAWING DOMESTIC WATER HEATER	N.T.S.	NOT TO SCALE	TYP	TYPICAL
RETURN)(SUPPLY)			DX	DIRECT EXPANSION	OA(G) OA(T)	OUTSIDE AIR (GRILLE) OUTSIDE AIR (TEMPERATURE)	UH U.O.N.	UNIT HEATE UNLESS OT
ER (RETURN)(SUPPLY)			<e></e>	EXISTING	OAD OAI	OUTSIDE AIR DAMPER OUTSIDE AIR INTAKE	V OR VT VAC	VENT VACUUM
WATER (RETURN)(SUPPLY)			EA(T) EAD	EXHAUST AIR (TEMPERATURE) EXHAUST AIR DUCT	OBD	OPPOSED BLADE DAMPER	VAC VAV	VACOOM VARIABLE A
ED WATER (RETURN)(SUPPLY)			EAT	ENTERING AIR TEMPERATURE	O.C. OD	ON CENTER OUTSIDE DIMENSION or OUTSIDE DIAMETER	VB VFD	VACCUM BE VARIABLE F
WATER (RETURN)(SUPPLY)			EER EF	ENERGY EFFICIENCY RATIO EXHAUST FAN	OS&Y	OUTSIDE STEM & YOKE GATE VALVE	VSD	VARIABLE S
			EJ EL	EXPANSION JOINT EXPANSION LOOP	OV OX	OUTLET VELOCITY OXYGEN	VI V.I.F.	VIBRATION VERIFY IN
			ELEV	ELEVATION	OWS P	OPERATOR'S WORK STATION PLATE	VR VTR	VENT RISEF VENT THRO
			ELEC EMCS	ELECTRICAL ENERGY MANAGEMENT & CONTROL SYSTEM		PUMP	W	WASTE
			EMS EOD	ENERGY MANAGEMENT SYSTEM EXTENT OF DEMOLITION	PCHW(R)(S)(T) PCHWP	PRIMARY CHW PUMP	W/ WB	WITH WET BULB
			E/P	ELECTRO/PNEUMATIC TRANSDUCER	PCR PD	PUMPED CONDENSATE RETURN PRESSURE DROP	WC	WATER COL
			EQ EQUIP.	EQUAL EQUIPMENT	PE	PNEUMATIC TO ELECTRIC RELAY	WP WPD	WEATHER F WATER PRE
			ESP	EXTERNAL STATIC PRESSURE (IN.W.G.)	PG PHW(R)(S)	PIPE GUIDE PRIMARY HOT WATER (RETURN)(SUPPLY)	WT XFMR	WEIGHT TRANSFORM
			ET EWLC	EXPANSION TANK ELECTRONIC WATER LEVEL CONTROLLER	P&ID	PROCESS & INSTRUMENTATION DIAGRAM	XMTR	TRANSMITTE
			EWS EWT	EMERGENCY EYEWASH AND SHOWER ENTERING WATER TEMPERATURE	PIV PLY or PLYWD	POST INDICATING VALVE PLYWOOD		
			<f></f>	FUTURE	PM POC	POWER METER POINT OF CONNECTION		
			F FA	FAHRENHEIT FACE AREA	PRS	PRESSURE REDUCING STATION		
			FAF FC	FORCED AIR FURNACE FLEXIBLE CONNECTION	PRV PS	PRESSURE REDUCING VALVE PRESSURE SWITCH		
			FC	FLOOR CLEAN OUT				

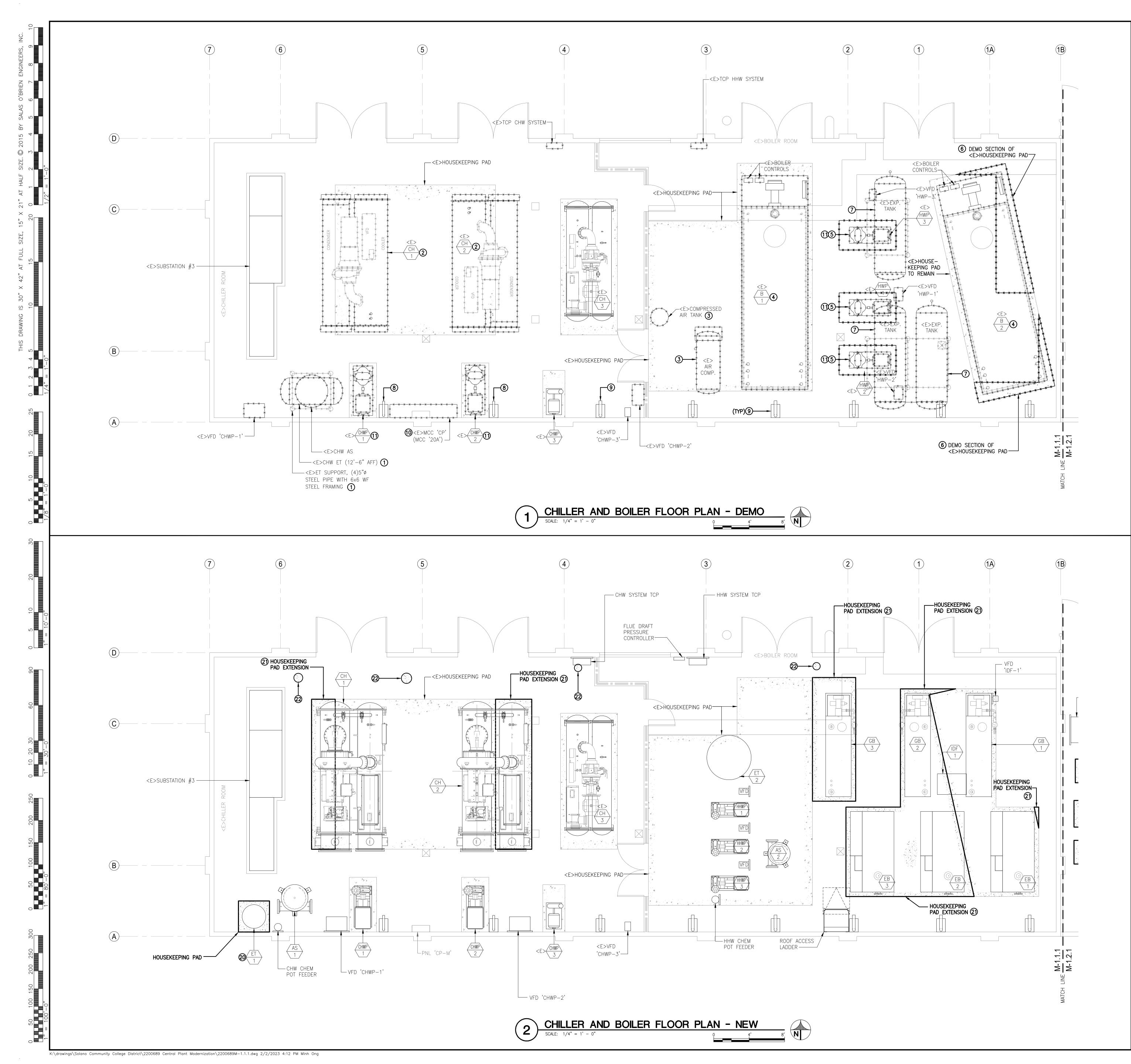
FLOOR CLEAN OUT

FCO

ABBREVIATIONS

PER SQUARE INCH (GAUGE) UPPORT DESIGNATION JRE TREATED DOUGLAS FIR NYL CHLORIDE E EXISTING /RELOCATE E & REPLACE WITH <N> AIR AIR DUCT AIR GRILLE I AIR (TEMPERATURE) RAIN AIR FAN HUMIDITY COIL EVATION)—IN—PLACE LOAD AMPS E OSMOSIS UTIONS PER MINUTE VALVE IMED WATER WATER LEADER AIR DUCT RCHITECTURAL DRAWINGS AIR GRILLE Y AIR (TEMPERATURE) CONTAINED BREATHING APPARATUS IVIL DRAWINGS NBARY CHW (RETURN)(SUPPLY)(TEMPERATURE) DRAIN DRAIN CLEAN-OUT LECTRICAL DRAWINGS NAL ENERGY EFFICIENCY RATIO ′ FAN DARTUREATING HOT WATER (RETURN)(SUPPLY) ANDSCAPE DRAWINGS METAL DAMPER MANHOLE OID VALVE PRESSURE PUMP DISCHARGE LUMBING DRAWINGS ICATIONS Y RELIEF VALVE RY SEWER /STOP TRUCTURAL DRAWINGS ESS STEEL TRAP TURAL TO ROUND TRANSITION OSTAT OR TEMPERATURE SENSOR (DDC) ABANDONED REMOVED ARY CHW (RETURN)(SUPPLY)(TEMPERATURE) RY CHW PUMP RATURE CONTROL PANEL DYNAMIC HEAD DUTY VALVE RATURE FER AIR GRILLE E & GROOVE OMETER RATURE INDICATOR DUCT PLUG (PETE'S PLUG) GH ROOF TION RATURE SENSOR STATIC PRESSURE (IN.W.G.) HEATER OTHERWISE NOTED BLE AIR VOLUME BREAKER LE FREQUENCY DRIVE BLE SPEED DRIVE ION ISOLATOR IN FIELD RISER THROUGH ROOF ULB COLUMN ER PROOF PRESSURE DROP (FT WATER) FORMER MITTER





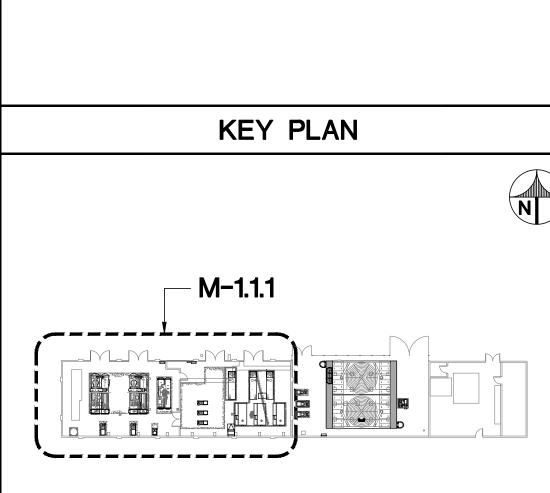
REFERENCE SHEET NOTES

DEMO:

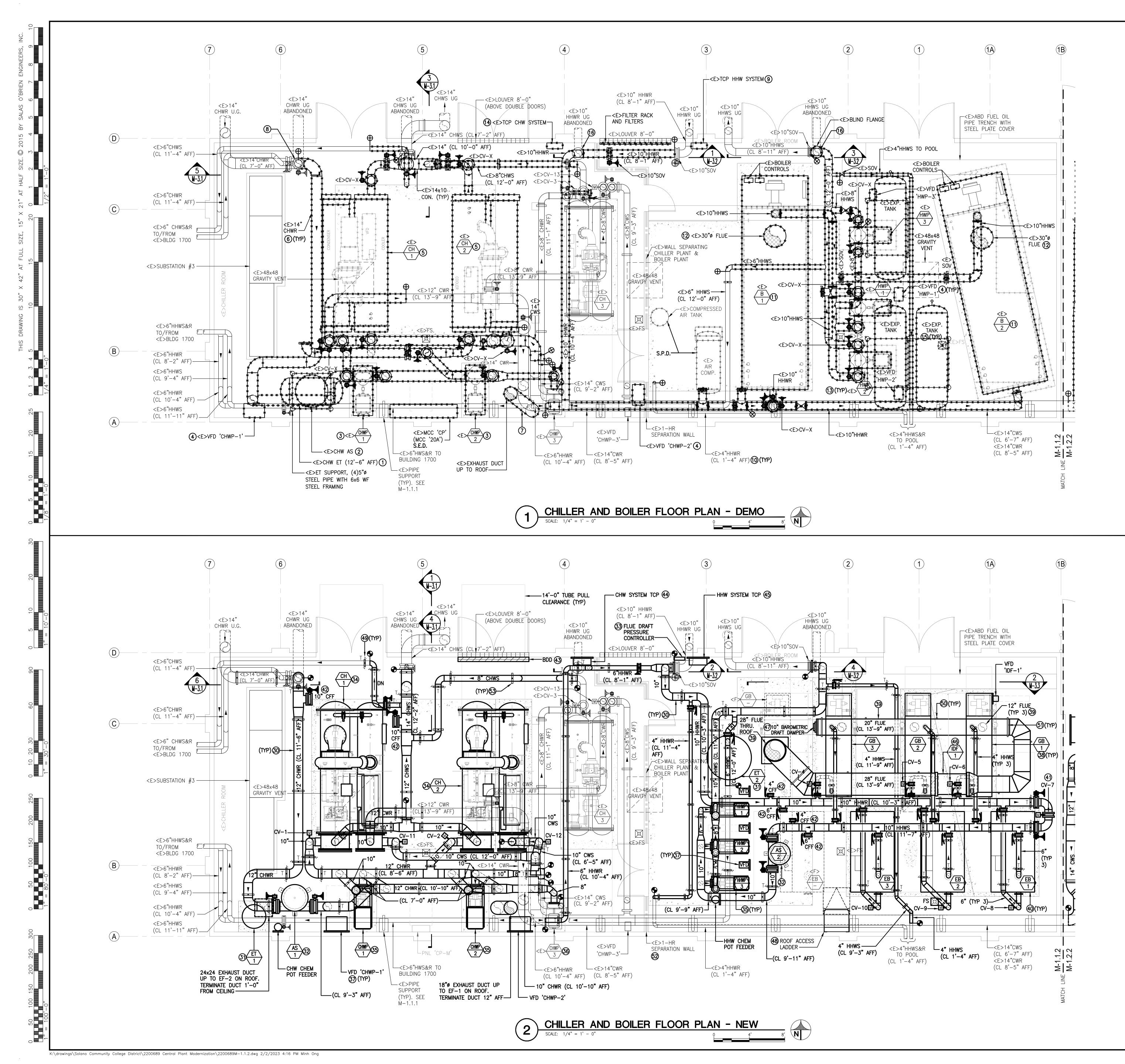
- 1. DEMOLISH EXISTING CHW EXPANSION TANK, AND STEEL STRUCTURAL SUPPORT FRAMING TO SLAB. CUT STEEL SUPPORT PIPES (IF NECESSARY). FILL ANCHOR HOLES AND OPENINGS WITH GROUT AND FINISH TO MATCH EXISTING CONCRETE SLAB.
- 2. SEE M-1.1.2 FOR DEMOLITION OF <E> CHILLER EQUIPMENT, PIPING AND ACCESSORIES. CUT 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, PIPIN AND ACCESSORIES. CUT ABANDONED AIR COMPRESSOR ANCHOR POSTS AND GRIND SMOOTH TO FINISHED CONCRETE PAD. SEE PLUMBING DRAWING 1/P-1.1.
- 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.
- DEMOLISH EXISTING HOUSEKEEPING PAD TO THE EXTENT NECESSARY FOR NEW EQUIPMENT LAYOUT AND PAD DESIGN. SEE STRUCTURAL DRAWINGS.
 DEMOLISH EXISTING HOUSEKEEPING DATA TO THE EXTENT VECTOR AND TO THE EXTENT VECTOR.
- DEMOLISH EXISTING HOUSEKEEPING PAD TO THE EXTENT NECESSARY TO SQUARE OFF THE NEW EQUIPMENT PAD DESIGN.
 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.
- EXISTING PIPE SUPPORT TO REMAIN. 3"Ø PIPE WELDED TO 18"x12" BASE PLATE WITH 3"Øx18" LONG CANTILEVER ARMS.
- 9. EXISTING PIPE SUPPORT TO REMAIN. 4"Ø PIPE WELDED TO 18"x12" BASE PLATE WITH 4"Øx18" 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.

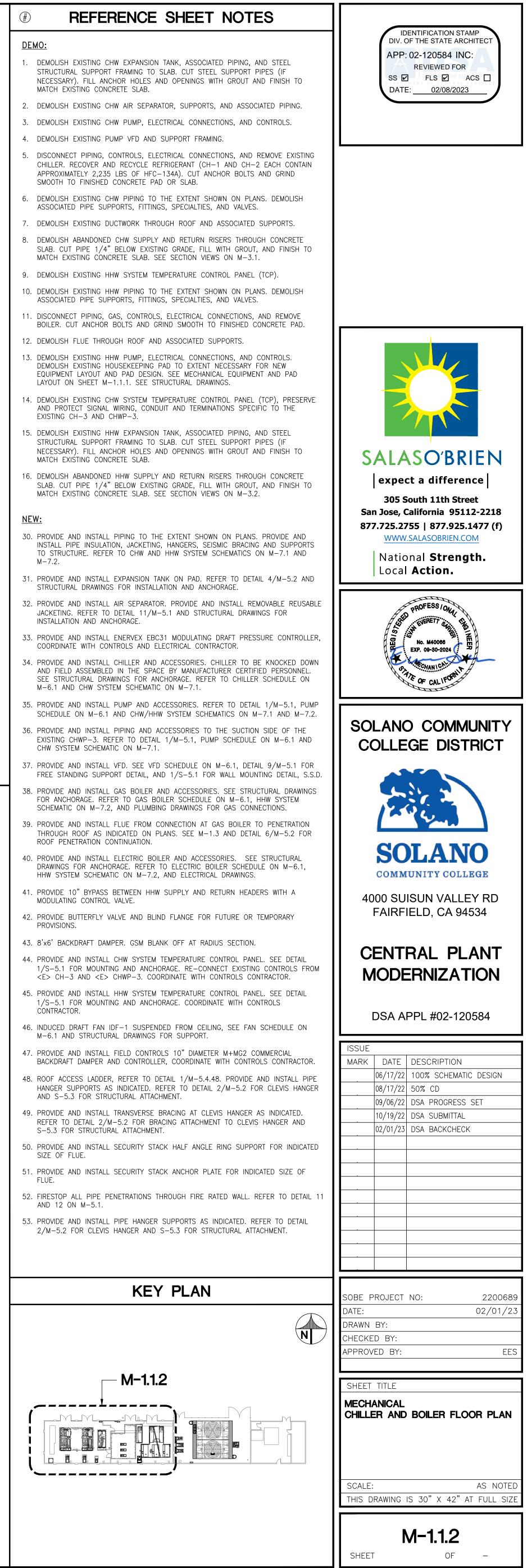
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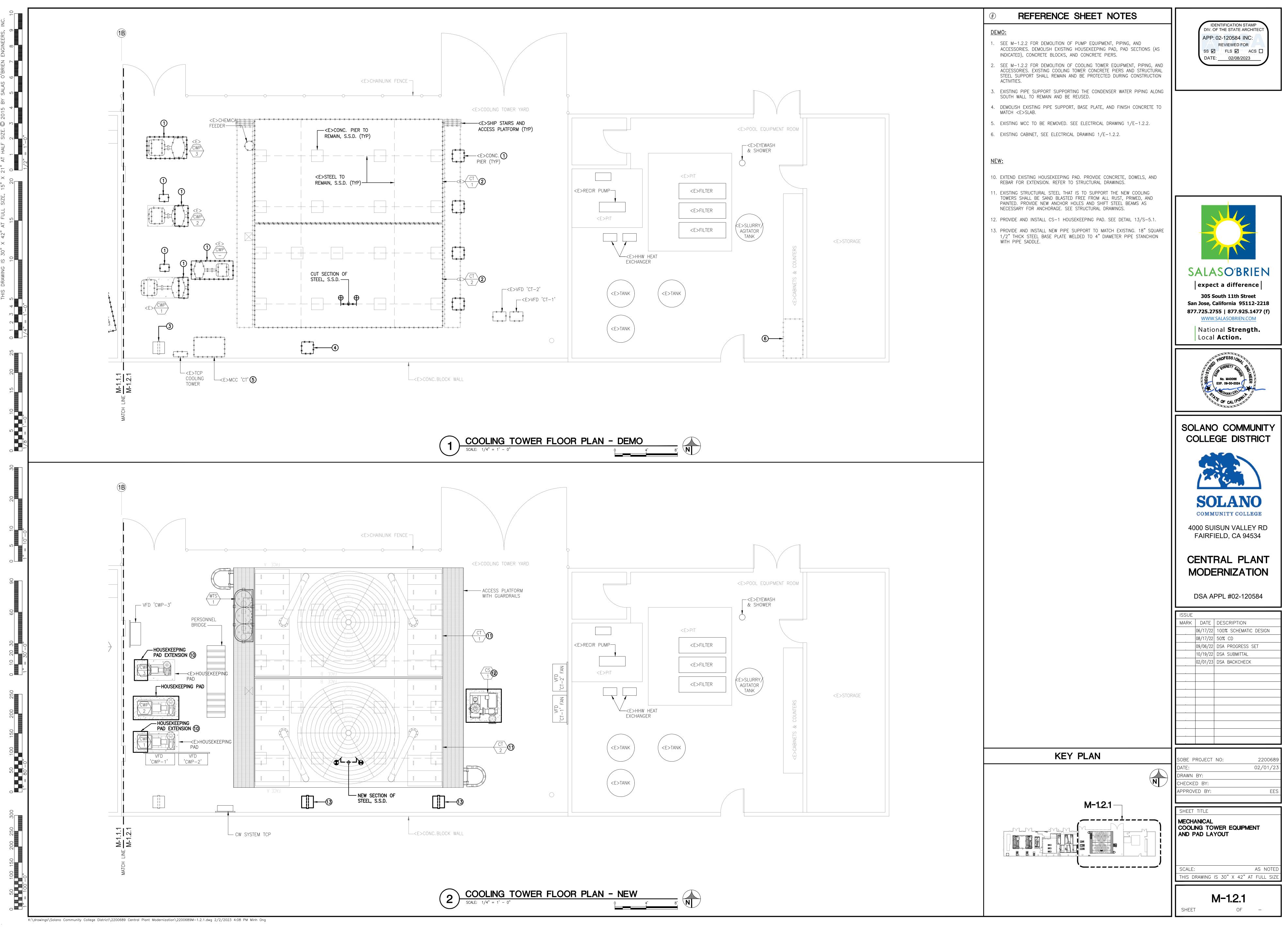
- 20. PROVIDE AND INSTALL EXPANSION TANK PAD. SEE DETAIL 11/S-1.2.
- 21. EXTEND EXISTING HOUSEKEEPING PAD. PROVIDE CONCRETE, DOWELS, AND REBAR FOR EXTENSION. REFER TO STRUCTURAL DRAWINGS.
- 22. FILL WITH GROUT, AND FINISH TO MATCH EXISTING CONCRETE SLAB.



	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT APP: 02-120584 INC: REVIEWED FOR SS ☑ FLS ☑ ACS □ DATE: 02/08/2023
NG D	
	Image: constraint of the second straints of the second strai
	No. M40086 EXP. 09-30-2024
	SOLANO COMMUNITY COLLEGE DISTRICT
	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 10/19/22 DSA SUBMITTAL 02/01/23 DSA BACKCHECK
	SOBE PROJECT NO: 2200689
	DATE: 02/01/23 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 -

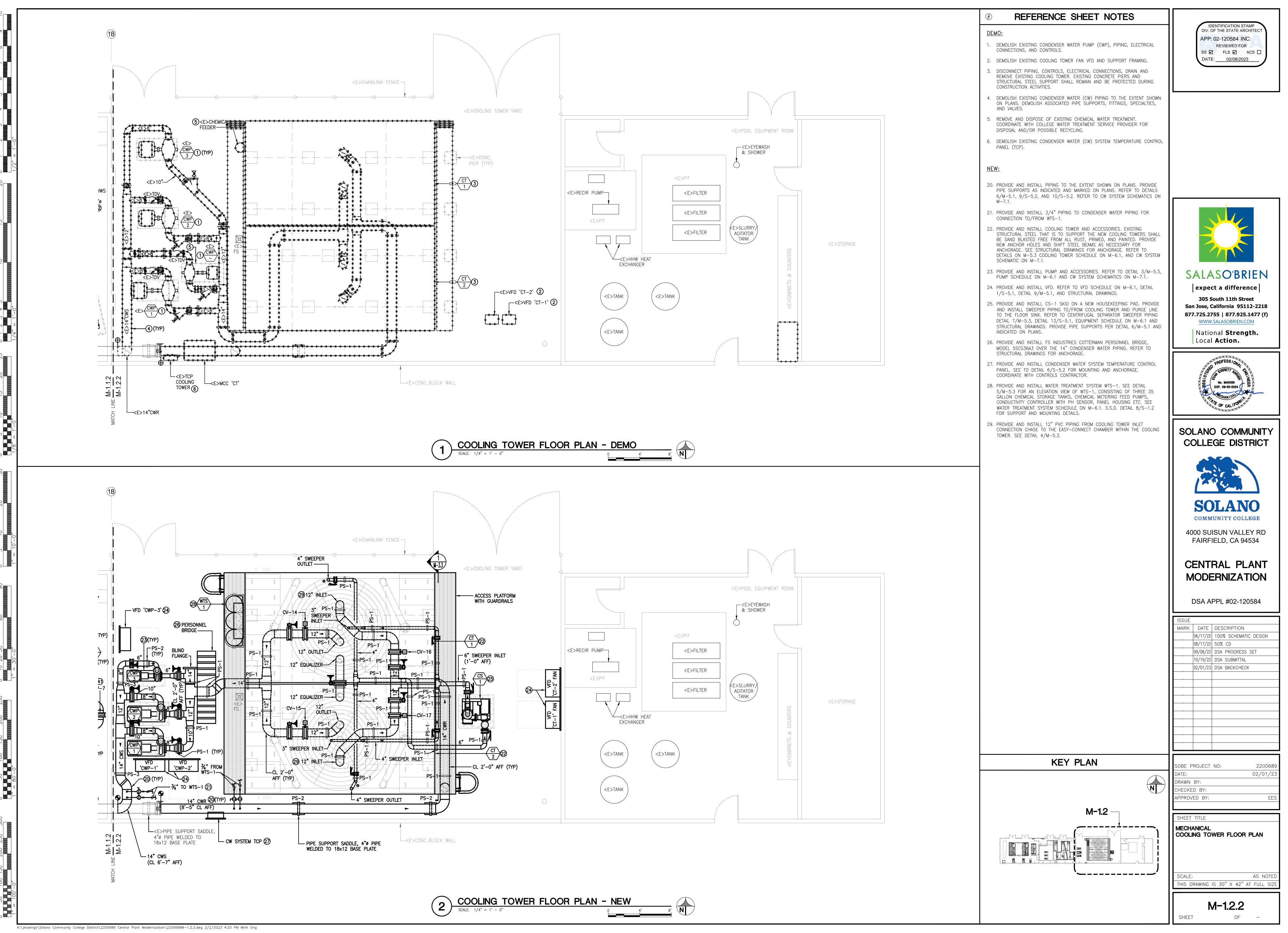




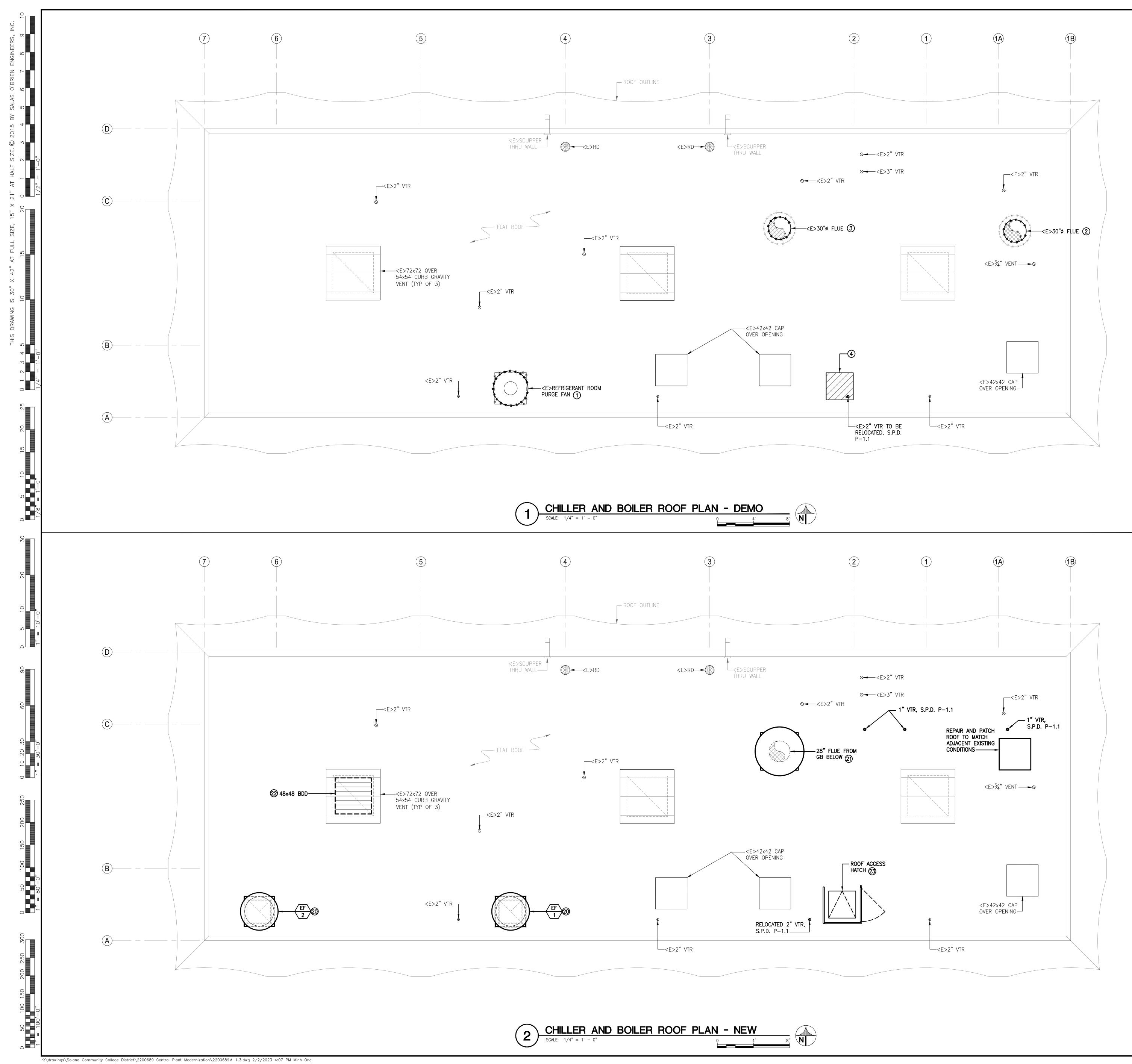














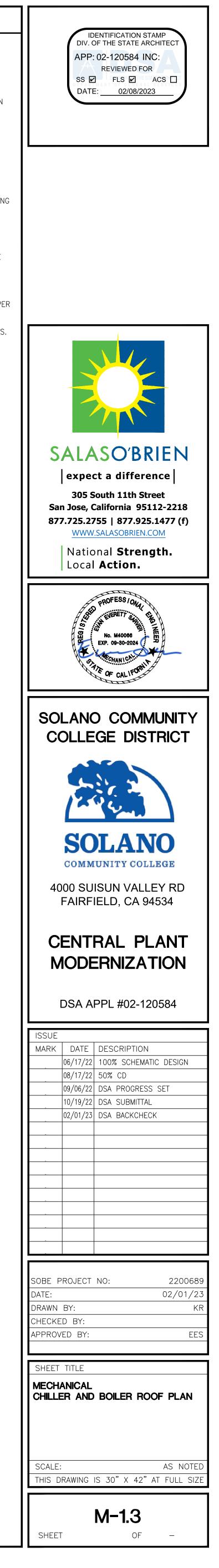
REFERENCE SHEET NOTES

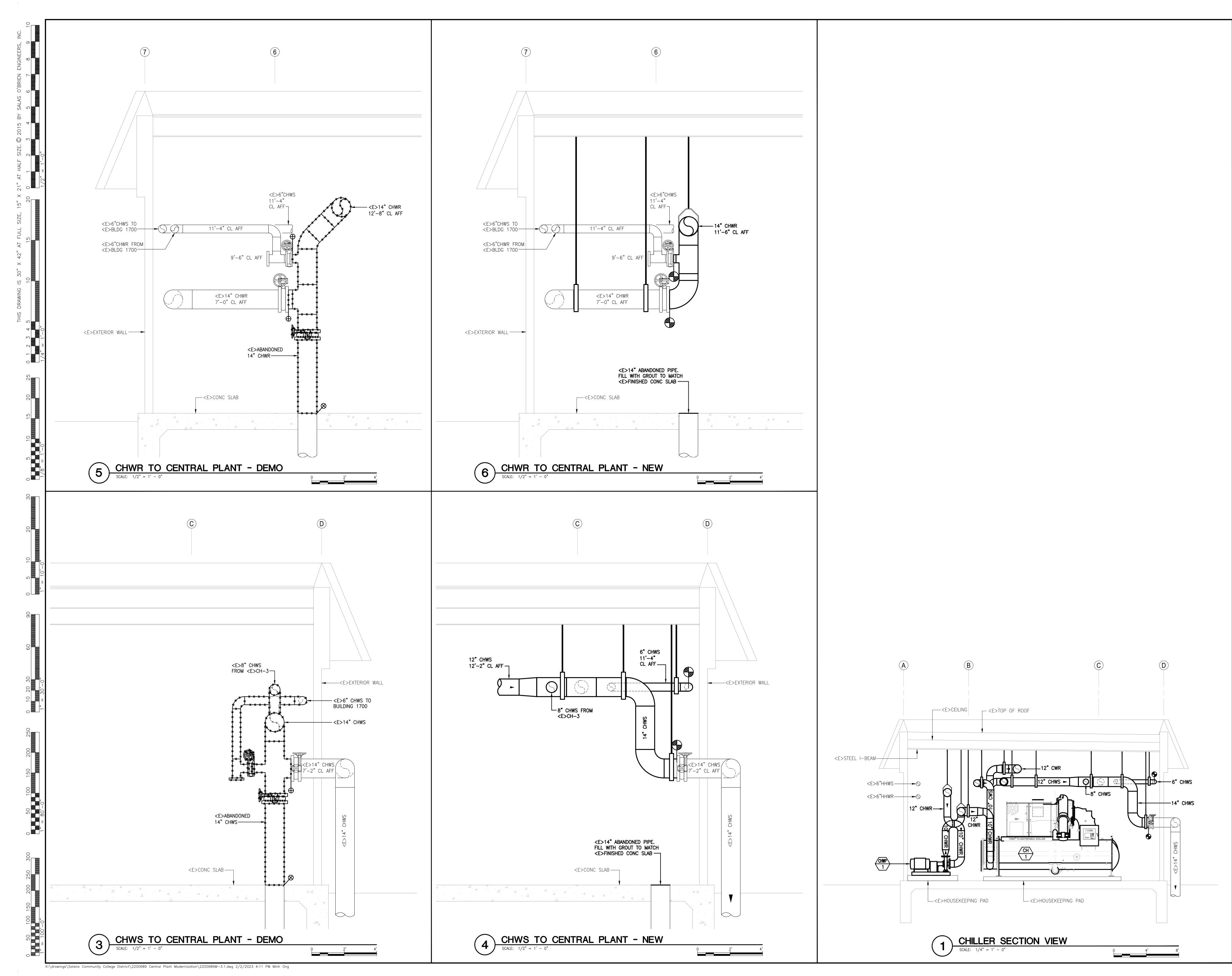
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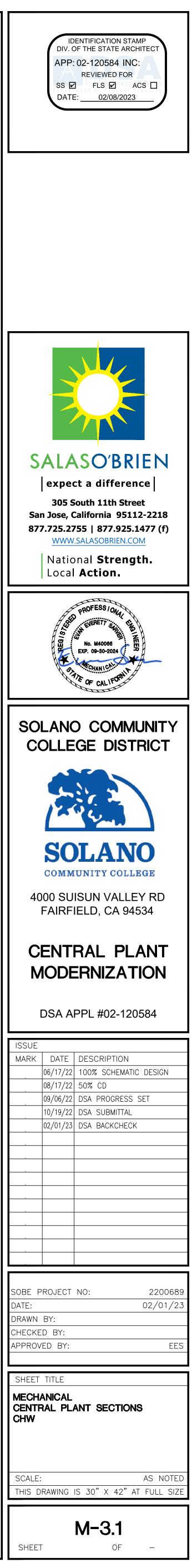
- 1. DEMOLISH EXISTING EXHAUST FAN AND ROOF CURB.
- 2. DEMOLISH EXISTING FLUE AND CURB.
- 3. DEMOLISH EXISTING FLUE AND FLASHING CAP. EXISTING ROOF PENETRATION AND ROOF CURB TO REMAIN AND SHALL BE PROTECTED DURING CONSTRUCTION ACTIVITIES.
- 4. SAWCUT ROOFING FOR ACCESS HATCH, S.S.D. FOR JOIST MODIFICATIONS.

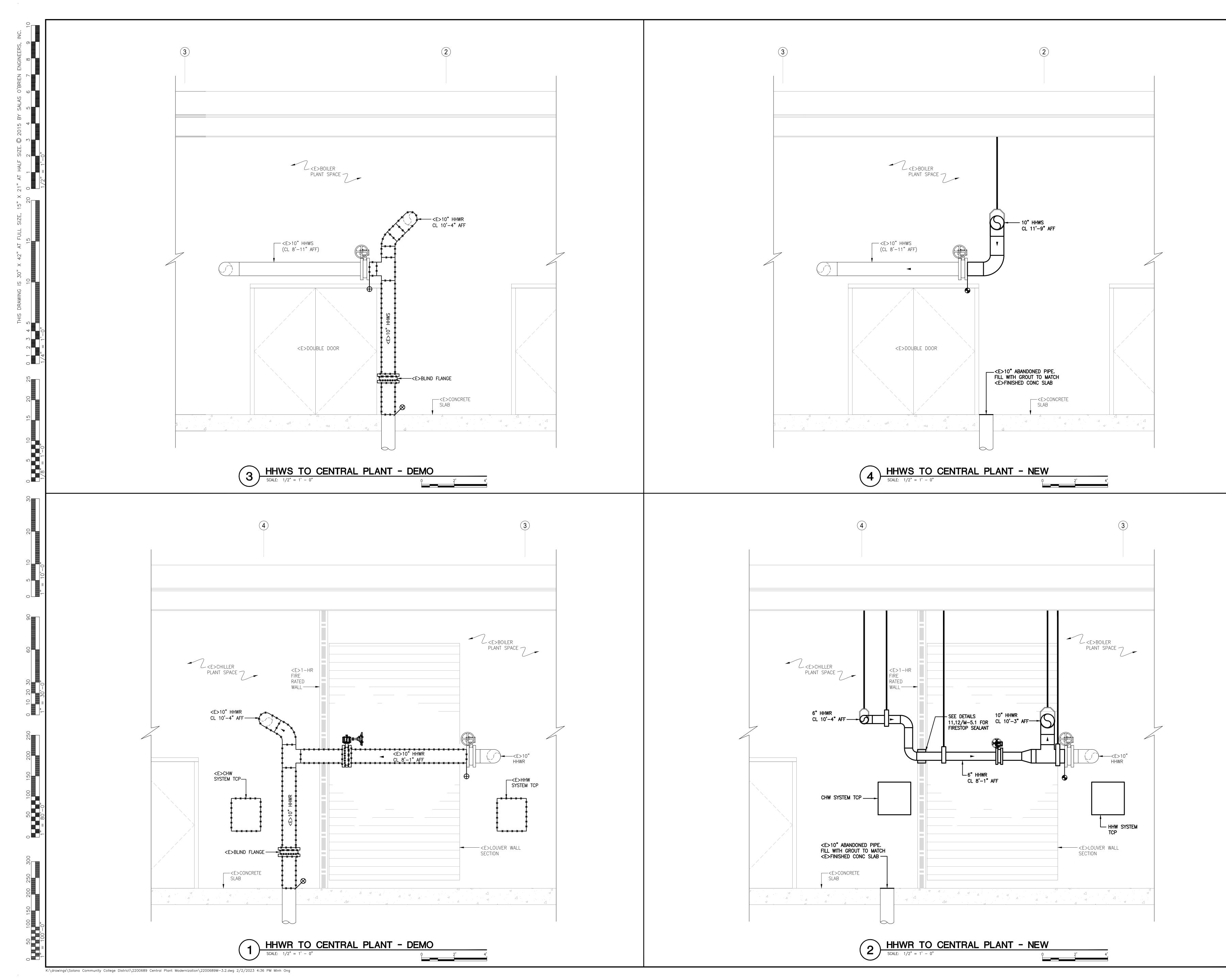
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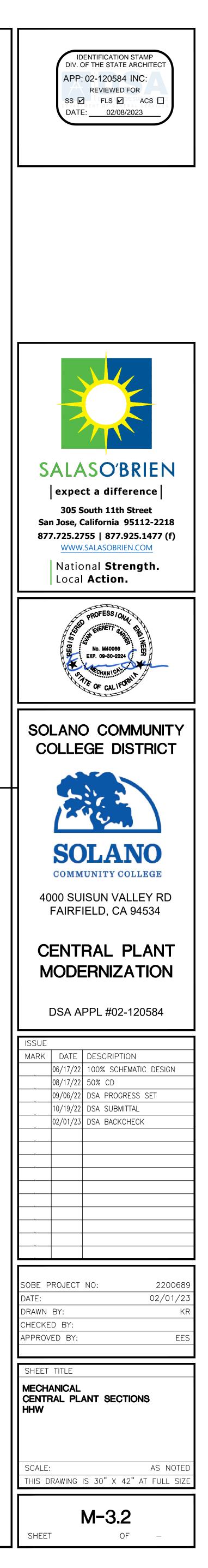
- 20. PROVIDE AND INSTALL EXHAUST FAN AND ROOF CURB. EXHAUST FAN TERMINATION SHALL BE A MINIMUM OF 10 HORIZONTAL FEET FROM BUILDING VENTILATION INLETS, CONTRACTOR TO VIF. REFER TO EXHAUST FAN SCHEDULE ON M-6.1, MECHANICAL DETAIL 10/M-5.1 FOR INSTALLATION, AND STRUCTURAL DRAWINGS FOR FRAMING AND EQUIPMENT ANCHORAGE.
- 21. PROVIDE AND INSTALL 28" DIAMETER CAT. III POSITIVE PRESSURE DOUBLE WALL (1" AIR GAP) FLUE THROUGH EXISTING ROOF PENETRATION. PROVIDE NEW FLASHING CURB CAP TO 28" DIAMETER FLUE. REFER TO GAS BOILER SCHEDULE ON M-6.1 AND MECHANICAL DETAIL 6/M-5.2.
- 22. REMOVE EXISTING GRAVITY VENT HOOD. PROVIDE AND INSTALL 48" X 48" BACKDRAFT DAMPERS AND RE-INSTALL VENT HOOD. SEE BACKDRAFT DAMPER SCHEDULE ON M-6.1.
- 23. REFER TO 8,9,10/M-5.2 FOR ROOF ACCESS HATCH AND HANDRAIL DETAILS.

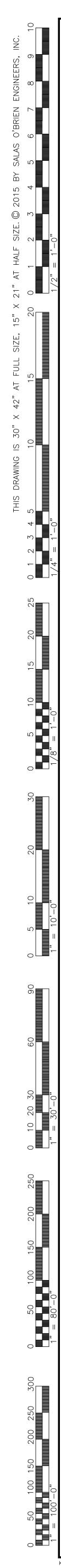


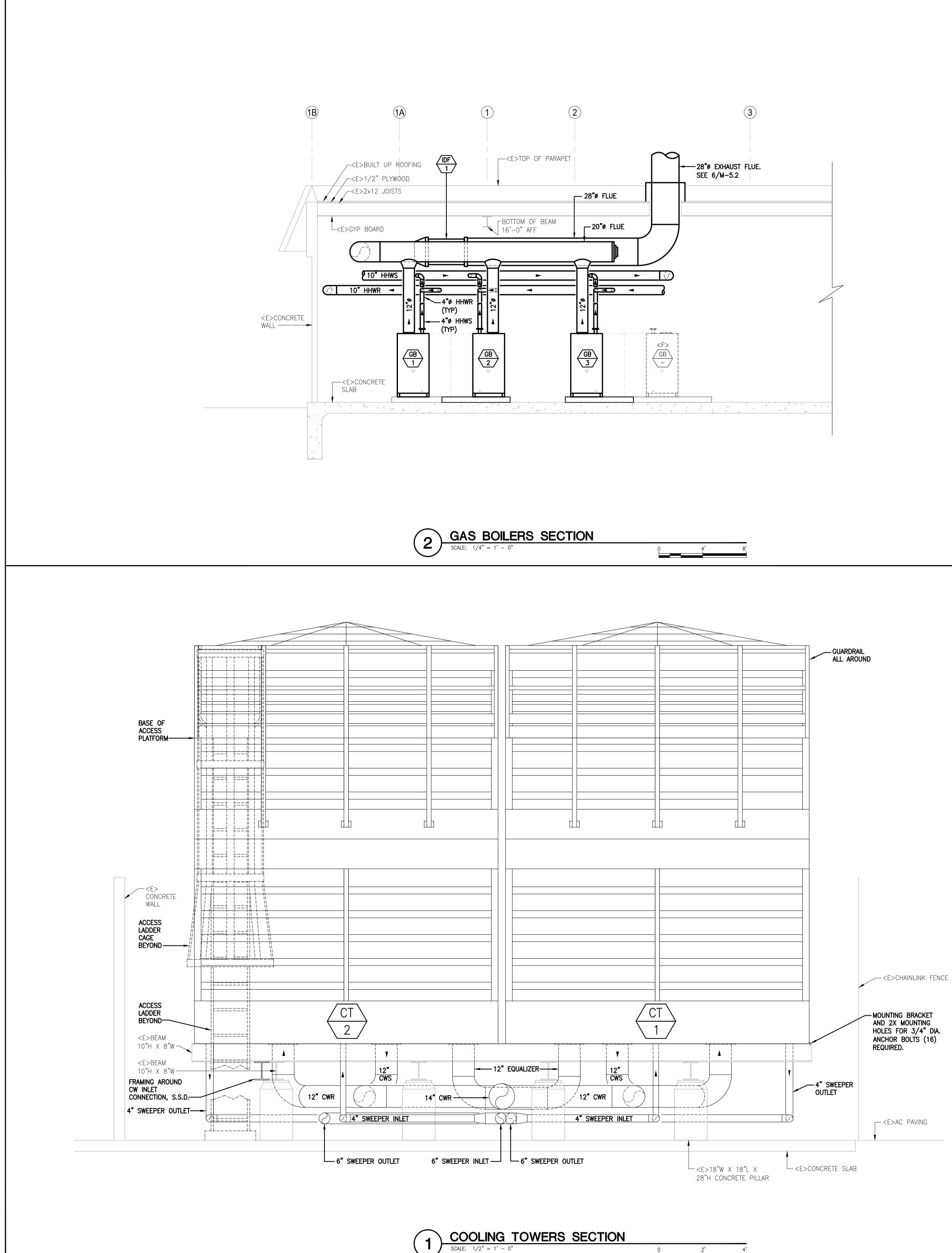




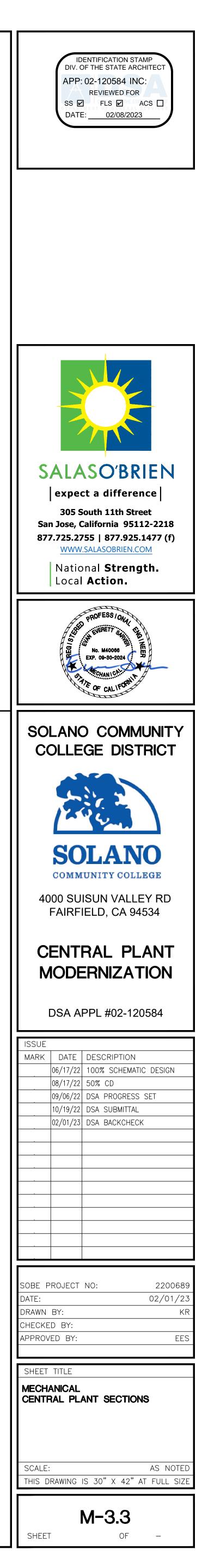


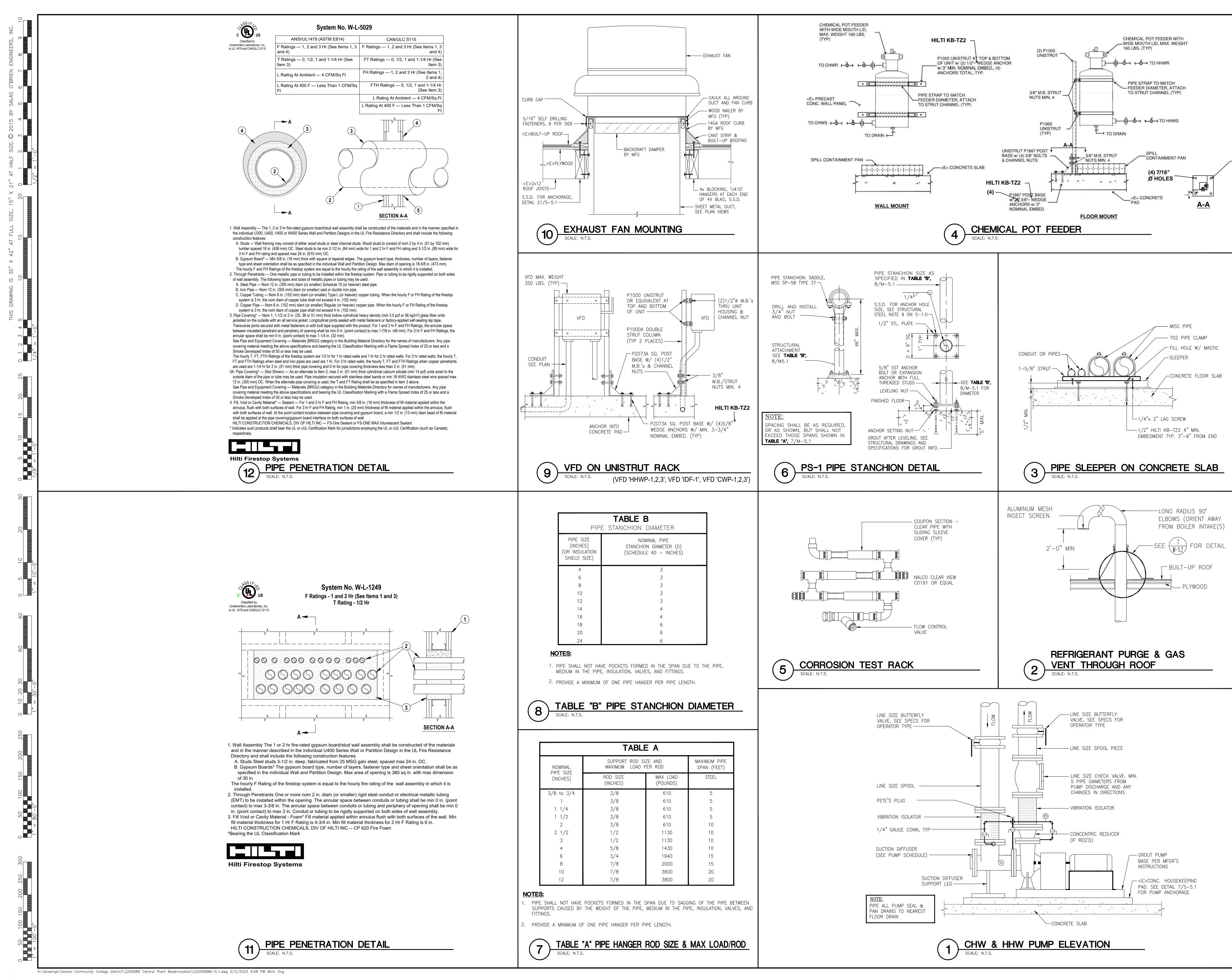


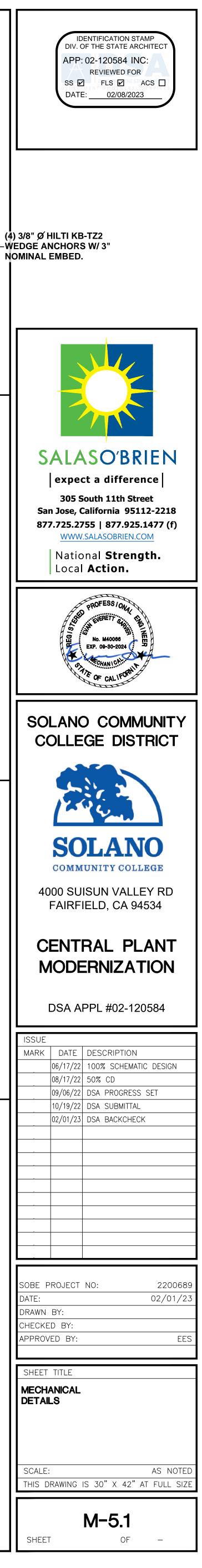


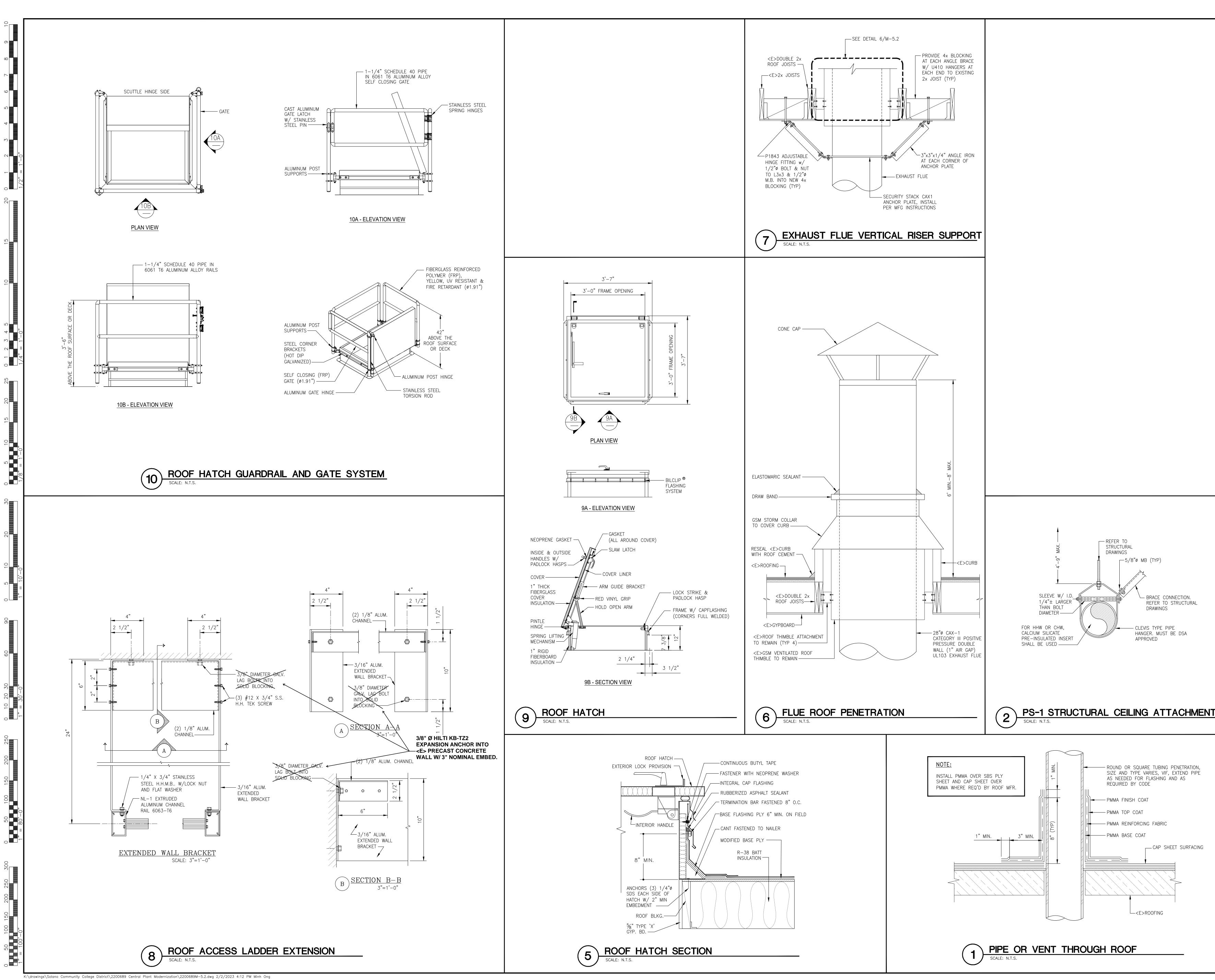


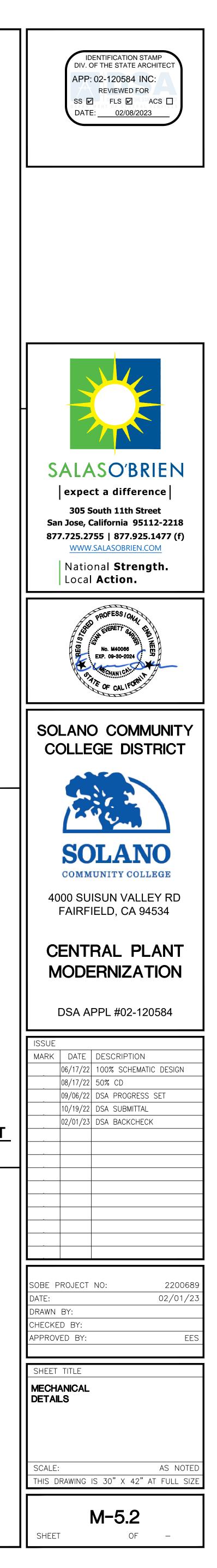
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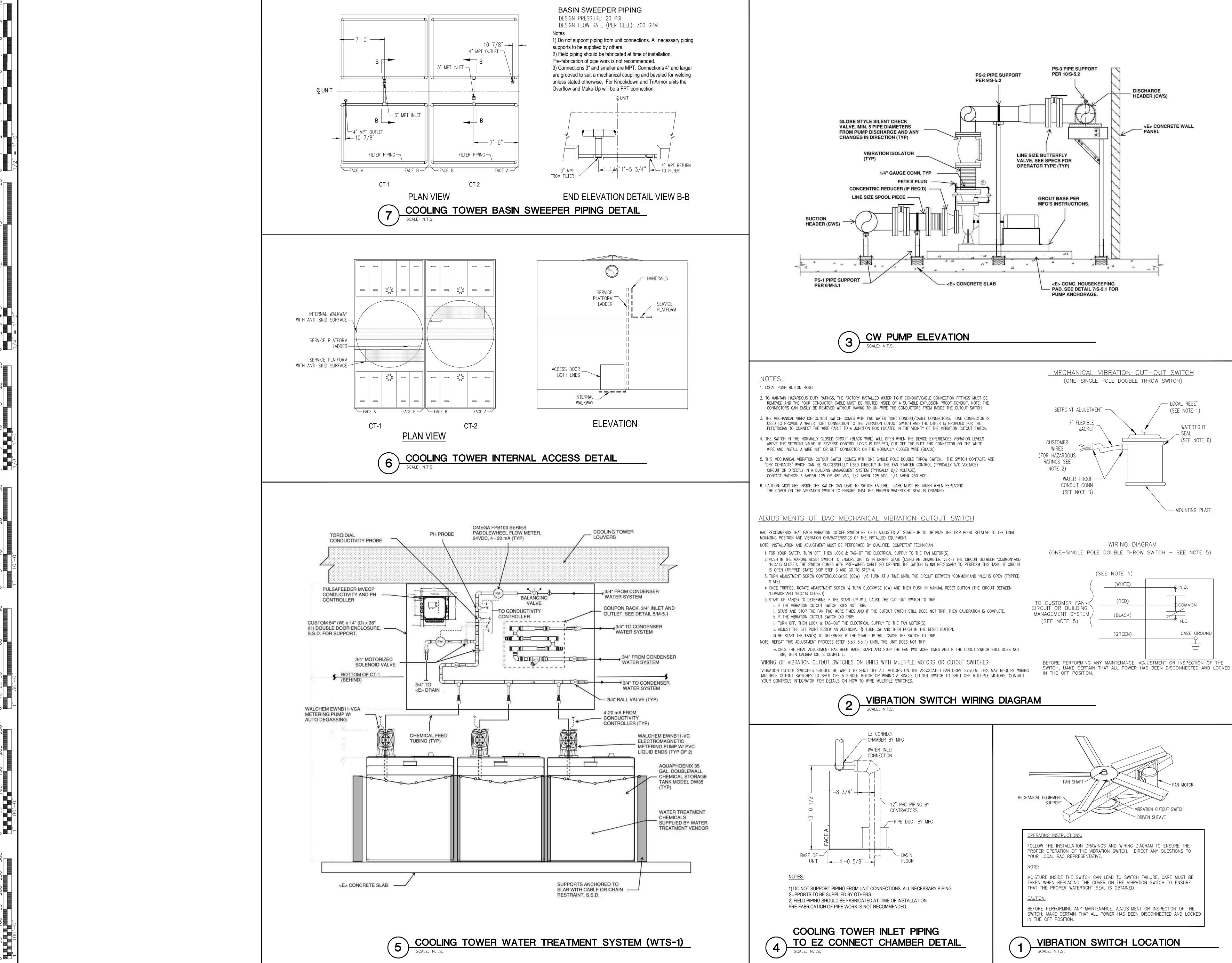


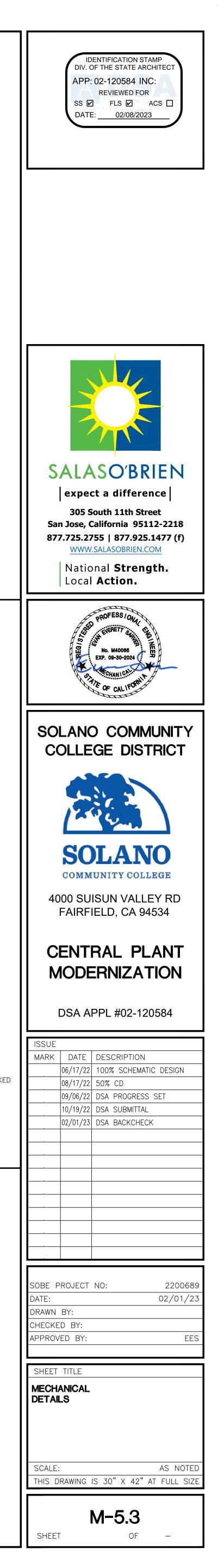


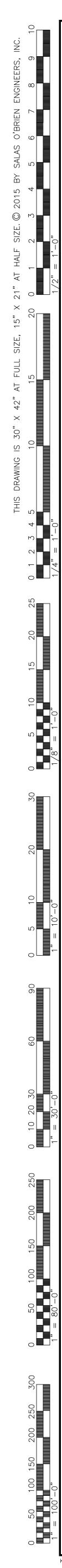


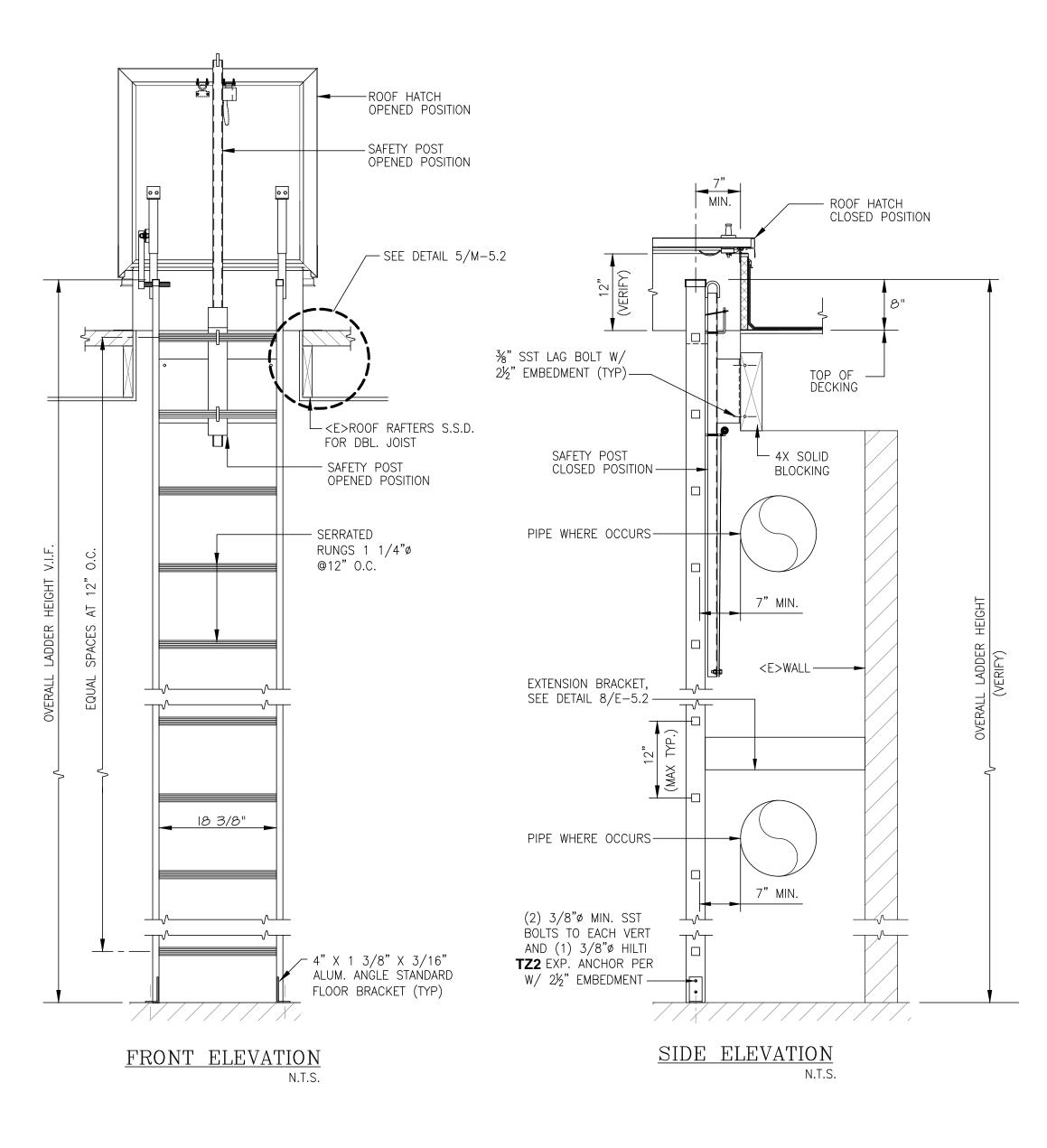


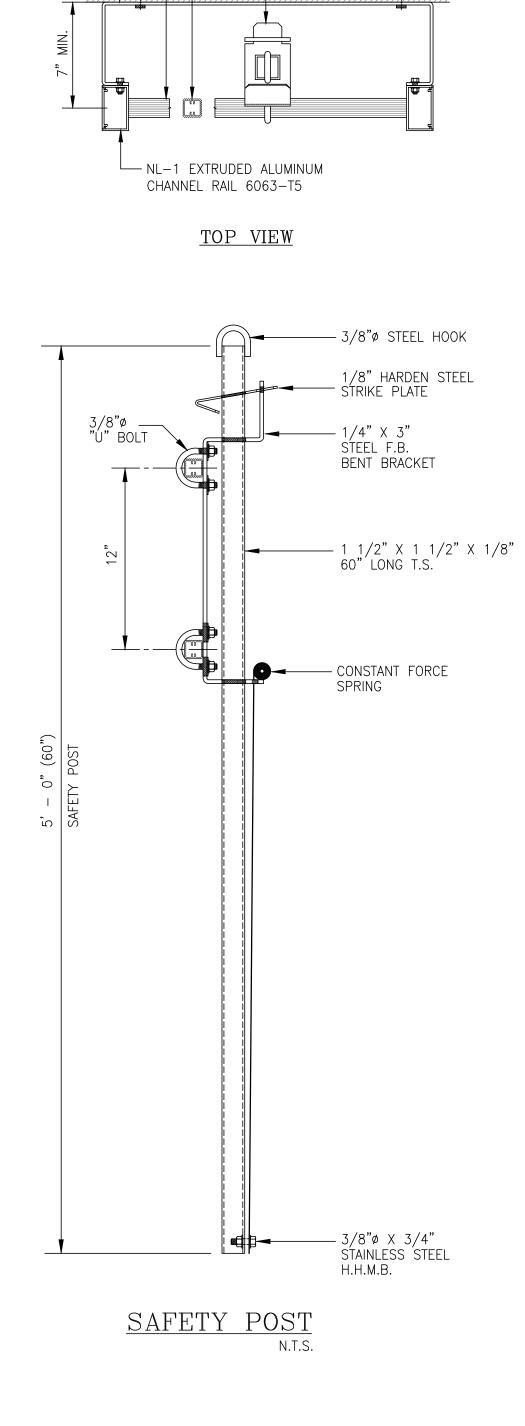












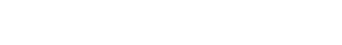
1500 LBS.

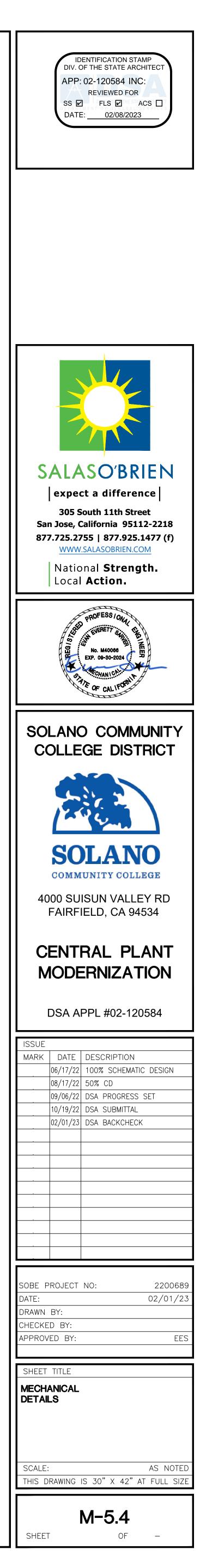
1–1/4"ø ALUM. EXTRUDED SERRATED RUNG ALLOY 6063–T5 PATENT RATED FOR

– SAFETY POST BEYOND

- 3/8" SST LAG BOLT W/ 2-1/2" EMBEDMENT INTO

SOLID BLKG (TYP)





				(COOL	ING T	OWE	R SCH	IEDU	JLE		
MARK	SERVICE	MAKE	MODEL	GPM	EWT (F)	LWT (F)	WPD (FT)	WET BULB (F)	FAN HP	IN/OUT CONN (IN)	VOLT/PH/ HERTZ	MAX LGTH (IN)
CT-1	CENTRAL PLANT	BALTIMORE AIRCOIL COMPANY	S3E-1424-12Q-2/Y	2,475	88.0	78.0	18.2	71.1	50	12	460/3/60	336
CT-2	CENTRAL PLANT	BALTIMORE AIRCOIL COMPANY	S3E-1424-12Q-2/Y	2,475	88.0	78.0	18.2	71.1	50	12	460/3/60	330

1) EXTERNAL ACCESS LADDER WITH CAGE, LADDER EXTENSION, AND ACCESS PLATFORM WITH GUARDRAIL AT EACH LOUVER FACE FOR ACCESSING HOT WAT 2) 8' EXTERNAL ACCESS LADDER AND SAFETY CAGE EXTENTION **3) PROVIDE WITH VIBRATION CUT-OUT SWITCH**

4) STAINLESS STEEL SUMP AND HOT WATER BASIN, REMAINDER POLYMER HYBRID EPOXY (BALTIBOND)

5) EXTENDED BEARING LUBRICATION LINES 6) INVERTER DUTY MOTOR - VFD CONTROLLED

7) PROVIDE FACTORY INSTALLED BASIN SWEEPER PIPING 8) PROVIDE MECHANICAL FLOAT FOR EACH COOLING TOWER CELL FOR MAKE-UP WATER

9) 12" EQUALIZER CONNECTION 10) INTERNAL ACCESS LADDER AND SERVICE PLATFORM WITH GALVANIZED STEEL SUPPORTS

11) "EASY-CONNECT CHAMBER" PIPING ARRANGEMENT - FIELD INSTALL PIPING THROUGH COLD WATER BASINPAN AND CHASE TO CONNECTION POINT, SEE SH 12) HOT WATER BASIN WEIR DAMS

						P	PUMP	SCHEDU	JLE			
MARK	SERVICE	MAKE	MODEL	GPM	TDH (Ft.)	HP	RPM	MIN. DUTY PT. PUMP EFF.	SIZE	VOLT/PH/ HERTZ	OPER. WEIGHT (LBS)	SUCT. DIFF.
CHWP-1	CHILLED WATER	BELL & GOSSETT	E-1510	1,555	92	50	1800	85.6%	6E	460/3/60	1,126	10" x 8"
CHWP-2	CHILLED WATER	BELL & GOSSETT	E-1510	1,555	92	50	1800	85.6%	6E	460/3/60	1,126	10" x 8"
<e> CHWP-3</e>	CHILLED WATER	BELL & GOSSETT	1510	840	140	50	1750	-	4AC	460/3/60	950	6" x 5"
HHWP-1	HEATING HOT WATER	BELL & GOSSETT	E-1510	1,060	77	30	1800	85.1%	5EB	460/3/60	798	6" x 6"
HHWP-2	HEATING HOT WATER	BELL & GOSSETT	E-1510	1,060	77	30	1800	85.1%	5EB	460/3/60	798	6" x 6"
HHWP-3	HEATING HOT WATER	BELL & GOSSETT	E-1510	1,060	77	30	1800	85.1%	5EB	460/3/60	798	6" x 6"
CWP-1	CONDENSER WATER	BELL & GOSSETT	E-1510	1,950	74	50	1800	86.8%	6E	460/3/60	1,126	-
CWP-2	CONDENSER WATER	BELL & GOSSETT	E-1510	1,950	74	50	1800	86.8%	6E	460/3/60	1,126	-
CWP-3	CONDENSER WATER	BELL & GOSSETT	E-1510	1,050	74	25	1800	87.9%	5BD	460/3/60	768	-

NOTES: 1) TUNGSTEN CARBIDE SEALS

2) TEFC INVERTER DUTY MOTOR 3) SUCTION DIFFUSER SHALL MATCH THE SUCTION SIZE AND CHECK VALVE SHALL BE LINE SIZE.

						EVAPO	RATOR			COND	ENSER		СОМР	RESSOR	REF.	REF.		ELE	CTRICAL	DATA		SOUND PRESSURE LEVEL		MIN.	RIG	OPER.	ANCHORAGE	
						EWT	LWT	WPD		EWT	LWT	WPD		TONS	ТҮРЕ	CHG.	VOLT/PH/				A-WEIGHTED	FULL LOAD	IPLV	WEIGHT	WEIGHT	DETAIL	NOTES	
MARK	SERVICE	MAKE	MODEL	TONS	GPM	(F)	(F)	(FT)	GPM	(F)	(F)	(FT)	NO.	EA		(LBS)	HERTZ	KW	(AMPS)	(AMPS)	(AMPS)	(dBA)	KW/TON	KW/TON	(LBS)	(LBS)		
CH-1	CHILLED WATER	YORK	YZ-MA068BV063P078NAS	650	1,555	55.0	45.0	21.4	1,950	78.0	88.0	13.7	1	650	R-1233zd(E)	1,584	460/3/60	275.9	380	475	800	79	0.4244	0.3073	31,230	36,457	6 & 9/S-5.1	2 - 14
CH-2	CHILLED WATER	YORK	YZ-MA068BV063P078NAS	650	1,555	55.0	45.0	21.4	1,950	78.0	88.0	13.7	1	650	R-1233zd(E)	1,584	460/3/60	275.9	380	475	800	79	0.4244	0.3073	31,230	36,457	6 & 9/S-5.1	2 - 14
<e> CH-3</e>	CHILLED WATER	YORK	YKCSCSQ4-CJG	335	840	54.6	45.0	11.8	1,050	85.0	93.8	10.9	1	335	R-134A	1,091	460/3/60	194	279	349	-	-	0.5791	-	16,497	18,276	-	1

NOTES: 1) <E> CHILLER TO REMAIN

2) CHILLER TO BE EQUIPPED WITH REFRIGERANT RELIEF VALVES

3) NEOPRENE ISOLATION PADS AT CHILLER FEET 4) CHILLED AND CONDENSER WATER FLOW SWITCHES

5) FACTOR Y PROVIDED (FIELD INSTALLED) INSULATION ON EVAPORATOR AND ALL COLD SURFACES - PAINTED TO MATCH CHILLER - SEE SPECIFICATIONS 6) SHIPPED KNOCKED DOWN, FACTORY AUTHORIZED REASSEMBLY IN PLACE

7) PROVIDE HINGED MARINE WATER BOXES AT CONNECTION SIDE OF CHILLER EVAPORATOR AND CONDENSER. 8) PROVIDE HINGED COMPACT WATER BOX CAPS AT BLANKED SIDE OF CHILLER EVAPORATOR AND CONDENSER.

9) CHILLER TO BE PROVIDED WITH SINGLE POINT OF POWER CONNECTION. VARIABLE SPEED DRIVE (VSD) CABINET SHALL INCLUDE TRANFORMERS TO POWER CHILLER OPTIVIEW CONTROL PANEL AND FACTORY PROVIDED SENSORS. 10) CHILLER INTERNAL CONTROLS SHALL CONNECT TO BUILDING MANAGEMENT SYSTEM, COORDINATE WITH CONTROLS CONTRACTOR - SEE POINTS LIST ON MI-6.1 AND MI-6.2. 11) PROVIDE 10 YEAR PARTS AND LABOR WARRANTY AND ANNUAL SERVICE AGREEMENT WITH "JCI SERVICE".

12) OIL FREE, MAGNETIC BEARING COMPRESSOR 13) R-1233zd(E): REFRIGERANT SAFETY CLASS = A1, OCCUPATIONAL EXPOSURE LIMIT (OEL) = 800 PPM, OZONE DEPLETION POTENTIAL (ODP) = 0, GLOBAL WARMING POTENTIAL = 1

14) MINIMUM FLOW RATE THROUGH CHILLER EVAPORATOR = 736 GPM, MINIMUM FLOW RATE THROUGH CHILLER CONDENSER = 1,256 GPM.

														GAS	BOILE	R SCH	EDUL	E																				VFD SO	CHEDUI	LE							
					Н	EATING	Б НОТ 	WATE	R					NA	TURAL GA	S				B	URNER ASSEMI	BLY - EL	ECTRICAL			RIG	OPER.	. ANCHORAG				MADIZ		MOTOR DA	ГА		D	RIVE DATA				VOLTAGE/ PHASE/	DVDAGG	WEIGHT	ANCHORAC	GE	
				GP	M EV		WT					OUTPU	T EFF	7. 1	FLUE DIA.	GAS	TRAIN					МОТ	TOR FI		VOLT/PH/	WEIGHT	WEIGH		NO	DTES		MARK	HP	FLA	Volts		Product ID	HP	FLA	Volt		FREQ	BYPASS	(LBS)	DETAIL		DTES
MARK	SERVICE	MAKE	MODEL	<u>.</u>	(F) ((F)	(FT)	CONN	ι. (Μ	1BH)	(MBH)	(%))	(IN)	5		PRESS		MAKE	MODEL	Н	P (AN	IPS)	HERTZ	(LBS)	(LBS)					CHWP-1	50	65	460 VAC	C ACH	580-BCR-065A 4+B056+J429	9 50	65	480 V	/AC	460/3/60	YES	138	1/8-5.1	1	5
			4.0.200			(0 1	00	2.20			000	2 505	02.50	24	1011		<u>IIN)</u>	(IN. W.C	/	DOWED FLAME	NIDOD C 240		0 1	0	400/2/20	2,770	4.500	11/0 = 1	1.2.5	5 12 15		CHWP-2	50	65	460 VAC	C ACH	580-BCR-065A 4+B056+J429	9 50	65	480 V	/AC	460/3/60	YES	138	1/8-5.1	1	- 5
GB-1	HEATING HOT WATER	BRYAN	AB300					3.20		- /	,000	2,505			12"	_	2	13.1		POWER FLAME	NP2R-G-340				480/3/60	3,750	4,580		1 - 3, 5	,		<e> CHWP-3</e>	50	65	460 VAC	2	-	50	65	480 V	/AC	460/3/60	-	-	-		-
GB-2	HEATING HOT WATER	BRYAN	AB300					3.20			,000	2,505	83.5%		12"		2"	13.1		POWER FLAME	NP2R-G-340		0 1		480/3/60	3,750	4,580			13, 15		HHWP-1	30	40	460 VAC	C ACH	580-PCR-044A 4+B056+J429	9 30	44	480 V	/AC	460/3/60	NO	39	9/M-5.1	1	- 5
GB-3	HEATING HOT WATER	BRYAN	AB300		1 1	60 1	80	3.20			,000	2,505	83.5%	%	12"		2''	13.1		POWER FLAME	NP2R-G-340		0 1		480/3/60	3,750	4,580		1 - 3, 5	5 - 13, 15		HHWP-2	30	40	460 VAC	C ACH	580-PCR-044A 4+B056+J429	9 30	44	480 V	/AC	460/3/60	NO	39	9/M-5.1	1	5
<f> GB-4</f>	HEATING HOT WATER	BRYAN	AB300	25	1 1	60 1	.80	3.20	4" / 4"	3,	,000	2,505	83.59	%	12"		2"	13.1		POWER FLAME	NP2R-G-340) 2.	0 1	0	480/3/60	3,750	4,580	11/S-5.1		14		HHWP-3	30	40			580-PCR-044A 4+B056+J429		44	480 V	AC	460/3/60	NO	39	9/M-5.1	1	- 5
																																CT-1	50	65			580-BCR-065A 4+B057+J429		65	480 V	AC	460/3/60	YES	342	1/8-5.2	1	- 5
																																CT-2	50	65			580-BCR-065A 4+B057+J429		65	480 V	-	460/3/60	YES	342	1/8-5.2	1	- 5
NOTES:																																CWP-1	50	65	-		580-BCR-065A 4+B057+J42		65	480 V	-	460/3/60	YES	342	9/M-5.1	1	- 5
1)	BOILER IS A NON-CONDENS	SING BOILER.	MINIMUM E	INTERIN	G WATI	ER TEMI	PERAT	URE =	= 120F, MI	NIMUN	M ENT	ERING	WATER '	темре	RATURE A	T CONTI	NOUS OF	ERATION	(> 1.5 H	HR) SHALL NOT BI	E LESS THAN 14	0F.										CWP-2	50	65			580-BCR-065A 4+B057+J42		65	480 V		460/3/60	YES	342	9/M-5.1		- 5
2)	LOW NOX EMISSION TO 20P	PM AND CO E	MMISSIONS	OF 200 P	PM																											CWP-3	25	34	460 VAC		580-BCR-034A 4+B057+J42		34	480 V	-	460/3/60	YES	188	9/M-5.1		-5
,	50 PSIG SAFETY RELIEF VAL																															IDF-1		73	460 VAC		321.0914.4200	5.36	9.5	460 V		460/3/60	NO	77	9/M-5.1		<u>3-6</u>
,	GAS BOILER TO BE IN REVE		UCTION CON	FIGURA	ΓΙΟΝ																										N	TES.		7.3			521.0714.4200	5.50		400 12	AU	TUU/J/UU	110	1.1	7/101-3.1		-0
,	LMV3 CONTROLLER FOR CO					OILERS	1																									JILO; ADD VED CHALL HA					SCONINE (T)										
,	SIEMENS RWF55 P.I.D. TYPE							TANI	R \$485 M (DRUS	COMN	TINICA	TION CO	NNEC	TION/CON	TROL															1.)	ABB VFD SHALL HA				(SCUNNECI) NESVETEM VIA DACNET I										

6) SIEMENS RWF55 P.I.D. TYPE MODULATION TEMERATURE CONTROLLER TO ACCEPT AN RS485 MODBUS COMMUNICATION CONNECTION/CONTROL

7) OUTDOOR RESET TEMPERATURE SIGNAL TO BE PROVIDED BY THE BAS (4-20MA), FACTORY TO PROGRAM THE RWF55 TO ACCEPT THIS SIGNAL. 8) 1" FLEXIBLE BENT WATER TUBES, INDIVIDUALLY REPLACEABLE WITHOUT WELDING OR ROLLING.

9) BOILER TUBE AND FURNACE AREA ACCESS PANEL: HEAVY 11 GAUGE STEEL CASING WITH 4" HIGH TEMPERATURE CERAMIC FIBER INSULATION, BOLTED AND TIGHTLY SEALED TO BOILER FRAME. 10) HEAVY 18 GAUGE STEEL BOILER JACKET WITH RUST-RESISTANT ZINC COATING AND DURABLE ENAMEL FINISH, LINED WITH 1-1/2" FIBERGLASS INSULATION. 11) HEATING SQUARE FOOTAGE = 534 SQ. FT.

12) 25 YEAR THERMAL SHOCK WARRANTY

13) FACTORY PROVIDED GAS MANIFOLD INCLUDING GAS REGULATORS, VALVES, TEST PORTS, ETC FOR MAIN BURNER AND PILOT LIGHT BURNER. CONTRACTOR TO FIELD INSTALL VENT PIPING AT GAS REGULATOR RELIEFS. 14) FUTURE BOILER, NOT PART OF CONTRACT 15) SINGLE POINT POWER CONNECTION. 120V CONTROL CIRCUIT TO BE PROVIDED BY FACTORY.

				HF	ATING E	IOT WAT	ER		ELECTRIC				
MARK	SERVICE	MANUFACTURER	MODEL	GPM	EWT (F)	LWT (F)	WPD (FT)	INPUT (KW)	OUTPUT (MBH)	EFF.	VOLT/PH/ HERTZ	RIG WT. (LBS)	OPEI WT. (L
EB-1	HEATING HOT WATER	BRYAN	840BH	275	160	180	5.0	840	2,744	96%	460/3/60	3,700	7,353
EB-2	HEATING HOT WATER	BRYAN	840BH	275	160	180	5.0	840	2,744	96%	460/3/60	3,700	7,353
EB-3	HEATING HOT WATER	BRYAN	840BH	275	160	180	5.0	840	2,744	96%	460/3/60	3,700	7,353
<f>EB-4</f>	HEATING HOT WATER	BRYAN	840BH	275	160	180	5.0	840	2,744	96%	460/3/60	3,700	7,353
2)	ELEMENT WATT DENSITY 5 60 PSIG SAFETY RELIEF VAI		INCOLOY SHI	ETHED H	IEATING	ELEME	NTS WIT	H PRESSU	JRE CONNE	CTOR PO	WER LUGS.		
1) 2) 3) 4) 5) 6) 7) 8) 9) 10)	ELEMENT WATT DENSITY 5	LVE FORNIA STATE COI H LIMIT WATER CUTOFF MODULATION TEI ATURE SIGNAL TO D DILER JACKET WITI GE POWER PANEL C	DE TITLE 8 FO MERATURE C BE PROVIDED H RUST-RESIS GABINET WITH	R ASME CONTROI) BY THE TANT ZI H SINGLI	SECTIO LLER TO DBAS (4-2 INC COA E POINT	N VI BOI ACCEPI 20MA), FA TING AN ELECTR	LERS `AN RS4 ACTORY D DURA IC CONN	85 MODB TO PROG BLE ENA VECTION.	US COMMU RAM THE R	NICATIO WF55 TO	N CONNECTIO ACCEPT THIS	SIGNAL.	

	,	OT PART OF CONTRACT		EIROVIDE	D DI FACIONI.												
]
							WATER TI	REATMENT SYS	TEM SCHEDULE								
	(CONDUCTIVITY CONTRO	OLLER				CHEMICAL PU	МР	-		CHE	MICAL S	STORAGE TAN	К			
MARK														DIMENSION	S	ANCHORAGE	
	MAKE	MODEL	PWR REQUIREMENTS	MAKE	MODEL	QUANTITY	MAX OUTPUT	RATED PRESSURE	PWR REQUIREMENTS	MAKE	MODEL	SIZE	QUANTITY	(DIA X H)	FILLED WEIGHT	DETAIL	NOTES
							(mL/min)	(PSI)				(GAL)		(IN)	(LBS)		1
WTS-1	PULSAFEEDER	MVECPXXPD	120VAC / 60HZ / 8A	IWAKI	EWNB11-VC	2	38	150	20W x 0.8A	GENERAL TREATMENT	DW-35	35	3	25 X 29 3/4	395	8/S-1.2	1-8
W151	I CEMITEED EN	MVECIMAD		IWAKI	EWNB11-VCA	1	38	150	20W x 0.8A		D (1 35	55	5	23 1 27 314	575	0/0 1.2	
NOTES:																	
			ГҮ PROBE, FLOW SWITCH, A														
2) F	PROVIDE A MINIMUM	1 OF SIX 4-20mA OUTPUT	S FOR CONNECTION TO THI	REE CHEMIC.	AL METERING PUM	PS, TWO SOLE	NOID VALVES, AND	ONE OUTPUT CONNECT	TION TO BMS								
3) H	PROVIDE A MINIMUM	1 OF FIVE 4-20mA INPUTS	S FOR CONNECTION TO 4-20	mA WATER N	IETER, CONDUCTIV	VITY PROBE, TV	VO PADDLEWHEEL	FLOW METERS, AND PH	PROBE								

4) THREE CHEMICAL ELECTROMAGNETIC METERING PUMPS WITH ADJUSTABLE STROKE AND SPEED CONTROL, 4-20mA INPUT, AND AUTO DEGASSING CAPABILITIES 5) CHEMICAL PUMPS MATERIAL TO BE SELECTED BASED ON CHEMICALS SELECTED, COORDINATE WITH WATER TREATMENT SYSTEM PROVIDER. 6) CHEMICAL STORAGE TANKS SHALL HAVE VISUAL/LEVEL LEAK DETECTION, MIXER PAD, AND INLAYED PUMP MOUNT 7) DOUBLE WALL CHEMICAL STORAGE TANKS SHALL HAVE 150% CONTAINMENT U-BASIN OVERFLOW 8) TWO OMEGA FPB100 SERIES PADDLEWHEEL FLOW METERS, 24VDC, 4-20mA

	MAX WIDTH (IN)	MAX HEIGHT (IN)	RIG WEIGHT (LBS)	OPER. WEIGHT (LBS)	ANCHORAGE DETAIL	NOTES
	288	238	51,730	97,410	15/8-5.1	1 - 12
_	200			>/,	15/S-5.1	1 - 12
SH	IEET M-5	5.3				
[.	CHECK VLV.	ANCHOR DETAI			NOTES	
3"	10"	7/S-5.			1-3	
: :	10"	7/S-5.	1		1-3	
;;	- 6"	-			3	
••	6" 6"	7/S-5.			<u>1-3</u> 1-3	
**	6" 6"	7/8-5. 7/8-5.			1-3	
_	10"	7/S-5.			1-3	
	10"	7/S-5.			1-3	
	10 8''	7/S-5.			1-3	
_	•	110-0.	•		1-5	

						FAN	SCHE	DULE								
MARK	BLDG /RM NO.	ROOM FUNCTION	MAKE	MODEL	CFM	RPM	ESP	HP	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	VOLT/PH/ HERTZ	FLA (AMPS)	OPER. WEIGHT (LBS)	ANCHORAGE DETAIL	NOTES
EF-1	CHILLER PLANT	REFRIGERANT PURGE	GREENHECK	G-240-VG	4380	665	0.57	2	42.8	42.8	49.5	460/3/60	3.3	188	21/S-5.1	1 - 13, 15, 17
EF-2	CHILLER PLANT	VENTILATION	GREENHECK	G-300-VG	11,445	810	0.65	5	50	50	54	460/3/60	7.4	276	21/S-5.1	1 - 12, 14, 16, 17
IDF-1	BOILER PLANT	GAS BOILER FLUE DRAFT	ENERVEX	TDF 500	3,140	1,950	0.275	4	39.4	30.4	33.1	460/3/60	7.3	164	6/S-1.2	18
1) 2) 3) 4) 5) 6)	NOTES: 1) DISCONNECT TOGGLE SWITCH, NEMA-1, SHIPPED WITH UNIT 2) JUNCTION BOX MOUNTED & WIRED 3) SEISMIC RATED TO DESIGN CATEGORY F PER CBC-2019 & ASCE 7-16 STANDARDS 4) OSHPD SEISMIC CERTIFIED, #OSP-0148-10 5) VARI-GREEN EC MOTOR CONTROLLED BY 2-10VDC INPUTS 6) MOTOR VFD RATED WITH SHAFT GROUNDING PROTECTION 7) MOTOR WITH THERMAL OVERLOAD															

9) BEARINGS WITH GREASE FITTINGS, L10 LIFE OF 100,000 HRS. (L50 AVG. LIFE 500,000 HRS)

10) 1 YEAR STANDARD WARRANTY 11) UL/CUL 705 LISTED - "POWER VENTILATORS"

12) EXTENDED BEARING LUBE LINES 13) 18" ROOF CURB-GALV., GPI-34, UNDER SIZED 1.5 IN. TOTAL, 1 INCH INSULATION, WOOD NAILERS 14) 18" ROOF CURB-GALV., GPI-40, UNDER SIZED 1.5 IN. TOTAL, 1 INCH INSULATION, WOOD NAILERS

15) DAMPER SHIPPED LOOSE, WD-100-PB-24X24X, GRAVITY OPERATED, NOT COATED 16) DAMPER SHIPPED LOOSE, WD-100-PB-34X34X, GRAVITY OPERATED, NOT COATED

17) GALVANIZED BIRD SCREENS 18) PROVIDE EBC31 CONTROLLER, E-DRIVE VFD, XTP3 PRESSURE SENSOR, AND DISCONNECT SWITCH

	EXPANSION TANK SCHEDULE												
MARK	SERVICE	MAKE	MODEL	VOLU ACCEPT. (GAL)	JME TANK (GAL)	PRECHARGE PRESSURE (PSI)	DIA. (IN)	HT. (IN)	MOUNTING PROVISIONS	RIG. WEIGHT (LBS)	FLOODED WEIGHT (LBS)	ANCHORAGE DETAIL	NOTES
ET-1	CHILLED WATER	WESSEL	NLA-800L	89	211	21	32	76	VERTICAL	475	2,235	11/S-1.2	1 - 2
ET-2	HEATING HOT WATER	WESSEL	NLA-5000	634	1320	21	60	128	VERTICAL	2,617	13,626	10/S-5.1	1 - 2
· · · ·	NOTES: 1) PRE-CHARGED STEEL HVAC EXPANSION TANK WITH HEAVY-DUTY BUTYL BLADDER. 2) 150 PSIG MAXIMUM DESIGN PRESSURE												

WATER COOLED CHILLER SCHEDULE

					AIR SI	EPARA'	TOR S	CHED	ULE									FLOW	V METI	ER SCHEDULE				
					FLOW	WPD	CONN	DIA.	HT.	MOUNTING	RIG WEIGHT	FLOODEI WEIGHT				MARK	SERVICE	LOCATION	VAC	MANUFACTURER	MODEL	METER TYPE	PIPE SIZE	NOTES
]	MARK	SERVICE	MAKE	MODEL	(GPM)	(FT)	(IN)	(IN)	(IN)	PROVISIONS	(LBS)	(LBS)	DETAIL	NOTES		BTU-1	CHILLED WATER	CHILLER PLANT	120	ONICON	F-1200	TURBINE	12"	1 - 3
														·		BTU-2	HEATING HOT WATER	BOILER PLANT	120	ONICON	F-1200	TURBINE	10"	1-3
	AS-1	CHILLED WATER	BELL & GOSSETT	RL-12F	4,840	4.89	12	41.5	75.39	SUSPENDED	1,110	3,538	18/S-5.1	1 - 4		BTU-3	CONDENSER WATER	COOLING TOWER YARD	120	ONICON	F-3200	ELECTROMAGNETIC	14"	1 - 3
	AS-2	HEATING HOT WATER	BELL & GOSSETT	RL-10F	3,600	1.86	10	35.5	64.69	SUSPENDED	800	2,052	18/S-5.1	1 - 4	J F									
_																NOTES:								
	OTEC.															,		REE OF OBSTRUCTIONS UPSTR			UA			
1	OTES:		CONNECTION TO ALL	OW FOD SI	ED IMENT T		TIL ADI V	CIEANE										HE IOM. SEE FLOW METER MA) ED			
	,	HREADED BLOW DOWN (I		,		-10 BTU METER WITH TWO TE						
	,	UTOMATIC AIR VENT TO							NSION T	ANK.				I		/		RATURE TRANSMITTERS SHA				BTU METER		
	3) F	LANGED END CONNECTION	ONS SHALL BE DESIG	NED ACCO	ORDING TO	ANSI STAI	NDARDS.	•						I			AS SHOWN ON M-7.1 AND M	1-7.2 SYSTEM SCHEMATICS. SI	EE ALSO N	IANUFACTURER'S IOI	м.			

4) FACTORY PROVIDED MOUNTING TABS FOR SUSPENDED SUPPORT ATTACHMENT

TAG SERVICE CV-1 CV CH-1 EVAPORATOR CV-2 CV CH-2 EVAPORATOR CV CH-3 EVAPORATOR <E> CV-3 CV-4 CV GB-3 CV-5 CV GB-2 CV-6 CV-7 CV GB-1 HHW BYPASS VALVE CV-8 CV EB-1 CV-9 CV EB-2 CV-10 CV EB-3 CV-11 CV CH-1 CONDENSER **CV-12** <E> CV-13 CV CH-2 CONDENSER CV CH-3 CONDENSER CV CT-1 CWS ISOLATION CV-14 CV-15 CV CT-2 CWS ISOLATION CV-16 CV CT-1 CWR ISOLATION CV-17 **CV CT-2 CWR ISOLATION** NOTES: 1) ACTUATOR SHALL BE EQUIPPED WITH FEEDBACK PROVISIONS 2) TWO AUXILIAR Y LIMIT SWITCHES

3) NEMA 4, 1P66/67, UL ENCLOSURE TYPE 4 5) ACTUATOR TO BE NON-FAIL SAFE 6) NEMA 1, IP40, UL ENCLOSURE TYPE 1 7) 7MM HEX CRANK MANUAL OVERRIDE TO BE SUPPLIED 8) EXTERNAL PUSH BUTTON MANUAL OVERRIDE TO BE SUPPLIED 9) EXISTING CONTROL VALVE IN PLACE

2.) ABB VFD SHALL HAVE DIRECT COMMUNICATION TO CONTROL SYSTEM VIA BACNET INTERFACE CARD 4.) FACTOR Y START-UP AND TRAINING SHALL BE INCLUDED 5.) VFD SHALL RESTART AUTOMATICALLY AFTER POWER OUTAGE 6.) ENERVEX VFD EDRIVE E3. IDF-1 VFD TO MODULATE SPEED BASED SIGNAL FROM ENERVEX EBC31 FLUE DRAFT PRESSURE CONTROLLER. STATUS, SPEED, AND FAULT/ALARM TO CONNECT TO BMS.

MARK BDD-1 BDD-2 NOTES:

3.) WARRANTY SHALL BE 2 YEARS

ANCHORAGE NOTES PER. DETAIL . (LBS) 12/8-5.1 1 - 12 12/S-5.1 1 - 12 12/S-5.1 1 - 12 12/S-5.1

		CE	NTRI	FUGA	L SEPA	ARATOF	Ł				
MARK	SERVICE	MODEL	GPM	INLET	OUTLET	PURGE OUTLET	HP	VOLTS PH & HZ	WEIGHT (LBS)	ANCHORAGE DETAIL	NOTES
CS-1	COOLING TOWER 1 & 2	PF-64-050-AP	600	6"	5"	1-1/2"	15	460/3/60	1,245	13/8-5.1	1 - 12
NOTES: 1)	TES: 1) NEMA 4X MOTOR STARTER ENCLOSURE WITH SINGLE POINT POWER CONNECTION, SAFETY DISCONNECT, AND HOA SWITCH.										

2) PROVIDE ISOLATION VALVE KIT 3) AUTOMATIC PURGE: INDUSTRIAL GRADE TWO-WAY BRASS PURGE VALVE WITH DIRECT MOUNT 100-240VAC ELECTRIC ACTUATOR AND ADJUSTABLE PURGE TIMER. (FACTORY PURGE SETTINGS: 30-SECONDS EVERY SIX HOURS) 4) SEE SEQUENCE OF OPERATION ON MI-6.1 FOR COOLING TOWER INTERLOCK

5) PROVIDE 4-20MA Y-DOUBLER FOR BAS COMMUNICATION 6) RATED TO REMOVE PARTICULATES AS LOW AS 45 MICRONS

7) PROVIDE MANUAL AIR BLEED VALVE AND INLET/OUTLET PRESSURE GAUGES

8) PROVIDE MOTOR STARTER WITH SHORT-CIRCUIT OVERLOAD PROTECTION 9) PUMP STATUS AND FAULT DRY CONTACT SIGNALS TO CONNECT TO BMS, COORDINATE WITH CONTROLS CONTRACTOR.

10) PROVIDE CAST IRON PRE-STRAINER 11) PROVIDE 3" X 4" HANDHOLE

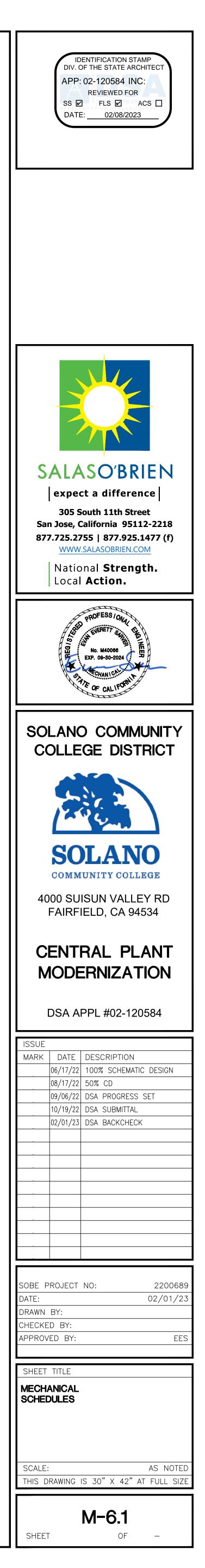
12) PROVIDE ELECTRICALLY ACTUATED BALL VALVE AND ADJUSTABLE PURGE TIMER

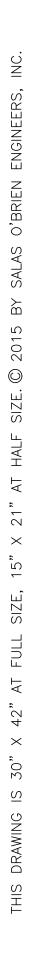
	BACKDRAFT DAMPER SCHEDULE												
BLDG /RM NO.	ROOM FUNCTION	MAKE	MODEL	WIDTH (IN)	HEIGHT (IN)	THICKNESS (IN)	FRAME DEPTH (IN)	BLADE THICKNESS (IN)	RATING PRESSURE (IN. WG)	RATED VELOCITY (FPM)	RATED TEMP (F)	NOTES	
ILLER PLANT	LOUVER	GREENHECK	EM-30	96	72	3.125	0.125	0.07	10	3500	180	1 - 2	
ILLER PLANT	GRAVITY VENT	GREENHECK	EM-40	48	48	3.125	0.125	0.07	10	3500	180	2	

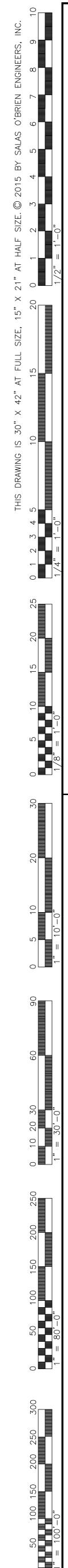
1) GALVANIZED SHEET METAL BLANK OFF FOR CIRCULAR PORTION OF LOUVER TO BE PROVIDED BY CONTRACTOR 2) PROVIDE COUNTER BALANCE WEIGHTS FOR DAMPER BALANCING.

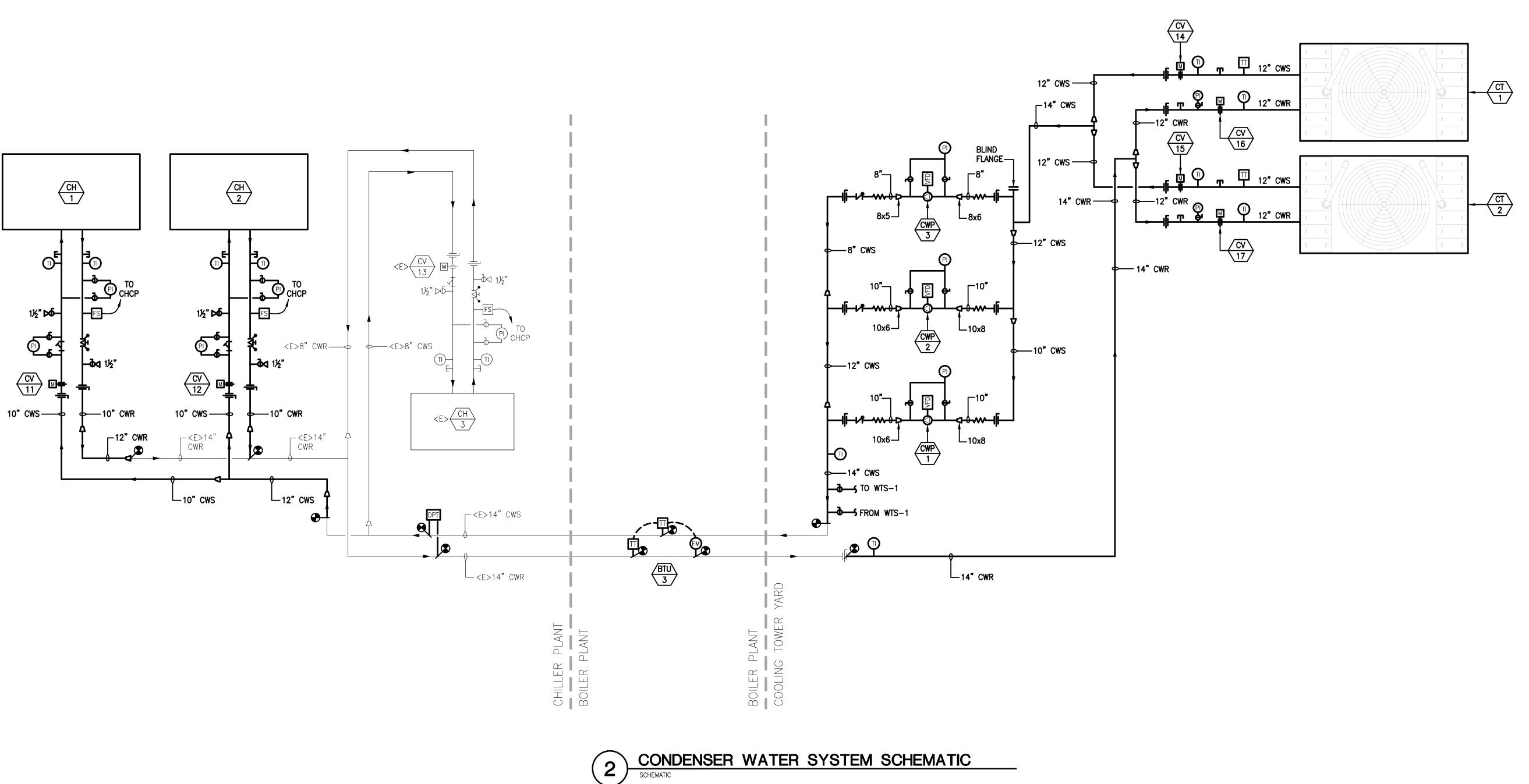
			(CONTROL	VALVE SCHEDU	ЛЕ						
VAC	PIPE SIZE	VALVE BODY SIZE	PATTERN	2- POSITION VS. MODULATING	DEFAULT POSITION (OPEN / CLOSED)	STYLE	MANUFACTURER	VALVE PART #	ACTUATOR PART #	CV	GPM	NOTES
120v	10"	10"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61000VB-1550	SY4-120MFT	1550	1555	2, 4, 6, 8
120v	10"	10"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61000VB-1550	SY4-120MFT	1550	1555	2, 4, 6, 8
120v	8"	8"	2-WAY	2-POSITION	-	-	-	-	-	-	-	9
24v	4''	4"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6400S-186	GRX24-MFT	186	255	2, 4, 6, 8
24v	4"	4"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6400S-186	GRX24-MFT	186	255	2, 4, 6, 8
24v	4''	4"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6400S-186	GRX24-MFT	186	255	2, 4, 6, 8
120v	10"	10"	2-WAY	MODULATING	CLOSED	BFLY	BELIMO	F6250-150SHP	SY4-120MFT	3517	2545	1, 4 - 7
24v	6"	6"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6600S-400	GRX24-MFT	400	445	2, 4, 6, 8
24v	6''	6"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6600S-400	GRX24-MFT	400	445	2, 4, 6, 8
24v	6''	6"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B6600S-400	GRX24-MFT	400	445	2, 4, 6, 8
120v	10"	10"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61000VB-1550	SY4-120MFT	1550	1950	2, 4, 6, 8
120v	10"	10"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61000VB-1550	SY4-120MFT	1550	1950	2, 4, 6, 8
120v	8"	8"	2-WAY	2-POSITION	-	-	-	-	-	-	-	9
120v	12"	12"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61200VB-1905	SY4-120MFT	1905	2475	2 - 4, 8
120v	12"	12"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61200VB-1905	SY4-120MFT	1905	2475	2 - 4, 8
120v	12"	12"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61200VB-1905	SY4-120MFT	1905	2475	2 - 4, 8
120v	12"	12"	2-WAY	2-POSITION	CLOSED	CCV	BELIMO	B61200VB-1905	SY4-120MFT	1905	2475	2 - 4, 8

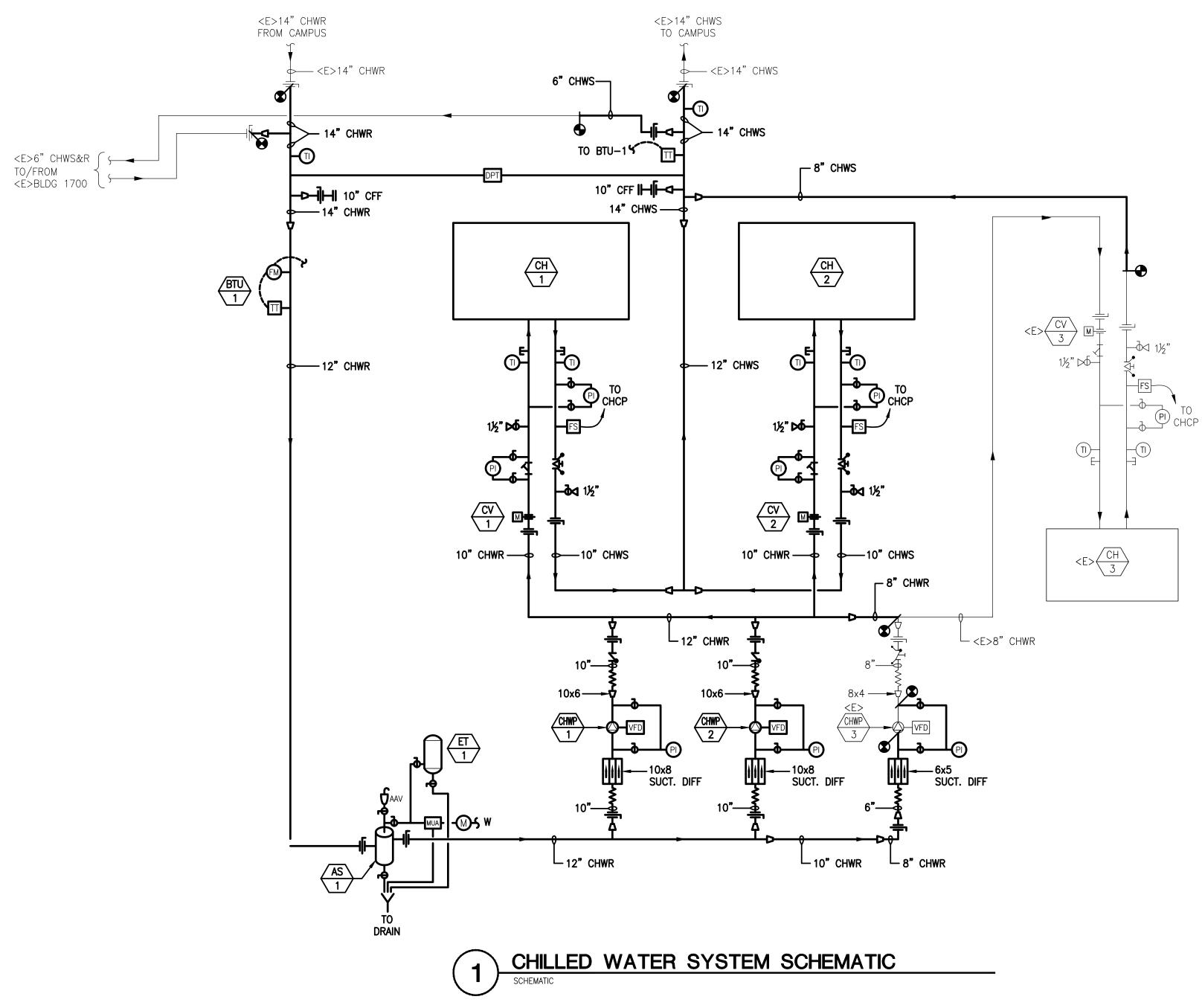
4) ACTUATOR TO BE EQUIPPED WITH MULTI-FUNCTION TECHNOLOGY (MFT) COMPATIBILITY

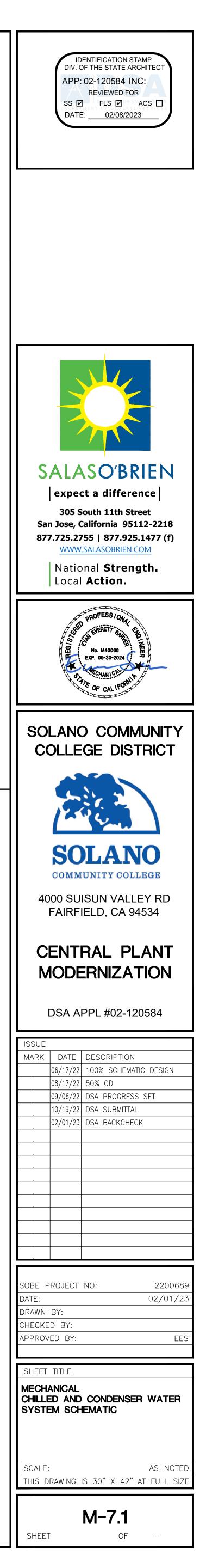


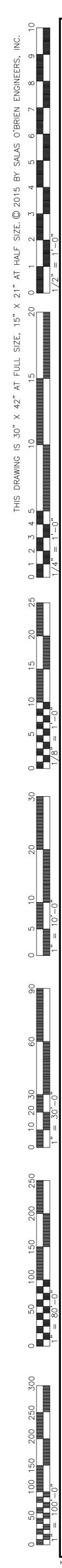




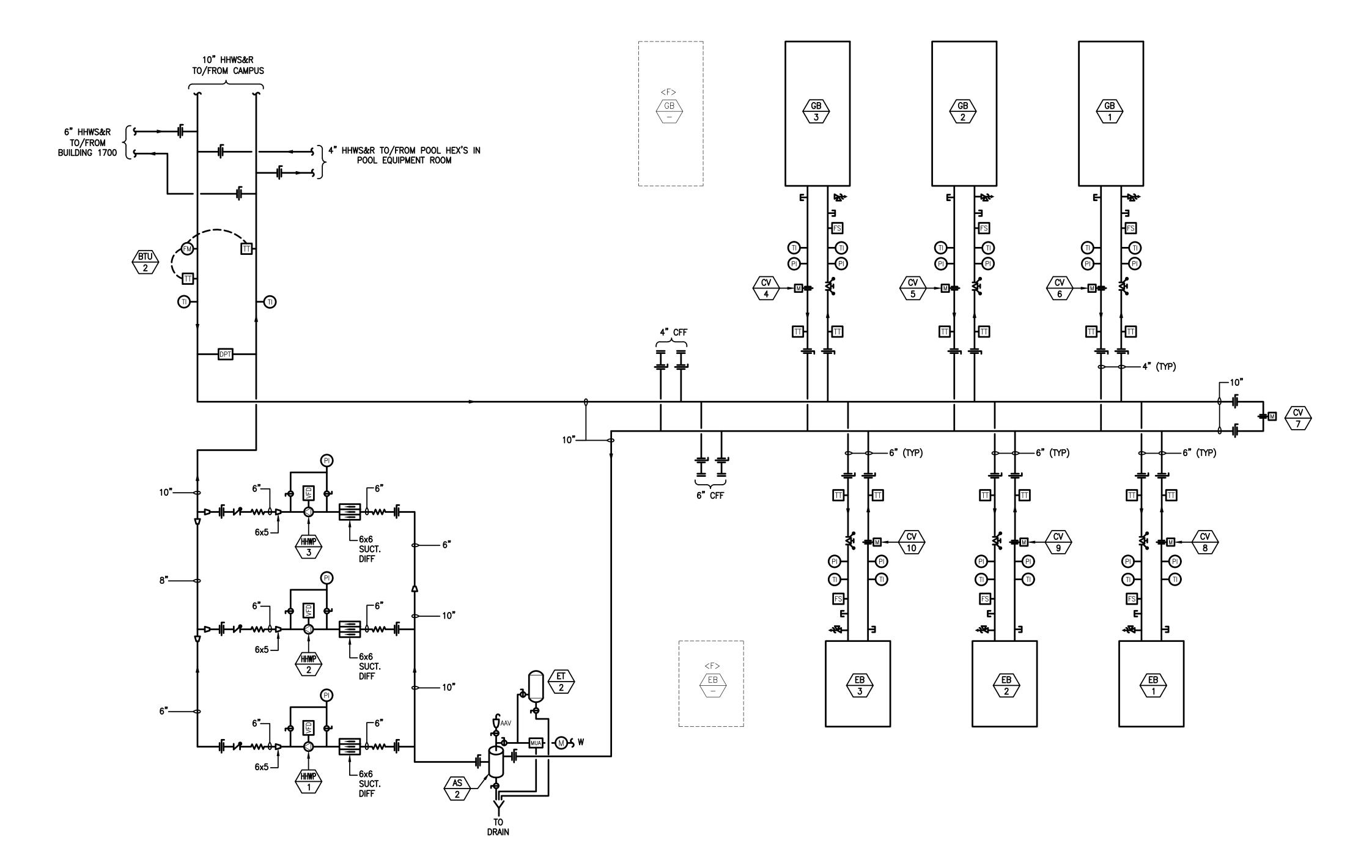


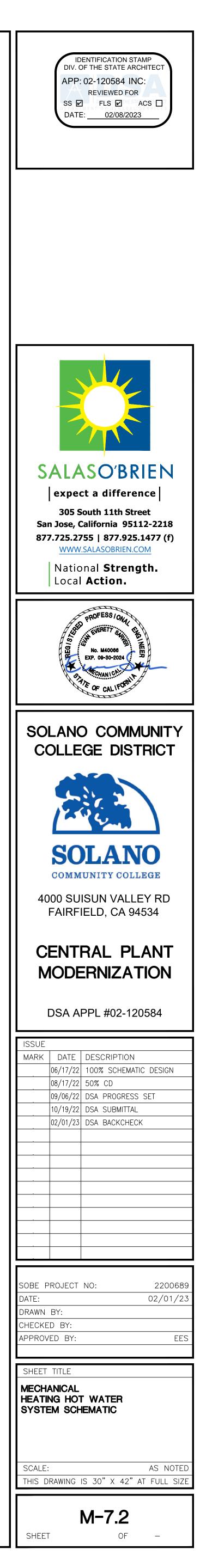


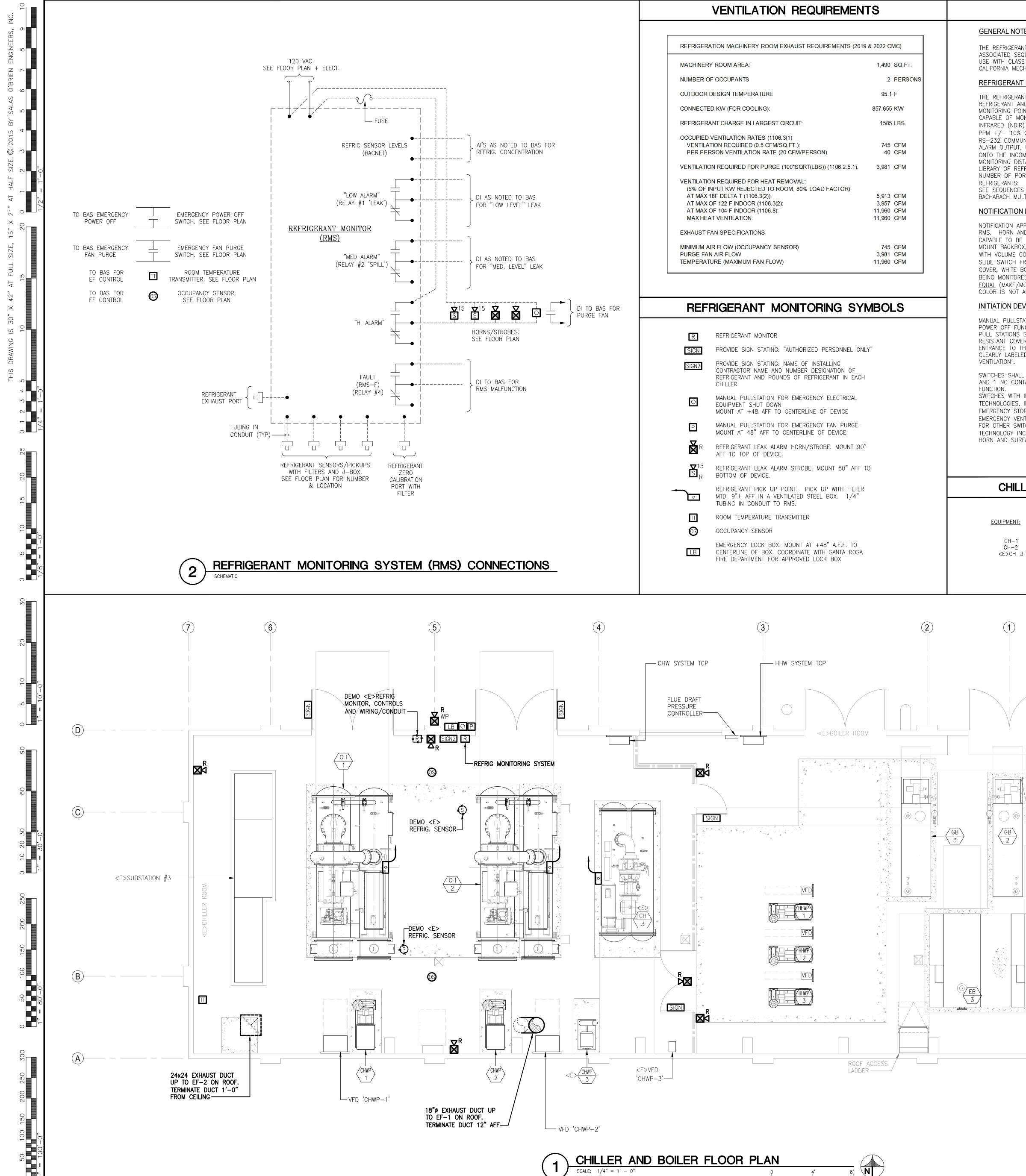




1 HEATING HOT WATER SYSTEM SCHEMATIC

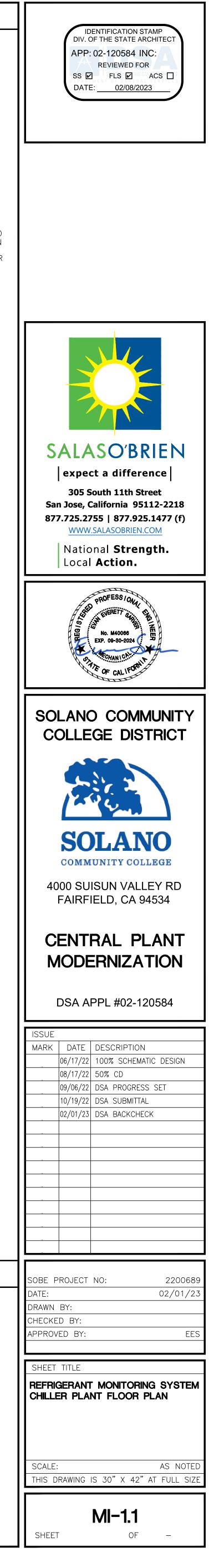






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RMS SPECIFICATIONS	SEQUENCE OF OPERATION
IOTE:	REFRIGERATION MACHINERY ROOM SAFETY SYSTEM:
RANT MONITORING SYSTEM (RMS) SHOWN, SPECIFIED AND DETAILED AND THE SEQUENCES AND OPERATIONS CALLED OUT ON THESE DRAWINGS ARE ONLY FOR ASS A1 AND B1 REFRIGERANTS AS DEFINED IN ASHRAE STANDARD 15 AND THE MECHANICAL CODE, CHAPTER 11. INT MONITOR: RANT MONITOR SHALL CONTINUOUSLY MONITOR THE ATMOSPHERE FOR	REFRIGERANT MONITORING SYSTEM: REFRIGERANT MONITORING SYSTEM (RMS) SHALL CONTINUOUSLY MONITOR THE MACHINERY ROOM ATMOSPHERE FOR REFRIGERANT. RMS SHALL INCLUDE ANALOG INPUTS TO THE BUILDING AUTOMATION SYSTEM (BAS) TO MONITOR REFRIGERANT LEVELS AT EACH SENSOR/PICK-UP. RMS SHALL INCLUDE DIGITAL INPUTS TO THE BAS FOR "LOW ALARM", "MEDIUM ALARM" AND "HI ALARM" REFRIGERANT LEVELS AND TO INDICATE AN RMS FAULT.
AND INITIATE ALARMS BASED ON THREE CONCENTRATION SETPOINTS FOR EACH POINT. UNIT SHALL MONITOR SEPARATE SAMPLING TUBES AND SHALL BE MONITORING A DIFFERENT REFRIGERANT ON EACH PORT. NON DISPERSIVE	REFRIGERANT MONITOR SHALL BE CALIBRATED TO MONITOR REFRIGERANTS:
DIR) TECHNOLOGY, CAPABLE OF SENSING DOWN TO 1 PPM. ACCURACY $+/-$ 1 0% OF READING 0-1000 PPM. PROVIDE BAC NET CONNECTIVITY AND RS-485, IMUNICATIONS CAPABILITY. MONITOR SHALL INCLUDE A SELF DIAGNOSTICS 'FAULT' JT. UNIT SHALL BE CAPABLE OF POWERING NOTIFICATION DEVICES BY TYING ICOMING POWER STRIP AND ROUTING THROUGH APPROPRIATE RELAY(S). DISTANCE UP TO 1200 FEET, 120 – 240 VOLT, 20 W. SHALL HAVE BUILT IN REFRIGERANTS, INCLUDING R-410A AND R-514A. PORTS: MINIMUM OF 3 S: R-1233zd(E) AND R-134a	R-1233zd(E)R134A (A1)ALARM byACTIONLOW LEVEL 180 ppm100 ppmBASBAS ALARMLOW LEVEL 2400 ppm500 ppmBASBAS ALARMAUDIBLE/VISUAL &PURGE FAN (CMC ALARM1)800 ppm1000 ppmRMSINPUT TO RMS TO POWER HORNS/ STROBES/INPUT TO BAS TO START FAN
CES FOR SETPOINTS. MUTH BACNET OR APPROVED EQUAL. MULTI-ZONE HGM-MZ, WITH BACNET OR APPROVED EQUAL. ON DEVICES:	SHUT DOWN N/A N/A NOT REQUIRED FOR CMC ALARM2 N/A N/A A1 OR B1 REFRIGERANT EMERGENCY POWER OFF SWITCH:
APPLIANCES SHALL BE RATED 120VAC AND SHALL BE COMPATIBLE WITH THE AND STROBE IN EACH UNIT SHALL BE WIRED SEPARATELY OR SHALL BE BE WIRED TOGETHER. HORN/STROBE SHALL BE WEATHERPROOF WITH SURFACE BOX, SHALL PROVIDE SELECTABLE CONTINUOUS OR TEMPORAL PATTERN TONE, CONTROL (99 DB @ 10' MAX). CANDELA LEVEL SHALL BE ADJUSTABLE WITH FROM LOW TO HIGH INTENSITY (15 – 185 CANDELA). PROVIDE BLUE STROBE	MANUAL PUSH BUTTON SHALL BE LOCATED IMMEDIATELY ADJACENT TO AND OUTSIDE OF THE PRINCIPAL ENTRANCE TO THE REFRIGERATION MACHINERY ROOM. MANUAL STATION SHALL BE WIRED TO THE BAS AND SHALL INITIATE SHUTDOWN SEQUENCE. EMERGENCY PURGE SWITCH:
E BODY AND LABELS FOR: "REFRIGERANT R-XXX" TO MATCH REFRIGERANT ORED. <u>CALIBRATION TECHNOLOGIES INC. (CTI) SHA-120-BLUE OR APPROVED</u> C/MODEL CONFIRMED 12/22). 120V, 150 mA MAX. RED HOUSING AND LENS OT ALLOWED. DEVICES:	MANUAL PUSH BUTTON SHALL BE LOCATED IMMEDIATELY ADJACENT TO AND OUTSIDE OF THE PRINCIPAL ENTRANCE TO THE REFRIGERATION MACHINERY ROOM. MANUAL STATIONS SHALL BE WIRED TO THE BAS AND SHALL INITIATE THE EXHAUST FAN PURGE SEQUENCE.
STATIONS SHALL BE PROVIDED TO INITIATE EMERGENCY PURGE AND EMERGENCY FUNCTIONS. DEVICES SHALL BE DIFFERENTIATED FROM FIRE ALARM DEVICES. IS SHALL BE OF THE BREAK GLASS TYPE, OR PROVIDED WITH A TAMPER OVER, LOCATED IMMEDIATELY OUTSIDE OF AND ADJACENT TO THE PRINCIPAL DIFT THE REFRIGERATION MACHINERY ROOM. PULL STATIONS SHALL BE	HORN/STROBES SHALL BE LOCATED INSIDE THE REFRIGERATION MACHINERY ROOM AND IMMEDIATELY OUTSIDE AND ADJACENT TO EVERY ENTRANCE TO THE REFRIGERATION MACHINERY ROOM.
ELED AS TO FUNCTION "EMERGENCY POWER OFF" AND "EMERGENCY NALL BE RATED 120 V, WEATHERPROOF, SURFACE MOUNT WITH 1 NO CONTACT ONTACT. SWITCHES SHALL REQUIRE MANUAL RESET AND LABELED AS TO	FAULT SEQUENCE: UPON A FAULT CONDITION THE RMS SHALL PROVIDE A DIGITAL INPUT TO THE BAS. BAS SHALL OUTPUT ALARM "RMS FAULT TO THE BAS". ALARM OUTPUTS TO BAS SHALL CLEAR IMMEDIATELY UPON THE RMS FAULT CONDITION BEING CLEARED.
TH INTEGRAL TAMPER PROOF CLEAR COVER AND LABELING: CALIBRATON S, INC. (CTI) "EMERGENCY PUSHBUTTON SWITCHES" NEMA 4: STOP: SB-ES3 (MAKE/MODEL CONFIRMED 12/22) VENTILATION: SB-EV1 (MAKE/MODEL CONFIRMED 12/22) SWITCHES REQUIRING SEPARATE TAMPERPROOF COVERS, PROVIDE SAFETY	SILENCE SEQUENCE: HORNS MAY BE SILENCED WITH THE MANUAL RESET ON THE RMS.
INC. (STI) MODEL STI STOPPER II, (MAKE/MODEL CONFIRMED 12/22) WITH URFACE MOUNT WEATHERPROOF BACKBOX AND GASKET.	RESET SEQUENCE: AFTER THE ALARM CONDITIONS ARE CLEARED (IE, RMS IS NO LONGER SIGNALING "HI ALARM"), THE RMS IS RESET FROM THE LOCAL RESET BUTTON ON THE RMS. BAS SEQUENCES:
LLER EQUIPMENT REFRIGERANT INFO	GENERAL : THE BAS SHALL CONTROL THE INTERMITTENT EXHAUST FANS AND PROVIDE A SHUT DOWN
NT: REFRIGERANT: LBS: CMC OEL CLASSIFICATION	SEQUENCE FOR THE ELECTRICALLY POWERED EQUIPMENT IN THE REFRIGERATION MACHINERY ROOM. THE BAS ALSO PROVIDES FOR OCCUPANCY DEMAND AND TEMPERATURE CONTROL OPERATION OF THE INTERMITTENT EXHAUST FANS SERVING THE REFRIGERATION MACHINERY ROOM, AS DESCRIBED IN THE FOLLOWING PARAGRAPHS. NOTE: SEE CONTROLS DRAWINGS FOR ADDITIONAL BAS SEQUENCES FOR THE
1 R-1233zd(E) 1,583 A1 800 PPM 2 R-1233zd(E) 1,583 A1 800 PPM 1-3 R-134A 1,091 A1 1000 PPM	REFRIGERATION EQUIPMENT, INCLUDING NORMAL SHUTDOWN AND START-UP/STAGING SEQUENCES. OCCUPANCY DEMAND VENTILATION:
	BAS SHALL MONITOR OCCUPANCY SENSOR(S) AND ENERGIZE EXHAUST FANS TO MINIMUM VENTILATION CFM AS DETERMINED BY SQUARE FOOTAGE AND OCCUPANCY LOAD. SEE "VENTILATION REQUIREMENTS" FOR FAN REQUIREMENTS. TEMPERATURE CONTROL:
	THE BAS SHALL CONTINUOUSLY MONITOR REFRIGERATION MACHINERY ROOM TEMPERATURE, AND CYCLE AND/OR VARY THE SPEED OF THE EXHAUST FAN(S) TO MAINTAIN SETPOINT, INITIALLY SET AT 80°F (SEE CONTROL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND INFORMATION). PURGE SEQUENCE :
	UPON AN INPUT FROM THE RMS FOR A "HI" REFRIGERANT ALARM CONDITION OR THE ACTIVATION OF THE EMERGENCY FAN PURGE SWITCH, THE BAS SHALL START ALL INTERMITTENT FANS ASSOCIATED WITH THE REFRIGERATION MACHINERY ROOM. THIS CONTROL FUNCTION SHALL BE COMPARED TO THE TEMPERATURE CONTROL OR VENTILATION CFM REQUIREMENT, AND ALLOW THE FANS TO RUN AT THE MAXIMUM CFM REQUIRED BY THE THREE SEPARATE CONTROL FUNCTIONS. SHUT-DOWN SEQUENCE:
VFD 'IDF-1'	UPON THE ACTIVATION OF THE EMERGENCY POWER OFF SWITCH, THE BAS SHALL INITIATE A NORMAL SHUTDOWN SEQUENCE OF THE REFRIGERATION EQUIPMENT, INCLUDING ALL ASSOCIATED PUMPS. SEE CONTROL DRAWINGS FOR NORMAL SHUTDOWN SEQUENCE. THIS CONTROL FUNCTION SHALL OVERRIDE ALL OTHER CONTROL SEQUENCES FOR THE REFRIGERATION EQUIPMENT (STAGING, ON/OFF, ETC.). LOW ALARM SEQUENCE:
	UPON AN INPUT FROM THE RMS FOR "LOW ALARM", THE BAS SHALL INITIATE AN ALARM ON THE BAS MONITOR, INDICATING "MINOR REFRIGERANT LEAK DETECTED" AND PROVIDE A DISPLAY OF THE ZONE ID IN ALARM AND REFRIGERANT LEVEL INDICATION IN PPM. MEDIUM ALARM SEQUENCE:
	UPON AN INPUT FROM THE RMS FOR "MEDIUM ALARM", THE BAS SHALL INITIATE AN ALARM ON THE BAS MONITOR, INDICATING "MODERATE REFRIGERANT LEAK DETECTED – IMMEDIATE REMEDIAL ATTENTION REQUIRED" AND PROVIDE A DISPLAY OF THE ZONE ID IN ALARM AND REFRIGERANT LEVEL INDICATION IN PPM. HI ALARM SEQUENCE:
	UPON ACTIVATION OF THE "HIGH" ALARM (RMS ALARM), THE RMS SHALL PROVIDE INPUTS TO THE BAS FOR PURGE SEQUENCE INITIATION, AS WELL AS PROVIDE POWER TO ALL THE SIGNALING DEVICES (HORNS/STROBES) FOR VISUAL AND AUDIBLE NOTIFICATION. HIGH ALARM SHALL ALSO LOCK OUT BOILERS LOCATED IN THE REFRIGERATION MACHINERY ROOM, AS REQUIRED AND SHOWN ON DRAWINGS. REFRIGERANT LEVEL INDICATION:
	THE BAS SHALL INCLUDE A SCREEN INDICATING THE ACTUAL LEVELS OF REFRIGERANT DETECTED BY ALL SENSORS IN THE SYSTEM.
VFD 'CWP-1'	KEY PLAN
	N
	MI-1.1



GENERAL:

GRAPHICS:

PLANT AND AT EACH BUILDING INCLUDING TONS, MBH, OAT, AND OA WBT. SCREENS. NEW CONTROL POINTS SHALL ACCURATELY UPDATE TO CURRENT VALUE OR SETPOINT. TRENDING:

SET UP TRENDS FOR EACH POINT FOR A MINIMUM 30 DAYS. ALARMS:

AN ALARM SHALL BE ISSUED BY THE BMS WHENEVER A STATUS INPUT DOES NOT MATCH THE CORRESPONDING COMMANDED STATE AFTER AN ADJUSTABLE TIME-DELAY PERIOD. ALARMS SHALL BE CAPABLE OF BEING ACKNOWLEDGED WITHOUT BEING CLEARED. ACKNOWLEDGING AN ALARM SHALL NOT PREVENT THE ISSUANCE OF ADDITIONAL ALARMS. IF AN ALARM/FAULT OCCURS FOR ANY PIECE OF EQUIPMENT, AS SEEN BY THE EQUIPMENT CONTROL PANEL (VIA AVAILABLE BACNET POINTS), AN ALARM SHALL BE ISSUED BY THE BMS TRANSLATING THE ALARM/FAULT TO THE FRONT END. WATER METERS SHALL BE CONFIGURED WITH A PROGRAMMED ALARM THAT SHALL BE GENERATED IF MORE THAN 100 GALLONS (USER ADJUSTABLE) HAS FLOWED THROUGH THE CHILLED WATER OR HEATING HOT WATER MAKE-UP WATER ASSEMBLIES IN A 30 MINUTE (USER ADJUSTABLE) TIME PERIOD.

START-UP PROGRAMMING AND COMMISSIONING:

THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEQUENCES AND SHALL TEST, TUNE, AND ADJUST AS REQUIRED FOR A FULLY FUNCTIONAL CENTRAL PLANT. ALL DIFFERENTIAL PRESSURE SETPOINTS SHALL BE SET AND COORDINATED WITH BALANCING AGENCY. CONTROLS CONTRACTOR AND BALANCER SHALL BE ON SITE TOGETHER TO DETERMINE SETPOINTS. CONTROLS CONTRACTOR WILL DOCUMENT ALL FINAL SETPOINTS ON RECORD DWGS.

CHILLER PLANT:

CHILLERS: GENERAL:

PERIODS PER DAY.

EACH CHILLER SHALL HAVE A MINIMUM RUN TIME OF 15 MINUTES (USER ADJUSTABLE). CHILLED WATER AND CONDENSER WATER ISOLATION VALVES SHALL CLOSE. A CHILLER FAULT SHOULD BE DEFINED AS: AN ISOLATION VALVE THAT DOES NOT OPEN.

 A CHILLER FAILS TO START. ROTATION:

CHILLERS ARE TO BE ENABLED IN A ROTATIONAL SEQUENCE BASED ON TIME OF YEAR (USER ADJUSTABLE). THE VALID ROTATIONAL SEQUENCES ARE AS FOLLOWS: SUMMER

> SUMMER (MAY 1ST - OCTOBER 31ST) CH-1 - CH-3 - CH-2 CH-2 - CH-3 - CH-1

AFTER 168 HOURS (USER ADJUSTABLE) OF RUNTIME ON THE LEAD CHILLER IN THE SUMMER, OR THE LAG CHILLER IN THE WINTER. THE ROTATIONAL SEQUENCE SHALL AUTOMATICALLY ROTATE TO THE NEXT SEQUENCE. A TOGGLE SHALL BE PROVIDED TO REMOVE ONE OR MORE CHILLERS FROM THE ROTATIONAL SEQUENCES FOR SERVICE. ANY CHILLER REMOVED FROM SEQUENCES SHALL NOT GENERATE ALARMS. IF A CHILLER FAILS, GENERATE AN ALARM TO ALERT THE BUILDING SPECIALIST, TOGGLE CHILLER OUT OF THE ROTATIONAL SEQUENCE, AND START THE NEXT CHILLER IN ROTATION. START UP:

WHEN THE TIME SCHEDULE ALLOWS, AND OAT RISES ABOVE SETPOINT OF 60°F (USER ADJUSTABLE) THE LEAD CHILLER CHILLED WATER (CHW) AND CONDENSER WATER (CW) ISOLATION VALVES SHALL OPEN SIMULTANEOUSLY. ONCE CHW AND CW ISOLATIONVALVES ARE BOTH PROVEN OPEN VIA LIMIT SWITCHES, LEAD CHILLER SHALL BE ENABLED: LEAD CHW PUMP SHALL START ONCE SIGNAL IS RECEIVED FROM CHILLER CONTROL PANEL. DO NOT ENABLE LEAD CHW PUMP UNTIL ISOLATION VALVES ARE OPEN AND LEAD CHILLER IS ENABLED. SEE CHW PUMP, COOLING TOWER AND CW PUMP SECTIONS FOR RESPECTIVE SEQUENCES OF OPERATION.

UPON PROOF OF FLOW VIA ON BOARD CHW AND CW FLOW SWITCHES. CH-1 SHALL START AND RAMP UP GRADUALLY TO MAINTAIN THE CHWST SETPOINT OF 45°F (USER ADJUSTABLE).

THE STAGING OF THE NEXT AND LAST CHILLERS SHALL BE BASED ON THE CHW RETURN TEMPERATURE (CHWRT) AND SHALL BEGIN 30 MINUTES (USER ADJUSTABLE) AFTER THE LEAD CHILLER HAS BEEN ENABLED. IF THE CHWRT EXCEEDS 55°F (USER ADJUSTABLE) FOR 3 MINUTES (USER ADJUSTABLE). OPEN LAG CHILLER CHW AND CW ISOLATION VALVES, AND ENABLE THE LAG CHILLER. AFTER 20 MINUTE STAGING DELAY (USER ADJUSTABLE), LAST CHILLER SHALL STAGE IF CHWRT EXCEEDS 55°F FOR 5 MINUTES (USER ADJUSTABLE). DURING OPERATION:

IF A CHILLER FAILURE OCCURS DURING OPERATION, THE FOLLOWING SHALL OCCUR IN THIS ORDER: GENERATE ALARM, COMMAND CHILLER OFF, COMMAND ASSOCIATED CHWP AND CWP OFF, CLOSE CHW AND CW ISOLATION VALVES, TOGGLE OFF (I.E. REMOVE) CHILLER AND ASSOCIATED CHWP AND CWP FROM ROTATIONAL SEQUENCE FOR SERVICE, THE NEXT CHILLER, CHWP, AND CWP IN ROTATION SHALL BE ENABLED TO REPLACE THE FAULTED CHILLER.

CHWST SETPOINT SHALL DYNAMICALLY RESET BASED ON OAT, WITH ENDPOINTS OF 45°F CHWST SETPOINT (USER ADJUSTABLE) AT 85°F OAT (USER ADJUSTABLE) AND 50°F CHWST SETPOINT (USER ADJUSTABLE) AT 60°F OAT (USER ADJUSTABLE).

> CHW SUPPLY TEMPS ASSOCIATED OAT TEMPS

SHUT DOWN:

IF MULTIPLE CHILLERS ARE RUNNING AND THE CHWRT DROPS BELOW SETPOINT OF 50°F (USER ADJUSTABLE) FOR 10 MINUTES (USER ADJUSTABLE), DISABLE THE LAST CHILLER IN ROTATION. REPEAT SEQUENCE UNTIL ONLY THE LEAD CHILLER IS ENABLED. IF CHWRT IS LESS THAN OR EQUAL TO THE CHWRT SETPOINT, AND LEAD CHILLER HAS OPERATED AT A LOAD EQUAL TO OR LESS THAN 20% FOR 10 MINUTES (USER ADJUSTABLE), THEN CALL FOR COOLING HAS BEEN SATISFIED AND LEAD CHILLER SHALL CYCLE ON ITS OWN CONTROLS. UPON TIME OF DAY SCHEDULE OR OAT LOCKOUT, LEAD CHILLER SHALL BE DISABLED.

ONCE CHWP ASSOCIATED WITH THE CHILLER HAS BEEN DISABLED, CLOSE CHILLER'S CHW AND CW ISOLATION VALVES. CHILLED WATER PUMPS:

GENERAL THE CHILLED WATER PUMPS (CHWP) SHALL BE ENABLED BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE), OAT (USER ADJUSTABLE), AND SIGNAL FROM THE INTERLOCKED CHILLER CONTROL PANEL. EACH CHWP SHALL BE INTERLOCKED WITH A SPECIFIC CHILLER AS DESCRIBED IN THE TABLE BELOW:

CHILLER	ASSOCIATED CHILLED	REQUIRED CHWP FLOW
	WATER PUMP	FOR CHILLER EVAP.
CH-1	CHWP-1	1,555 GPM
CH-2	CHWP-2	1,555 GPM
CH-3	CHWP-3	840 GPM

THE CHWP'S SHALL OPERATE AT A SPEED BASED ON THE DIFFERENTIAL PRESSURE (DP) BETWEEN THE MAIN CHW SUPPLY AND RETURN PIPING IN THE CENTRAL PLANT (TO BE DETERMINED DURING SYSTEM BALANCING). DP SETPOINT RESETS SHALL BE USED FOR EACH STAGE OF OPERATION FROM SINGLE CH/CHWP OPERATION THROUGH ALL THREE CH'S AND CHWP'S BEING ENABLED, TO ENSURE REQUIRED FLOWRATES ARE BEING MET (TO BE DETERMINED DURING SYSTEM BALANCING).

ROTATION:

THE ROTATIONAL SEQUENCE FOR THE CHWP'S SHALL MIMIC THE ROTATIONAL SEQUENCE FOR THE CHILLERS SINCE EACH CHWP SHALL BE INTERLOCKED WITH A SPECIFIC CHILLER AS DESCRIBED ABOVE. START UP: UPON RECEIVING A SIGNAL FROM THE CHILLER CONTROL PANEL THAT THE CHILLER HAS BEEN ENABLED, THE INTERLOCKED CHWP (PER THE TABLE ABOVE) SHALL START AT MINIMUM RPM, PER VFD PROGRAMMING, THEN MODULATE SPEED TO MAINTAIN DP SETPOINT.

DURING OPERATION:

IF A PUMP FAULT OCCURS WHILE PUMP IS IN OPERATION, THE FOLLOWING SHALL OCCUR IN THIS ORDER: GENERATE ALARM, CHANGE PUMP COMMAND TO OFF, CHANGE INTERLOCKED CHILLER COMMAND TO OFF, TOGGLE OFF (I.E. REMOVE) CHWP AND INTERLOCKED CHILLER FROM ROTATIONAL SEQUENCE FOR SERVICE. THE NEXT CHWP AND CHILLER IN ROTATION SHALL BE ENABLED TO REPLACE THE FAULTED PUMP.

IF SIGNAL FROM THE CHW DIFFERENTIAL PRESSURE TRANSDUCER IS LOST, AN ALARM SHALL BE ISSUED BY THE BMS. THE FOLLOWING BACKUP SEQUENCE SHALL BE EMPLOYED TO CONTROL THE CHWP'S BASED OFF OF FLOW: • UPON LEAD CHILLER BEING ENABLED, INTERLOCKED CHWP SHALL START AT MINIMUM RPM THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY CHILLER (SEE TABLE ABOVE) AS SEEN BY BTU-1 OR FROM CHILLER CONTROL PANEL.

• UPON LAG CHILLER BEING ENABLED, INTERLOCKED CHWP SHALL START AT MINIMUM RPM, THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY THE TWO ENABLED CHILLERS (SUMMATION OF FLOW RATES PER ABOVE TABLE) AS SEEN BY BTU-1 OR CHILLER CONTROL PANEL. • UPON LAST CHILLER BEING ENABLED, INTERLOCKED CHWP SHALL START AT MINIMUM RPM, THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY THE THREE ENABLED CHILLERS AS SEEN BY BTU-1 OR CHILLER CONTROL PANEL.

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CONTROLS CONTRACTOR SHALL INCORPERATE NEW GRAPHICS TO ENSURE THAT ALL NEW OR UPDATED SYSTEMS ARE DISPLAYED ON APPROPRIATE GRAPHICS SCREENS. SHOW COMPLETE BUILDING FLOWS AND TEMPERATURE AT THE CONTRACTOR SHALL ENSURE THAT ALL NEW CONTROL POINTS HAVE BEEN UPDATED ON ALL GRAPHICS

CHILLERS SHALL BE ENABLED BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE) AND OUTSIDE AIR TEMPERATURE (OAT) (USER ADJUSTABLE). SCHEDULE SHALL ACCOMMODATE A MINIMUM OF 3 OCCUPIED/UNOCCUPIED

IF A CHILLER IS DISABLED AND THE CHILLER'S ASSOCIATED CHILLED WATER PUMP IS DISABLED, THEN THE CHILLER

• THE CHILLER GENERATES A FAULT (SEE POINTS LIST FOR FAULT/ALARM CONTROL POINTS TO BE INTEGRATED).

WINTER (NOV-1ST - APRIL 30TH) CH-3 - CH-1 - CH-2CH-3 - CH-2 - CH-1

DYNAMIC CH	WST SP RESET
LOW CHWST	HIGH CHWST
45°F	50°F
85°F	60°F

SHUT DOWN:

DURING OCCUPIED HOURS, IF LEAD CHILLER IS IN A LOW LOAD CONDITION AND IS CYCLING OFF/ON VIA ITS ONBOARD CONTROLS, LEAD CHWP SHALL MODULATE SPEED TO LEAD CHILLER'S MINIMUM FLOW (MINIMUM FLOW FOR CH-1 & CH-2 IS 740 GPM EACH, AND 420 GPM FOR CH-3) WHEN CHILLER IS COMMANDED OFF. UPON RECEIVING A SIGNAL THAT A CHILLER HAS BEEN DISABLED, THE INTERLOCKED CHWP SHALL CONTINUE MODULATING TO MAINTAIN DIFFERENTIAL PRESSURE (OR FLOW CONTROL) FOR 5 MINUTES (USER ADJUSTABLE).CHWP FOR AN INTERLOCKED CHILLER SHALL BE DISABLED AFTER THE CHILLER HAS BEEN DISABLED FOR A TIME PERIOD OF 5 MINUTES (USER ADJUSTABLE) AND CHILLER ISOLATION VALVES SHALL CLOSE.

<u>EXHAUST FAN (EF-1):</u>

REFRIGERANT PURGE FAN, EF-1 BE ENABLED BY AN ALARM SIGNAL FROM THE REFRIGERANT MONITORING SYSTEM (RMS) OR MANUAL EMERGENCY PURGE PUSH BUTTON. COORDINATE WITH AIR BALANCE CONTRACTOR AND RMS DRAWINGS FOR CFM SETPOINT.

EXHAUST FAN (EF-2):

CHILLER ROOM VENTILATION FAN, EF-2 SHALL OPERATE BASED ON ROOM TEMPERATURE. AS THE TEMPERATURE RISES ABOVE SETPOINT INITIALLY SET AT 80°F (USER ADJUSTABLE), THE EXHAUST FAN SHALL MODULATE SPEED TO MAINTAIN ROOM SETPOINT. AS THE ROOM TEMPERATURE DROPS BELOW SETPOINT, THE EXHAUST FAN SHALL TURN OFF.

COOLING TOWER YARD:

COOLING TOWERS:

GENERAL:

COOLING TOWERS SHALL BE ENABLED BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE) AND OUTSIDE AIR TEMPERATURE (OAT) (USER ADJUSTABLE).

COOLING TOWERS (CT) SHALL BE DESIGNATED LEAD/LAG (USER SELECTABLE) AND SHALL STAGE TO MAINTAIN THE CONDENSER WATER SUPPLY TEMPERATURE (CWST) SETPOINT (SP).

TOWER FANS SHALL BE DISABLED IF THERE ARE NO CONDENSER WATER PUMPS OPERATING. ROTATION:

AFTER 168 HOURS (USER ADJUSTABLE) OF OPERATION THE LEAD CT SHALL BECOME THE LAG CT AND VICE VERSA. A TOGGLE SHALL BE PROVIDED TO REMOVE A COOLING TOWER FROM THE ROTATION FOR SERVICE. A TOWER REMOVED FROM SERVICE SHALL NOT GENERATE ALARMS. START UP:

LEAD COOLING TOWER (CT) ISOLATION VALVES SHALL OPEN PRIOR TO STARTING ASSOCIATED LEAD CONDENSER WATER PUMP (CWP), SEE CWP SEQUENCES. LEAD CT FAN SHALL START WHEN LEAD CT ISOLATION VALVES HAVE BEEN PROVEN OPEN VIA INTEGRATED LIMIT SWITCHES, AND CWST AS SEEN BY THE TEMPERATURE TRANSMITTER AT

DRIVE (VFD) TO MAINTAIN CWST SP. LAG COOLING TOWER ISOLATION VALVES SHALL OPEN WHEN FLOW DETECTED AT BTU-3 IS GREATER THAN 850 GPM (MIN. FLOW PER CT: USER ADJUSTABLE) FOR 5 MINUTES (USER ADJUSTABLE). LAG CT FAN SHALL START WHEN LAG CT ISOLATION VALVES ARE PROVEN OPEN VIA THE INTEGRATED LIMIT SWITCHES AND CWST AT LAG CT IS GREATER

WHEN LEAD AND LAG CT FANS ARE BOTH ENABLED AND STEADY STATE OPERATION HAS BEEN ACHIEVED, TOWER FAN SPEEDS SHALL MODULATE AT EQUAL SPEEDS VIA THE EQUIPPED VFD'S TO MAINTAIN THE CWST SP AT BTU-3. DURING OPERATION:

CONDENSER WATER SUPPLY TEMPERATURE (CWST) SETPOINT (SP) SHALL BE RESET TO BE EQUAL TO WET BULB TEMPERATURE (WBT) PLUS THE DESIGN APPROACH OF 7°F (USER ADJUSTABLE). THUS:

 $CWST SP = (WBT + 7^{\circ}F)$

THAN CWST SP.

WITH A LOW LIMIT OF 60°F (USER ADJUSTABLE) AND A HIGH LIMIT OF 80°F (USER ADJUSTABLE) FOR THE CWST SP. IF CT VIBRATION CUT-OFF SWITCH TRIPS, ASSOCIATED CT FAN SHALL BE DISABLED. AN ALARM SHALL BE ISSUED. AND NEXT CT IN ROTATION SHALL BE ENABLED.

IF LEAD CT FAILS, DISABLE THE FAN, GENERATE AN ALARM TO ALERT THE BUILDING SPECIALIST, CLOSE THE ISOLATION VALVES TO THAT TOWER CELL, & START THE LAG COOLING TOWER. IF A TOWER FAILS, AND THE REQUIRED GPM FOR COMBINED CHILLERS IS GREATER THAN THE TOWER MAX FLOW, SHUT DOWN (LAST) AND LAG CHILLERS TO REDUCE FLOW REQUIREMENT AS REQUIRED FOR SINGLE CELL OPERATION. SHUT DOWN:

IF CWST SP IS SATISFIED, AND LEAD AND LAG CT FANS MAINTAIN A SPEED LESS THAN OR EQUAL TO 15% (USER ADJUSTABLE) FOR 10 MINUTES (USER ADJUSTABLE), LAG CT FAN SHALL BE DISABLED. WAIT 5 MINUTES (USER ADJUSTABLE) BEFORE SEQUENCE RESTART.

IF THE FLOW DETECTED FROM BTU-3 IS LESS THAN 850 GPM (MIN. FLOW PER CT; USER ADJUSTABLE) AND IF LAG CT FAN IS ENABLED, THEN LAG CT FAN SHALL DECREASE SPEED TO 15% SPEED AND DISABLE. ONCE LAG CT FAN HAS BEEN DISABLED, LAG CT ISOLATION VALVES SHALL CLOSE. IF LEAD CT FAN MAINTAINS A SPEED LESS THAN OR EQUAL TO 20% AND CWST SETPOINT IS SATISFIED, FOR 10 MINUTES (USER ADJUSTABLE), THEN LEAD CT FAN SHALL BE DISABLED. IF CW IS STILL FLOWING PER CWP SEQUENCES, THEN CYCLE LEAD CT FAN ON/OFF TO MAINTAIN CWST SP. WHEN LEAD CWP IS DISABLED PER CWP SEQUENCES, LEAD CT ISOLATION VALVES SHALL CLOSE AND LEAD CT FAN SHALL BE DISABLED. CONDENSER WATER PUMPS:

GENERAL:

THE CONDENSER WATER PUMPS (CWP) SHALL BE ENABLED BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE), OAT (USER ADJUSTABLE), AND SIGNAL FROM THE INTERLOCKED CHILLER CONTROL PANEL. EACH CWP SHALL BE INTERLOCKED WITH A SPECIFIC CHILLER AS DESCRIBED IN THE TABLE BELOW:

CHILLER	ASSOCIATED CONDENSER	REQUIRED CWP FLOW
	WATER PUMP	FOR CHILLER COND.
CH-1	CWP-1	1,950 GPM
CH-2	CWP-2	1,950 GPM
CH-3	CWP-3	1,050 GPM

THE CWP'S SHALL OPERATE AT A CONSTANT SPEED BASED ON THE DIFFERENTIAL PRESSURE (DP) BETWEEN THE MAIN CW SUPPLY AND RETURN PIPING IN THE CENTRAL PLANT (TO BE DETERMINED DURING SYSTEM BALANCING).

DP SETPOINT RESETS SHALL BE USED FOR EACH STAGE OF OPERATION FROM SINGLE CH/CWP OPERATION THROUGH ALL THREE CH'S AND CWP'S BEING ENABLED, TO ENSURE REQUIRED FLOWRATES ARE BEING MET (TO BE DETERMINED DURING SYSTEM BALANCING).

ROTATION:

THE ROTATIONAL SEQUENCE FOR THE CWP'S SHALL MIMIC THE ROTATIONAL SEQUENCE FOR THE CHILLERS SINCE EACH CWP SHALL BE INTERLOCKED WITH A SPECIFIC CHILLER AS DESCRIBED ABOVE. START UP:

UPON RECEIVING A SIGNAL FROM THE CHILLER CONTROL PANEL THAT THE CHILLER HAS BEEN ENABLED, THE INTERLOCKED CWP (PER THE TABLE ABOVE) SHALL START AT MINIMUM RPM, PER VFD PROGRAMMING, THEN MODULATE SPEED TO MAINTAIN DP SETPOINT. DURING OPERATION:

IF A PUMP FAULT OCCURS WHILE PUMP IS IN OPERATION, THE FOLLOWING SHALL OCCUR IN THIS ORDER: GENERATE ALARM, CHANGE PUMP COMMAND TO OFF. CHANGE INTERLOCKED CHILLER COMMAND TO OFF. TOGGLE OFF (I.E. REMOVE) CWP AND INTERLOCKED CHILLER FROM ROTATIONAL SEQUENCE FOR SERVICE, THE NEXT CWP AND CHILLER IN ROTATION SHALL BE ENABLED TO REPLACE THE FAULTED PUMP.

IF SIGNAL FROM THE CHW DIFFERENTIAL PRESSURE TRANSDUCER IS LOST, AN ALARM SHALL BE ISSUED BY THE BMS. THE FOLLOWING BACKUP SEQUENCE SHALL BE EMPLOYED TO CONTROL THE CWP'S BASED OFF OF FLOW: • UPON LEAD CHILLER BEING ENABLED, INTERLOCKED CWP SHALL START AT MINIMUM RPM THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY CHILLER (SEE TABLE ABOVE) AS SEEN BY BTU-1. • UPON LAG CHILLER BEING ENABLED, INTERLOCKED CWP SHALL START AT MINIMUM RPM, THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY THE TWO ENABLED CHILLERS (SUMMATION OF FLOW RATES PER ABOVE TABLE) AS SEEN BY BTU-1.

• UPON LAST CHILLER BEING ENABLED, INTERLOCKED CWP SHALL START AT MINIMUM RPM, THEN MODULATE SPEED TO MAINTAIN FLOW RATE REQUIRED BY THE THREE ENABLED CHILLERS AS SEEN BY BTU-1. SHUT DOWN:

UPON RECEIVING A SIGNAL THAT A CHILLER HAS BEEN DISABLED, THE INTERLOCKED CWP SHALL CONTINUE MODULATING TO MAINTAIN DIFFERENTIAL PRESSURE (OR FLOW CONTROL) UNLESS CHILLERS ARE OUTSIDE OF SCHEDULE AND OAT.

CWP FOR AN INTERLOCKED CHILLER SHALL BE DISABLED AFTER THE CHILLER HAS BEEN DISABLED FOR A TIME PERIOD OF 5 MINUTES (USER ADJUSTABLE).

THE LEAD TOWER CELL IS GREATER THAN CWST SP. CT FAN SPEED SHALL MODULATE VIA VARIABLE FREQUENCY

BOILER PLANT:

GAS-FIRED BOILERS AND ELECTRIC BOILERS

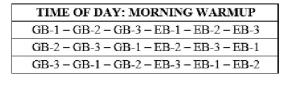
GENERAL:

ROTATION:

THE BOILERS SHALL BE ENABLED FOR OPERATION BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE) AND OAT (USER ADJUSTABLE).

BOILERS ARE TO BE ENABLED IN A ROTATIONAL SEQUENCE BASED ON TIME OF YEAR (USER ADJUSTABLE) AND TIME OF DAY. TIME OF DAY ROTATIONAL SEQUENCE FUNCTION SHALL BE DEFINED AS FOLLOWS:

 "MORNING WARMUP" – SHALL OCCUR DAILY (USER ADJUSTABLE) BETWEEN THE HOURS OF 6:00AM - 7:00AM (USER ADJUSTABLE). DURING THIS PHASE THE ROTATIONAL SEQUENCE FUNCTION IS CHANGED SUCH THAT THE THREE GAS BOILERS LEAD THE THREE ELECTRIC BOILERS, AS FOLLOWS:



 "OCCUPIED" – SHALL OCCUR DAILY (USER ADJUSTABLE) BETWEEN THE HOURS OF 7:01AM – 10:00PM (USER ADJUSTABLE). "OCCUPIED" ROTATIONAL SEQUENCES CHANGE BASED OFF OF TIME OF YEAR, SUCH THAT AN ELECTRIC BOILER LEADS AN ALTERNATING ROTATION SEQUENCE IN THE SUMMER MONTHS (MAY THROUGH OCTOBER) AND A GAS BOILER LEADS THE SEQUENCE IN THE WINTER (NOVEMBER THROUGH APRIL), AS FOLLOWS:

SUMMER	WINTER
(MAY 1 ⁵¹ – OCTOBER 31 ⁵¹)	(NOV-1 ST – APRIL 30 TH)
TIME OF DAY: OCCUPIED	TIME OF DAY: OCCUPIED
EB-1 - GB-1 - EB-2 - GB-2 - EB-3 - GB-3	GB-1-EB-1-GB-2-EB-2-GB-3-EB-3
EB-2 - GB-2 - EB-3 - GB-3 - EB-1 - GB-1	GB-2-EB-2-GB-3-EB-3-GB-1-EB-1
EB-3 - GB-3 - EB-1 - GB-1 - EB-2 - GB-2	GB-3-EB-3-GB-1-EB-1-GB-2-EB-2

 "UNOCCUPIED" – SHALL OCCUR DAILY (USER ADJUSTABLE) BETWEEN THE HOURS OF 12:00AM – 5:59AM AND 10:01PM – 11:59PM (USER ADJUSTABLE). "UNOCCUPIED" ROTATIONAL SEQUENCES SHALL MIMIC THE WINTER "OCCUPIED" ROTATIONAL SEQUENCE, AS FOLLOWS:

TIME OF DAY: UNOCCUPIED
GB-1-EB-1-GB-2-EB-2-GB-3-EB-3
GB-2 - EB-2 - GB-3 - EB-3 - GB-1 - EB-1
GB-3 - EB-3 - GB-1 - EB-1 - GB-2 - EB-2

AFTER 168 HOURS (USER ADJUSTABLE) OF RUNTIME ON THE LEAD BOILER DURING EACH ROTATIONAL SEQUENCE FUNCTION, THE ROTATIONAL SEQUENCE SHALL AUTOMATICALLY ROTATE TO THE NEXT SEQUENCE AS DESCRIBED AND DEFINED ABOVE.

A TOGGLE SHALL BE PROVIDED TO REMOVE A BOILER FROM THE ROTATIONAL SEQUENCES FOR SERVICE.

IF A BOILER FAILS, GENERATE AN ALARM TO ALERT THE BUILDING SPECIALIST. TOGGLE BOILER OUT OF THE ROTATIONAL SEQUENCE, AND START THE NEXT BOILER IN ROTATION.

CAMPUS PRIMARY HEATING HOT WATER LOOP REQUIRES FLOW 24/7/365 TO ENSURE DOMESTIC HOT WATER AND POOL HEATING SYSTEMS ARE OPERATIONAL. THE HHW BYPASS VALVE CV-7 SHALL OPEN IF LEAD BOILER ISOLATION VALVE IS COMMANDED OR PROVEN CLOSED. THIS WILL ALLOW HHW FLOW THROUGH THE PRIMARY LOOP EVEN IF CALL FOR HEATING IS SATISFIED AND NO BOILERS ARE FIRING. BYPASS VALVE CV-7 SHALL CLOSE WHEN ANY BOILER ISOLATION VALVE IS PROVEN OPEN.

START-UP:

BYPASS CONTROL VALVE (CV-7):

IF LEAD HEATING HOT WATER PUMP (HHWP) IS ENABLED AND HEATING HOT WATER RETURN TEMPERATURE AS SEEN BY BTU-2 IS LESS THAN SETPOINT OF 160°F (USER ADJUSTABLE) FOR 3 MINUTES (USER ADJUSTABLE). LEAD BOILER ISOLATION VALVE SHALL OPEN. ONCE LEAD BOILER ISOLATION VALVE IS PROVEN OPEN, THEN LEAD BOILER AND BOILER SYSTEM SHALL BE ENABLED FOR OPERATION. BOILER SHALL MODULATE FIRING RATE (FOR GAS BOILERS) OR STEPS (FOR ELECTRIC BOILER) VIA ONBOARD CONTROLS TO MAINTAIN HHWST SETPOINT OF 180°F (USER ADJUSTABLE) PER RESET SCHEDULE. IF HHWRT IS LESS THAN SETPOINT OF 180F (USER ADJUSTABLE) FOR 10 MINUTES (USER ADJUSTABLE), THE ISOLATION VALVE FOR THE NEXT BOILER IN ROTATION SHALL OPEN. ONCE ISOLATION VALVE IS PROVEN OPEN, NEXT BOILER IN ROTATION SHALL BE ENABLED AND CONTROL TO LEAVING WATER TEMP OF CURRENT SETPOINT DURING MORNING WARMUP TIME OF DAY PERIOD, 10 MINUTE DELAY FOR STAGING BOILERS SHALL BE REDUCED TO 3 MINUTES (USER ADJUSTABLE).

DURING OPERATION:

IF A BOILER FAILURE OCCURS DURING OPERATION, THE FOLLOWING SHALL OCCUR IN THIS ORDER: GENERATE ALARM, COMMAND BOILER OFF AND CLOSE ISOLATION VALVE, TOGGLE OFF (I.E. REMOVE) BOILER FROM ROTATIONAL SEQUENCE FOR SERVICE, THE NEXT BOILER IN ROTATION SHALL BE ENABLED TO REPLACE THE FAULTED BOILER. HEATING HOT WATER SUPPLY TEMPERATURE (HHWST) SETPOINT AT BOILER CONTROLS SHALL DYNAMICALLY RESET BASED ON OAT, WITH ENDPOINTS OF 180°F HHWST SETPOINT (USER ADJUSTABLE) AT 35°F OAT (USER ADJUSTABLE) AND 165°F HHWST SETPOINT (USER ADJUSTABLE) AT 65°F OAT (USER ADJUSTABLE). HEATING HOT WATER RETURN TEMPERATURE (HHWRT) SETPOINTS SHALL BE 20°F LESS THAN THE HHWST SETPOINT TO MAINTAIN DESIGN DIFFERENTIAL TEMPERATURE AT BOILERS.

	DYNAMIC HHWST SP RESET		
	HIGH HHWST	LOW HHWST	
HHW SUPPLY TEMPS:	180°F	165°F	
HHW RETURN TEMPS:	160°F	145°F	
ASSOCIATED OAT TEMPS:	35°F	65°F	

SHUT DOWN:

IF HHWRT AS SEEN BY BTU-2 IS GREATER THAN SETPOINT OF 160°F (USER ADJUSTABLE) AND LAST ENABLED BOILER IN ROTATIONAL SEQUENCE IS FIRING AT 20% OR LESS FOR 10 MINUTES (USER ADJUSTABLE), THEN LAST ENABLED BOILER IN ROTATION SHALL BE DISABLED. AFTER 3 MINUTE (USER ADJUSTABLE) DELAY, BOILER ISOLATION VALVE SHALL CLOSE.

IF HHWRT AS SEEN BY BTU-2 IS GREATER THAN SETPOINT OF 160°F (USER ADJUSTABLE) AND LEAD BOILER IS FIRING AT 20% OR LESS FOR 15 MINUTES (USER ADJUSTABLE), THEN LEAD BOILER SHALL BE DISABLED. AFTER 3 MINUTE (USER ADJUSTABLE) DELAY AND IF HHWRT/SETPOINT CONDITION DOES NOT CHANGE, LEAD BOILER ISOLATION VALVE SHALL CLOSE AND BYPASS VALVE SHALL OPEN (SEE BYPASS VALVE SEQUENCES).

HEATING HOT WATER PUMPS:

GENERAL:

ROTATION:

START UP:

THE HEATING HOT WATER PUMPS (HHWP) SHALL BE ENABLED FOR OPERATION BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE).

HHWP'S ARE TO BE ENABLED IN A ROTATIONAL SEQUENCE. AFTER 168 HOURS (USER ADJUSTABLE) OF RUNTIME ON THE LEAD HHWP, THE ROTATIONAL SEQUENCE SHALL AUTOMATICALLY ROTATE TO THE NEXT SEQUENCE, AS FOLLOWS:

HHWP ROTATIONAL SEQUENCES	
HHWP-1 - HHWP-2 - HHWP-3	
HHWP-2 - HHWP-3 - HHWP-1	
HHWP-3 - HHWP-1 - HHWP-2	

A TOGGLE SHALL BE PROVIDED TO REMOVE ANY HHWP FROM THE ROTATIONAL SEQUENCES FOR SERVICE. PUMPS REMOVED FROM SERVICE WILL NOT GENERATE ALARMS.

IF A HHWP FAILS. GENERATE AN ALARM TO ALERT THE BUILDING SPECIALIST. TOGGLE HHWP OUT OF THE ROTATIONAL SEQUENCE. AND START THE NEXT HHWP IN ROTATION.

BECAUSE THERE ARE 24/7/365 HEATING HOT WATER LOADS ON CAMPUS (BLDG. 1700 DHW & POOL HEATING), THE HHWP SYSTEM WILL BE STARTED UP INFREQUENTLY IN THE SUMMER PERIOD. LEAD HHWP SHALL BE ENABLED FOR OPERATION BASED ON 365-DAY TIME SCHEDULE (USER ADJUSTABLE)AND MODULATE SPEED VIA VARIABLE FREQUENCY DRIVE (VFD) TO MINIMUM FLOW OF 200 GPM (USER ADJUSTABLE) AT BTU-2. LEAD HHWP SHALL MODULATE SPEED AND LAG HHWP SHALL STAGE TO MAINTAIN FLOW THROUGH BTU-2 AS CALCULATED BY THE FOLLOWING EQUATION:

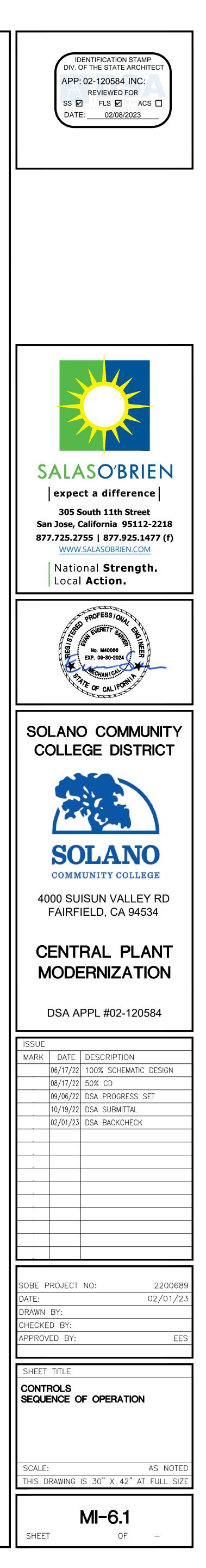
 $HHW FLOW SETPOINT = [(GB_1 + GB_2 + GB_3)_{STATUS} \times 255 GPM] + [(EB_1 + EB_2 + EB_3)_{STATUS} X275 GPM]$ WHERE BOILER STATUS EQUALS "1" WHEN BOILER ISOLATION VALVE IS PROVEN OPEN AND DO WHEN BOILER ISOLATION VALVE IS PROVEN CLOSED.

DURING OPERATION:

IF HHW FLOW SETPOINT IS LESS THAN 255 GPM, THEN LEAD HHWP SHALL MAINTAIN MINIMUM FLOW OF 200 GPM (USER ADJUSTABLE). IF A PUMP FAULT OCCURS WHILE ANY PUMP IS IN OPERATION, THE FOLLOWING SHALL OCCUR IN THIS ORDER: GENERATE ALARM, CHANGE PUMP COMMAND TO OFF, TOGGLE OFF (I.E. REMOVE) HHWP FROM ROTATIONAL SEQUENCE FOR SERVICE, THE NEXT HHWP IN ROTATION SHALL BE ENABLED TO REPLACE THE FAULTED PUMP. SHUT DOWN:

LAG PUMP SHALL BE DISABLED IF HHW FLOW SETPOINT IS LESS THAN 1,060 GPM FOR 10 MINUTES (USER ADJUSTABLE).

UPON RECEIVING A SIGNAL THAT THE LEAD BOILER HAS BEEN DISABLED, THE LEAD PUMP SHALL CONTINUE MODULATING TO MAINTAIN MINIMUM FLOW UNLESS BOILERS ARE OUTSIDE OF THE USER ADJUSTABLE TIME SCHEDULE.

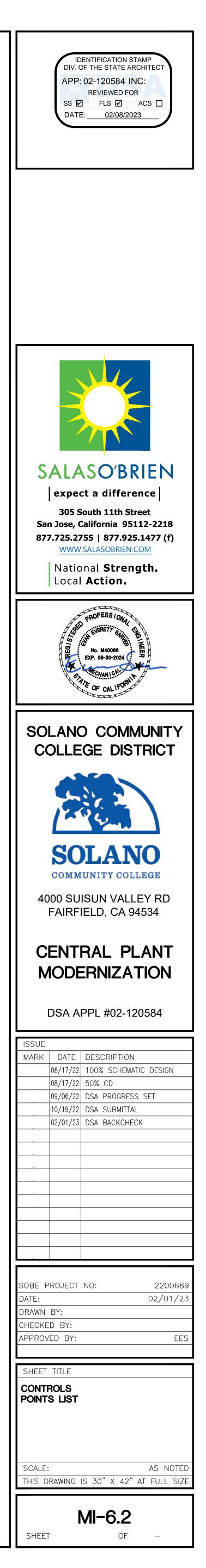


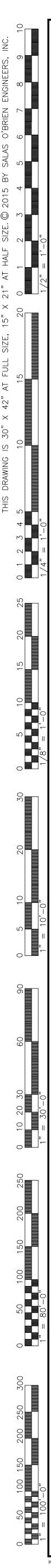
DOINTID	DOBUT					
POINT I.D.	POINT TYPE CONTROL DEVICE	CONTROL DESCRIPTION MECHANICAL PLANT	CONTROL LOCATION AI AO DI DO B T NOTES	PUMPS PCHWP-X S/S	DO RELAY PRIMARY PUMP START/STOP	CHILLER PLANT 2
II FD DI ANT AD FA		MECHANICAL PLANI		PCHWP-X S/S PCHWP-X STS	DI CURRENT SWITCH PRIMARY PUMP STATUS	CHILLER PLANT
ILLER PLANT AREA				PCHWP-X SPEED FB PCHWP-X SPEED	AIVFDPRIMARY PUMP VFD SPEED FEEDBACKAOVFDPRIMARY PUMP VFD SPEED	CHILLER PLANT CHILLER PLANT 2
ILLERS X START/STOP CMD		CHILLER START/STOP COMMAND	CHILLER PLANT	PCHWP-X FLT	DI VFD PRIMARY PUMP VFD FAULT	CHILLER PLANT
X CHW ISO VLV OPN/CLD X CHW ISO VLV OPN		CHILLER CHW ISOLATION VALVE OPEN/CLOSE CHILLER CHW ISOLATION VALVE OPEN	CHILLER PLANT25CHILLER PLANT25	PCHWP- DPT PCHWP- DPT SP	AI DPT DIFFERENTIAL PRESSURE TRANSDUCER AO VIRTUAL POINT DIFFERENTIAL PRESSURE TRANSDUCER SETPOINT	CHILLER PLANT 1 CHILLER PLANT 1
-X CHW ISO VLV CLD	DI END SWITCH C	CHILLER CHW ISOLATION VALVE CLOSE	CHILLER PLANT 2 5	PCHWP- DP1 SP	AU VIRTUAL POINT DIFFERENTIAL PRESSURE TRANSDUCER SETPOINT	CHILLER PLAN I I
-X CW ISO VLV OPN/CLD -X CW ISO VLV OPN		CHILLER CW ISOLATION VALVE OPEN/CLOSE CHILLER CW ISOLATION VALVE OPEN	CHILLER PLANT25CHILLER PLANT25	REFRIGERANT MONITORING SYSTEM		
-X CW ISO VLV CLD W CONDFS		CHILLER CW ISOLATION VALVE CLOSE CHW CONDENSER FLOW SENSOR	CHILLER PLANT25CHILLER PLANT25	RMS- LEVEL 1 RMS- LEVEL 2	DIRELAYREFRIGERANT MONITORING SYSTEM LOW LEVEL 1 ALARMDIRELAYREFRIGERANT MONITORING SYSTEM LOW LEVEL 2 ALARM	CHILLER PLANT1CHILLER PLANT1
W EVAPFS		CHW EVAPORATOR FLOW SENSOR	CHILLER PLANT25CHILLER PLANT25	RMS- PURGE (EF-1)	DI RELAY REFRIGERANT MONITORING SYSTEM PURGE (EF-1)	CHILLER PLANT
-X PUMP ENABLE/DISABLE	DO RELAY	CHILLER PUMP COMMAND DISABLE/ENABLE	CHILLER PLANT 2 5	RMS- MANUAL SHUTDOWN (EF-1) RMS-FAULT	DI SWITCH MANUAL SHUTDOWN (EF-1) DI RELAY REFRIGERANT MONITORING SYSTEM FAULT	CHILLER PLANT1CHILLER PLANT1
-X MAPPED BACNET POINTS FROM CONTROL	LS			RMS- MANUAL PURGE (EF-1)	DI SWITCH MANUAL PURGE (EF-1)	CHILLER PLANT 1
FERFACE I/O M LEAVING CHL TEMP SP	T TRANSLATOR POINT	REMOTE LEAVING CHILLED LIQUID SETPOINT	CHILLER PLANT	RMS-OCC SENSOR (EF-2) RMS-TEMP TRANS (EF-2)	DIOCCUPANCY SENSOROCCUPANCY SENSOR FOR VENTILATION (EF-2)AITEMP TRANSTEMPERATURE TRANSMITTER, SPACE TEMP (EF-2)	CHILLER PLANT 2 CHILLER PLANT 1
MOTE INPUT CURRENT SP	T TRANSLATOR POINT F	REMOTE INPUT CURRENT LIMIT SETPOINT	CHILLER PLANT 2 1, 4			
M HEATING SP M RUN STOP CMD		REMOTE HEATING SETPOINT REMOTE RUN/STOP [0=STOP, 1=RUN]	CHILLER PLANT 2 1, 4 CHILLER PLANT 2 1, 4	CHW METERING FMER-X	AI BTU METER ENERGY RATE	CHILLER PLANT
ITS	T TRANSLATOR POINT U	UNITS	CHILLER PLANT	FMVR-X	AI BTU METER VOLUME RATE	CHILLER PLANT
MPR MOTOR RUN LIQ PUMP STAT		MOTOR RUN [0=OFF, 1=ON] CHILLED LIQUID PUMP [0=OFF, 1=ON]	CHILLER PLANT21,4CHILLER PLANT21,4	FMST-X FMRT-X	AI BTU METER SUPPLY TEMPERATURE AI BTU METER RETURN TEMPERATURE	CHILLER PLANT CHILLER PLANT
D LIQ PUMP STAT LIQ FLOW SWITCH STAT		CONDENSER LIQUID PUMP [0=OFF, 1=ON] CHILLED LIQUID FLOW SWITCH [0=OPEN, 1=CLOSED]	CHILLER PLANT21,4CHILLER PLANT21,4	FMDT-X	AI BTU METER DELTA TEMPERATURE	CHILLER PLANT
D FLOW SWITCH STAT	T TRANSLATOR POINT C	CONDENSER LIQUID FLOW SWITCH [0=OPEN, 1=CLOSED]	CHILLER PLANT CHILLER PLANT 2 1, 4	FMPER-X FMADT-X	AI BTU METER PEAK ENERGY RATE AI BTU METER AVERAGE DELTA TEMP	CHILLER PLANT CHILLER PLANT
ART STOP SWITCH STATUS D COOLING SYS STAT		PANEL STOP SWITCH [0=OFF, 1=ON] VSD COOLING SYSTEM [0=OFF, 1=ON]	CHILLER PLANT21,4CHILLER PLANT21,4	FMTOT-X	AI BTU METER AVERAGE DELTA TEMI AI BTU METER TOTALIZATION	CHILLER PLANT
D HARMONIC FILTER INST	T TRANSLATOR POINT H	HARMONIC FILTER INSTALLED [0=FALSE, 1=TRUE]	CHILLER PLANT 2 1, 4	CHW-MU-GAL	DI WATER METER MAKE UP WATER GALLONS DI WATER METER MAKE UP WATER GPM	CHILLER PLANT
ND REF LEVEL CNTRL MODE RGE TANK HIGH LEVEL SW		CONDENSER LEVEL CONTROL VALVE MODE [0=AUTO,1=MANUAL] PURGE TANK HIGH LEVEL SWITCH	CHILLER PLANT21,4CHILLER PLANT21,4	CHW-MU-GPM CHW-MU-TOT	DIWATER METERMAKE UP WATER GPMAIVIRTUAL POINTMAKE UP WATER TOTALIZATION	CHILLER PLANT1CHILLER PLANT1
AVING CH LIQ TEMP SEL SP	T TRANSLATOR POINT I	LEAVING CHILLED LIQUID SETPOINT - SELECTED	CHILLER PLANT 2 1, 4			
AVING CH LIQ TEMP TERING CH LIQ TEMP		LEAVING CHILLED LIQUID TEMPERATURE ENTERING CHILLED LIQUID TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	BOILER PLANT AREA		
TERING COND LIQ TEMP	T TRANSLATOR POINT E	ENTERING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT 2 1, 4	GAS FIRED BOILERS		
AVING COND LIQ TEMP APORATOR PRESSURE		LEAVING CONDENSER LIQUID TEMPERATURE EVAPORATOR PRESSURE	CHILLER PLANT21,4CHILLER PLANT21,4	GB-X START/STOP CDM GB-X HHW ISO VLV OPN/CLD	DORELAYGAS BOILER HHW START/STOPDORELAYGAS BOILER HHW ISOLATION VALVE OPEN/CLOSE	BOILER PLANT3BOILER PLANT3
NDENSER PRESSURE	T TRANSLATOR POINT C	CONDENSER PRESSURE	CHILLER PLANT 2 1, 4	GB-X HHW ISO VLV OPN	DI END SWITCH GAS BOILER HHW ISOLATION VALVE OPEN	BOILER PLANT 3
AP SATURATION TEMP ND SATURATION TEMP		EVAPORATOR SATURATION TEMPERATURE CONDENSER SATURATION TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	GB-X HHW ISO VLV CLD GB-X HHW BYPASS VLV POS	DIEND SWITCHGAS BOILER HHW ISOLATION VALVE CLOSEAOMODULATINGGAS BOILER HHW BYPASS VALVE POSITION	BOILER PLANT3BOILER PLANT1
AP REFRIGERANT TEMP CHARGE TEMP		EVAPORATOR REFRIGERANT TEMPERATURE DISCHARGE TEMPERATURE	CHILLER PLANT21, 4CHILLER PLANT21, 4	GB-X HHW BYPASS VLV POS GB-X HHW BYPASS VLV FDBK	AOMODULATINGGAS BOILER HHW BYPASS VALVE POSITIONAIFEEDBACKGAS BOILER HHW BYPASS VALVE FEEDBACK	BOILER PLANT I BOILER PLANT 1
PUT CURRENT ACT LIMIT	T TRANSLATOR POINT	ACTIVE INPUT CURRENT LIMIT	CHILLER PLANT 2 1, 4	GB-X SUPTEMP	AI TEMP SENSOR GAS BOILER SUPPLY WATER TEMPERAURE	BOILER PLANT 3
PUT CURRENT PCT FLA DTOR CURRENT PCT FLA		INPUT % FULL LOAD AMPS MOTOR % FULL LOAD AMPS	CHILLER PLANT21, 4CHILLER PLANT21, 4	GB-X RETTEMP GB-X FS	AITEMP SENSORGAS BOILER RETURN WATER TEMPERAUREDIFLOW SWITCH/SENSORGAS BOILER FLOW SWITCH/SENSOR	BOILER PLANT3BOILER PLANT3
D INPUT CURRENT	T TRANSLATOR POINT	VSD INPUT CURRENT (RMS)	CHILLER PLANT 2 1, 4	GB-X SUPSP	AO VIRTUAL POINT GAS BOILER SUPPLY SETPOINT	BOILER PLANT 1
D PHASE A OUTPUT CURRENT D PHASE B OUTPUT CURRENT		VSD PHASE A OUTPUT CURRENT (RMS) VSD PHASE B OUTPUT CURRENT (RMS)	CHILLER PLANT21,4CHILLER PLANT21,4	COM STATUS FLAME SIGNAL	TTRANSLATOR POINTLMV3 - COM STATUSTTRANSLATOR POINTLMV3 - FLAME SIGNAL	BOILER PLANT BOILER PLANT
D PHASE C OUTPUT CURRENT	T TRANSLATOR POINT V	VSD PHASE C OUTPUT CURRENT (RMS)	CHILLER PLANT 2 1, 4	LOCKOUT ERROR CODE	T TRANSLATOR POINT LMV3 - LOCKOUT ERROR CODE	BOILER PLANT
D OUTPUT VOLTAGE PUT POWER		VSD OUTPUT VOLTAGE INPUT POWER	CHILLER PLANT21,4CHILLER PLANT21,4	LOCKOUT DIAGNOSTIC CODE CONTROL MODE	TTRANSLATOR POINTLMV3 - LOCKOUT DIAGNOSTIC CODETTRANSLATOR POINTLMV3 - CONTROL MODE	BOILER PLANT BOILER PLANT
PUT KWH	T TRANSLATOR POINT I	INPUT KILOWATT HOURS	CHILLER PLANT 2 1, 4	OPERATING MODE	T TRANSLATOR POINT LMV3 - CONTROL MODE T TRANSLATOR POINT LMV3 - OPERATING MODE	BOILER PLANT
PUT KWH LO PUT KWH OFFSET		INPUT KILOWATT HOURS LOW INPUT KILOWATT HOURS OFFSET	CHILLER PLANT 2 1, 4 CHILLER PLANT 2 1, 4	FUEL RATE	T TRANSLATOR POINT LMV3 - FUEL RATE	BOILER PLANT
D DC BUS VOLTAGE	T TRANSLATOR POINT	VSD DC BUS VOLTAGE	CHILLER PLANT 2 1, 4	FUEL SELECTED FIRING RATE	TTRANSLATOR POINTLMV3 - FUEL SELECTEDTTRANSLATOR POINTLMV3 - FIRING RATE	BOILER PLANT BOILER PLANT
D DC BUS CURRENT RGE COUNT		VSD DC BUS CURRENT SURGE COUNT	CHILLER PLANT 2 1, 4 CHILLER PLANT 2 1, 4	COM STATUS	T TRANSLATOR POINT RWF55 - COM STATUS	BOILER PLANT
D OUTPUT FREQUENCY	T TRANSLATOR POINT	VSD OUTPUT FREQUENCY	CHILLER PLANT 2 1, 4	ANALOG INPUT INP1 ANALOG INPUT INP2	TTRANSLATOR POINTRWF55 - ANALOG INPUT INP1TTRANSLATOR POINTRWF55 - ANALOG INPUT INP2	BOILER PLANT BOILER PLANT
D INTERNAL AMBIENT TEMP D CONVERTER HSINK TEMP		VSD INTERNAL AMBIENT TEMP VSD CONVERTER HEATSINK TEMP	CHILLER PLANT21,4CHILLER PLANT21,4	ANALOG INPUT INP3	T TRANSLATOR POINT RWF55 - ANALOG INPUT INP3	BOILER PLANT
D BASEPLATE TEMP	T TRANSLATOR POINT	VSD BASEPLATE TEMPERATURE	CHILLER PLANT 2 1, 4	ACTUAL SETPOINT SETPOINT 1	T TRANSLATOR POINT RWF55 - ACTUAL SETPOINT T TRANSLATOR POINT RWF55 - SETPOINT 1	BOILER PLANT
D PH A HEATSINK TEMP D PH B HEATSINK TEMP		VSD PHASE A HEATSINK TEMPERATURE VSD PHASE B HEATSINK TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	SETPOINT 1 SETPOINT 2	TTRANSLATOR POINTRWF55 - SETPOINT 1TTRANSLATOR POINTRWF55 - SETPOINT 2	BOILER PLANT BOILER PLANT
D PH C HEATSINK TEMP	T TRANSLATOR POINT	VSD PHASE C HEATSINK TEMPERATURE	CHILLER PLANT 2 1, 4	ANALOG INPUT INP3	T TRANSLATOR POINT RWF55 - ANALOG INPUT INP3	BOILER PLANT
TER BASEPLATE TEMP TER MAX VOLTAGE THD		HARMONIC FILTER BASEPLATE TEMPERATURE HARMONIC FILTER MAX VOLTAGE TOTAL HARMONIC DISTORTION	CHILLER PLANT21,4CHILLER PLANT21,4	ACTUAL ANGULAR POSITIONING BURNER ALARM	TTRANSLATOR POINTRWF55 - ACTUAL ANGULAR POSITIONINGTTRANSLATOR POINTRWF55 - BURNER ALARM	BOILER PLANT BOILER PLANT
TER MAX CURRENT TDD	T TRANSLATOR POINT H	HARMONIC FILTER MAX CURRENT TOTAL DEMAND DISTORTION	CHILLER PLANT 2 1, 4	ACTIVATION REMOTE OPERATION	T TRANSLATOR POINT RWF55 - ACTIVATION REMOTE OPERATION	BOILER PLANT
TER SUPPLY KVA R WINDING AVG TEMP		HARMONIC FILTER TOTAL SUPPLY KVA AVERAGE WINDING TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	CONTROLLER OFF IN REMOTE SETPOINT SWITCH-ON THRESHOLD REMOTE	TTRANSLATOR POINTRWF55 - CONTROLLER OFF IN REMOTE SETPOINTTTRANSLATOR POINTRWF55 - SWITCH-ON THRESHOLD REMOTE	BOILER PLANT BOILER PLANT
ND REFRIGERANT LEVEL SP ND REFRIGERANT LEVEL		CONDENSER REFRIGERANT LEVEL SETPOINT CONDENSER REFRIGERANT LEVEL	CHILLER PLANT21,4CHILLER PLANT21,4	SWITCH-OFF THRESHOLD DOWN REMOTE	T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE	BOILER PLANT
ND LVL CTRL VLV CMD	T TRANSLATOR POINT C	CONDENSER LEVEL CONTROL VALVE COMMAND	CHILLER PLANT 2 1, 4	SWITCH-OFF THRESHOLD UP REMOTE SETPOINT REMOTE	TTRANSLATOR POINTRWF55 - SWITCH-OFF THRESHOLD UP REMOTETTRANSLATOR POINTRWF55 - SETPOINT REMOTE	BOILER PLANT BOILER PLANT
OP LEG REFRIG TEMP T GAS BYPASS COMMAND		DROP LEG REFRIGERANT TEMPERATURE HOT GAS BYPASS COMMAND	CHILLER PLANT21,4CHILLER PLANT21,4	BURNER RELEASE REMOTE OPERATION	T TRANSLATOR POINT RWF55 - SETPOINT REMOTE T TRANSLATOR POINT RWF55 - BURNER RELEASE REMOTE OPERATION	BOILER PLANT
ERATING HOURS	T TRANSLATOR POINT C	OPERATING HOURS	CHILLER PLANT 2 1, 4	RELAY K2 REMOTE OPERATION RELAY K3 REMOTE OPERATION	TTRANSLATOR POINTRWF55 - RELAY K2 REMOTE OPERATIONTTRANSLATOR POINTRWF55 - RELAY K3 REMOTE OPERATION	BOILER PLANT BOILER PLANT
ERATING HOURS LO ERATING HOURS OFFSET		OPERATING HOURS LOW OPERATING HOURS OFFSET	CHILLER PLANT21,4CHILLER PLANT21,4	RELAY K3 REMOTE OPERATION RELAY K6 REMOTE OPERATION	TTRANSLATOR POINTRWF55 - RELAY K3 REMOTE OPERATIONTTRANSLATOR POINTRWF55 - RELAY K6 REMOTE OPERATION	BOILER PLANT BOILER PLANT
MBER OF STARTS	T TRANSLATOR POINT	NUMBER OF STARTS	CHILLER PLANT 2 1, 4	STEP-BY-STEP CONTROL REMOTE OPERATION	T TRANSLATOR POINT RWF55 - STEP-BY-STEP CONTROL REMOTE OPERATION	BOILER PLANT
IT OPERATION CODE IT OPERATION CODE AV		UNIT OPERATION CODE UNIT OPERATION CODE AV	CHILLER PLANT 2 1, 4 CHILLER PLANT 2 1, 4	ANGULAR POSITION OUTPUT REMOTE OPERATION SWITCH-ON THRESHOLD REMOTE	TTRANSLATOR POINTRWF55 - ANGULAR POSITION OUTPUT REMOTE OPERATIONTTRANSLATOR POINTRWF55 - SWITCH-ON THRESHOLD REMOTE	BOILER PLANT BOILER PLANT
IT SAFETY FAULT CODE	T TRANSLATOR POINT U	UNIT SAFETY FAULT CODE	CHILLER PLANT 2 1, 4	SWITCH-OFF THRESHOLD DOWN REMOTE	T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE	BOILER PLANT
IT SAFETY FAULT CODE AV IT CYCLING FAULT CODE		UNIT SAFETY FAULT CODE AV UNIT CYCLING FAULT CODE	CHILLER PLANT 2 1, 4 CHILLER PLANT 2 1, 4	SWITCH-OFF THRESHOLD UP REMOTE	T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD UP REMOTE	BOILER PLANT
IT CYCLING FAULT CODE AV	T TRANSLATOR POINT U	UNIT CYCLING FAULT CODE AV	CHILLER PLANT 2 1, 4	ELECTRIC BOILERS		
IT WARNING CODE IT WARNING CODE AV		UNIT WARNING CODE UNIT WARNING CODE AV	CHILLER PLANT21,4CHILLER PLANT21,4	EB-X START/STOP CMD	DO RELAY ELECTRIC BOILER HHW START/STOP COMMAND DO RELAY ELECTRIC BOILER HHW ISOLATION VALVE OPEN/CLOSE	BOILER PLANT 3
IT CONTROL SOURCE	T TRANSLATOR POINT U	UNIT CONTROL SOURCE [0=LOCAL, 1=BAS, 2=ANALOG, 3=DIGITAL, 5=REMOTE]	CHILLER PLANT 2 1, 4	EB-X HHW ISO VLV OPN/CLD EB-X HHW ISO VLV OPN	DORELAYELECTRIC BOILER HHW ISOLATION VALVE OPEN/CLOSEDIEND SWITCHELECTRIC BOILER HHW ISOLATION VALVE OPEN	BOILER PLANT3BOILER PLANT3
IT CONTROL SOURCE AV IT MODIFIED RUN CODE		UNIT CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=ANALOG, 3=DIGITAL, 5=REMO [*] UNIT MODIFIED RUN CODE	TE] CHILLER PLANT 2 1,4 CHILLER PLANT 2 1,4	EB-X HHW ISO VLV CLD	DI END SWITCH ELECTRIC BOILER HHW ISOLATION VALVE CLOSE	BOILER PLANT 3
IT MODIFIED RUN CODE AV IT START INHIBIT CODE		UNIT MODIFIED RUN CODE AV UNIT START INHIBIT CODE	CHILLER PLANT21, 4CHILLER PLANT21, 4	EB-X SUPTEMP EB-X FS	AITEMP SENSORELECTRIC BOILER SUPPLY WATER TEMPERAUREDIFLOW SWITCH/SENSORELECTRIC BOILER FLOW SWITCH/SENSOR	BOILER PLANT3BOILER PLANT3
IT START INHIBIT CODE AV	T TRANSLATOR POINT U	UNIT START INHIBIT CODE AV	CHILLER PLANT 2 1, 4	EB-X RETTEMP	AI TEMP SENSOR ELECTRIC BOILER RETURN WATER TEMPERAURE	BOILER PLANT 3
IT INTERNAL FAULT CODE IT INTERNAL FAULT CODE AV		UNIT INTERNAL FAULT CODE UNIT INTERNAL FAULT CODE AV	CHILLER PLANT21,4CHILLER PLANT21,4	EB-X OM EB-X PE	TTRANSLATOR POINTELECTRIC BOILER OPERATION MODETTRANSLATOR POINTELECTRIC BOILER PROCESS ENABLE	BOILER PLANT BOILER PLANT
TIVE PURGE MODE	T TRANSLATOR POINT	ACTIVE PURGE MODE	CHILLER PLANT 2 1, 4	EB-X PS	III	BOILER PLANT
TIVE PURGE MODE AV RGE CONTROL STATE		ACTIVE PURGE MODE AV PURGE CONTROL STATE	CHILLER PLANT21,4CHILLER PLANT21,4	EB-X EK 1 EB-X M	T TRANSLATOR POINT ELECTRIC BOILER ENABLE K1	BOILER PLANT
RGE CONTROL STATE AV	T TRANSLATOR POINT F	PURGE CONTROL STATE AV	CHILLER PLANT 2 1, 4	EB-X M EB-X CS	TTRANSLATOR POINTELECTRIC BOILER MODULATIONTTRANSLATOR POINTELECTRIC BOILER COMMUNICATION STATUS	BOILER PLANT BOILER PLANT
C CONTROL MODE C CONTROL MODE AV		MBC CONTROL MODE MBC CONTROL MODE AV	CHILLER PLANT21,4CHILLER PLANT21,4	COM STATUS	T TRANSLATOR POINT RWF55 - COM STATUS	BOILER PLANT
N STOP CTRL SOURCE	T TRANSLATOR POINT F	RUN/STOP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=HARDWIRE]	CHILLER PLANT 2 1, 4	ANALOG INPUT INP1 ANALOG INPUT INP2	TTRANSLATOR POINTRWF55 - ANALOG INPUT INP1TTRANSLATOR POINTRWF55 - ANALOG INPUT INP2	BOILER PLANT BOILER PLANT
N STOP CTRL SOURCE AV OL SETP CTRL SOURCE		RUN/STOP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=HARDWIRE] COOLING SETP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=4	CHILLER PLANT21,4CHILLER PLANT21,4	ANALOG INPUT INP3	T TRANSLATOR POINT RWF55 - ANALOG INPUT INP3	BOILER PLANT
OL SETP CTRL SOURCE AV	T TRANSLATOR POINT C	COOLING SETP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS,	CHILLER PLANT 2 1, 4	ACTUAL SETPOINT SETPOINT 1	TTRANSLATOR POINTRWF55 - ACTUAL SETPOINTTTRANSLATOR POINTRWF55 - SETPOINT 1	BOILER PLANT BOILER PLANT
AT SETP CTRL SOURCE AT SETP CTRL SOURCE AV		HEATING SETP CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=4 HEATING SETP CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS,	CHILLER PLANT21,4CHILLER PLANT21,4	SETPOINT 2	T TRANSLATOR POINT RWF55 - SETPOINT 2	BOILER PLANT
RR LIM CTRL SOURCE	T TRANSLATOR POINT C	CURRENT LIMIT CONTROL SOURCE [0=LOCAL, 1=BAS, 2=0-10 VOLTS, 3=	CHILLER PLANT 2 1, 4	ANALOG INPUT INP3	T TRANSLATOR POINT RWF55 - ANALOG INPUT INP3	BOILER PLANT
RR LIM CTRL SOURCE AV TAL PURGE COUNT		CURRENT LIMIT CONTROL SOURCE AV [0=LOCAL, 1=BAS, 2=0-10 VOLTS, TOTAL PURGE COUNT	CHILLER PLANT21,4CHILLER PLANT21,4	ACTUAL ANGULAR POSITIONING BURNER ALARM	TTRANSLATOR POINTRWF55 - ACTUAL ANGULAR POSITIONINGTTRANSLATOR POINTRWF55 - BURNER ALARM	BOILER PLANT BOILER PLANT
AP SMALL TEMP DIFF	T TRANSLATOR POINT E	EVAPORATOR SMALL TEMP DIFFERENCE	CHILLER PLANT 2 1, 4	ACTIVATION REMOTE OPERATION	T TRANSLATOR POINT RWF55 - ACTIVATION REMOTE OPERATION	BOILER PLANT
ND SMALL TEMP DIFF CHARGE SUPERHEAT		CONDENSER SMALL TEMP DIFFERENCE DISCHARGE SUPERHEAT	CHILLER PLANT21,4CHILLER PLANT21,4	CONTROLLER OFF IN REMOTE SETPOINT SWITCH-ON THRESHOLD REMOTE	TTRANSLATOR POINTRWF55 - CONTROLLER OFF IN REMOTE SETPOINTTTRANSLATOR POINTRWF55 - SWITCH-ON THRESHOLD REMOTE	BOILER PLANT BOILER PLANT
BCOOLER EFFECTIVENESS	T TRANSLATOR POINT S	SUBCOOLER EFFECTIVENESS	CHILLER PLANT 2 1, 4	SWITCH-ON THRESHOLD REMOTE SWITCH-OFF THRESHOLD DOWN REMOTE	II RANSLATOR POINTRWF55 - SWITCH-ON THRESHOLD REMOTETTRANSLATOR POINTRWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE	BOILER PLANT
BCOOLING TEMP LTA P DIV P		SUBCOOLING TEMPERATURE DELTA P / P	CHILLER PLANT21,4CHILLER PLANT21,4	SWITCH-OFF THRESHOLD UP REMOTE	T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD UP REMOTE	BOILER PLANT
AD PRESSURE	T TRANSLATOR POINT H	HEAD PRESSURE	CHILLER PLANT 2 1, 4	SETPOINT REMOTE BURNER RELEASE REMOTE OPERATION	TTRANSLATOR POINTRWF55 - SETPOINT REMOTETTRANSLATOR POINTRWF55 - BURNER RELEASE REMOTE OPERATION	BOILER PLANT BOILER PLANT
DTOR SPEED IB DEW POINT TEMP		MOTOR SPEED AMBIENT DEW POINT TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	RELAY K2 REMOTE OPERATION	T TRANSLATOR POINT RWF55 - RELAY K2 REMOTE OPERATION	BOILER PLANT
TOR HOUSING TEMP	T TRANSLATOR POINT N	MOTOR HOUSING TEMPERATURE	CHILLER PLANT 2 1, 4	RELAY K3 REMOTE OPERATION	T TRANSLATOR POINT RWF55 - RELAY K3 REMOTE OPERATION	BOILER PLANT
TOR COOL VLV CMD S BATTERY VOLTAGE		MOTOR COOLING VALVE COMMAND UPS BATTERY VOLTAGE	CHILLER PLANT21,4CHILLER PLANT21,4	RELAY K6 REMOTE OPERATION STEP-BY-STEP CONTROL REMOTE OPERATION	TTRANSLATOR POINTRWF55 - RELAY K6 REMOTE OPERATIONTTRANSLATOR POINTRWF55 - STEP-BY-STEP CONTROL REMOTE OPERATION	BOILER PLANT BOILER PLANT
T ANTI-SURGE MIN FREQ	T TRANSLATOR POINT	ACTIVE ANTI-SURGE MINIMUM FREQUENCY	CHILLER PLANT 2 1, 4	ANGULAR POSITION OUTPUT REMOTE OPERATION	T TRANSLATOR POINT RWF55 - ANGULAR POSITION OUTPUT REMOTE OPERATION	BOILER PLANT
D POSITION TERING HEAT COND LIQ TEMP		VGD POSITION ENTERING HEATING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT21,4CHILLER PLANT21,4	SWITCH-ON THRESHOLD REMOTE SWITCH-OFF THRESHOLD DOWN REMOTE	TTRANSLATOR POINTRWF55 - SWITCH-ON THRESHOLD REMOTETTRANSLATOR POINTRWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE	BOILER PLANT BOILER PLANT
AVING HEAT COND LIQ TEMP	T TRANSLATOR POINT I	LEAVING HEATING CONDENSER LIQUID TEMPERATURE	CHILLER PLANT 2 1, 4	SWITCH-OFF THRESHOLD UP REMOTE	T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD DOWN REMOTE T TRANSLATOR POINT RWF55 - SWITCH-OFF THRESHOLD UP REMOTE	BOILER PLANT
ATING ACTIVE SP		ACTIVE HEATING SETPOINT HEAT RECOVERY/HEAD PRESSURE CONTROL VALVE CMD	CHILLER PLANT21,4CHILLER PLANT21,4	DIMDE		
AT REC HEAD PRESS VLV CMD		LOCAL HEATING SETPOINT	CHILLER PLANT 2 1, 4	PUMPS PHHWP-X S/S	DO RELAY PRIMARY HHW PUMP PCHWP-X START/STOP	BOILER PLANT 3
AT REC HEAD PRESS VLV CMD ATING LOCAL SP						
AT REC HEAD PRESS VLV CMD		STALL VOLTAGE	CHILLER PLANT	PHHWP-X STS	DI CURRENT SWITCH PRIMARY HHW PUMP PCHWP-X STATUS	BOILER PLANT 3
AT REC HEAD PRESS VLV CMD ATING LOCAL SP		STALL VOLTAGE	CHILLER PLANT	PHHWP-X SPEED FB	AI VFD PRIMARY HHW PUMP PCHWP-X VFD SPEED FEEDBACK	BOILER PLANT
T REC HEAD PRESS VLV CMD TING LOCAL SP		STALL VOLTAGE	CHILLER PLANT			

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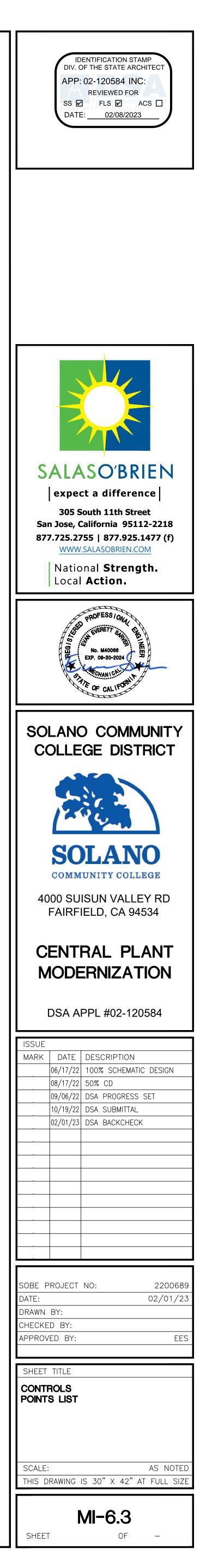


EF-X S/S	DO	RI
EF-X STS EF-X SPEED FB	DI	C E
EF-X SPEED	AO	E
EF-X FLT	DI	E
IDF-X S/S IDF-X STS	DO DI	R C
IDF-X SPEED FB	AI	V
IDF-X SPEED	AO	
IDF-X FLT IDF-X MEASURED DRAFT	DI	
IDF-X BOILER FAILURE	DI	V
HHW METERING		
FMER-X	AI	B
FMVR-X FMST-X	AI	B' B'
FMRT-X	AI	B
FMDT-X	AI	B
FMTOT-X FMPER-X	AI	B B
FMADT-X	AI	B
GM-DMD	AI	G
GM-TOT HHW-MU-GAL	AI DI	G W
HHW-MU-GPM	DI	W
HHW-MU-TOT	AI	V
COOLING TOWER YARD		
COOLING TOWERS CT-X S/S	DO	R
CT-X STS	DI	C
CT-X SPEED FB	AI	
CT-X SPEED CT-X FLT	AO DI	
CT-X INLET VLV OPN/CLD	DO	R
CT-X INLET VLV OPN	DI	E
CT-X INLET VLV CLD CT-X OUTLET VLV OPN/CLD	DI DO	El Ri
CT-X OUTLET VLV OPN	DI	E
CT-X OUTLET VLV CLD	DI	E
CT-X CWT CTW-MU-GAL (WM-3)	AI DI	TI W
CTW-MU-GPM (WM-3)	AI	W
CT-WBT	AI	TI FI
CT-X HIGH LVL ALRM CT-X LOW LVL ALRM	DI	FI FI
CT-VIB	DI	V
CENTRIFUGAL SEPARATOR		
CS-1 SS CS-1 STS	DO DI	R C
CS-1 PVSTS	DI	E
PUMPS CWP-X S/S	DO	R
CWP-X STS	DI	C
CWP-X SPEED FB CWP-X SPEED	AI AO	
CWP-X FLT	DI	
CWP-DPT CWP-DPT SP	AO AO	
WATER TREATMENT SYSTEM WTS-STS	AI	W
WTS-FAULT	DI	N N
WTS-MU-FLOW (WM-3) WTS-CONDUCTIVITY	AI	W W
WTS-PH WTS-BLOWDOWN FM	AI	W W
WTS-BLOWDOWN TOT	AI	V
WTS-FLOW WTS-DRUM LVL 1	AI DI	W W
WTS-DRUM LVL 2	DI	W
WTS-DRUM LVL 3	DI	W
CW METERING FMER-X	AI	В
FMVR-X FMST-X	AI	B B
FMRT-X	AI	В
FMDT-X FMPER-X	AI	B' B'
FMADT-X	AI	B
FMTOT-X CT-X MUA VLV OPN/CLD	AI DO	B R
CT-X MUA VLV OPN/CLD CT-X MUA VLV OPN	DI	к Е
CT-X MUA VLV CLD	DI	E
CW-MU-GAL CW-MU-GPM	DI	W W
CW-MU-TOT	AI	V
	NOTES: 1) CONTI	
	INTEC 2) PULSE	
	3) MONI	FOR
	4) POINT CAMP	US B
	5) POINT	S TC

				<u> </u>			T	
RELAY CURRENT SWITCH ECM ECM RELAY CURRENT SWITCH VFD VFD VFD VFD VFD	EXHAUST FAN EF-X START/STOP EXHAUST FAN EF-X STATUS EXHAUST FAN EF-X ECM SPEED FEEDBACK EXHAUST FAN EF-X ECM SPEED EXHAUST FAN EF-X ECM FAULT INDUCED DRAFT FAN IDF-X START/STOP INDUCED DRAFT FAN IDF-X STATUS INDUCED DRAFT FAN IDF-X VFD SPEED FEEDBACK INDUCED DRAFT FAN IDF-X VFD SPEED INDUCED DRAFT FAN IDF-X VFD FAULT INDUCED DRAFT FAN MEASURED DRAFT INDUCED DRAFT FAN BOILER FAILURE ON DRAFT FAN	CHILLER PLANT CHILLER PLANT CHILLER PLANT CHILLER PLANT CHILLER PLANT BOILER PLANT BOILER PLANT BOILER PLANT BOILER PLANT BOILER PLANT BOILER PLANT	1	2	2	2	2 2 1 1	1 1 1
BTU METER BTU METER BTU METER BTU METER BTU METER BTU METER BTU METER GAS METER GAS METER WATER METER WATER METER WATER METER VIRTUAL POINT	ENERGY RATE VOLUME RATE SUPPLY TEMPERATURE RETURN TEMPERATURE DELTA TEMPERATURE TOTALIZATION PEAK ENERGY RATE AVERAGE DELTA TEMP MONITOR GAS DEMAND (SCFH) GAS METER TOTALIZATION (SCF) HHW MAKE UP WATER GALLONS HHW MAKE UP WATER GPM MAKE UP WATER TOTALIZATION	BOILER PLANT BOILER PLANT	3 3 1		1 1		1 1 1 1 1 1 1	1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3
RELAY CURRENT SWITCH VFD VFD RELAY END SWITCH END SWITCH RELAY END SWITCH RELAY END SWITCH TEMP SENSOR WATER METER WATER METER WATER METER TEMP SENSOR FLOAT FLOAT VIBRATION SWITCH	COOLING TOWER START/STOP COOLING TOWER STATUS COOLING TOWER VFD SPEED FEEDBACK COOLING TOWER VFD SPEED COOLING TOWER VFD FAULT COOLING TOWER INLET VALVE OPEN/CLOSE COOLING TOWER INLET VALVE OPEN COOLING TOWER INLET VALVE CLOSE COOLING TOWER OUTLET VALVE OPEN/CLOSE COOLING TOWER OUTLET VALVE OPEN COOLING TOWER OUTLET VALVE OPEN COOLING TOWER OUTLET VALVE CLOSE COOLING TOWER OUTLET VALVE CLOSE COOLING TOWER OUTLET VALVE CLOSE COOLING TOWER CONDENSER WATER SUPPLY TEMPERAURE CW MAKE UP WATER GALLONS (WM-3) CW MAKE UP WATER GPM (WM-3) OUTDOOR WET BULB TEMERATURE FLOAT ASSEMBLY HIGH LEVEL ALARM FLOAT ASSEMBLY LOW LEVEL ALARM COOLING TOWER VIBRATION SWITCH	COOLING TOWER YARD COOLING TOWER YARD	2 1 1	2	2 2 2 2 2 2 1 1 2 2 2 2 2	2 2 2	2	1
RELAY CURRENT SWITCH END SWITCH	CS-1 START/STOP CS-1 STATUS PURGE VALVE OPEN/CLOSE INDICATOR	COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD			1	1		
RELAY CURRENT SWITCH VFD VFD TRANSDUCER VIRTUAL POINT	CWP PUMP START/STOP CWP PUMP STATUS CWP PUMP VFD SPEED FEEDBACK CWP PUMP VFD SPEED CWP PUMP VFD FAULT CW DIFFERENTIAL PRESSURE TRANSDUCER CW DIFFERENTIAL PRESSURE SETPOINT	COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD COOLING TOWER YARD	1	3	3	3	3	1 1
WTS PANEL WTS PANEL WATER METER WTS PANEL WTS PANEL WTS PANEL VIRTUAL POINT WTS PANEL WTS PANEL WTS PANEL WTS PANEL	WTS PANEL STATUS SIGNAL WTS PANEL FAULT SIGNAL WTS CW MAKE UP FLOW METER SIGNAL (WM-3) WTS PANEL CONDUCTIVITY SIGNAL WTS PANEL PH SIGNAL WTS PANEL BLOWDOWN FLOW METER WTS BLOWDOWN TOTALIZATION WTS BLOWDOWN TOTALIZATION WTS PADDLEWHEEL FLOW METER SIGNAL WTS LOW DRUM LEVEL ALARMS WTS LOW DRUM LEVEL ALARMS	COOLING TOWER YARD COOLING TOWER YARD	1 1 1 1 1 1 1		1 1 1 1 1			
BTU METER BTU METER BTU METER BTU METER BTU METER BTU METER BTU METER BTU METER RELA Y END SWITCH WATER METER WATER METER	ENERGY RATE VOLUME RATE SUPPLY TEMPERATURE RETURN TEMPERATURE DELTA TEMPERATURE PEAK ENERGY RATE AVERAGE DELTA TEMP TOTALIZATION COOLING TOWER MUA VALVE OPEN/CLOSE COOLING TOWER MUA VALVE OPEN COOLING TOWER MUA VALVE CLOSE HHW MAKE UP WATER GALLONS HHW MAKE UP WATER GPM	COOLING TOWER YARD COOLING TOWER YARD BOILER PLANT BOILER PLANT			2 2 1 1	2	1 1 1 1 1 1 1 1	1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3

I.D. FROM MANUFACTURER INPUT/OUTPUT POINTS LIST. TRANSLATOR POINTS SHALL BE MAPPED TO

S BMS, SEE MANUFACTURER'S IOM. TO BE CONNECTED TO CH-1 CONTROL PANEL



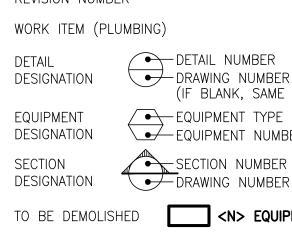
			PLUMBIN	IG SCHEDU	JLE			
	0501/05	DECODIDITION	CONNECTIONS					000000000
FIXTURE ID	SERVICE	DESCRIPTION	MAKE / MODEL	SS	SS V W G		G	COMMENTS
FS-1	BOILER ROOM	FLOOR SINK 12" SQUARE TOP	JOSAM 49320A	4"	2"	-	-	CONTRACTOR TO VIF <e> TRAP PRIMER IF <e> PROVIDE FS W/ TRAP PRIMER</e></e>
RPBFP-1	CT MAKE-UP WATER	REDUCED PRESSURE BACKFLOW PREVENTER	WATTS LF009-QT	-	-	2"		SEE MFG INSTALLATION AND MAINTENANCE INSTRUCTIONS. PROVIDE AIR GAP DRAIN FITTING
GM-1	GB-1	GAS BOILER 1 GAS METER	ONICON SERIES F-5500	-	-	-	2"	SEE MFG INSTALLATION INSTRUCTIONS FOR UPSTREAM/DOWNSTREAM STRAIGHT LENGTH REQUIREMENT
GM-2	GB-2	GAS BOILER 2 GAS METER	ONICON SERIES F-5500	-	-	-	2"	SEE MFG INSTALLATION INSTRUCTIONS FOR UPSTREAM/DOWNSTREAM STRAIGHT LENGTH REQUIREMENT
GM-3	GB-3	GAS BOILER 3 GAS METER	ONICON SERIES F-5500	-	-	-	2"	SEE MFG INSTALLATION INSTRUCTIONS FOR UPSTREAM/DOWNSTREAM STRAIGHT LENGTH REQUIREMENT
WM-1	CHW	CHILLED WATER MAKE- UP WATER METER	BADGER METER M170	-	-	2"	-	FLOW RANGE 2-170 GPM
WM-2	HHW	HEATING HOT WATER MAKE-UP WATER METER	BADGER METER M170	-	-	2"	-	FLOW RANGE 2-170 GPM
WM-3	CW	CONDENSER MAKE-UP WATER METER	BADGER METER M170	-	-	2"	-	FLOW RANGE 2-170 GPM

$\left\langle \begin{array}{c} CT\\ 1\end{array} \right\rangle$	EQUIPMENT TYPE DESIGNATION
P-5.1	SECTION NUMBER DESIGNATION OF DRAWING NUMBER
	TO BE DEMOLISHED (N) EQUIPMENT
	TO BE DEMOLISHED
	<u>PIPING</u>
4	ARROW INDICATES DIRECTION OF FLOW
	EXISTING PIPING (ABOVE GRADE OR FLOOR)
	EXISTING PIPING (BELOW GRADE OR FLOOR)
	NEW PIPING (ABOVE GRADE OR FLOOR)
	NEW PIPING (BELOW GRADE OR FLOOR)
- x x x x x x	PIPE TO BE REMOVED (ABOVE GRADE OR FLOOR)
* * * * * * * -	PIPE TO BE REMOVED (BELOW GRADE OR FLOOR)
	VALVES, SPECIAL DUTY
	AUTOMATIC AIR VENT
——————————————————————————————————————	BALL
—— [BUTTERFLY
	GATE
	GATE, ANGLE
	GLOBE
	GLOBE, ANGLE
	THREE WAY
	CONTROL
	IN PIT
	CHECK, SWING GATE
	CIRCUIT SETTER
——×	NEEDLE
	PRESSURE REDUCING (NUMBER & SPECIFY)
	PRESSURE REGULATOR
	RELIEF (R) OR SAFETY (S)
	SEISMIC VALVE
MUA	MAKE UP WATER ASSEMBLY
	BACK PRESSURE
	PLUG VALVE
	TRIPLE DUTY VALVE (STOP CHECK & BALANCE W/PRESSURE TAPS)
-BFP	REDUCED PRESSURE BACKFLOW PREVENTER
	FLOW CONTROL

-**∠1**∖ 1 1 P-5.1 $\langle CT \rangle$ 1 P-5.

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DETAIL NUMBER DESIGNATION DRAWING NUMBER (IF BLANK, SAME SHEET) -EQUIPMENT NUMBER SECTION NUMBER DRAWING NUMBER <N> EQUIPMENT

NEW TO EXISTING CONNECTION REVISION NUMBER WORK ITEM (PLUMBING)

EXTENT OF DEMOLITION

<u>GENERAL</u>

SYMBOLS

	FITTINGS
	BUSHING
E	CAP
	CHANGE IN PIPE ELEVATION
	CONNECTION, BOTTOM
	CONNECTION, TOP
	CROSS
0	ELBOW, TURNED UP
C	ELBOW, TURNED DOWN
	FLANGES
1	LATERAL
	PLUG
⊳∮	PLUGGED (BALL) VALVE
	REDUCER, CONCENTRIC
N	REDUCER, ECCENTRIC STRAIGHT INVERT
	REDUCER, ECCENTRIC STRAIGHT CROWN
	TEE
——————	TEE, OUTLET UP
	TEE, OUTLET DOWN
	TEE, SIDE OUTLET, OUTLET UP
<u> </u>	TEE, SIDE OUTLET, OUTLET DOWN
	TEE, SINGLE SWEEP
	UNION

	PLUMBING
——— AW ———	ACID WASTE
——— CA ———	COMPRESSED AIR
	DOMESTIC COLD WATER
CD	CONDENSATE DRAIN ABOVE F
- DHW(R)(S) $-$	DOMESTIC HOT WATER (RETU
—— F ——	FIRE WATER
G	GAS
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— ICW(R)(S) —	INDUSTRIAL COLD WATER (RE
— IHW(R)(S) —	INDUSTRIAL HOT WATER (RET
	INDIRECT WASTE
SD	STORM DRAIN
	SUMP PUMP DISCHARGE
	SANITARY SEWER ABOVE GRA
	SANITARY SEWER BELOW GRA
VAC	VACUUM (AIR)
	VENT
VTR	VENT THROUGH ROOF
— —	WATER HAMMER ARRESTER
]	HOSE CONNECTOR
НВ -ң	HOSE BIBB
]	WALL HYDRANT
	CLEAN OUT
	WALL CLEAN-OUT
● _{FCO/GCO}	FLOOR/GRADE CLEAN-OUT
	FLOOR DRAIN
	ROOF DRAIN
() ESH	EMERGENCY SHOWER/EYEWAS
(S) VTR	VENT THROUGH ROOF
${{}{}}$	SPRINKLER INSPECTOR TEST
\sim	FIRE HYDRANT
0	SPRINKLER HEAD
Y	FUNNEL DRAIN, OPEN
	UNDERGROUND VALVE
0	OVERFLOW
AB-1 SW	BLOCK ID/RISER ID SOIL/WASTE
•	WATER HAMMER ARRESTOR
	TRAP PRIMER

PLUMBING SCHEDULE

COMPRESSED AIR
DOMESTIC COLD WATER
CONDENSATE DRAIN ABOVE FLR OR GRADE
DOMESTIC HOT WATER (RETURN)(SUPPLY)
FIRE WATER
GAS
(LOW)(MEDIUM)(HIGH) PRESSURE GAS
DOMESTIC HOT WATER
DOMESTIC HOT WATER RETURN
INDUSTRIAL COLD WATER (RETURN)(SUPPLY)
INDUSTRIAL HOT WATER (RETURN)(SUPPLY)
INDIRECT WASTE
STORM DRAIN
SUMP PUMP DISCHARGE
SANITARY SEWER ABOVE GRADE
SANITARY SEWER BELOW GRADE
VACUUM (AIR)
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VENT THROUGH ROOF
WATER HAMMER ARRESTER
HOSE CONNECTOR
HOSE BIBB
WALL HYDRANT
CLEAN OUT
WALL CLEAN-OUT
FLOOR/GRADE CLEAN-OUT
FLOOR DRAIN
ROOF DRAIN
EMERGENCY SHOWER/EYEWASH
VENT THROUGH ROOF
SPRINKLER INSPECTOR TEST STATION
FIRE HYDRANT
SPRINKLER HEAD
FUNNEL DRAIN, OPEN
UNDERGROUND VALVE
OVERFLOW
BLOCK ID/RISER ID SOIL/WASTE

ABBREVIATIONS

S.M.D.

SPECS

SP

SS

S.S.D. STD

ΤΥΡ

U.O.N.

UR

V.I.F.

VTR

WSP

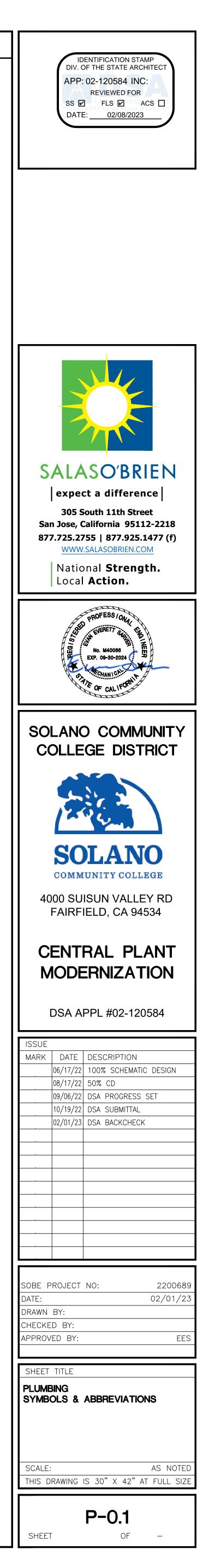
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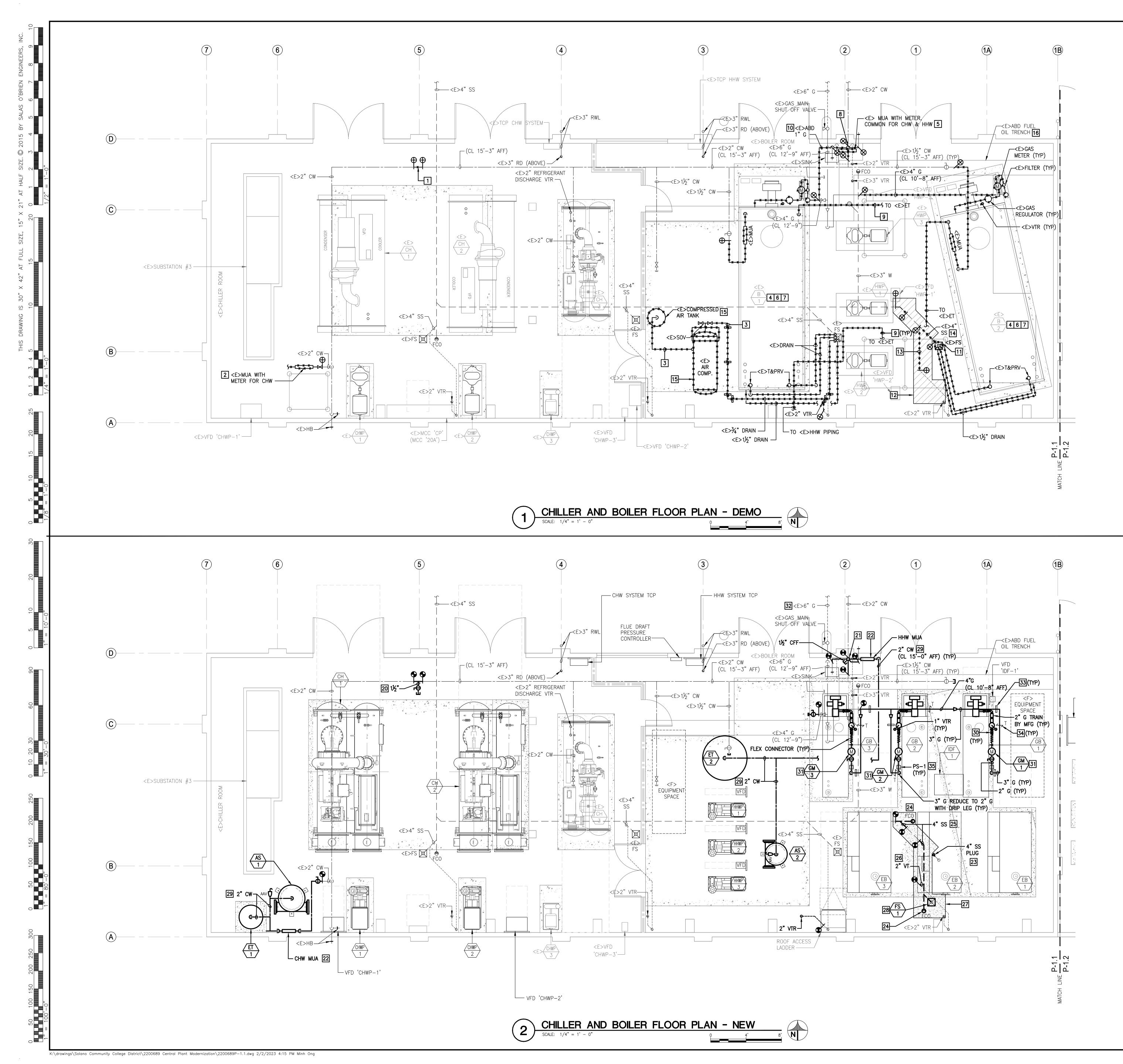
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PSI(G)POUNDS PER SQUARE INCH (GAUGE)P&TPRESSURE AND TEMPERATUREP&TPRESSURE AND TEMPERATURE <r>REMOVERCPREINFORCED CONCRETE PIPERDROOF DRAINRPBFPREDUCED PRESSURE TYPE BACKFLOW PREVENTORRWRECYCLED WATERRWLRAIN WATER LEADERSAN.SANITARYS.A.D.SEE ARCHITECTURAL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK</r>	PRV		PRESSURE REDUCING VALVE
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P&TPRESSURE AND TEMPERATURE <r>REMOVERCPREINFORCED CONCRETE PIPERDROOF DRAINRPBFPREDUCED PRESSURE TYPE BACKFLOW PREVENTORRWRECYCLED WATERRWLRAIN WATER LEADERSAN.SANITARYS.A.D.SEE ARCHITECTURAL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK</r>		;)	
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RWLRAIN WATER LEADERSAN.SANITARYS.A.D.SEE ARCHITECTURAL DRAWINGSS.C.D.SEE CIVIL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK	RPBF	P	REDUCED PRESSURE TYPE BACKFLOW PREVENTOR
SAN.SANITARYS.A.D.SEE ARCHITECTURAL DRAWINGSS.C.D.SEE CIVIL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK	RW		RECYCLED WATER
SAN.SANITARYS.A.D.SEE ARCHITECTURAL DRAWINGSS.C.D.SEE CIVIL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK	RWI		RAIN WATER LEADER
S.A.D.SEE ARCHITECTURAL DRAWINGSS.C.D.SEE CIVIL DRAWINGSSCOSURFACE CLEAN-OUTSDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK			
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SDSTORM DRAINS.E.D.SEE ELECTRICAL DRAWINGSSKSINK			
S.E.D. SEE ELECTRICAL DRAWINGS SK SINK			
SK SINK	SD		STORM DRAIN
	S.E.D		SEE ELECTRICAL DRAWINGS
	SK		SINK
	S.L.D		SEE LANDSCAPE DRAWINGS

SEE MECHANICAL DRAWINGS
FIRE SPRINKLER
SPECIFICATIONS
SANITARY SEWER
SEE STRUCTURAL DRAWINGS
STANDARD
TYPICAL
UNLESS OTHERWISE NOTED
URINAL
VENT
VERIFY IN FIELD
VENT RISER
VENT THROUGH ROOF
WATER
WITH
WATER CLOSET
WALL CLEAN-OUT
WALL HYDRANT
WATER HAMMER ARRESTOR
WET STANDPIPE
WELL WATER

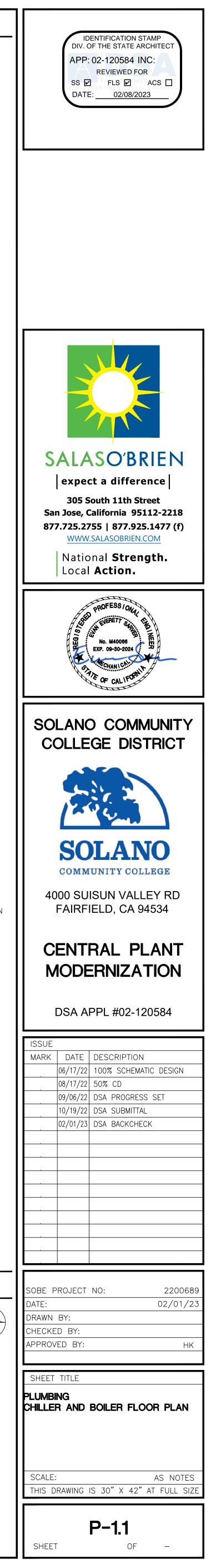
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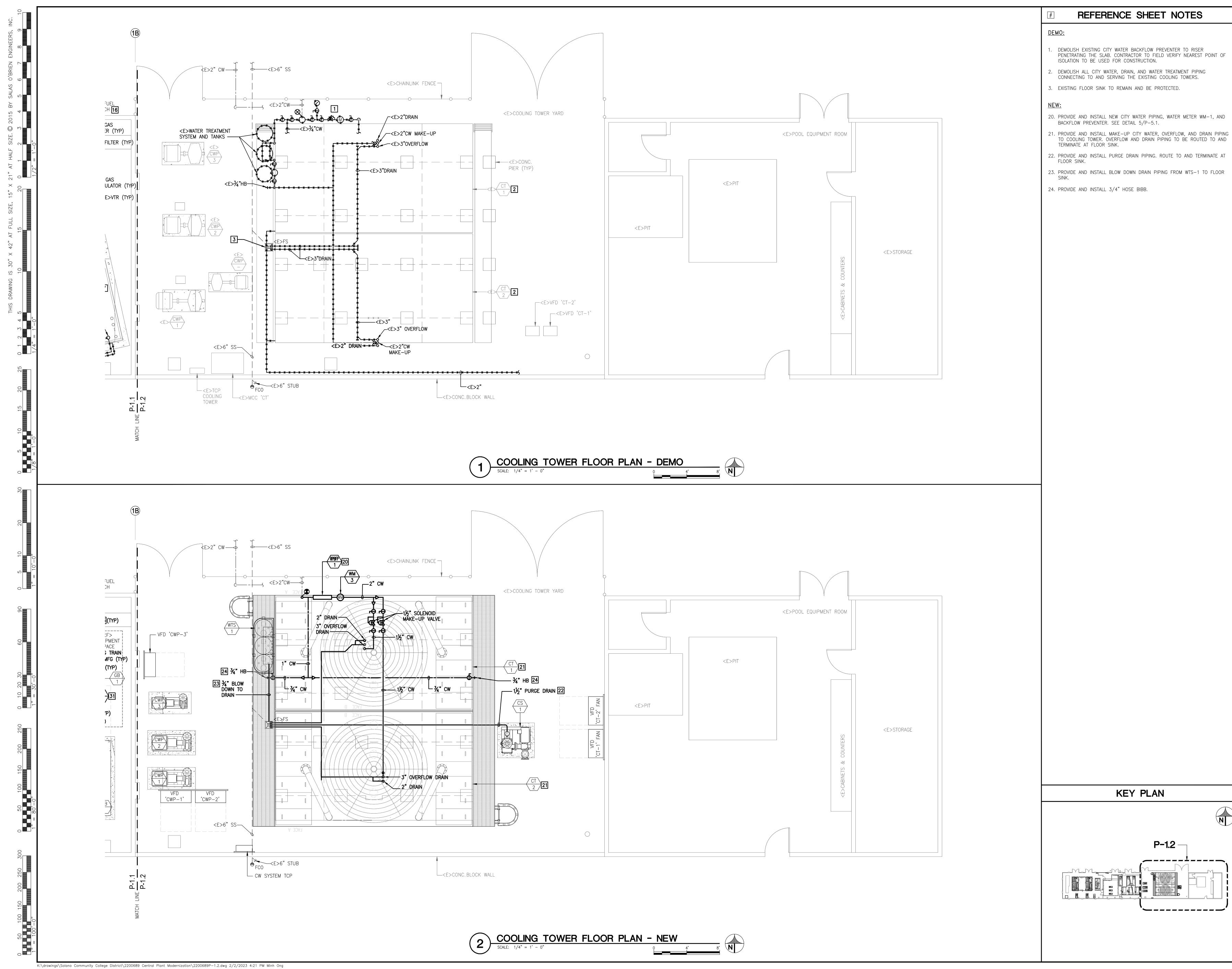




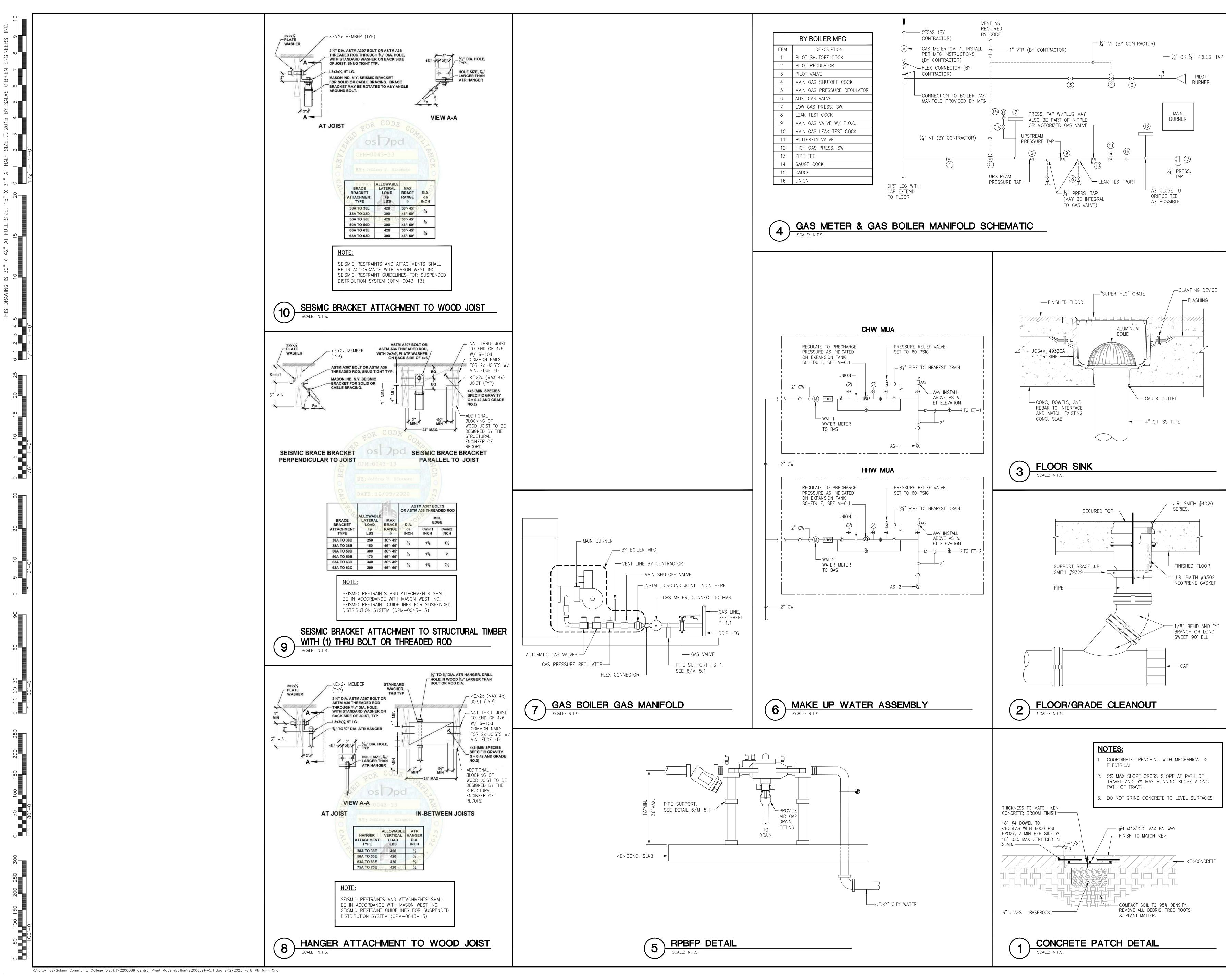
2.	DEMOLISH SECTION OF CITY WATER PIPING.
	DEMOLISH EXISTING CHW MAKE UP WATER ASSEMBLY.
3.	DEMOLISH EXISTING CHW MAKE OP WATER ASSEMBLY. DEMOLISH ABANDONED AIR PIPING.
	DEMOLISH ALL DRAIN PIPING FROM EXISTING BOILERS.
	DEMOLISH EXISTING COMMON HHW AND CHW MAKE UP WATER ASSEMBLY.
	DEMOLISH EXISTING BOILER INDUSTRIAL WATER MAKE UP WATER ASSEMBLY. ISOLATE, DISCONNECT, AND DEMOLISH EXISTING GAS PIPING AND GAS
	ACCESSORIES AT EXISTING BOILERS.
	DEMOLISH SECTION OF CITY WATER RISER FOR NEW WORK.
	DEMOLISH PIPING TO/FROM EXISTING EXPANSION TANKS. DEMOLISH ABANDONED PIPING.
11.	CONTRACTOR TO V.I.F. WHETHER TRAP PRIMER EXISTS FOR <e> FLOOR SINK (NEW FS TO MATCH CONDITION). DEMOLISH EXISTING FLOOR SINK, FILL WITH GROUT AND FINISH TO MATCH EXISTING CONCRETE SLAB. APPROXIMATE INVERT ELEVATION: 25" BOTTOM OF PIPE TO FINISHED FLOOR.</e>
12.	SAW CUT EXISTING CONCRETE SLAB TO EXPOSE AND ACCESS EXISTING SANITARY SEWER (APPROXIMATE INVERT ELEVATION: 25" B.O.P. TO FINISHED FLOOR) AND VENT PIPING. LOCATE REBAR PRIOR TO SAW CUTTING, DO NOT CUT ANY REBAR.
	DEMOLISH EXISTING UNDERGROUND VENT PIPING.
	DEMOLISH EXISTING UNDERGROUND SANITARY SEWER PIPING.
	DEMOLISH ABANDONED AIR COMPRESSOR, MANIFOLD ASSEMBLY, AIR FILTER, AND ASSOCIATED PIPING AND SUPPORTS. CUT ANCHOR BOLTS AND GRIND SMOOTH TO FINISHED CONCRETE PAD.
16.	DEMOLISH ABANDONED FUEL OIL PIPING IN THE ABANDONED FUEL OIL TRENCH BACK TO THE NEAREST WALL AND CAP.
<u>NEV</u>	<u>/:</u>
	PROVIDE AND INSTALL CITY WATER PIPING, BALL VALVES AND CAPS AS INDICATED ON PLANS.
21.	PROVIDE 2" CITY WATER RISER WITH CONNECTION TO THE <e> SINK, <e> HOSE BIBS, THE DEDICATED HHW MAKE-UP WATER ASSEMBLY AND THE</e></e>
	DEDICATED CHW MAKE-UP WATER ASSEMBLY. PROVIDE AND INSTALL SEPARATE/DEDICATED HHW AND CHW MAKE-UP WATEF
	ASSEMBLIES. SEE DETAIL $6/P-5.1$.
	PROVIDE AND INSTALL PLUG FOR EXPOSED SS PIPE TO BE DEMOLISHED (FILLED WITH GROUT) FLOOR SINK.
25.	PROVIDE AND INSTALL FLOOR CLEANOUT. SEE DETAIL 2/P-5.1. PROVIDE AND INSTALL UNDERGROUND SANITARY SEWER PIPING FOR CONNECTION TO EXISTING, SLOPE 1/4" PER FOOT. SIZE SHOWN IS
26.	ASSUMED, CONTRACTOR TO FIELD VERIFY AND MATCH EXISTING PIPE SIZE. PROVIDE AND INSTALL UNDERGROUND VENT PIPING FOR CONNECTION TO EXISTING, SLOPE UPWARD TO VTR. SIZE SHOWN IS ASSUMED, CONTRACTOR TO FIELD VERIFY AND MATCH EXISTING PIPE SIZE.
27.	PATCH AND REPAIR SAWCUT CONCRETE SECTION AFTER PLUMBING PIPE HAS BEEN INSTALLED AND TESTED. RELOCATE/INSTALL REBAR AS NECESSARY. FILL WITH CONCRETE AND FINISH TO MATCH EXISTING CONCRETE SLAB. REFER TO DETAIL 1/P-5.1.
28.	PROVIDE AND INSTALL 12"X12" FLOOR SINK AND CONNECT TO SS PIPING, SEE DETAIL 3/P-5.1.
	PROVIDE AND INSTALL MAKE-UP WATER PIPING TO SYSTEM AIR SEPARATOR AND EXPANSION TANK. PROVIDE AND INSTALL AUTOMATIC AIR VENT AT HIGHEST ELEVATION OF PIPING AT AIR SEPARATOR CONNECTION. PROVIDE PIPE SUPPORTS AT LOCATIONS AND SPANS REQUIRED TO COMPLY WITH OPM-0043-13 FOR COPPER PIPE, REFER TO P-5.1 FOR STRUCTURAL ATTACHMENT.
30.	PROVIDE AND INSTALL 2" GAS PIPING TO GAS BOILER GAS MANIFOLD. GAS MANIFOLD PROVIDED BY MANUFACTURER, CONTRACTOR TO PROVIDE AND INSTALL VENT PIPING FROM PILOT LIGHT AND MAIN BURNER GAS REGULATORS. REGULATOR VENT PIPING SHALL CONNECT TO A COMMON 1" VENT RISER THAT SHALL PENETRATE THROUGH THE ROOF AND TERMINATE IN A DOWNWARD DIRECTION. SEE DETAIL $2/M-5.1$ FOR ROOF PENETRATION AND DETAIL 4 & $7/P-5.1$ GAS CONNECTION SCHEMATICS.
	PROVIDE AND INSTALL GAS METER GM-1. SEE MANUFACTURER'S INSTALLATIO INSTRUCTIONS FOR STRAIGHT LENGTH REQUIREMENTS. SEE PLUMBING SCHEDULE ON P-0.1.
	DURING DESIGN GAS PRESSURE DOWNSTREAM OF THE GAS METER (AT GAS MANIFOLD) WAS MEASURED AT APPROXIMATELY 5 PSIG. CONTRACTOR TO MEASURE AND VERIFY GAS PRESSURE ENTERING BOILER PLANT, REPORT RESULTS TO ENGINEER.
	PROVIDE AND INSTALL PIPE HANGER SUPPORTS AS INDICATED. REFER TO DETAIL 2/M–5.2 FOR CLEVIS HANGER AND P–5.1 FOR STRUCTURAL ATTACHMENT (IN COMPLIANCE WITH OPM–0043–13).
	PROVIDE AND INSTALL TRANSVERSE BRACING AT CLEVIS HANGER AS INDICATED. REFER TO DETAIL $2/M-5.2$ FOR BRACING ATTACHMENT TO CLEVIS HANGER AND $P-5.1$ FOR STRUCTURAL ATTACHMENT (IN COMPLIANCE WITH
35.	OPM-0043-13). PROVIDE AND INSTALL PIPE SUPPORT PS-1 AS INDICATED, REFER TO DETAIL 6/M-5.1.
	KEY PLAN
	N
	── P−1.1

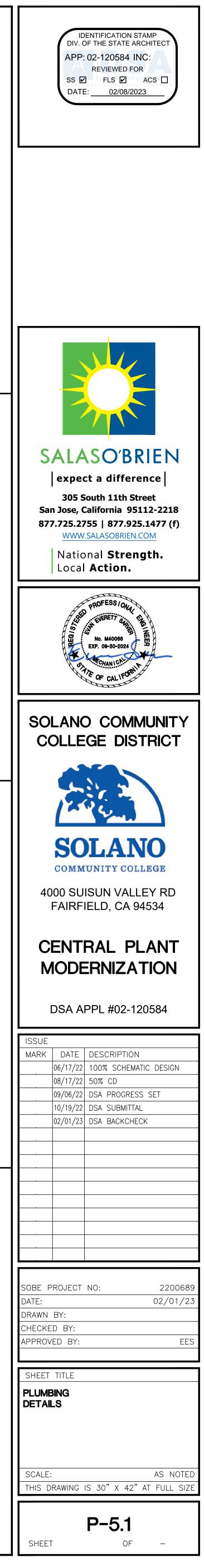
REFERENCE SHEET NOTES





IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT APP: 02-120584 INC: REVIEWED FOR SS ☑ FLS ☑ ACS □ DATE: 02/08/2023
Image: Constraint of the system 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. 08-30-2024
COLLEGE DISTRICT
COMMUNITY COLLEGE 4000 SUISUN VALLEY RD FAIRFIELD, CA 94534 CENTRAL PLANT MODERNIZATION
DSA APPL #02-120584
MARK DATE DESCRIPTION 06/17/22 100% SCHEMATIC DESIGN 08/17/22 50% CD 09/06/22 DSA PROGRESS 10/19/22 DSA SUBMITTAL 02/01/23 DSA BACKCHECK
SOBE PROJECT NO: 2200689 DATE: 02/01/23 DRAWN BY: CHECKED BY: APPROVED BY: EES
SHEET TITLE PLUMBING COOLING TOWER FLOOR PLAN
SCALE: AS NOTES THIS DRAWING IS 30" X 42" AT FULL SIZE P-1.2 SHEET OF -





1.	REMOVE EXISTING EQUIPMENT IN CONFLICT WITH NE WIRE NOT IN SERVICE AND FROM ABANDONED RACI CIRCUITING PASSING THROUGH DEMOLITION AREAS. AS NECESSARY.
2.	ALL ABANDONED EQUIPMENT INCLUDING LIGHT, REC ALARM, ETC., SHALL BE COVERED WITH BLANK MET MATCH THE ADJACENT FINISH OF SURROUNDING WA SATISFACTION OF THE ARCHITECT/OWNER.
3.	ELECTRICAL CONTRACTOR IS RESPONSIBLE TO DISC EXISTING ELECTRICAL EQUIPMENT AFFECTED BY THE REROUTING OR THE EXTENSION OF EXISTING CONDI NECESSARY TO MAINTAIN OPERATIONAL OF ANY EXIS
4.	CIRCUIT NUMBERS AND CONDUIT HOMERUNS SHOWI WERE TAKEN FROM EXISTING RECORD DRAWINGS. E RESPONSIBLE TO VERIFY EXISTING CIRCUITING AND ADJUST CIRCUIT NUMBERS ACCORDING TO THE ACT
5.	WHERE EXISTING CONDUIT IS TO BE ABANDONED O SHALL BE REMOVED IF IT IS EXPOSED, IN A CRAW ACCESSIBLE CEILING. ABANDONED OR DEMOLISHED THROUGH THE FLOOR SHALL BE CUT OFF AND PLU FLOOR.
6.	ALL ELECTRICAL EQUIPMENT INCLUDING LIGHT, REC ETC., THAT ARE TO BE REMOVED, SHALL BE REMOV CONDUIT AND WIRING BACK TO THE LAST DEVICE F SOURCE.
7.	EXISTING CIRCUITS WHICH ARE REMOVED AND NOT IDENTIFIED ON THE PANEL SCHEDULE AS "SPARE".
8.	ELECTRICAL CONTRACTOR SHALL COORDINATE WITH REMOVAL OF EXISTING ELECTRICAL EQUIPMENT AND EQUIPMENT THAT THE OWNER REQUESTS IN AN "AS
9.	ALL DEMOLITION WORK SHOWN, IF ANY, WAS PREP, OF THE CONTRACTOR. NO REPRESENTATION HAS BE THAT MAY REQUIRE DEMOLITION HAVE BEEN SHOWN RESPONSIBILITY OF THE CONTRACTOR TO CAREFULL THE CONTRACT DOCUMENTS AND TO PERFORM ALL RECONSTRUCTION WHICH MAY BE REQUIRED FOR TH COMPLETION OF THE WORK.
10.	WHEN CALLED FOR, OR SCOPE OF WORK REQUIRE BE REMOVED, ALL CONDUIT, WIRE, BOXES, HANGER REMOVED COMPLETELY. ALL OPENINGS SHALL BE PAINTED TO MATCH THE ADJACENT FINISH.

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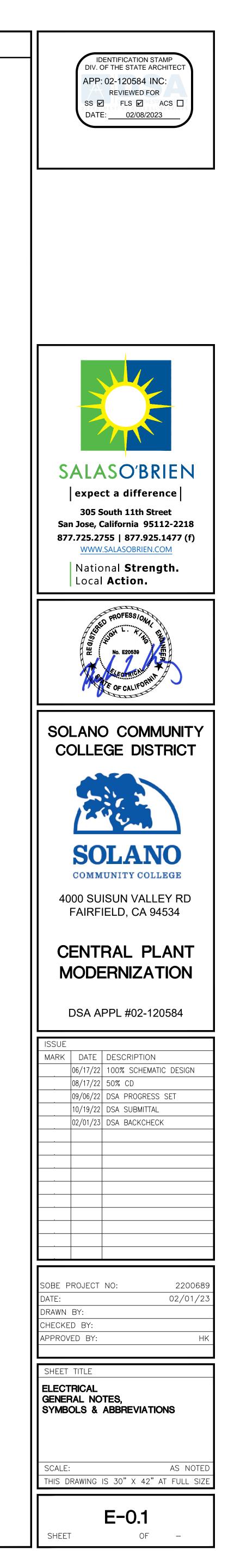
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	DEMOLITION NOTES	GENERAL NO	DTES	SYMBOLS & ABBREVIATIONS
TYPE MANUNCIPIER DESCRIPTION INFORMATIONER DESCRIPTION DESCRIPTION	1. REMOVE DUSTING EQUIPMENT IN CONFLICT WITH HER CONFLICTS, REDUCTE AND RECTOR TAXES, NOT TAXE TO CONFLICT AND RECTOR TAXES, NOT TAXES	 S. SWISCHER R. BETHEMPELE IN CREW A COMPLEX OF CONSIGN DEMAND. S. SWISCHER R. BETHEMPELE IN CREW A COMPLEX OF CONSIGN DEMAND. S. SWISCHER R. BETHEMPELE RECORD DEMAND. S. SWISCHER R. B. LEWERR R. S. SWISCHER, D. SWISC	<text><list-item></list-item></text>	SYMBOLS & ABEREVIATIONS
		 SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS. 28. FINAL CONNECTIONS TO ALL EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS, AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIAL AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED. 		 V.I.F. VERIFY IN FIELD W WATTS WP WEATHERPROOF (NEMA 3R) XFMR TRANSFORMER



STATE OF CALIFORNIA Indoor Lighting NRCC-LTI-E (Created 04/21) CERTIFICATE OF COMPLIANCE

his document is used to demonstrate compl	liance with requirements in	1 <u>§110.9</u> , <u>§110.12</u>	(c), <u>§130</u>	.0, <u>§130.1</u> ,	§140.6, and	141.0(b)2 fo	or indoor lighti	ng scopes us	sing the
rescriptive path.									
roject Name: Solano Community College		esign		Report Pa	ge:				Page 1
roject Address: 4000 Suisun Valley Road, Fa	airfield, California 94583			Date Prep	ared:				10/18/2
. GENERAL INFORMATION							-		
01 Project Location (city)	Fairfield		04 To	tal Conditio	oned Floor Ar	ea (ft ²)		0	
02 Climate Zone	12		05 To	tal Uncond	litioned Floor	Area (ft ²)		3,830	
03 Occupancy Types Within Project (select	all that apply):		06 # 0	f Stories (H	Habitable Abo	ve Grade)		0	
Office Retail	Ware	house	н	otel/Motel	1	School		Support A	reas
Parking Garage High-Rise	e Residential 📃 Reloc	catable	H	ealthcare	✓	Other (write	e in): Ce	ntral plant	
. PROJECT SCOPE									
	no that are within the see	o of the normit a	anligatio	and are a	dom o potrating	anneliana	using the pro	oorintivo nat	h outlined in
able Instructions: Include any lighting system <u>140.6</u> or <u>§141.0(b)2</u> for alterations. WARNI					-	•			
alculation method, please open a new form		ion wethou in this	s tuble w	in result in	the deletion of	n uutu pievi	ously input. Ij	you need to	chunge the
Scope of Work		0	ondition	ned Spaces	1		Uncond	itioned Spa	ces
01			2		03		04		05
My Project Consists of (check al	that apply:	Calculatio		d			alculation Me	thad	
	i tilat appiy).	Calculatio	in weitig	iu ii	Area (ft ²)			liiluu	Area (ft ²)
New Lighting System									
		Add Parking	Garage-O	Complete B	Bldg Method		Remove	Parking Gar	age
Altered Lighting System				-			Area Categor	у 🔽	3,830
		Add A	Altered L	ighting Sys	stem		Remove La	ist Altered S	ystem
	Total Area of Work (ft ²)							3,830	

C. COMPLIANCE	COMPLIANCE RESULTS												
Table Instructions	: If any cell on t	his table says "D	OES NOT COMPL	LY" or "COMPLIE	ES V	with Exceptional	Co	nditions" refer t	o Table D. for gu	ıid	ance.		
		Allowed Light	ing Power per <mark>§</mark>	140.6(b) (Watt	s)			Adjusted Light	ting Power per 🕯	14	0.6(a) (Watts)	Compliance Results	
Lighting in	01	02	03	04		05]	06	07		08	09	
conditioned and unconditioned spaces must not be combined for compliance per <u>\$140.6(b)1</u> .	Complete Building <u>§140.6(c)1</u>	Area Category <u>§140.6(c)2</u>	Area Category Additional <u>§140.6(c)2G</u> (+)	Tailored <u>§140.6(c)3</u> (+)	=	Total Allowed (Watts)	N	Total Designed (Watts)	Adjustments PAF Control Credits <u>§140.6(a)2</u> (-)	=	Total Adjusted (Watts) *Includes Adjustments	05 Must be ≥08 <u>§140.6</u>	
	(See Table I)	(See Table I)	(See Table J)	(See Table K)				(See Table F)	(See Table P)				
Conditioned:					=		≥			=			
Unconditioned:		1,532			=	1,532	≥	892		=	892	COMPLIES	
Table Continued													

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

STATE OF CALIFORNIA Indoor Lighting NRCC-LTI-E (Created 04/21) CALIFORNIA ENERGY CO CERTIFICATE OF COMPLIANCE Project Name: Solano Community College - Fairfield Central Plant Design Report Page: Project Address: 4000 Suisun Valley Road, Fairfield, California 94583 Date Prepared: P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF)) This Section Does Not Apply Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS This Section Does Not Apply R. 80% LIGHTING POWER FOR ALTERATIONS - CONTROLS EXCEPTIONS This Section Does Not Apply S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF) This Section Does Not Apply T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please exp Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://ww2.energy.ca.g title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/ Field YES NO Form/Title Pass \bigcirc O NRCI-LTI-01-E - Must be submitted for all buildings NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be \bigcirc ۲ recognized for compliance. NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference \bigcirc ۲ room, a multipurpose room, or a theater to be recognized for compliance. INRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance. NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for \bigcirc ۲ compliance.

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

K:\drawings\Solano Community College District\2200689 Central Plant Modernization\2200689E-0.2.dwg 2/2/2023 4:04 PM Minh Ong

Project Na								CA	LIFORNIA ENERGY (COMM
	TE OF COMPLIANCE					1				
Drojoct Ac						Report Page:				
FIOJECT AD	dress: 4000 Suisun Valley Road, Fair	field, C	alifornia	94583		Date Prepared	1:			
					Cont	rols Compliance (S	ee Table H for D	Details)		
				Rated F	Power Reduct	ion Compliance (S	ee Table Q for D	Details)	Not Applic	abl
D. EXCEP	TIONAL CONDITIONS									
	is auto-filled with uneditable comme	nts bec	ause of s	elections made or	r data entered	l in tables through	out the form.			
NO except	ional conditions apply to this project.	•								
E. ADDIT	IONAL REMARKS									
This table	includes remarks made by the permit	t applic	ant to th	e Authority Havin	g Jurisdiction.					
	R LIGHTING FIXTURE SCHEDULE									
		11:								
	ructions: Include all permanent design Wattage: Unconditioned Spaces	nea iigi	nting and	a all portable light	ing in offices.					
		1	03	04	05	06	07	08	09	1
01	02	1			05	00			09	
Name or	Complete Luminaire Description		odular	Small Aperture	Watts per	How Wattage is	Total number	Exempt per	Design Watts	F
		(Track	<) Fixture	& Color Change ¹	luminaire ²	determined	luminaires	<u>§140.6(a)3</u>	8	
Item Tag										
Item Tag A1/A1E	LED STRIP LIGHT, 4FT				32	Mfr. Spec ²	24		768	
	LED STRIP LIGHT, 4FT LED STRIP LIGHT, 4FT				32 62	Mfr. Spec ²	2		124	
A1/A1E							2	IONED SPACES:	124	

OMMI	SSION NRCC-LTI-E Page 4 of 6 10/18/2022	
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April 2021

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CALIFORNIA ENERGY COMMISSION

NRCC-LTI-E

Page 1 of 6

Area (ft²)

3,830

April 2021

10/18/2022

STATE OF CALIF	FORNIA					
Indoor Li	ighting					
NRCC-LTI-E (Cre	eated 04/21)			CALIFORNIA E	NERGY COMMI	ssion
CERTIFICATE	E OF COMPL	IANCE				NRCC-LTI-E
Project Nam	ne: Soland	o Community College - Fairfield Central Plant Design	Report Page:			Page 5 of 6
Project Addr	ress: 4000 S	Suisun Valley Road, Fairfield, California 94583	Date Prepared:			10/18/2022
U. DECLAR	ATION OF	REQUIRED CERTIFICATES OF ACCEPTANCE				2
Table Instru	ctions: Selec	tions have been made based on information provided in previous tables of	of this document.	f any selection needs to be changed, p	lease explair	n why in
Table E. Add	litional Rem	arks. These documents must be provided to the building inspector during	construction and	any with "-A" in the form name must b	e completed	through an
Acceptance	Test Technic	cian Certification Provider (ATTCP). For more information visit: <u>http://ww</u>	w.energy.ca.gov/t	itle24/attcp/providers.html		
YES	NO	Form/Title			Field In	spector
					Pass	Fail
0	۲	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automat	ic time switch cor	trols.		
0	۲	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.				
\bigcirc	۲	NRCA-LTI-04-A - Must be submitted for demand responsive lighting con	trols.			
\bigcirc	۲	NRCA-LTI-05-A - Must be submitted for institutional tuning power adjus	tment factor (PAF).		

NRCA-LTI-05-A - Must be submitted for institutional tuning power adjustment factor (PAF). INRCA-ENV-03-F - Must be submitted for daylighting design power adjustment factors (PAF).

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

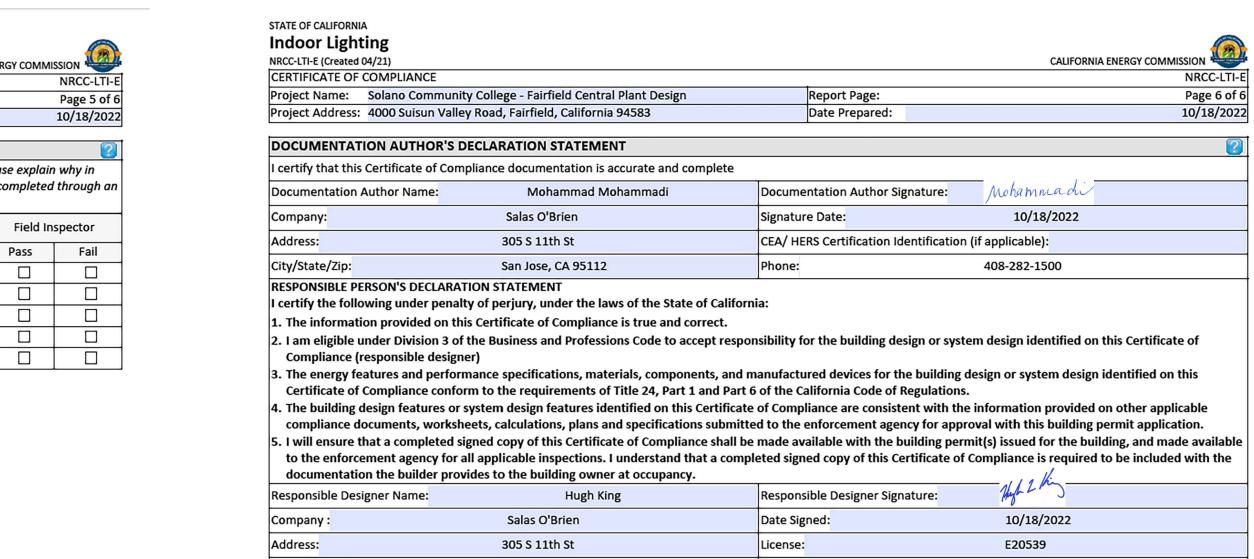
STATE OF CALIFORNIA Indoor Lighting

City/State/Zip:

Indoor Lighting							
NRCC-LTI-E (Created 04/21)					CALI	FORNIA ENERGY CO	
CERTIFICATE OF COMPLIANCE							NRCC-LTI-E
<u>.</u>	ty College - Fairfield Central Plant Design	-	port Page:				Page 3 of 6
Project Address: 4000 Suisun Valle	y Road, Fairfield, California 94583	Dat	te Prepared:				10/18/2022
H. INDOOR LIGHTING CONTROL	LS (Not Including PAFs)						2
This Section Does Not Apply							
I. LIGHTING POWER ALLOWAN	CE: COMPLETE BUILDING OR AREA CATEGORY METHO	DS					2
•	ble for each area complying using the Complete Building or <i>,</i> ments per <u>\$140.6(a)</u> are being used.	Area C	ategory Method	's per <u>§140.6(t</u>	<mark>o)</mark> . Indicate if a	additional lightin	
Unconditioned Spaces							
01	02		03	04	05	0	6
Area Description	Complete Building or Area Category		Allowed Density	Area	Allowed Wattage		Allowances / tment
	Primary Function Area		(W/ft ²)	(ft²)	(Watts)	Area Category	PAF
Central Plant	Electrical, Mechanical, Telephone Rooms	-	0.4	3,830	1,532		
			TOTAL:	3,830	1,532	See Tables J	or P for detail
					Reset	Add Row	Remove Last
	WANCE: AREA CATEGORY METHOD QUALIFYING LIGH	TING	SYSTEM				2
This Section Does Not Apply							
K. TAILORED METHOD GENERA	L LIGHTING POWER ALLOWANCE						2
This Section Does Not Apply							
	WANCE: TAILORED WALL DISPLAY						2
This Section Does Not Apply	WANCE. TAILORED WALL DISPLAT						<u> </u>
M. ADDITIONAL LIGHTING ALLO	DWANCE: TAILORED FLOOR AND TASK LIGHTING						2
This Section Does Not Apply							
	WANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS						2
This Section Does Not Apply							
O. ADDITIONAL LIGHTING ALLO	WANCE: TAILORED VERY VALUABLE MERCHANDISE						2
This Section Does Not Apply							

April 2021

April 2021

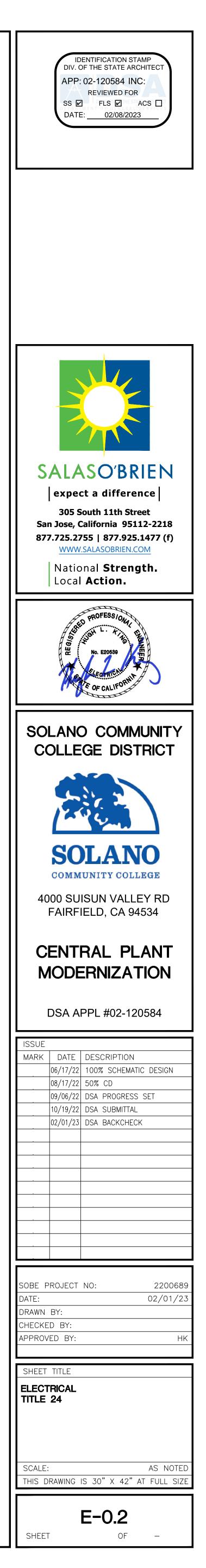


Phone:

San Jose, CA 95112

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards



April 2021

NRCC-LTI-E Page 6 of 6

10/18/2022

Remove Last

April 2021

408-282-1500

Add Responsible Person

STATE OF CALIFORNIA											
Electrical Power	Distr	ibution									
NRCC-ELC-E (Created 01/20)		Dation							CAL	FORNIA ENERGY COMMISSION	
CERTIFICATE OF COMP										NRCC-EL	
										tial, high-rise residential and	
· ·		tions and alte	rations t	o electri	ical service systems	in these occ	upancies will also u	use this docume	nt to demonstrate	compliance per <u>§141.0(a)</u> or	
§141.0(b)2P for altera			Tainfiel	d Canto							
Project Name: Solar Project Address: 4000					al Plant Design		Report Pag Date Prepa			Page 1 0 10/18/20	
roject Address. 4000	Suisuit	valley Road, r	anneiu, v	Jamorn	18 54365		Date Prepa	ileu.		10/18/20	
A. GENERAL INFORM	ATION										
01 Project Location	(city)				Fairfield	02	2 Occupancy Type	s Within Projec	t:		
Office		Retail		[Warehouse		Hotel/ Motel	🖌 Sch	ool	Support Areas	
Parking Garage		High-Rise	Resident	ial [Relocatable] Healthcare Facilit	ties 🖌 Oth	ner (Write In):	Central plant	
B. PROJECT SCOPE										6	
										(
Table Instructions: Incl 01	uae any	electrical serv	lice syste		are within the scop	<u> </u>		05		06	
UI				02		03	04	05	Dama		
										nd Response Controls lemand response controls mu	
							Utility	System	he specified which are conchined frequiting and		
Electrical Ser	vice		Scope of Work ¹			Dating	Provided	subject to CA Elec Code		onding to at least one	
Designation	n/					Rating (kVA)	Metering System	Article 517		nessaging protocol which	
Description	n					((\\),	Exception to	Exception to	enables demand r	esponse after receiving a	
							§130.5(a) ²	§130.5(a)&(b)		signal. Sections <u>§120.2</u> , <u>§130</u>	
										mpliance documents NRCC-	
		Add/Al	t to food	arc and	branch circuits					d NRCC-LTS will indicate when	
Existing Substat	ion #3	Add/Al	t to reed	only			\checkmark		demand response	controls are required.	
(4000A, 480Y/	<u>277V)</u>			only					dd Row	Remove Last	
' FOOTNOTES: Adding	onlyna	u foodors and	hranch a	ircuito t	riggore Voltago Dro	n 120 5/c) n	o other requireme			Remove Last	
² Applicable if the utili											
, pprouble if the utility	.,		gumen					, in the second second	., «בן		
C. COMPLIANCE RES	TUTE									(
Table Instructions: If the		SOME "DOES N	IOT COM	DI V" rot	fer to Table D. for a	uidance and	review the Table t	hat indicates "N	o"	ļ	
01		02			03		04			05	
	4 }				05	_				00	
Service Electrical		Separatio		410	Voltage Drop	4410	Controlled				
Metering <u>§130.5(a)</u>	AND	Monitor <u>§130.5</u>	-	AND	§130.5(c)	AND	Receptacles §130.5(d)		Compliar	nce Results	
	$\left\{ \right\}$				(Cas Table II)	-		_			
(See Table F)		(See Tabl	e G)		(See Table H)		(See Table I)				
	AND			AND	Yes	AND				ceptional Conditions	

STATE OF CALIFORNIA Electrical Power Distribution NRCC-ELC-E (Created 01/20)

City/State/Zip:

NRCC-ELC-E (Created 01/20)					CALIFORNIA ENE	ERGY COMM
CERTIFICATE OF COMPLIANCE						
Project Name: Solano Communi	ty College - Fairfield Central Plant Design		Report Page:			
Project Address: 4000 Suisun Valle	ey Road, Fairfield, California 94583		Date Prepared:			
DOCUMENTATION AUTHOR'S	DECLARATION STATEMENT					
I certify that this Certificate of Con	npliance documentation is accurate and complete.					
Documentation Author Name:	Mohammad Mohammadi	Documer	tation Author Sign	ature:	Mohammadi 10/18/2022	
Company:	Salas O'Brien	Signature	Date:		10/18/2022	
Address:	305 S 11th St	CEA/ HER	S Certification Ider	ntification (if ap	plicable):	
City/State/Zip:	San Jose, CA 95112	Phone:		40	8-282-1500	
RESPONSIBLE PERSON'S DECLARA	TION STATEMENT					
I certify the following under pena	Ity of perjury, under the laws of the State of Califo	rnia:				
1. The information provided on the	nis Certificate of Compliance is true and correct.					
2. I am eligible under Division 3 o Compliance (responsible design	f the Business and Professions Code to accept resp ner)	onsibility fo	r the building desig	gn or system de	sign identified on this	s Certificat
	mance specifications, materials, components, and form to the requirements of Title 24, Part 1 and Par				ı or system design ide	ntified on
	system design features identified on this Certifica neets, calculations, plans and specifications submit					
	signed copy of this Certificate of Compliance shall I		-			
	all applicable inspections. I understand that a com vides to the building owner at occupancy.	pleted signe	d copy of this Cert	ificate of Comp	liance is required to b	oe include
Responsible Designer Name:	Hugh King	Responsi	ble Designer Signat	ture:	High 2 mg	
Company :	Salas O'Brien	Date Sign	ed:		10/18/2022	
Address:	305 S 11th St	License:			E20539	

Phone:

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

San Jose, CA 95112

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

NDCC ELC E (Croated 01/20)				CALIFORNIA ENERGY C	ONAMISSIC
NRCC-ELC-E (Created 01/20) CERTIFICATE OF COMPLIANCE				CALIFORNIA ENERGY C	NF
	nity College - Fairfield Centra	al Plant Design	Report Page:		P
Project Address: 4000 Suisun Va			Date Prepared:		10
D. EXCEPTIONAL CONDITIONS			• •		
		f selections made or data en	tered in tables throughout the form		
Table B indicates the project is ex indicates instantaneous kW dem			ements because the utility company	y has provided the project a meterir	ng systen
E. ADDITIONAL REMARKS					
This table includes remarks made	by the permit applicant to t	the Authority Havina Jurisdic	tion.		
	DING				
F. SERVICE ELECTRICAL METE	RING				
This Section Does Not Apply					
G. SEPARATION OF ELECTRIC					
G. SEI ANATION OF ELECTING	AL CIRCOTTS FOR ENERGI	MONITORING			
This Section Does Not Apply	AL CIRCOTTS FOR EVERGI	MONITORING			
This Section Does Not Apply	AL CIRCOTTS FOR ENERGY	MONITORING			
This Section Does Not Apply H. VOLTAGE DROP					
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl	ete this table for entirely new	w or complete replacement of		s, or alterations that add, modify or strate compliance per <u>\$141.0(b)2Pii</u>	
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl	ete this table for entirely net monstrate compliance with	w or complete replacement of			
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to de 01 Electrical Service	ete this table for entirely new monstrate compliance with Combined Voltage Drop	w or complete replacement of <u>§130.5(c)</u> . For alterations, of 02 on Installed Feeder/Branch	nly the altered circuits must demon 03 Location of Voltage Drop	strate compliance per <u>§141.0(b)2Pii</u>	<u>ii</u>
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to de 01	ete this table for entirely new monstrate compliance with Combined Voltage Drop	w or complete replacement o <u>§130.5(c)</u> . For alterations, o 02	nly the altered circuits must demon 03	strate compliance per <u>\$141.0(b)2Pii</u> 04 Sheet Number for Voltage Drop	<u>II</u> .
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to de 01 Electrical Service	ete this table for entirely new monstrate compliance with Combined Voltage Drop	w or complete replacement of <u>§130.5(c)</u> . For alterations, of 02 on Installed Feeder/Branch	nly the altered circuits must demon 03 Location of Voltage Drop	strate compliance per <u>\$141.0(b)2Pii</u> 04 Sheet Number for Voltage Drop Calculations in Construction	ii. Field Ir
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to der 01 Electrical Service Designation/ Description Existing Substation #3 (4000A, 480Y/277V)	ete this table for entirely net monstrate compliance with Combined Voltage Drop Circuit Conductors	w or complete replacement of §130.5(c). For alterations, of 02 on Installed Feeder/Branch 5 Compliance Method Permitted by CA Elec Code (Exception to §130.5(c))*	nly the altered circuits must demon 03 Location of Voltage Drop Calculations ¹	strate compliance per <u>\$141.0(b)2Pii</u> 04 Sheet Number for Voltage Drop Calculations in Construction Documents Sheet E-7.1 (SLD)	ii. Field Ir
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to der 01 Electrical Service Designation/ Description Existing Substation #3 (4000A, 480Y/277V) *NOTES If "Permitted by CA Elec 'FOOTNOTES: Voltage drop calcu	ete this table for entirely new monstrate compliance with Combined Voltage Drop Circuit Conductors Voltage drop < 5% Code *" is selected under Con lations may be attached to	w or complete replacement of §130.5(c). For alterations, o 02 on Installed Feeder/Branch s Compliance Method Permitted by CA Elec Code (Exception to §130.5(c))* mpliance Method above, ple the permit application outsi	nly the altered circuits must demon 03 Location of Voltage Drop Calculations ¹ In construction documents	strate compliance per <u>\$141.0(b)2Pii</u> 04 Sheet Number for Voltage Drop Calculations in Construction Documents Sheet E-7.1 (SLD) oplies in the space provided below. lowed by the Authority Having Jurise	Field Ir Pass
This Section Does Not Apply H. VOLTAGE DROP Table Instructions: Please compl feeders and branch circuits to dee 01 Electrical Service Designation/ Description Existing Substation #3 (4000A, 480Y/277V) *NOTES If "Permitted by CA Elec ' FOOTNOTES: Voltage drop calcu	ete this table for entirely net monstrate compliance with Combined Voltage Drop Circuit Conductors Voltage drop < 5% Code*" is selected under Con lations may be attached to lations will be the responsibi	w or complete replacement of §130.5(c). For alterations, o 02 on Installed Feeder/Branch s Compliance Method Permitted by CA Elec Code (Exception to §130.5(c))* mpliance Method above, ple the permit application outsi ility of the installing contract	nly the altered circuits must demon 03 Location of Voltage Drop Calculations ¹ In construction documents ase indicate where the exception ap de the construction documents if all for, select "Contractor Responsible".	strate compliance per <u>\$141.0(b)2Pii</u> 04 Sheet Number for Voltage Drop Calculations in Construction Documents Sheet E-7.1 (SLD) oplies in the space provided below. lowed by the Authority Having Jurise	Field Ir Pass

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards

MISSION NRCC-ELC-E Page 4 of 4 10/18/2022	1
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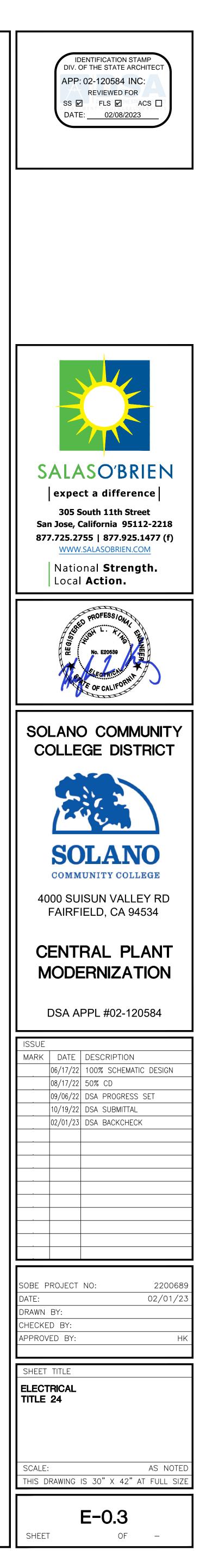
January 2020

408-282-1500

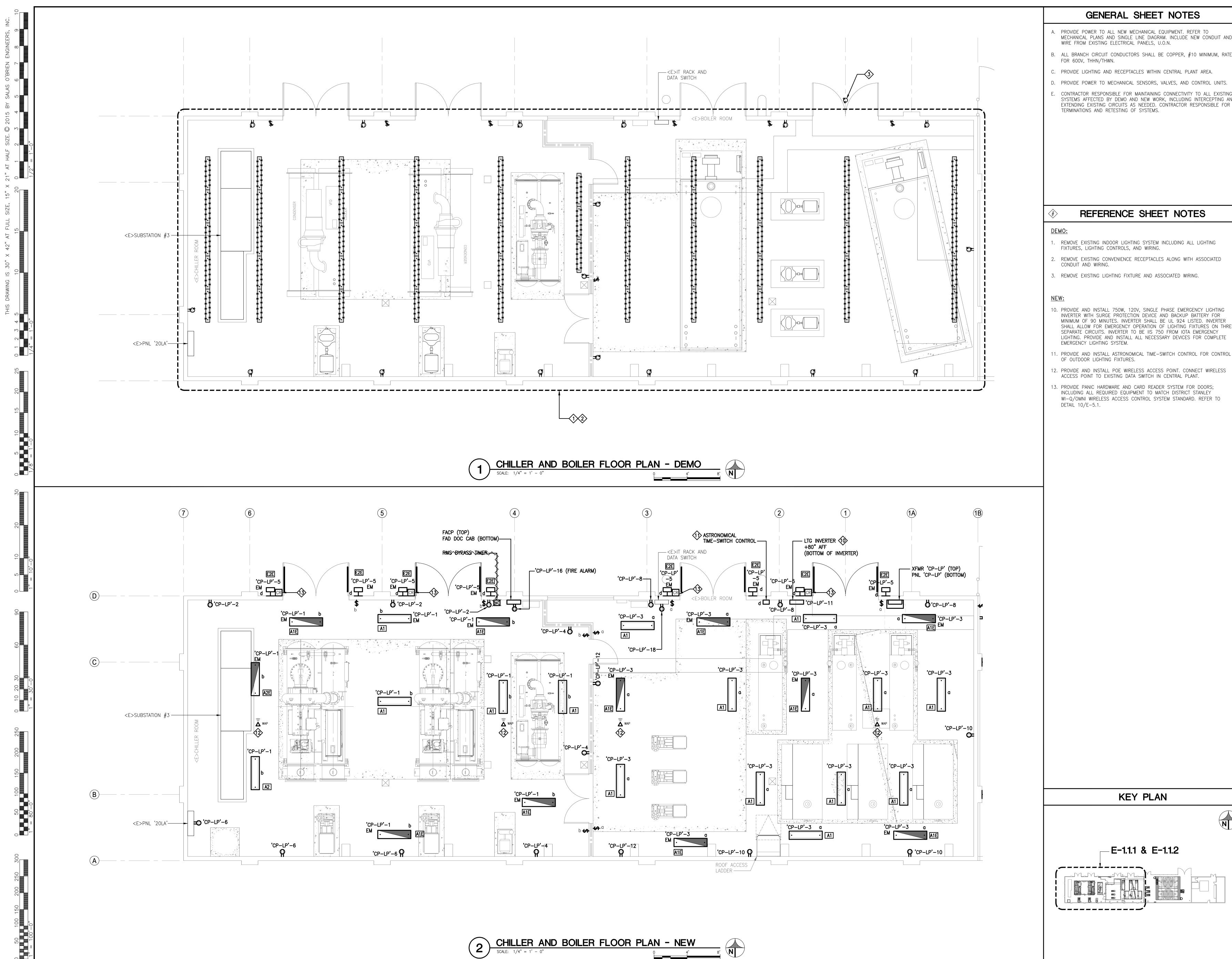
January 2020

Electrical Power Distribution NRCC-ELC-E (Created 01/20) CALIFORNIA ENERGY COMMISSION					SSION	
			NRCC-ELC			
roject Nam	e: Solan	o Community College - Fairfield Central Plant Design	Report Page:			Page 3 o
roject Addr	ess: 4000	Suisun Valley Road, Fairfield, California 94583	Date Prepared:			10/18/20
Table Instruc Table E. Add	ctions: Selé litional Ren	REQUIRED CERTIFICATES OF INSTALLATION ections have been made based on information provided in previous tab marks. These documents must be provided to the building inspector du		•		•
Table Instruc Table E. Add <u>itle24/2019</u>	ctions: Sele litional Ren Istandards/	ections have been made based on information provided in previous tab marks. These documents must be provided to the building inspector du (2019_compliance_documents/Nonresidential_Documents/NRCI/	ring construction and can be	•	nergy.ca.gov	•
Table Instruc Table E. Add	ctions: Selé litional Ren	ections have been made based on information provided in previous tab narks. These documents must be provided to the building inspector du	ring construction and can be	•	nergy.ca.gov	Ľ
Table Instruc Table E. Add <u>itle24/2019</u>	ctions: Sele litional Ren Istandards/	ections have been made based on information provided in previous tab marks. These documents must be provided to the building inspector du (2019_compliance_documents/Nonresidential_Documents/NRCI/	ring construction and can be	•	Field In	spector

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards



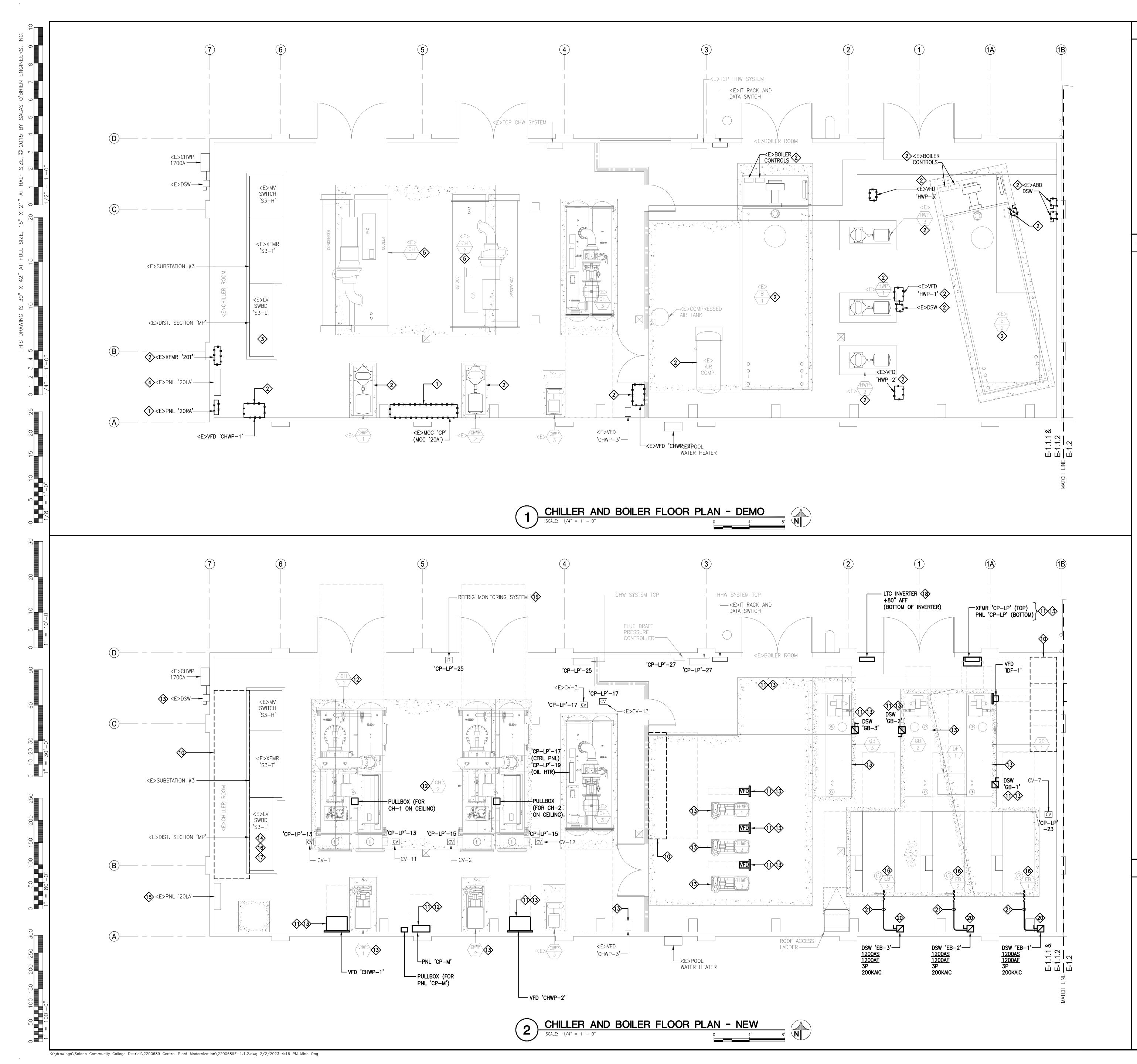
January 2020



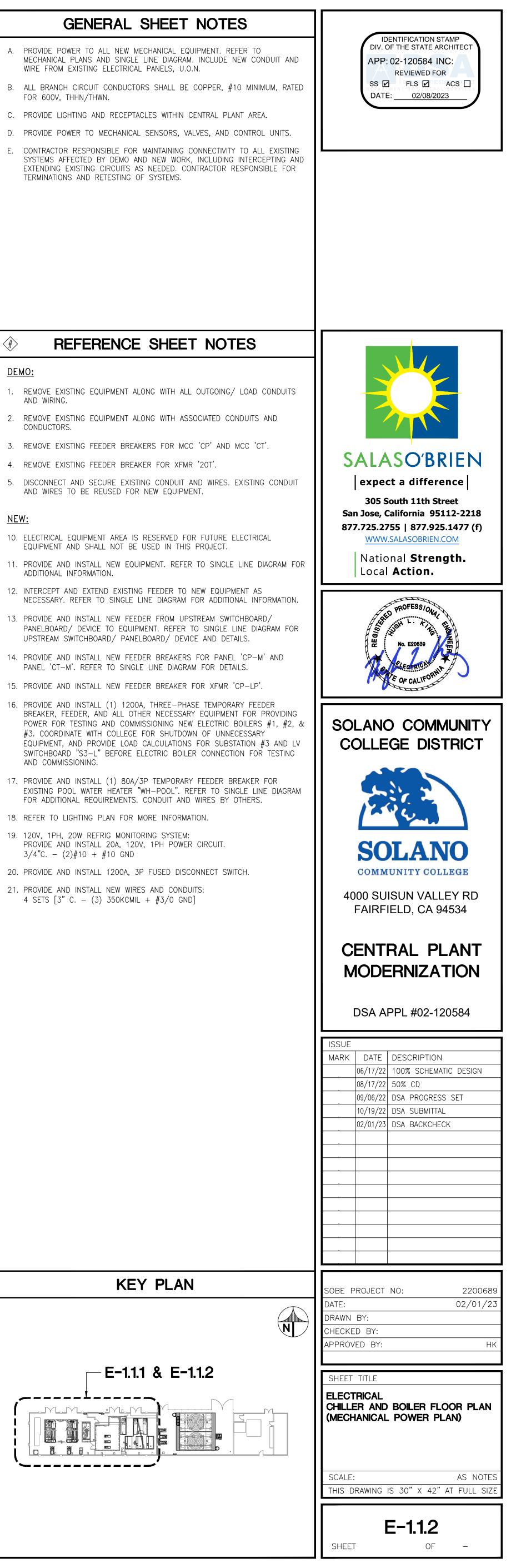
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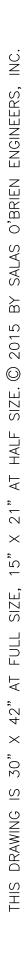
	GENERAL SHEET NOTES
A.	PROVIDE POWER TO ALL NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL PLANS AND SINGLE LINE DIAGRAM. INCLUDE NEW CONDUIT AND WIRE FROM EXISTING ELECTRICAL PANELS, U.O.N.
В.	ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, #10 MINIMUM, RATED FOR 600V, THHN/THWN.
С.	PROVIDE LIGHTING AND RECEPTACLES WITHIN CENTRAL PLANT AREA.
D.	PROVIDE POWER TO MECHANICAL SENSORS, VALVES, AND CONTROL UNITS.
E.	CONTRACTOR RESPONSIBLE FOR MAINTAINING CONNECTIVITY TO ALL EXISTING SYSTEMS AFFECTED BY DEMO AND NEW WORK, INCLUDING INTERCEPTING AND EXTENDING EXISTING CIRCUITS AS NEEDED. CONTRACTOR RESPONSIBLE FOR TERMINATIONS AND RETESTING OF SYSTEMS.
<i>(</i> #>	REFERENCE SHEET NOTES
DEI	<u>MO:</u>
1.	REMOVE EXISTING INDOOR LIGHTING SYSTEM INCLUDING ALL LIGHTING FIXTURES, LIGHTING CONTROLS, AND WIRING.
2.	REMOVE EXISTING CONVENIENCE RECEPTACLES ALONG WITH ASSOCIATED CONDUIT AND WIRING.

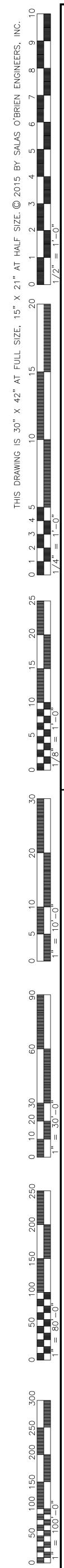
ID TED	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT APP: 02-120584 INC: REVIEWED FOR SS ☑ FLS ☑ ACS □ DATE: 02/08/2023
IG ND R	
	SALASO'BRIEN expect a difference
ΈE	305 South 11th Street San Jose, California 95112-2218 877.725.2755 877.925.1477 (f) WWW.SALASOBRIEN.COM
L	National Strength. Local Action.
	No. E20539
	SOLANO COMMUNITY COLLEGE DISTRICT
	202
	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
	SOBE PROJECT NO: 2200689 DATE: 02/01/23 DRAWN BY: CHECKED BY: APPROVED BY: HK
	SHEET TITLE ELECTRICAL CHILLER AND BOILER FLOOR PLAN POWER & LIGHTING
	SCALE: AS NOTES THIS DRAWING IS 30" X 42" AT FULL SIZE
	E-1.1.1
	SHEET OF –



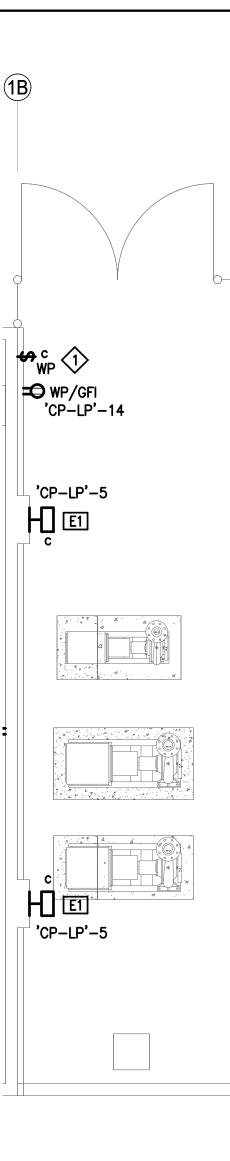
GENERAL SHEET NOTES MECHANICAL PLANS AND SINGLE LINE DIAGRAM. INCLUDE NEW CONDUIT AND WIRE FROM EXISTING ELECTRICAL PANELS, U.O.N. FOR 600V, THHN/THWN. CONTRACTOR RESPONSIBLE FOR MAINTAINING CONNECTIVITY TO ALL EXISTING SYSTEMS AFFECTED BY DEMO AND NEW WORK, INCLUDING INTERCEPTING AND EXTENDING EXISTING CIRCUITS AS NEEDED. CONTRACTOR RESPONSIBLE FOR TERMINATIONS AND RETESTING OF SYSTEMS. **REFERENCE SHEET NOTES** REMOVE EXISTING EQUIPMENT ALONG WITH ALL OUTGOING/ LOAD CONDUITS AND WIRING. REMOVE EXISTING EQUIPMENT ALONG WITH ASSOCIATED CONDUITS AND CONDUCTORS. AND WIRES TO BE REUSED FOR NEW EQUIPMENT. EQUIPMENT AND SHALL NOT BE USED IN THIS PROJECT. ADDITIONAL INFORMATION. NECESSARY. REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL INFORMATION. PANELBOARD/ DEVICE TO EQUIPMENT. REFER TO SINGLE LINE DIAGRAM FOR UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE AND DETAILS. PANEL 'CT-M'. REFER TO SINGLE LINE DIAGRAM FOR DETAILS. BREAKER, FEEDER, AND ALL OTHER NECESSARY EQUIPMENT FOR PROVIDING POWER FOR TESTING AND COMMISSIONING NEW ELECTRIC BOILERS #1, #2, #3. COORDINATE WITH COLLEGE FOR SHUTDOWN OF UNNECESSARY EQUIPMENT, AND PROVIDE LOAD CALCULATIONS FOR SUBSTATION #3 AND L' SWITCHBOARD "S3-L" BEFORE ELECTRIC BOILER CONNECTION FOR TESTING AND COMMISSIONING. . PROVIDE AND INSTALL (1) 80A/3P TEMPORARY FEEDER BREAKER FOR EXISTING POOL WATER HEATER "WH-POOL". REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS. CONDUIT AND WIRES BY OTHERS. PROVIDE AND INSTALL 20A, 120V, 1PH POWER CIRCUIT.

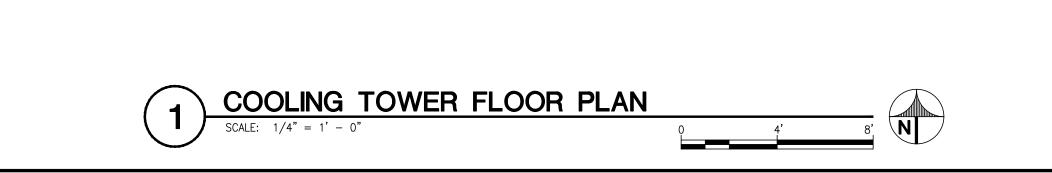


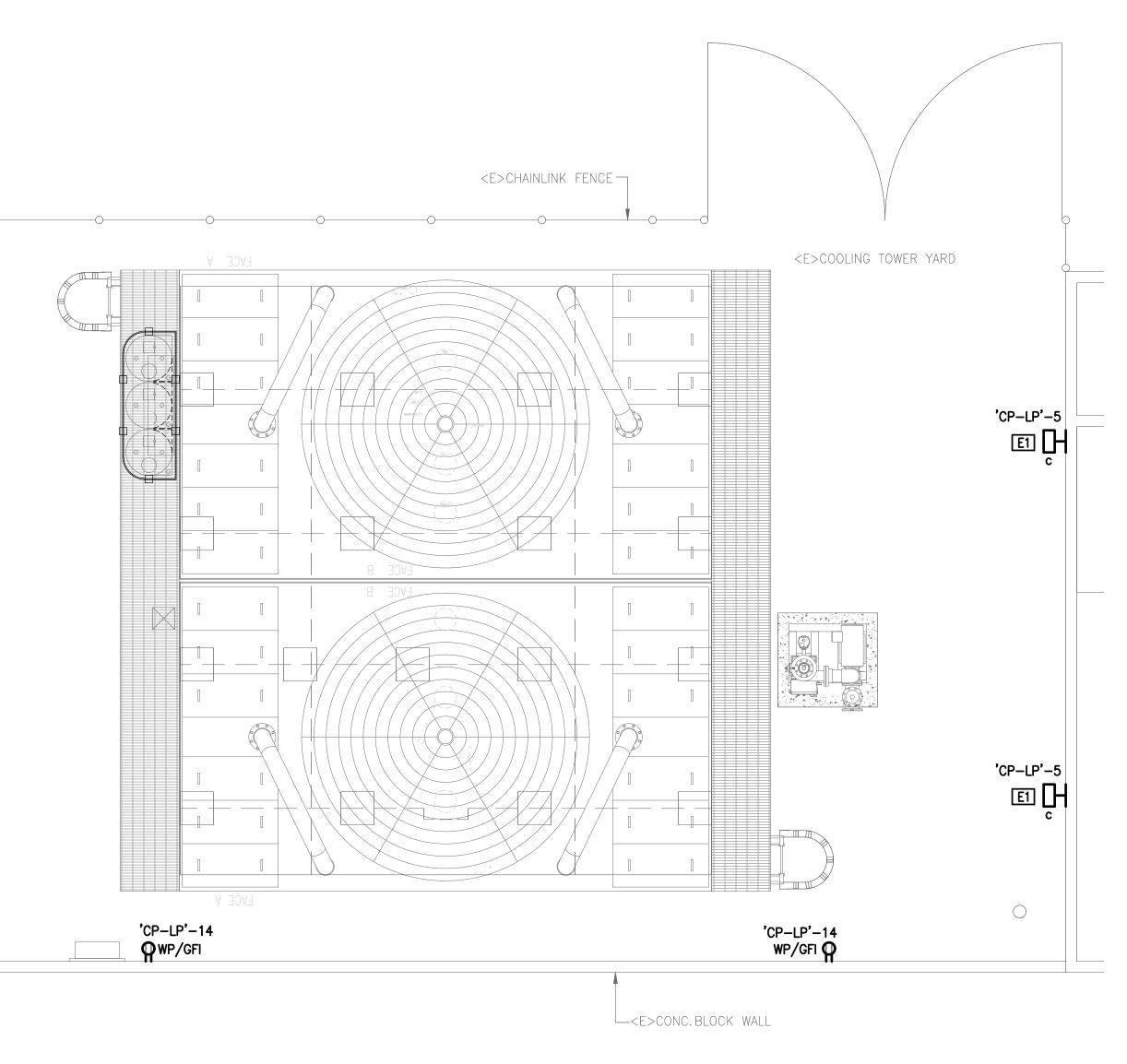




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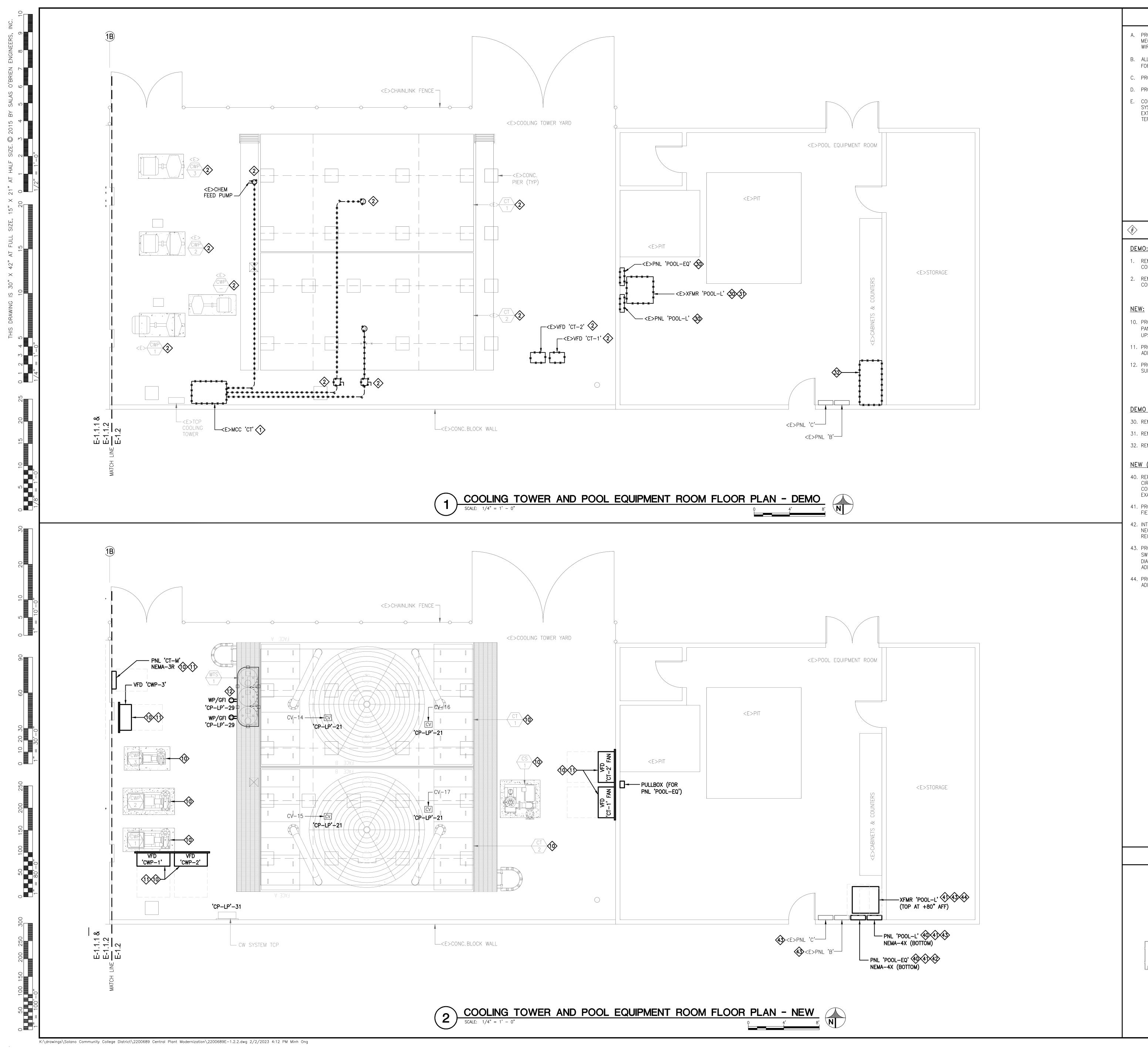




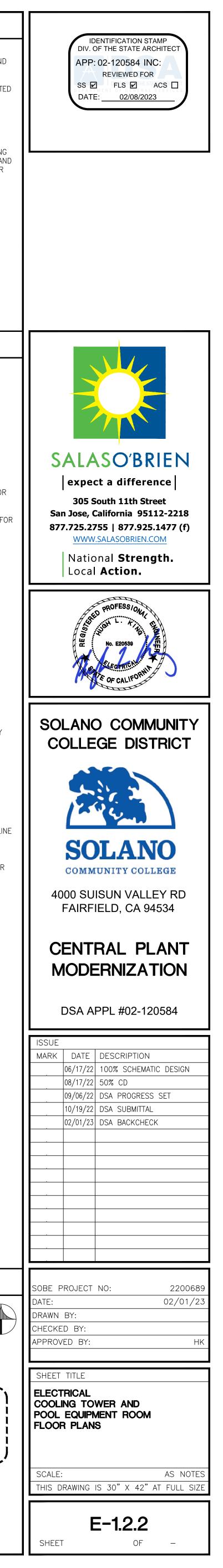
А. В.	PROVIDE POWER TO ALL NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL PLANS AND SINGLE LINE DIAGRAM. INCLUDE NEW CONDUIT AN WIRE FROM EXISTING ELECTRICAL PANELS, U.O.N. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, #10 MINIMUM, RAT FOR 600V, THHN/THWN.
C. D. E.	PROVIDE LIGHTING AND RECEPTACLES WITHIN CENTRAL PLANT AREA. PROVIDE POWER TO MECHANICAL SENSORS, VALVES, AND CONTROL UNITS. CONTRACTOR RESPONSIBLE FOR MAINTAINING CONNECTIVITY TO ALL EXISTIN SYSTEMS AFFECTED BY DEMO AND NEW WORK, INCLUDING INTERCEPTING A EXTENDING EXISTING CIRCUITS AS NEEDED. CONTRACTOR RESPONSIBLE FOR TERMINATIONS AND RETESTING OF SYSTEMS.
 < <u>#</u> >	PROVIDE AND INSTALL 12-HOUR MECHANICAL TIMER-SWITCH.
	KEY PLAN
	E-1.2.1

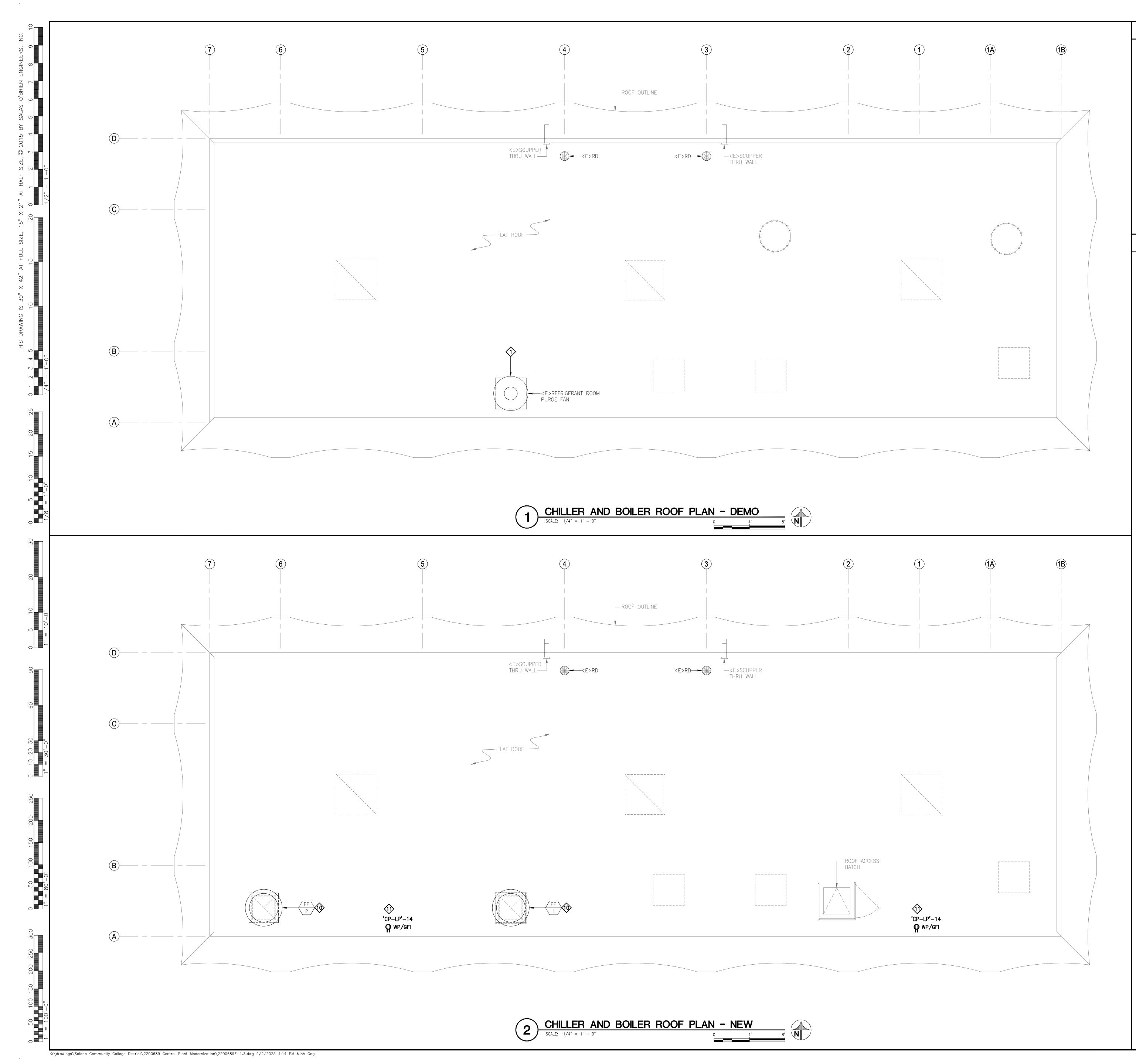
GENERAL SHEET NOTES

ID FED	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT APP: 02-120584 INC: REVIEWED FOR SS ☑ FLS ☑ ACS □ DATE: 02/08/2023
IG AND R	
	Image: Constraint of the second state of the second sta
	Local Action. Local Action.
	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
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	SHEET TITLE ELECTRICAL COOLING TOWER FLOOR PLAN POWER & LIGHTING
	SCALE: AS NOTES THIS DRAWING IS 30" X 42" AT FULL SIZE E-1.2.1 SHEET OF -



	GENERAL SHEET NOTES
Α.	PROVIDE POWER TO ALL NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL PLANS AND SINGLE LINE DIAGRAM. INCLUDE NEW CONDUIT AND
В.	WIRE FROM EXISTING ELECTRICAL PANELS, U.O.N. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, #10 MINIMUM, RATED
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$\langle \# \rangle$	REFERENCE SHEET NOTES
DE	<u>MO:</u>
1.	REMOVE EXISTING EQUIPMENT ALONG WITH ALL INCOMING AND OUTGOING CONDUITS AND WIRING.
2.	REMOVE EXISTING EQUIPMENT ALONG WITH ASSOCIATED CONDUITS AND CONDUCTORS.
<u>NE</u>	<u>W:</u>
10.	PROVIDE AND INSTALL NEW FEEDER FROM UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE TO EQUIPMENT. REFER TO SINGLE LINE DIAGRAM FOR
11	UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE AND DETAILS. PROVIDE AND INSTALL NEW EQUIPMENT. REFER TO SINGLE LINE DIAGRAM FOR
	ADDITIONAL INFORMATION. PROVIDE AND INSTALL POWER CIRCUIT AND RECEPTACLES WITH UNISTRUT
	SUPPORT FOR WATER TREATMENT SYSTEM.
	MO (BID ALTERNATE #1): REMOVE EXISTING EQUIPMENT.
	REMOVE EXISTING INCOMING AND OUTGOING FEEDERS.
	REMOVE EXISTING CABINETS AS NECESSARY.
	W (BID ALTERMATE #1): REPLACE EXISTING PANELBOARD WITH NEW. INTERCEPT ALL EXISTING LOAD
	CIRCUITS AND EXTEND TO NEW PANELBOARD. MATCH EXISTING WIRE, CONDUIT, AND BREAKER SIZES. REFER TO PANEL SCHEDULE. FIELD VERIFY EXACT NUMBER OF BRANCH CIRCUIT LOADS.
41.	PROPOSED LOCATION FOR NEW EQUIPMENT: FIELD VERIFY LOCATION AND ADJUST AS NECESSARY.
42.	INTERCEPT EXISTING INCOMING FEEDER AND EXTEND TO EQUIPMENT AS NECESSARY. REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL
43.	REQUIREMENTS. PROVIDE AND INSTALL NEW FEEDER AND CONDUIT FROM UPSTREAM
	SWITCHBOARD/ PANELBOARD/ DEVICE TO EQUIPMENT. REFER TO SINGLE LINE DIAGRAM FOR UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE AND ADDITIONAL REQUIREMENTS.
44.	PROVIDE AND INSTALL TRANSFORMER. REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
	KEY PLAN
	N
	E-1.2.2





GENERAL SHEET NOTES

- A. PROVIDE POWER TO ALL NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL PLANS AND SINGLE LINE DIAGRAM. INCLUDE NEW CONDUIT AND WIRE FROM EXISTING ELECTRICAL PANELS, U.O.N.
- B. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, #10 MINIMUM, RATED FOR 600V, THHN/THWN.
- C. PROVIDE LIGHTING AND RECEPTACLES WITHIN CENTRAL PLANT AREA.
- D. PROVIDE POWER TO MECHANICAL SENSORS, VALVES, AND CONTROL UNITS.E. CONTRACTOR RESPONSIBLE FOR MAINTAINING CONNECTIVITY TO ALL EXISTING
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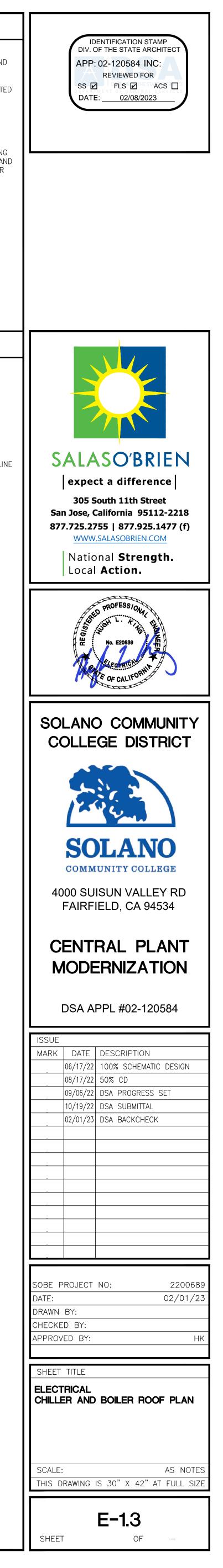
REFERENCE SHEET NOTES

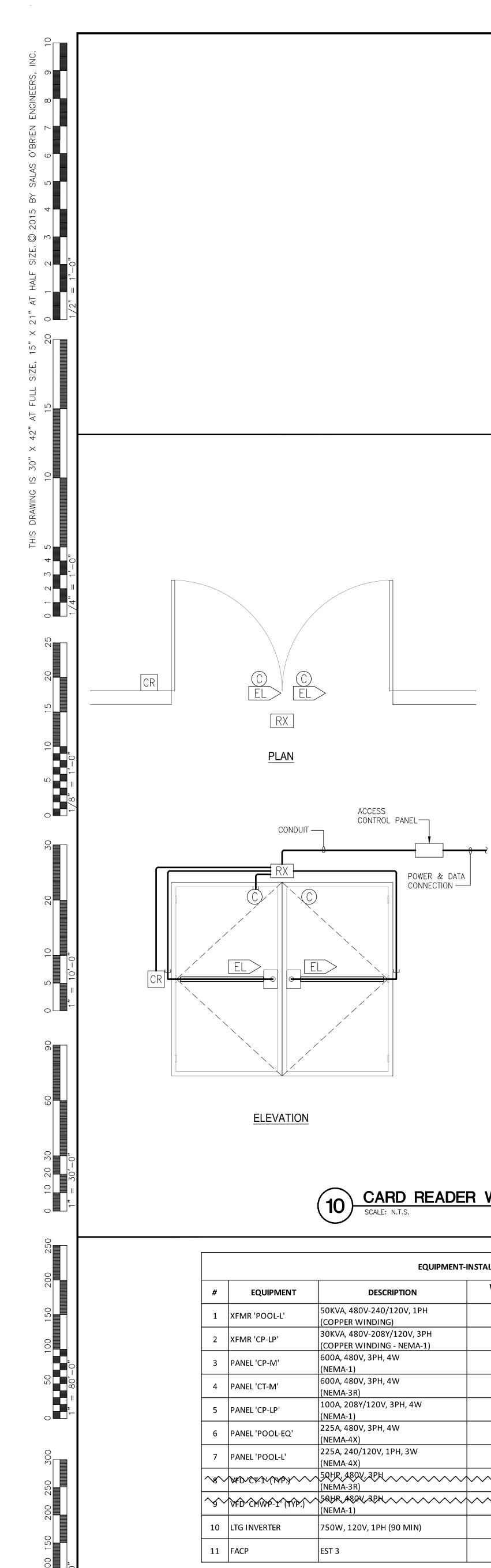
<u>DEMO:</u>

1. REMOVE EXISTING CONDUIT AND WIRES FROM EQUIPMENT TO UPSTREAM PANELBOARD.

<u>NEW:</u>

- 10. PROVIDE AND INSTALL NEW WIRES AND CONDUIT FROM UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE TO EQUIPMENT. REFER TO SINGLE LINE DIAGRAM FOR UPSTREAM SWITCHBOARD/ PANELBOARD/ DEVICE AND ADDITIONAL REQUIREMENTS.
- 11. PROVIDE AND INSTALL SUPPORT FOR RECEPTACLE AS NECESSARY.





LEGEND:	
CR C RX	CARD READER MAGNETIC DOO REQUEST-TO-I ELECTRICAL LO

SEQUENCE OF OPERATION:

- 1. NORMAL DOOR STATE IS CLOSED AT ALL TIMES.
- THE PROTECTED SIDE.
- 3. TO OPEN DOOR FROM NON-PROTECTED SIDE, CARD MUST BE PRESENTED TO UNLOCK DOOR.
- 4. REQUEST TO EXIT MOTION DETECTOR BYPASS ALARM ONLY ON EXIT.

NOTES:

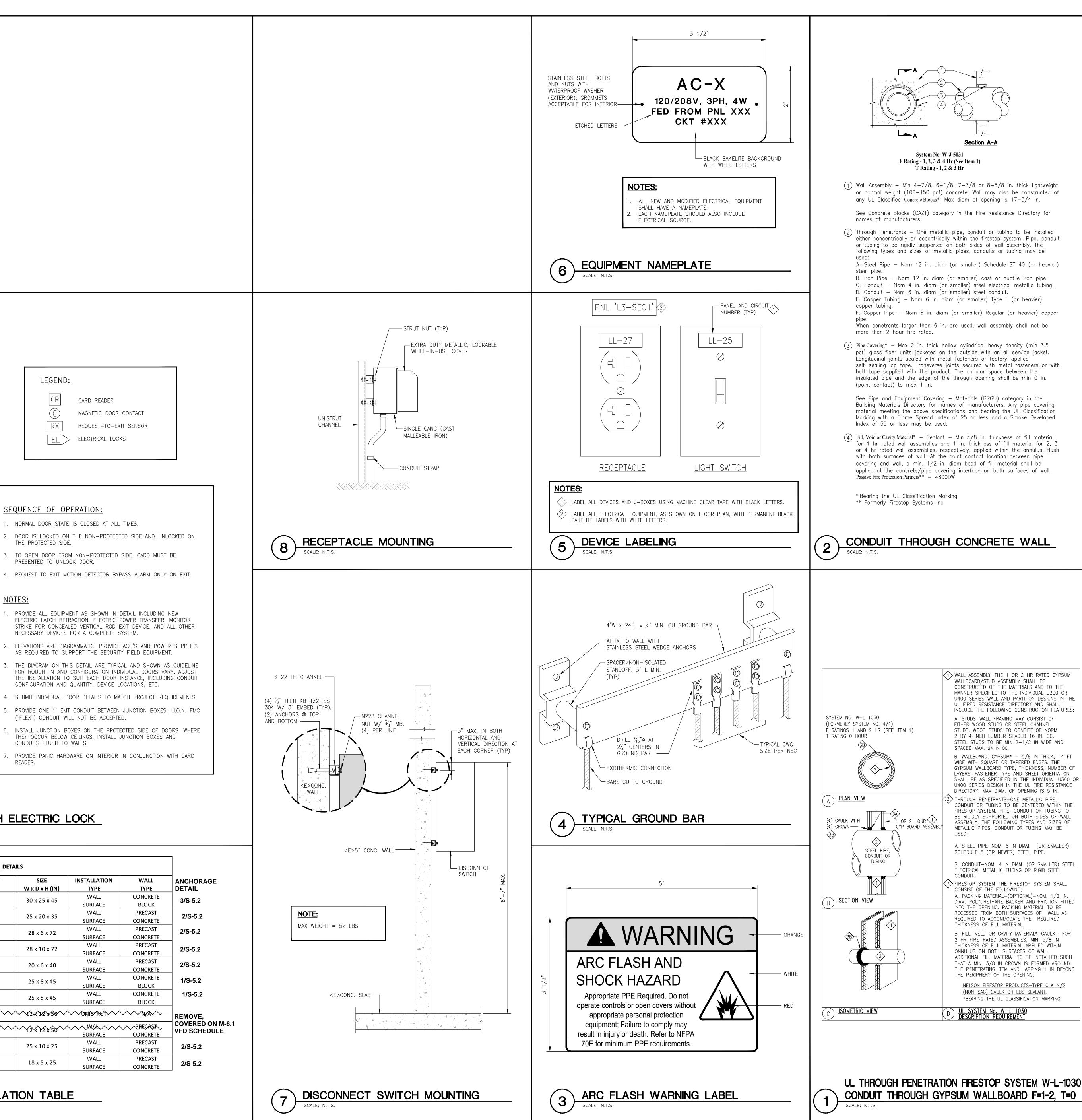
- 1. PROVIDE ALL EQUIPMENT AS SHOWN IN DETAIL INCLUDING NEW ELECTRIC LATCH RETRACTION, ELECTRIC POWER TRANSFER, MONITOR STRIKE FOR CONCEALED VERTICAL ROD EXIT DEVICE, AND ALL OTHER NECESSARY DEVICES FOR A COMPLETE SYSTEM.
- 2. ELEVATIONS ARE DIAGRAMMATIC. PROVIDE ACU'S AND POWER SUPPLIES AS REQUIRED TO SUPPORT THE SECURITY FIELD EQUIPMENT.
- 3. THE DIAGRAM ON THIS DETAIL ARE TYPICAL AND SHOWN AS GUIDELINE FOR ROUGH-IN AND CONFIGURATION INDIVIDUAL DOORS VARY. ADJUST THE INSTALLATION TO SUIT EACH DOOR INSTANCE, INCLUDING CONDUIT CONFIGURATION AND QUANTITY, DEVICE LOCATIONS, ETC.
- 4. SUBMIT INDIVIDUAL DOOR DETAILS TO MATCH PROJECT REQUIREMENTS.
- 5. PROVIDE ONE 1' EMT CONDUIT BETWEEN JUNCTION BOXES, U.O.N. FMC ("FLEX") CONDUIT WILL NOT BE ACCEPTED.
- 6. INSTALL JUNCTION BOXES ON THE PROTECTED SIDE OF DOORS. WHERE THEY OCCUR BELOW CEILINGS, INSTALL JUNCTION BOXES AND CONDUITS FLUSH TO WALLS.
- 7. PROVIDE PANIC HARDWARE ON INTERIOR IN CONJUNCTION WITH CARD READER.

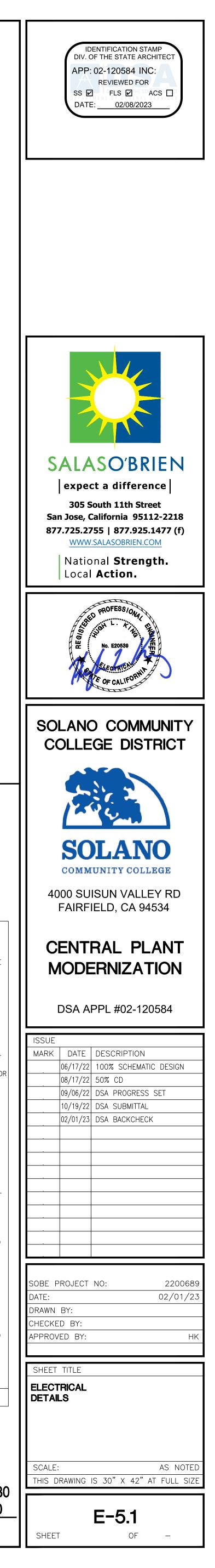
CARD READER WITH ELECTRIC LOCK

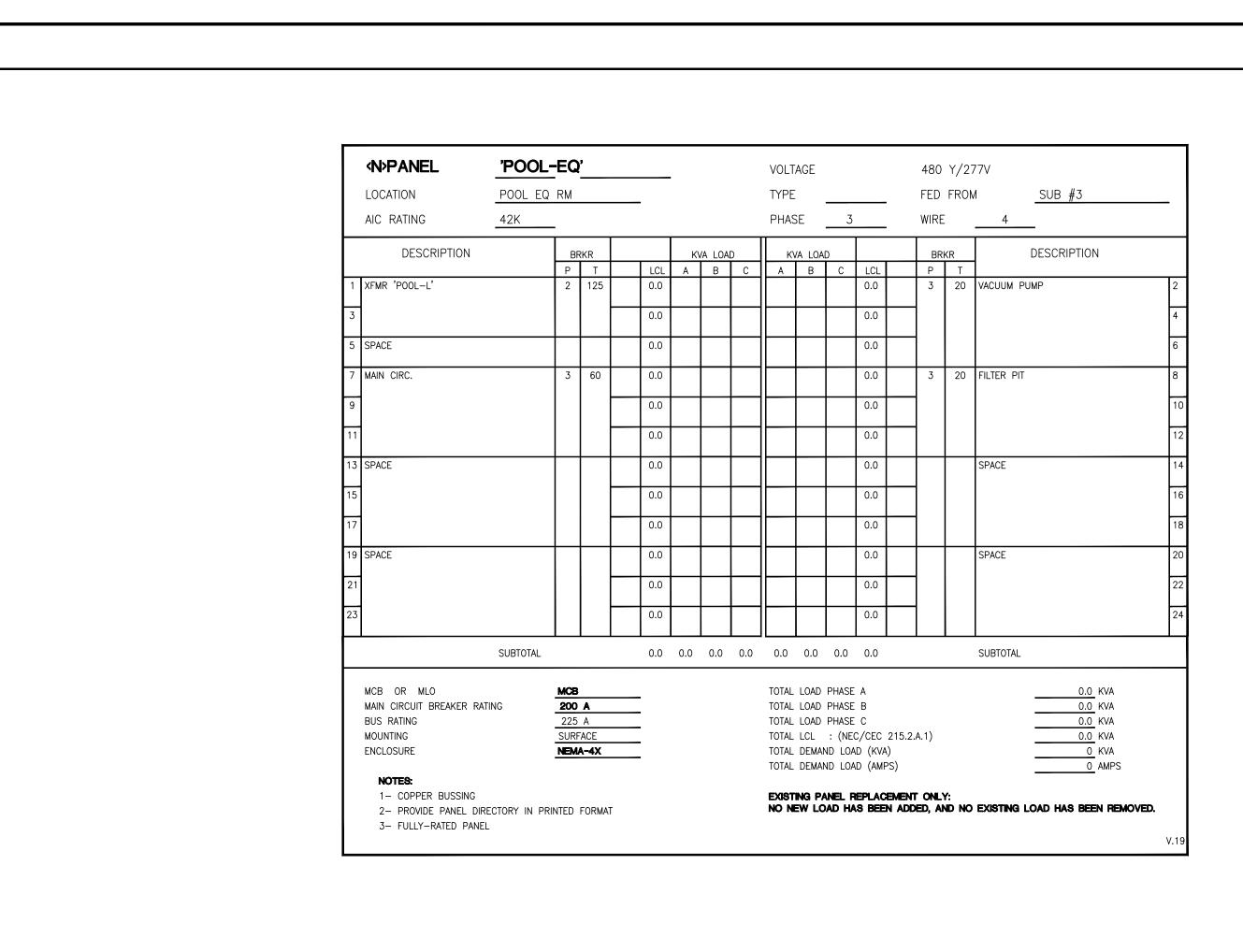
		EQUIPMENT-	INSTALLATION DETA	ILS	
#	EQUIPMENT	DESCRIPTION	WEIGHT (LBS)	SIZE W x D x H (IN)	INSTALLATION TYPE
1	XFMR 'POOL-L'	50KVA, 480V-240/120V, 1PH (COPPER WINDING)	900	30 x 25 x 45	WALL SURFACE
2	XFMR 'CP-LP'	30KVA, 480V-208Y/120V, 3PH (COPPER WINDING - NEMA-1)	500	25 x 20 x 35	WALL SURFACE
3	PANEL 'CP-M'	600A, 480V, 3PH, 4W (NEMA-1)	400	28 x 6 x 72	WALL SURFACE
4	PANEL 'CT-M'	600A, 480V, 3PH, 4W (NEMA-3R)	400	28 x 10 x 72	WALL SURFACE
5	PANEL 'CP-LP'	100A, 208Y/120V, 3PH, 4W (NEMA-1)	75	20 x 6 x 40	WALL SURFACE
6	PANEL 'POOL-EQ'	225A, 480V, 3PH, 4W (NEMA-4X)	200	25 x 8 x 45	WALL SURFACE
7	PANEL 'POOL-L'	225A, 240/120V, 1PH, 3W (NEMA-4X)	200	25 x 8 x 45	WALL SURFACE
$\sim 8 \sim$	₩ŕĎ≁ĊŦŕĨŀイŢŧᡟ₽;ϒ╲╲╲	50HR, 480V, 3PH (NEMA-3R)	~~~ <u>1</u> 00~~~~	V12x112x58V	~~~DWISTRUT
\sim	VFD~CHWP-Y^(YYP.)~	50HR #80V 3PH		<u>^12x12x58</u>	SURFACE
10	LTG INVERTER	750W, 120V, 1PH (90 MIN)	250	25 x 10 x 25	WALL SURFACE
11	FACP	EST 3	35	18 x 5 x 25	WALL SURFACE
					SURFACE

EQUIPMENT INSTALLATION TABLE SCALE: N.T.

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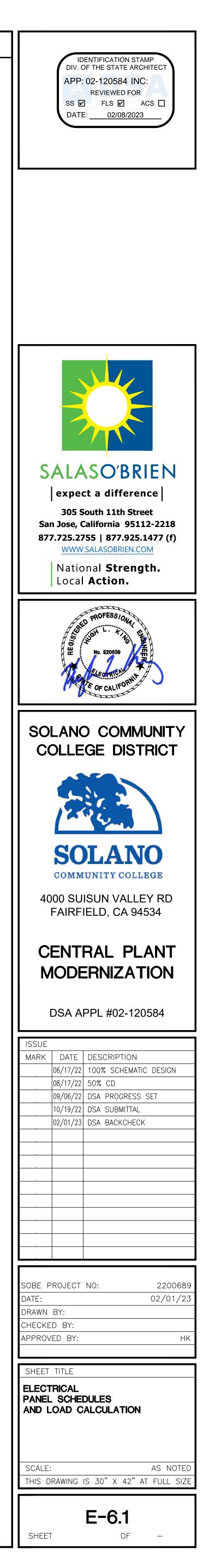
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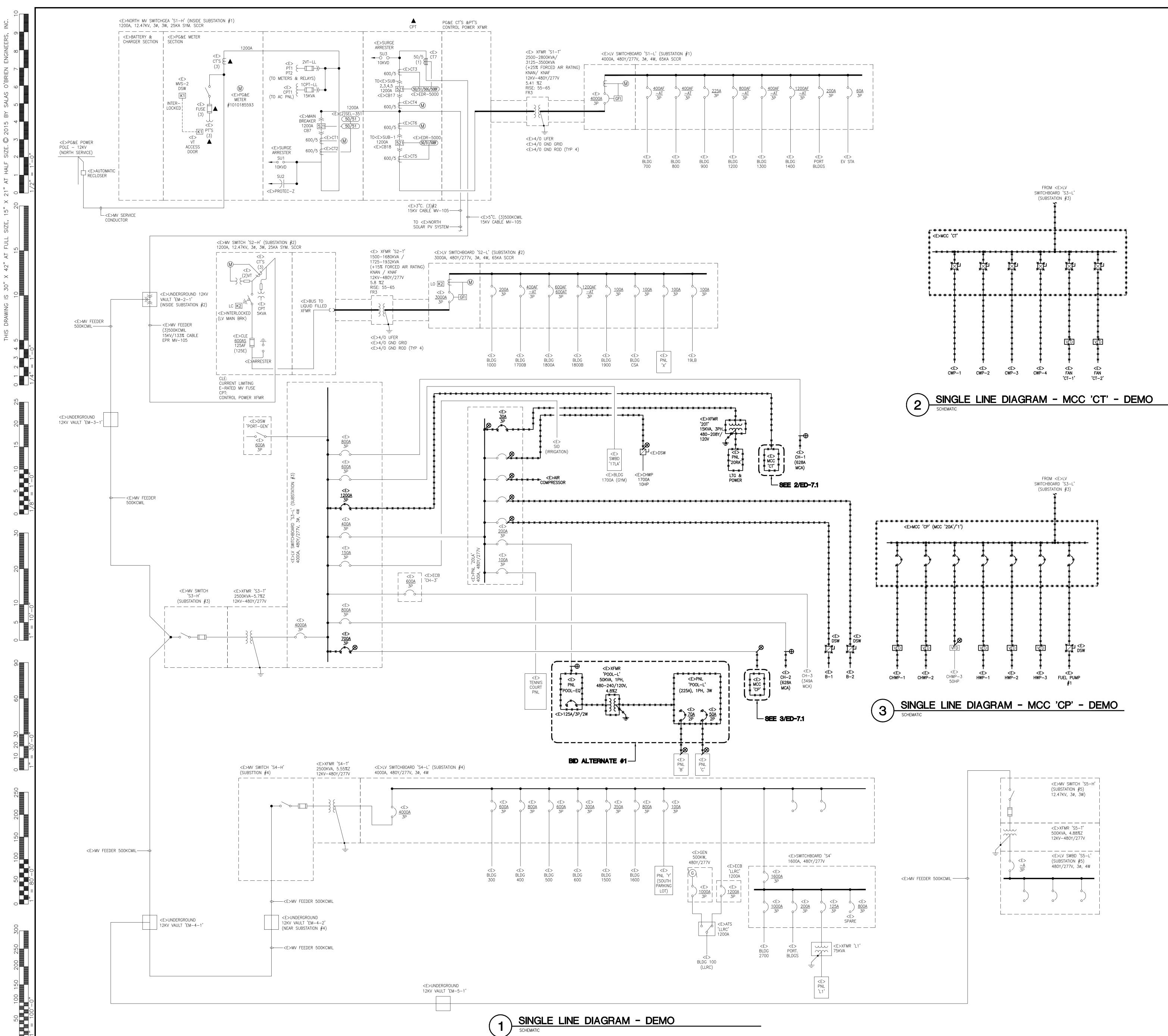
PANEL SCHEDULES

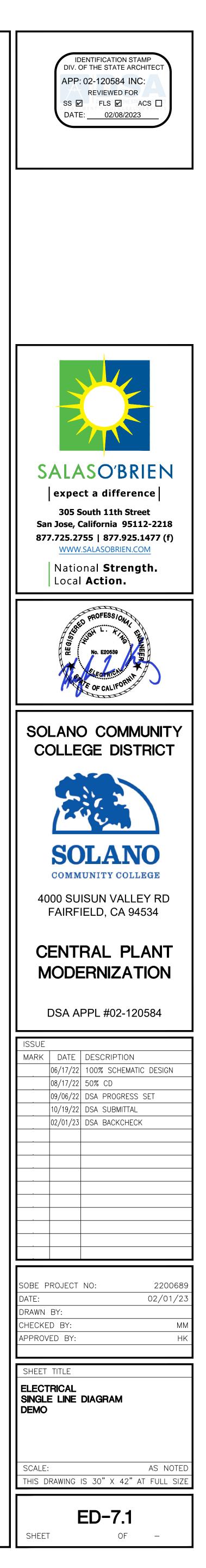
		•	/ \ \													
											Γ	ELECTRICAL LOAD CA	I CUILATIONS - FX	STING SUBSTAT	ION #3	
											-		LCOLATIONS - EX	ISTING SOBSTAT		
	<u>'CP</u>	-LP'	_		VOLTAGE				Y/120V				HP/UNIT	KVA/UNIT	QTY	SUB-TOTAL LOAD (KVA)
LOCATION <u>CP</u> AIC RATING <u>10K</u>					TYPE PHASE	3		WIRE	FROM <u>XFMR 'CP-</u>	<u></u>		LIGHTING (CP):				
DESCRIPTION	BRKR			LOAD	KVA LO	_		BRK	CR DESCRIPTION			3,830 SF @ 2VA/SF LTG LOAD @ 125%		8 10	1	10
1 LTG- CHILLER RM	P T 1 20	LC X 0.1		B C	A B		LCL 0.0	P		2		GENERAL RECEPTACLES (CP): 3,830 SF @ 1VA/SF		4		
3 LTG- BOILER RM	1 20	X 0.1		0.5	0.5		0.0		20 REC- CHILLER RM 20 REC- CHILLER RM	4		1ST 10KVA @ 100%		4	1	4
5 LTG- OUTDOOR - CP & CT AREA & AST T-SW CTRL	1 20	X 0.		0.4			0.0		20 REC- CHILLER RM	6		MECHANICAL EQUIPMENT (CP): <n> CH-1:</n>				
7 <e>LTG- OUTDOOR</e>	1 20	X 0.2			0.5		0.0		20 REC- BOILER RM	8		- 370HP - 475A MCA - 477A FLC @ 480V - NEC TABLE	370	397	1	397
9 <e>LTG- OUTDOOR</e>	1 20	X 0.2		0.8	0.5	,	0.0	1	20 REC- BOILER RM	10		<n> CH-2: - 370HP - 475A MCA</n>	370	397	1	397
11 LTG- INVERTER	1 20	0.0		0.5		0.5	0.0	1	20 REC- BOILER RM	12		- 477A FLC @ 480V - NEC TABLE <e> CH-3:</e>				
13 CV & CTRL PNL (CH-1)	1 20	0.0	0.5		0.5		0.0	1	20 REC- COOLING TWR & RO	F16		- 236HP - 349A MCA - 285A FLC @ 480V - NEC TABLE	236	237	1	237
CV & CTRL PNL (CH-2)	1 20	0.0		0.5	0.5	,	0.0	1	20 FACP	18		<n> CHWP-1 (50HP) - FED BY <n> PNL 'CP-M' <n> CHWP-2 (50HP) - FED BY <n> PNL 'CP-M'</n></n></n></n>	50 50	54 54	1 1	54 54
CV & CTRL PNL (CH-3)	1 20	0.0		0.5	\parallel	0.5	0.0	1	20 DATA SYSTEM	20		<e> CHWP-3 (50HP) - FED BY <n> PNL 'CP-M' <n> GAS BOILER-1 (2HP) - FED BY <n> PNL 'CP-M'</n></n></n></e>	50 2	54 3	1 1	54 3
OIL HEATER (CH-3)	1 20	0.0					0.0		20 SPARE	22		<n> GAS BOILER-2 (2HP) - FED BY <n> PNL 'CP-M' <n> GAS BOILER-3 (2HP) - FED BY <n> PNL 'CP-M'</n></n></n></n>	2 2	3 3	1 1	3 3
CV (CT CW ISOLATION)	1 20	0.0		1.0	\parallel		0.0		20 SPARE	24		<n> HHWP-1 (30HP) - FED BY <n> PNL 'CP-M' <n> HHWP-2 (30HP) - FED BY <n> PNL 'CP-M'</n></n></n></n>	30 30	33 33	1 1	33 33
CV (HHW BYPASS) 25	1 20	0.0		0.3	╢─┼─		0.0		20 SPARE	26		<n> HHWP-3 (30HP) - FED BY <n> PNL 'CP-M' <n> CT-1 (50HP FAN) - FED BY <n> PNL 'CT-M'</n></n></n></n>	30 50	33 54	1 1	33 54
27 TEMP CTRL PNL (CHW SYS) & RMS TEMP CTRL PNL (HHW SYS)	1 20	0.0		0.3	\parallel		0.0		20 SPARE 20 SPARE	28		<n> CT-2 (50HP FAN) - FED BY <n> PNL 'CT-M' <n> CS-1 (15HP PUMP) - FED BY <n> PNL 'CT-M'</n></n></n></n>	50 15	54 17	1 1	54 17
29 CHEM W. TREAT SYS	1 20	0.0		1.0			0.0		20 SPARE	30		<n> CWP-1 (50HP) - FED BY <n> PNL 'CT-M' <n> CWP-2 (50HP) - FED BY <n> PNL 'CT-M'</n></n></n></n>	50 50	54 54	1 1	54 54
31 TEMP CTRL PNL (CW SYS)	1 20	0.0	0.3	1.0			0.0		20 SPARE	32		<n> CWP-3 (30HP) - FED BY <n> PNL 'CT-M' <n> EF-1 (3/4HP) - FED BY <n> PNL 'CP-M'</n></n></n></n>	25 0.75	28 1	1 1	28 1
33 SPARE	1 20	0.0)				0.0		20 SPARE	34		<n> EF-2 (5HP) - FED BY <n> PNL 'CP-M' <n> IDF-1 (4HP) - FED BY <n> PNL 'CP-M'</n></n></n></n>	5 4	6 5	1 1	6 5
35 SPARE	1 20	0.0					0.0		20 SPARE	36		NON-COINCIDENT LOADS:				
37 SPACE		0.0					0.0		SPACE	38						
39 SPACE 41		0.0			$\parallel \perp$		0.0		SPACE	40		OTHER LOADS: <e> BUILDING 1700A (600A MCB - 480V @ 60%) <e> TENNIS COURT (100A MCB - 480V @ 60%)</e></e>		299 50	1	299 50
41 SPACE		0.0		,			0.0		SPACE	*2		<e> TENNIS COURT (100A MCB - 480V @ 60%) <e> POOL EQ (200A MCB - 480V @ 60%) <e> SID (2x30HP - 480V)</e></e></e>	30	50 100 33	1 1 2	50 100 67
SUBTOTA	L	0.7	3.0	3.1 2.6	1.6 1.6	1.6	0.0		SUBTOTAL			<e> SID (2X30HP - 480V) <e> CHWP-1700A (10HP - 480V) - FED BY <n> PNL 'CP-M'</n></e></e>	30 10	33 12	2	12
MCB OR MLO MAIN CIRCUIT BREAKER RATING	MCB 100 A				TOTAL LOAE TOTAL LOAE				4.6			- FED BY <n> PNL 'CP-M' <e> WH-POOL (54KW - 480V) - FED BY <n> PNL 'CT-M'</n></e></n>		54	1	54
BUS RATING MOUNTING	100 A SURFACE				TOTAL LOAE TOTAL LCL	D PHASE C : (NEC/	C /CEC 215.2		4.2 0.7	/A /A		- FED BY <n> PNL 'CT-M' LARGEST MOTOR @ 25%:</n>				
ENCLOSURE	NEMA-1				total dei Total dei				14 39			<n> CH-1 (370HP) @ 25%</n>		99	1	99
NOTES: 1– PROVIDE & INSTALL RED LOCK 2– COPPER BUSSING	ON DEVICE FOR	R FACP BRI	EAKER (CK	T #16).												EXISTING SUBSTATION #
3– PROVIDE PANEL DIRECTORY IN 4– FULLY RATED PANEL	PRINTED FORMAT	-											7	TOTAL DEMAND	LOAD (KVA) =	2,268
5- DOOR-IN-DOOR CONSTRUCTION	N									V.19			DEMAND LO	DAD AMPS @ 12	2.47KV - 3PH =	105
													DEMANI	D LOAD AMPS @	9 480V - 3PH =	2,729
													SYSTEM	CAPACITY (A) @) 480V - 3PH =	4,000
	POOL-L'				VOLTAGE		040	0 /120					I REMAINING	CAPACITY (A) @	480V - 3PH =	1271 (32%)
			—		TYDE		240			FO'						
_	OOL EQ RM		_		TYPE PHASE				FED FROM: PNL 'POOL	EQ'				TRANSFORME	R SIZE (KVA) =	2,500
_	OOL EQ RM			KVA LOAD	PHASE	<u> </u>	BR	RKR	FED FROM: PNL 'POOL	<u>EQ'</u>				TRANSFORME	R SIZE (KVA) = ACITY (KVA) =	2,500 2,500
AIC RATING 10	OOL EQ RM			KVA LOAD A B	PHASE	<u> </u>	BR LCL P	RKR	FED FROM: <u>PNL 'POOL</u> WIRE <u>3</u> DESCRIPTION	EQ'2				TRANSFORME	ACITY (KVA) =	
AIC RATING 10 DESCRIPTION	OOL EQ RM OK BRI P	T LC	L		PHASE		BR LCL P	RKR T 20	FED FROM: <u>PNL 'POOL</u> WIRE <u>3</u> DESCRIPTION	EQ' 4				TRANSFORME SYSTEM CAP	ACITY (KVA) =	2,500
AIC RATING 10 DESCRIPTION	OOL EQ RM OK BR P 2	T LC 70	L 0.0		PHASE	1 0.0	BR LCL P 2 -	RKR T 20	FED FROM: <u>PNL 'POOL</u> WIRE <u>3</u> DESCRIPTION SPARE	EQ' 2 4 6		ELECTRICAL LOA		TRANSFORME SYSTEM CAP REMAINING CAP	Pacity (KVA) = Pacity (KVA) =	2,500
AIC RATING 10 DESCRIPTION 1 PNL 'B' 3 5 PNL 'C' 7	OOL EQ RM OK BR P 2	T LC 70 -	0.0		PHASE	1 0.0 0.0 0.0	BR LCL P 2 -	RKR T 20 - 30	FED FROM: <u>PNL 'POOL</u> WIRE <u>3</u> DESCRIPTION SPARE	EQ' 2 4 6 8		ELECTRICAL LOA		TRANSFORME SYSTEM CAP REMAINING CAP	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%)
AIC RATING 10 DESCRIPTION 1 PNL 'B' 3	OOL EQ RM OK BR P 2 C C C C C C C C C C C C C C C C C C	T LC 70 - 50	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0	BR LCL P 2 - 2 2 - 2 2 2 2	RKR 20 - 30 - 20	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT	EQ' 2 4 6 8 10		ELECTRICAL LOA		TRANSFORME SYSTEM CAP REMAINING CAP	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK BR P 2 C C C C C C C C C C C C C C C C C C	T LC 70 - 50 - 20 -	L 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	BR LCL P 2 - 2 2 - 2 2 2 - 2 2 -	RKR T 20 - 30 - 20 -	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE	EQ'		MECHANICAL EQUIPMENT (CP):		TRANSFORME SYSTEM CAP REMAINING CAP	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA)
AIC RATING 10 DESCRIPTION 1 PNL 'B' 3 5 PNL 'C' 7	OOL EQ RM OK BR P 2 C C C C C C C C C C C C C C C C C C	T LC 70	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 - 2 2 -	RKR T 20 - 30 - 20 - 20	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE FLOOD LIGHT	EQ' 2 4 6 8 10 12 14		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP)</n></n>	AD CALCULATION HP/UNIT	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	BR LCL P 2 - 2 2 - 2 - 2 2 - 2 2 - 2 2 -	RKR T 20 - 30 - 20 - 20 -	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT FLOOD LIGHT SPARE FLOOD LIGHT SPARE	EQ'		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP)</n></e></n></n>	AD CALCULATION HP/UNIT	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	BR LCL P 2 - 2 2 - 2 - 2 2 - 2 2 - 2 2 -	RKR T 20 - 30 - 20 - 20 - 30 - 30 - 30	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT FLOOD LIGHT SPARE FLOOD LIGHT SPARE	EQ' 2 4 6 8 10 12 12 14 16 18		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP)</n></n></n></e></n></n>	AD CALCULATION 50 50 50 2 2 2 2 2	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 54 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 54 3 3 3
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK DK P 2 - -	T LC 70 - 50 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		PHASE	1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 30 - 30 - 30 - -	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT FLOOD LIGHT SPARE FLOOD LIGHT SPARE	EQ' 2 4 6 8 10 12 14 16 18 20 22		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP)</n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 3 3 3 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3 3 3 3 3 3 3 3 3
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK DK P 2 - -	T LC 70	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 30 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - - 20 - - 20 - - - - - - - - - - - - -	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE FLOOD LIGHT SPARE SPARE SPARE	EQ' 2 4 6 8 10 10 12 12 14 16 18 20 22		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-3 (30HP) <n> EF-1 (3/4HP)</n></n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 54 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 54 3 3 3 3 3 3 3 3 3 1
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK DK P 2 - -	T LC 70 - 50 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 30 - 20 - 20 20 20 20 20	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE FLOOD LIGHT SPARE SPARE SPARE SPARE SPARE SUMP CONTROL	EQ' 2 4 6 8 10 10 12 12 14 16 18 20 20 22 24 24		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-3 (30HP)</n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 3 3 3 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3 3 3 3 3 3 3 3 3 3 3 3 3 3
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70 - 50 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 30 - 20 - 20 20 20 20 20	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE FLOOD LIGHT SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE SUMP CONTROL NEW ADDITION	EQ' 2 4 6 8 10 12 12 14 16 18 20 22 24 24 28		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-3 (30HP) <n> EF-1 (3/4HP) <n> EF-1 (3/4HP) <n> IDF-1 (4HP) NON-COINCIDENT LOADS:</n></n></n></n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 3 3 3 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3 3 3 3 3 3 3 3 3 3 1 6
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 30 - 20 20 20 20 20 20 20 20	FED FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD LIGHT SPARE FLOOD LIGHT SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE SUMP CONTROL NEW ADDITION	EQ' 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-2 (30HP) <n> HHWP-3 (30HP) <n> EF-1 (3/4HP) <n> EF-2 (5HP) <n> IDF-1 (4HP)</n></n></n></n></n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 3 3 3 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3 3 3 3 3 3 3 3 3 3 1 6
AIC RATING 10 DESCRIPTION 1 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 20 20	FED_FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD_LIGHT SPARE FLOOD_LIGHT SPARE SPARE SPARE SUMP_CONTROL NEW_ADDITION NEW_ADDITION	EQ' 2 4 6 8 10 12 14 16 18 20 22 24 24 26 30 32		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-2 (30HP) <n> EF-1 (3/4HP) <n> EF-1 (3/4HP) <n> EF-1 (4HP) NON-COINCIDENT LOADS: N/A.</n></n></n></n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 3 3 3 3 3 3 3 3	ΆCITY (KVA) = ΆCITY (KVA) = /Ι'	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 54 3 3 3 3 3 3 3 3 3 3 1 6
AIC RATING 10 DESCRIPTION 1 PNL 'B' 3	OOL EQ RM OK P 2 -	T LC 70	0.0 0.0		PHASE	1 0.0	BR LCL P 2 - 2 - 2 - 2 - 2 2 - 2 - 2 2 - 2 2	RKR T 20 - 30 - 20 - 30 - 20 - 30 - 20 - 30 - 20 20 20 <tbr> </tbr> <	FED_FROM: PNL 'POOL WIRE 3 DESCRIPTION SPARE A/C FLOOD_LIGHT SPARE FLOOD_LIGHT SPARE SUMP_CONTROL NEW ADDITION FLOODS FLOODS	EQ' 2 4 6 8 10 12 14 16 18 20 21 24 20 22 24 26 28 30 32 34		MECHANICAL EQUIPMENT (CP): <n> CHWP-1 (50HP) <n> CHWP-2 (50HP) <e> CHWP-3 (50HP) <n> GAS BOILER-1 (2HP) <n> GAS BOILER-2 (2HP) <n> GAS BOILER-3 (2HP) <n> HHWP-1 (30HP) <n> HHWP-2 (30HP) <n> HHWP-3 (30HP) <n> EF-1 (3/4HP) <n> IDF-1 (4HP) NON-COINCIDENT LOADS: N/A.</n></n></n></n></n></n></n></n></e></n></n>	AD CALCULATION HP/UNIT 50 50 50 50 2 2 2 2 30 30 30 30 30 30 30 30 30 30	TRANSFORME SYSTEM CAP REMAINING CAP IS - PANEL 'CP-N KVA/UNIT 54 54 54 54 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ACITY (KVA) = ACITY (KVA) = A' QTY 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2,500 232 (9%) SUB-TOTAL LOAD (KVA) 54 54 54 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
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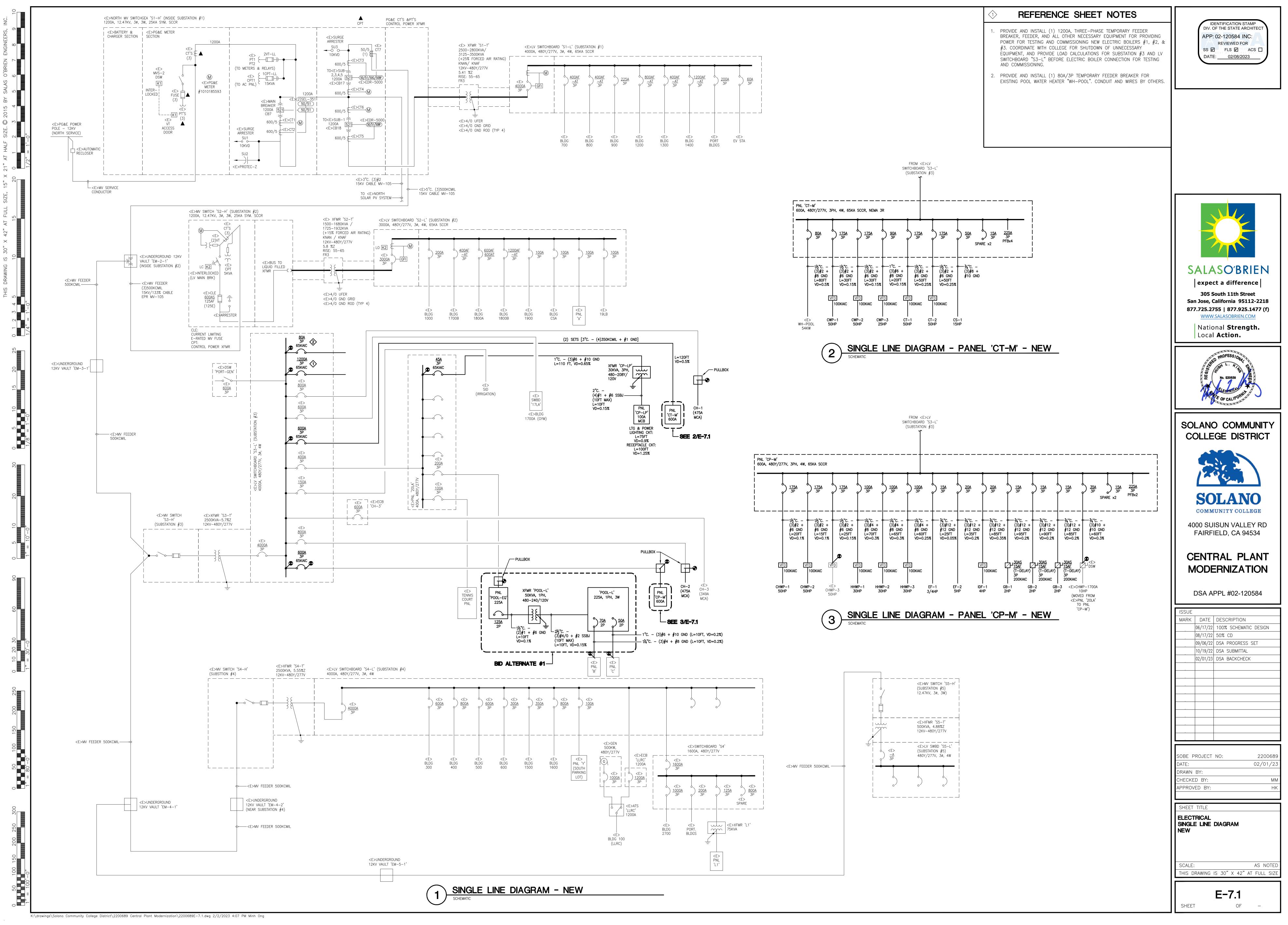
LOAD CALCULATION

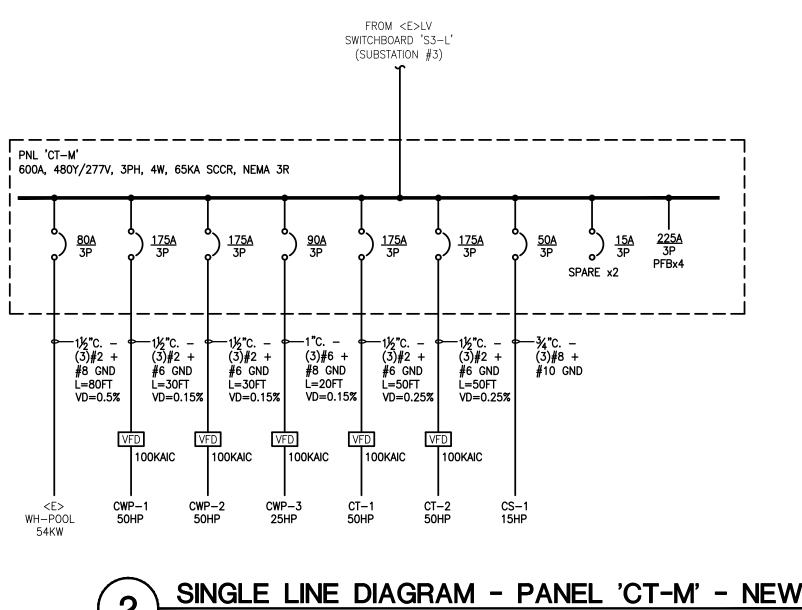
	<n> PANEL</n>	'POOL-	Ľ			_			VOLT	AGE			240	/120	٥v
	LOCATION	POOL EQ	RM			-			TYPE						FED FROM: PNL
	AIC RATING	10K							PHAS	SE	1				WIRE 3
	DESCRIPTION		BR P	KR T			KVA A	LOAD B		LOAD B		LCL	BR# P	(R T	DESCRIPTI
1	PNL 'B'		P 2	70	LCL	0.0	A	D	A	D	0.0	LUL	2	20	SPARE
3			_	-		0.0					0.0		_	-	
5	PNL 'C'		2	50		0.0					0.0		2	30	A/C
7			_	-		0.0					0.0		_	-	
9	FLOOD LIGHT		2	20		0.0					0.0		2	20	FLOOD LIGHT
11			-	-		0.0					0.0		-	-	SPARE
13	FLOOD LIGHT		2	20		0.0					0.0		2	20	FLOOD LIGHT
15			_	-		0.0					0.0		_	-	SPARE
17	FLOOD LIGHT		2	20		0.0					0.0		2	30	SPARE
19			-	-		0.0					0.0		-	-	
21			2	20		0.0					0.0		1	20	SUMP CONTROL
23			_	-		0.0					0.0		1	20	NEW ADDITION
25	TIME CLOCK		1	20		0.0					0.0		1	20	NEW ADDITION
27	CHEM MIXER		1	20		0.0					0.0		1	20	
29	CHEM FEEDER		1	20		0.0					0.0		1	20	FLOODS
31			1	20		0.0					0.0		1	20	
33	– COPE BOARD		1	20		0.0					0.0		1	20	
35	CHLORINATOR		1	20		0.0					0.0		1	20	LIGHTS
37	OLD CONTROLLER		1	20		0.0					0.0		1	20	
39			1	20		0.0					0.0		1	20	SUMP 2
41			1	20		0.0					0.0		1	20	
		SUBTOTAL		-		0.0	0	0	0	0	0.0			-	SUBTOTAL
	MCB OR MLO MAIN CIRCUIT BREAKER RATING BUS RATING MOUNTING ENCLOSURE NOTES:		225 SURF	AMPS AMPS ACE A-4X					TOTAL TOTAL TOTAL	LOAD LCL PANEI	LOAD			1)	
	1– COPPER BUSSING 2– PROVIDE PANEL DIRECTORY 3– FULLY–RATED PANEL	' IN PRINTED F	ORMA	T								REPLAC AS BEE			Y: Nd no existing load has

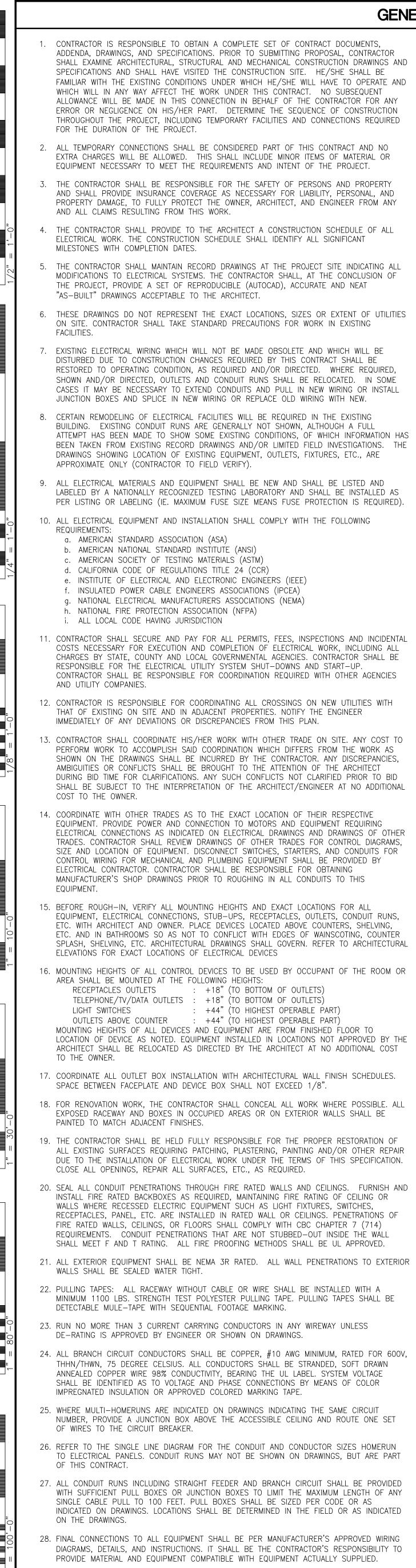












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GENERAL NOTES

- 29. DO NOT COMBINE DIFFERENT SYSTEM VOLTAG 277/480V), UNLESS APPROVED BY ENGINEER
- 30. ELECTRICAL SYSTEMS SHALL BE INSTALLED F AND PROOF OF TORQUE DURING FINAL INSPE CONDUCTORS TO ELECTRICAL EQUIPMENT AND TIGHTENED TO THE MANUFACTURER'S RECOMI
- 31. CIRCUIT BREAKER TERMINALS IN SWITCHBOARD APPROVED FOR USE WITH COPPER 75 DEGRE
- 32. SIZES OF BREAKERS, SWITCHES, FUSES AND SIZES. THESE SIZES SHALL BE ADJUSTED TO OR SUBSTITUTE EQUIPMENT. UP SIZING OR E WITHOUT ADDITIONAL COST TO THE OWNER.
- 33. AS REQUIRED ALL OVERSIZED FEEDERS THAT VOLTAGE DROP SHALL BE PROVIDED WITH AD SHALL BE PROVIDED IF SIZE IS AVAILABLE. SPLICE BOX TO REDUCE CABLES TO THE MAX ACCOMMODATE.
- 34. CONTRACTOR SHALL BE RESPONSIBLE FOR AL COMPACTION AND PATCHING OF CONCRETE A USE EXTREME CAUTION WHEN TRENCHING NE CONTRACTOR SHALL PROVIDE ALL REQUIRED NECESSARY TO RESTORE DAMAGED SURFACES CONDITIONS EXISTING AT THE START OF WORK
- 35. ALL ELECTRICAL EQUIPMENT SHALL BE BRACE ACTING IN ANY DIRECTION IN ACCORDANCE W OF ASCE7.
- 36. ALL INTERIOR AND ABOVE GRADE EXTERIOR GALVANIZED STEEL, UNLESS EXCEPTED BY NO
- 37. ELECTRICAL METALLIC TUBING (EMT) MAY BE INTERIOR APPLICATIONS, SMALLER THAN 2" T FEET FROM FINISHED FLOOR OR HIGHER, OR TRADE SIZE DIAMETER AND ENTERING A PANE
- 38. CONNECTIONS TO VIBRATING EQUIPMENT (MOTO SEISMIC SEPARATIONS SHALL BE PROVIDED W WATERTIGHT CONNECTORS. MAXIMUM LENGTH OTHERWISE NOTED.
- 39. POLYVINYL CHLORIDE (PVC) SCHEDULE 40 MA UNDERGROUND INSTALLATION. INSTALL PVC C FROM UNDERGROUND TO ABOVE GRADE INSTA
- 40. CONTRACTOR SHALL PROVIDE TERMINATIONS OUTLET LOCATIONS INDICATED ON DRAWINGS.
- 41. CONTRACTOR SHALL PROVIDE AND INSTALL AC WHERE REQUIRED TO ACCESS ELECTRICAL EG SHALL HAVE FIRE RATING EQUAL TO THE CEI
- 42. ALL FIRE LIFE SAFETY EQUIPMENT, SUCH AS POWER SUPPLIES SHALL BE PROVIDED WITH DESIGNATION AND PROVIDE PERMANENT LABEL PANEL. PROVIDE LOCKABLE CIRCUIT BREAKER.
- 43. CONTROL CONDUIT FOR ENERGY/BUILDING MA PROVIDED AND INSTALLED BY ELECTRICAL COI
- 44. ROUTE CONDUIT PARALLEL AND PERPENDICUL CONDUIT TO MAINTAIN HEADROOM AND TO PR
- 45. WHEN A DISCREPANCY IN QUANTITY OR SIZE BREAKERS, ETC., ARISES ON THE DRAWINGS RESPONSIBLE FOR PROVIDING AND INSTALLING STRINGENT CONDITIONS NOTED ON THE DRAWI COMPLETE AND OPERABLE SYSTEM, OR AS DI
- 46. FOR SMALL AC MOTORS NOT HAVING BUILT-I MANUAL MOTOR STARTERS WITH OVERLOAD HE RECOMMENDATION. FOR SMALL AC MOTORS WI PROVIDE A HORSEPOWER RATED TOGGLE DISC
- 47. DISCONNECT SAFETY SWITCHES SHALL BE HEA POLES, VOLTAGE, CURRENT AND HORSEPOWE
- PROTECTION BASED ON THE MOTOR NAMEPLA 48. PROVIDE PERMANENT IDENTIFICATION (NAMEPLA SWITCHBOARDS, MOTOR CONTROL CENTERS, CABINETS, ETC.
- 49. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH APPROVED LIGHTING FIXTURES OF CEILING. PROVIDE ALL NECESSARY MOUNTING WORKING LIGHTING SYSTEM.
- 50. ALL FINAL ELECTRICAL CONNECTIONS TO OWNE THE ELECTRICAL CONTRACTOR.
- 51. ALL SPLICES AND TERMINALS SHALL BE COMI TIN PLATED, LONG BARREL, INSPECTION WIND NEMA DRILLING). CLEAN ALL SURFACES AND BURNDY PENETROX-E OR EQUAL. APPLY CO BETWEEN CONDUCTOR AND LUG BARREL. IN CIRCUMFERENTIAL COMPRESSION DIE BURNDY
- 52. LABEL ALL CONDUIT WHERE IT BEGINS, AND DEVICE, LOAD, OR DISCONNECT. CONDUIT S CONDUIT SHALL BE LABELED WHERE IT PENETI PERMANENT PRINTED LABELS (DESCRIBING SOURCE, CIRCUIT, AND LOAD) LEGIBLE FROM FLOOR WHERE POSSIBLE (STANDING POSITION).
- 53. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT OR INSTALLATION METHODS.
- 54. PROVIDE ARC-FLASH HAZARD WARNING LABELS ON ALL AFFECTED ELECTRICAL EQUIPMENT, INCLUDING SWITCHBOARDS, PANEL BOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS. MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS. LABEL SHALL BE FACTORY PRE-PRINTED OR MACHINE-PRINTED SELF-ADHESIVE VINYL MATERIAL; UV, CHEMICAL, WATER, HEAT AND ABRASION RESISTANT; PRODUCED USING MATERIALS RECOGNIZED BY UL 969. MINIMUM SIZE: 3.5 BY 5 INCHES.
- 55. UNLESS OTHERWISE NOTED. ARRANGE, PAY FOR, COORDINATE AND PROVIDE ALL PERMITS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
- 56. ALL WORK IS <N> UNLESS OTHERWISE NOTED. 57. ELECTRICAL CONDUCTORS SERVING EQUIPMENT SUPPLIED BY POWER CONVERSION EQUIPMENT AS PART OF A VARIABLE FREQUENCY DRIVE (VFD) SYSTEM AND/OR A SERVO DRIVE SYSTEM SHALL HAVE THERMOSET INSULATION TYPE XHHW, OR XHHW-2.
- 58. WORK SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 33 OF CBC & CFC "FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION".
- 59. NON-METALLIC RACEWAY COLOR TO BE COORDINATED WITH DISTRICT.

	FIRE ALARM GEI	NERAL NOTES	SYMBOLS & ABBREVIATIONS
LTAGES IN SAME CONDUIT (EG., 120/208V VS. NEER OR SHOWN ON DRAWINGS. D FOR FINAL INSPECTIONS. PROVIDE NEUTRAL TEST NSPECTION FOR ALL UNITS. FINAL TERMINATIONS OF AND DEVICES SHALL BE TORQUE WRENCH COMMENDED SPECIFICATION, NO EXCEPTION. OARDS AND LOAD CENTER SHALL BE UL LISTED AND EGREE CELSIUS CONDUCTORS. AND FEEDERS ARE BASED ON DESIGNED EQUIPMENT TO SATISFY REQUIREMENTS OF ACTUAL INSTALLED OR DOWNSIZING OF FEEDERS SHALL BE PROVIDED R. HAT WERE ADJUSTED IN SIZE TO COMPENSATE FOR 4 ADAPTER LUGS OR SPLICE BOX. ADAPTER LUGS E. OTHERWISE PROVIDE CABLE SPLICES IN THE MAXIMUM SIZE THAT THE BREAKER LUGS CAN R ALL SAW-CUTTING, TRENCHING, BACKFILLING, E AND ASPHALT AS REQUIRED TO COMPLETE WORK. NEAR EXISTING UNDERGROUND UTILITY LINES. EED CUTTING, PATCHING, PAINTING, AND REPAIRS ACES TO EQUAL OR BETTER THAN ORIGINAL WORK.	 FIRE ALARM GEI ALL WORK IS NEW UON. CONCEAL CONDUITS ABOVE CEILING AND BEHIND WALLS. WHERE EXPOSED, OBTAIN APPROVAL FROM ENGINEER. ALL WIRING SHALL BE IN CONDUITS UON. UNDERGROUND AND OUTDOOR CONDUITS SHALL BE IN CONDUITS UND. UNDERGROUND AND OUTDOOR RATED. USE SHIELDED WIRES FOR INITIATION CIRCUITS ROUTED UNDERGROUND EXPOSED CONDUITS SHALL BE PAINTED TO MATCH FINISH. FIRE ALARM DEVICES SHALL BE SYNCHRONIZED. PROVIDE MODULES AND WIRES AS NECESSARY. ALL REQUIREMENTS OF CONTRACT SPECIFICATIONS AND DRAWINGS APPLY. SEE MANUFACTURER FIELD WIRING SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS. 120VAC 60HZ INPUT POWER FOR FIRE ALARM CONTROL SHALL BE A DEDICATED CIRCUIT WITH LOCKING BREAKER PROPERLY LABELED OR "EMERGENCY POWER FROM THE MAIN DISTRIBUTION PANEL AND LOCAL LOCKABLE BREAKER AT FACP, & TAC PANELS. ALL WIRING, INCLUDING SHIELDS, MUST BE DRY AND FREE OF SHORTS AND GROUNDS. NO SPLICES SHALL BE MADE IN UNDERGROUND BOXES. PROVIDE DISTRICT WITH ONE COPY OF "AS BUILT" DRAWINGS SHOWING LOCATION MAY BE MAINTAINED. 	 NERAL NOTES 27. FIRE ALARM CONTRACTOR SHALL PROVIDE A "PERMANENT RECORDS" TO THE INSPECTOR OF RECORD (IOR) / DSA AND DISTRICT AFTER SUCCESSFUL COMPLETION OF ACCEPTANCE TESTS. (2016 NFPA 72 SEC. 10.18.2 & FIGURE 10.18.2.1.1). 28. TITLE 24 PART I ADMINISTRATIVE REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE FOLLOWING SECTIONS AND THEIR SUB SECTIONS SHALL APPLY. A. ADMINISTRATION OF CONSTRUCTION. B. INSPECTOR AND CONTINUOUS INSPECTION PER SECTION 4–333(b) AND 4–342. C. SUPERVISION BY DSA PER SECTION 4–334. D. VERIFIED REPORTS PER SECTION 4–336. E. ADDENDA AND CHANGES PER SECTION 4–338. F. DSA IS NOT SUBJECT TO ARBITRATION. 29. UPON COMPLETION OF SYSTEM INSTALLATION, THE SYSTEM SHALL BE TESTED IN THE PRESENCE OF AND IN A MANNER ACCEPTABLE TO DSA/IOR. THE CONTRACTOR TO SUPPLY NECESSARY TESTING EQUIPMENTS INCLUDING A "DECIBEL METER" TO CHECK ACCEPTABLE NOISE LEVEL OF AUDIBLE DEVICES. PROVIDE TEST RESULTS PER NFPA 72 TO ENGINEER, DSA, IOR, OWNER AND TO THE LOCAL FIRE AUTHORITY. 30. PENETRATIONS OF ALL FIRE–RATED WALLS SHALL BE PROTECTED IN ACCORDANCE WITH THE CALIFORNIA BUILDING CODE, PART 2. PROVIDE DETAILS AND UL DESIGN NUMBERS. 	SYMBOLS & ABBREVIATIONS Image: provide the streng back-up Image: provide the streng back back back back back back back back
RACED OR ANCHORED TO RESIST HORIZONTAL FORCE EWITH THE REQUIREMENTS OF THE LATEST EDITION OR CONDUIT INSTALLATION SHALL BE RIGID Y NOTE 37 BELOW. BE USED IN THE FOLLOWING CONDITIONS: 2" TRADE SIZE DIAMETER AND INSTALLED EIGHT (8) OR INTERIOR APPLICATIONS, SMALLER THAN 2" PANEL FROM ABOVE. (MOTOR, TRANSFORMER ENCLOSURE, ETC.) AND D WITH LIQUID—TIGHT FLEXIBLE STEEL CONDUIT WITH GTH OF CONDUIT SHALL BE SIX FEET, UNLESS 0 MAY BE INSTALLED BENEATH SLAB AND C COATED RIGID STEEL CONDUIT FOR TRANSITION NSTALLATION. NS FOR ALL DATA/VOICE CABLES INDICATED AT IGS. L ACCESS PANELS IN NON—ACCESSIBLE CEILINGS - EQUIPMENT IN CEILING SPACE. ACCESS DOORS CEILING ASSEMBLY IN WHICH THEY ARE INSTALLED. AS FIRE ALARM CONTROL PANEL AND REMOTE ITH DEDICATED CIRCUITS. IDENTIFY CIRCUIT ABELING, "FIRE ALARM CIRCUIT" ON ELECTRICAL	 120VAC IS NOT PERMITTED IN SAME CONDUIT WITH LOW VOLTAGE WIRING. FA CONDUIT SHALL BE DEDICATED TO THE FA SYSTEM. DO NOT APPLY POWER EXCEPT IN THE PRESENCE OF A FACTORY TRAINED MANUFACTURER TECHNICAL REPRESENTATIVE. ANY SMOKE DETECTOR HEAD INSTALLED BEFORE BUILDING IS CLEANED AND ACCEPTED SHALL BE COVERED TO PROTECT FROM DUST. ANY FALSE ALARMS DUE TO DIRT CONTAMINATED HEADS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. THERE WILL BE NO CONDUIT ENTRY ALLOWED 18" OR LOWER ON THE SIDE PANELS OR THROUGH THE BOTTOM OF ALL CONTROL EQUIPMENT BACKBOXES. MANUAL PULL STATIONS SHALL BE MOUNTED NO HIGHER THAN 48" ABOVE FINISHED FLOOR. VISIBLE NOTIFICATION APPLIANCES MOUNTING HEIGHTS SHALL BE AS PER DRAWINGS. FINAL FIRE ALARM TEST SHALL BE MADE WITH THE DSA INSPECTOR OF RECORD (IOR). LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF DATE AND TIME OF FINAL FIRE ALARM TEST ING AND SHALL ASSIST / WITNESS SUCH TESTING WHEN ABLE. ALL WIRE, PANEL AND DEVICE TERMINATIONS, CONDUIT, PHYSICAL MOUNTING, ETC., SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. U.L. CERTIFICATION FOR THE FIRE ALARM SYSTEM WILL BE PROVIDED BY MANUFACTURER. AUDIBLE FIRE ALARM EVACUATION SIGNAL SHALL BE A UNIFORM CODED 	 RECORD RECEIPT OF ALL SIGNALS TO CENTRAL STATION MONITOR. CONTRACTOR SHALL REFER TO FIRE ALARM SPECIFICATIONS AND DISTRICT STANDARDS FOR ADDITIONAL FIRE ALARM SYSTEM INSTALLATION REQUIREMENTS. COORDINATE FLOW AND TAMPER SWITCHES WITH FIRE SPRINKLER INSTALLER. SUPERVISING STATION: AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72, AS AMENDED BY CFC CHAPTER 47. THE SUPERVISION STATION SHALL BE LISTED AS EITHER UUFX OR UUJS BY UNDERWRITERS LABORATORY OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. IF ROUTING DIFFERS SIGNIFICANTLY FROM THESE PLANS, APPROVAL FROM DSA AND THE PROJECT ELECTRICAL ENGINEER MUST BE OBTAINED BEFORE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT & OBTAIN DSA APPROVAL AT NO ADDITIONAL COST TO THE DISTRICT. AFTER CONSTRUCTION, PROVIDE ACCURATE FIELD RECORD DRAWINGS TO OWNER. T-TAPPING IS NOT ALLOWED. AUDIBLE DEVICES SHALL BE NOT LESS THAN 75 DBA AT 10 FEET OR MORE THAN 110 DBA IN TOTAL THROUGHOUT. AUDIBLE SOUND LEVELS SHALL ALSO BE AT LEAST 15 dBA ABOVE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIED AREAS. AUDIBLE DEVICES SHALL SOUND LEVEL IN ALL OCCUPIED AREAS. AUDIBLE DEVICES SHALL SOUND LEVEL IN ALL OCCUPIED AREAS. AUDIBLE DEVICES SHALL SOUND THE CALIFORNIA UNIFORM FIRE ALARM SIGNAL IN TEMPORAL MODE, THREE DISTINCTIVE FIRE ALARM SOUND. 	CSFMCALIFORNIA STATE FIRE MARSHALDACTDIGITAL ALARM COMMUNICATOR TRANSMITTER; SECURITY PANELPIVPOST INDICATOR VALVE <e>EXISTING<n>NEW (BOLD)<r>REMOVERPSREMOTE POWER SUPPLYUONUNLESS OTHERWISE NOTEDFACPFIRE ALARM CONTROL PANELTACTRUEALERT ADDRESSABLE CONTROLLER (RPS)TPTWISTED PAIR (SHIELDED)TPSTRUEALERT POWER SUPPLYVPVANDAL PROOFWGWIRE GUARDWPWEATHERPROOF</r></n></e>
KER. S MANAGEMENT SYSTEM (E/BMS) SHALL BE CONTRACTOR. ICULAR TO WALLS AND ADJACENT PIPING. ARRANGE D PRESENT A NEAT APPEARANCE. SIZE OF CONDUIT, WIRE, EQUIPMENT, CIRCUIT GS OR SPECIFICATIONS, CONTRACTOR SHALL BE LING ALL MATERIAL REQUIRED BY THE MOST IRAWINGS OR IN THE SPECIFICATIONS TO PROVIDE A S DIRECTED BY ENGINEER. LT-IN THERMAL OVERLOAD PROTECTION, PROVIDE D HEATER ELEMENTS SIZED PER MANUFACTURER'S IS WITH BUILT-IN THERMAL OVERLOAD PROTECTION, DISCONNECT SWITCH. HEAVY DUTY AND BE RATED FOR THE NUMBER OF DWER RATING AS REQUIRED. PROVIDE FUSE EPLATE RATINGS. MEPLATES) FOR ALL ELECTRICAL PANELS, IS, DISCONNECT SWITCHES, TRANSFORMERS, TERMINAL E TO VERIFY TYPE OF CEILING SYSTEMS AND TO DF THE TYPE REQUIRED FOR MOUNTING IN SUBJECT TING KIT/HARDWARE TO PROVIDE A COMPLETE OWNER FURNISHED EQUIPMENT SHALL BE MADE BY COMPRESSION TYPE, OF SEAMLESS PURE COPPER, WINDOW, TERMINALS WITH TWO-HOLE PAD (WITH AND INSTALL WITH OXIDE INHIBITING COMPOUND Y COMPOUND BETWEEN BUS BAR AND LUG PAD AND INSTALL COMPRESSION CONNECTORS WITH A FULLY NDY HYPRESS OR EQUAL. ND WHERE IT TERMINATES INTO A BOX, PANEL, T SHALL BE LABELED EVERY 30 FEET OR LESS. 'ENETRATES ANY WALL OR FLOOR. LABEL SHALL BE	 THREE - PULSE TEMPORAL PATTERN PER NTPA-72. ALL CONDUITS SHALL HAVE COMPRESSING TYPE. MINIMUM SIZE 3/4". PAINT ALL CONDUITS TO MATCH THE WALLS. PAINT JUNCTION BOXES RED. COORDINATE WITH DISTRICT PAINT STANDARDS. UNDERGROUND AND EXTERIOR CONDUITS WILL HAVE WATER-TIGHT FITTINGS (CEC 110-11 AND 300-6). AUDIBLE FIRE ALARM SOUND LEVEL SHALL BE AT LEAST 15dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIABLE AREAS. (2016 NFPA 72 SEC. 18,4.3.1) (i.e. CLASSROOM AVERAGE AMBIENT ROOM NOISE IS 45dBA PLUS 15dBA EQUALS = 60dBA MINIMUN ALARM TONE REQUIRED). STROBE SHALL FLASH AT A RATE OF NOT EXCEEDING TWO FLASHES PER SECOND NOT BE LESS THAN ONE FLASH EVERY SECOND. (2016 NFPA 72 SEC. 18.5.2.1). AT THE END OF THE WORKDAY, REMOVE ALL DEBRIS AND CLEAN THE WORK AREA. IN AREAS WHERE CONDUIT CAN NOT BE CONCEALED, ALL CONDUITS IN THE CORRIDORS AND CLASSROOMS SHALL BE INSTALLED ON WALLS, CLOSED TO THE CEILING AND THEY SHOULD BE EITHER PARALLEL OR 90 DEGREE TO THE WALLS. USE OF CEILING FOR SUPPORT OF CONDUITS HAS TO BE APPROVED BY THE ENGINEER. MARK THE LOCATION OF ALL DEVICES (USE DIFFERENT COLOR TAPE FOR DIFFERENT DEVICES) AND CONDUIT RUN AT SITE. THE LOCATION OF DEVICES AND CONDUIT RUN MUST BE APPROVED BY THE ENGINEER / INSPECTOR PRIOR TO INSTALLATION. TAG ALL WIRE AT JUNCTION BOXES AND AT TERMINATION, AND LABEL ALL DEVICES. AS THE DRAWINGS ARE SCHEMATICS IN NATURE, AFTER FINALIZING THE LOCATION OF THE DEVICES AND THE CONDUIT RUN THE INSTRUCT. THEY WILL PROVIDE YOU WITH THE INFORMATION ABOUT THE EXISTENCE OF LEAD-BASED PAINT OR ASBESTOS IN THE WORK AREA. FOLLOW THEIR DIRECTION TO MEET THE STATE AND CITY REQUIREMENTS TO WORK IN AND AROUND CONTAMINATED AREAS. 	 38. CONTRACTOR MUST SUBMIT RESULT OF THE SOUND TEST TO THE PROJECT ELECTRICAL ENGINEER AND MAY BE REQUIRED TO RELOCATE OR ADD AUDIEL DEVICES TO MEET THE DBA REQUIREMENT. CONTRACTOR BID SHALL INCLUDE (5) SPARE OF EACH TYPE OF SIGNALING & INITIATION DEVICES WITH CONNECTION TO FACP AS REQUIRED (I.E. SPEAKER, SPEAKER STROBE, DETECTOR). 39. BASED ON ORIGINAL STRUCTURAL DRAWINGS THE 1ST FLOOR CEILING HEIGHT: 21'. INTERSECTING BEAMS, CORRUGATED 2ND FLOOR DECK. EAST TO WEST BEAM ON THE COLUMN LINES ARE 23.9" DEEP THE INTERSECTING BEAMS RUNNING NORTH TO SOUTH ARE 17.9" DEEP WITH SOME INTERMEDIATE BEAMS AT 15.69" DEEP. 40. BASED ON NFPA-72 THE BEAM DEPTH RATIO TO CEILING HEIGHT IS LESS THAN 10% DEEP. FOR BEAMS OR INTERSECTING BEAMS: CEILING OR BOTTOM OF BEAMS, FOR SOLID JOISTS: BOTTOM OF JOISTS. 41. REFERENCE SHEET GOO1 FOR ADDITIONAL NOTES AND REQUIREMENTS. 42. NOT ALL DEVICES ARE SHOWN IN THESE DRAWINGS AND IT SHALL BE THE CONTRACTORS RESPONSIBILITY FOR A COMPLETE AND OPERATIONAL SYSTEM UPON COMPLETION MEETING NFPA-72 REQUIREMENTS AND ALL APPLICABLE CODES ALONG WITH ANY LOCAL JURISDICTION REQUIREMENTS - A "TURN KEY" SOLUTION. 43. THERE SHALL BE NO SPLICING OF FIRE ALARM CONDUCTORS BETWEEN TERMINATION OF FIRE ALARM MEVICES, UNLESS SPECIFICALLY NOTED OTHERWISE. FIRE ALARM CONDUCTORS SHALL BE CONTINUOUS FROM DEVICE TO DEVICE. SPLICES ARE PERMITTED AT THE BUILDING FIRE ALARM TERMINAL CAN. 44. EXISTING FIRE ALARM SYSTEM SHALL NOT BE TAKEN OFFLINE UNTIL NEW FIRE ALARM SYSTEM IS TESTED AND FULLY FUNCTIONAL. IN THE EVENT OF FIRE ALARM SYSTEM NOT OPERATION IN A DEPENDABLE MANNER, THE CONTRACTORS SHALL BE WHITE. 45. NOTIFICATION DEVICES SHALL BE RED, PULL STATION SHALL BE RED, DETECTORS SHALL BE WHITE. 	<section-header><section-header><list-item><list-item><list-item><list-item><list-item><list-item><list-item><list-item></list-item></list-item></list-item></list-item></list-item></list-item></list-item></list-item></section-header></section-header>
SOURCE. CIRCUIT. AND LOAD) LEGIBLE FROM			

WIRE SCHEDULE

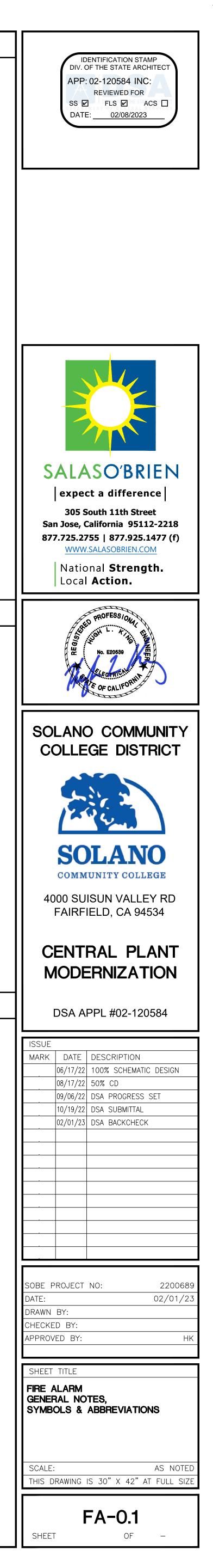
ITEM NO.	INDICATOR	NO. OF CONDUTORS	WIRE SIZE	COLOR	WIRE TYPE
	м#				
01	M#	1 PAIR	#14 AWG	RED/BLK	FPLP, UTP SL
02	С	1 PAIR	#12 AWG	RED/BLK	FPLP, SOLID
03	E	* (1) FIBER OPTIC CABLE WITH CONNECTOR	N/A	N/A	N/A
NOTES:					

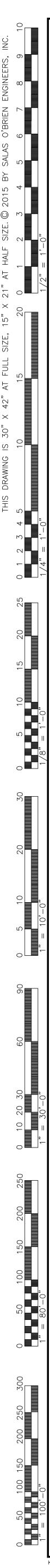
CONDUIT RUN CONCEALED IN CEILING OR WALL, MIN. 1"C. OUTDOOR WIRING TO BE LISTED FOR WET LOCATIONS. FIBER OPTIC CABLE TYPE AND CONNECTORS SHALL BE COORDINATED WITH OWNER.

TESTING OF EXISTING SYSTEM

- 1. PROVIDE COMPLETE OPERATIONAL TEST OF EXISTING FIRE ALARM SYSTEM PRIOR TO ANY DEMOLITION OR CONSTRUCTION. VERIFY OPERATION OF EACH DEVICE, CONTROL PANEL, DISTRIBUTION EQUIPMENT AND ASSOCIATED ACCESSORIES.
- 2. PROVIDE A COMPLETE WRITTEN REPORT TO THE ENGINEER, INDICATING ANY DEFICIENCIES OF THE EXISTING SYSTEM IN RELATION TO EACH COMPONENT'S INTENDED FUNCTION. IN ADDITION, PROVIDE DEFICIENCIES OF THE EXISTING SYSTEM WITH REGARD TO CURRENT CODE, ADA, AND LOCAL ACCESSIBILITY STANDARDS REQUIREMENTS. PROVIDE THE WRITTEN REPORT 14 DAYS PRIOR TO ANY WORK RELATED TO THE EXPANSION OF THE EXISTING SYSTEM.
- 3. TESTING OF THE EXISTING SYSTEM SHALL INCLUDE ALL AREAS AND ALL BUILDINGS SERVED BY THE EXISTING SYSTEM.

	DESCRIPTION
_C	INITIATION CIRCUIT
	STROBE CIRCUIT
	CONNECTION CABLE





FIRE ALARM DEVICE LEGEND

SYMBOL	DESCRIPTION	model #	CSFM #	BACK BOX	MANUFACTURER
FACP	FIRE ALARM CONTROL PANEL W WITH MODEM/DIALER INTERFACE	EST 3	7165–1657:306 7165–1657:186	MFR. SPECIFIC	EST
RPS	BOOSTER POWER SUPPLY WITH BUILT-IN SYNC	BPS-10A	7300–1657:229	MFR. SPECIFIC	EST
٢	CEILING MOUNTED FIRE ALARM SMOKE DETECTOR DETECTOR / BASE	SIGA-PD	7272–1657:331	SEE INSTALLATION MANUAL	EST
٢	CEILING MOUNTED HEAT DETECTOR 135° FIXED/RATE DETECTOR / BASE	SIGA-HRD	7270–1657:333	SEE INSTALLATION MANUAL	EST
F	MANUAL PULL STATION	SIGA-270	7150-1657:129 7150-1657:256	SEE INSTALLATION MANUAL	EST
∑75	FIRE ALARM COMBO HORN/STROBE 15cd,30cd,75cd,110cd	G1RF-HDVM	7125–1657:0284	4x4x2½", SINGLE GANG, DOUBLE GANG, 4" OCTAGON	EST
WP	WEATHERPROOF HORN WITH LISTED WEATHERPROOF BACK BOX	WG4 SERIES	7135–1657:310	4x4x2½", SINGLE GANG, DOUBLE GANG, 4" OCTAGON	EST
FATC	FIRE ALARM TERMINAL CABINET	24186 TCS	_	_	EST
FAD	FIRE ALARM DOCUMENTATION CABINET	NF-FAD	7300–0553:0110	SEE MFR. MANUAL FOR SURFACE MOUNT	SPACE AGE

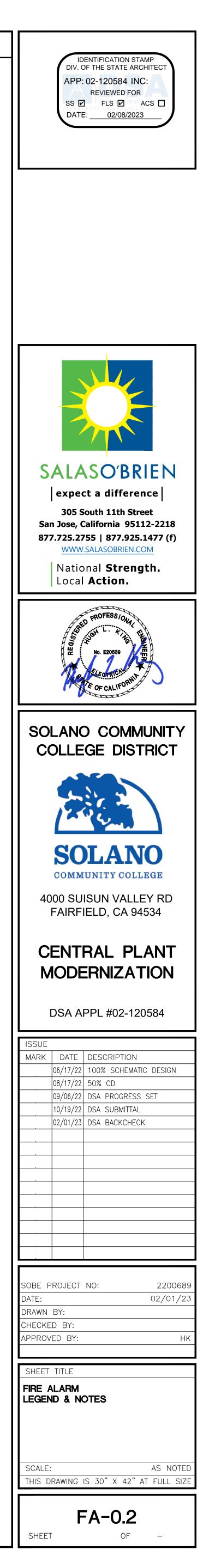
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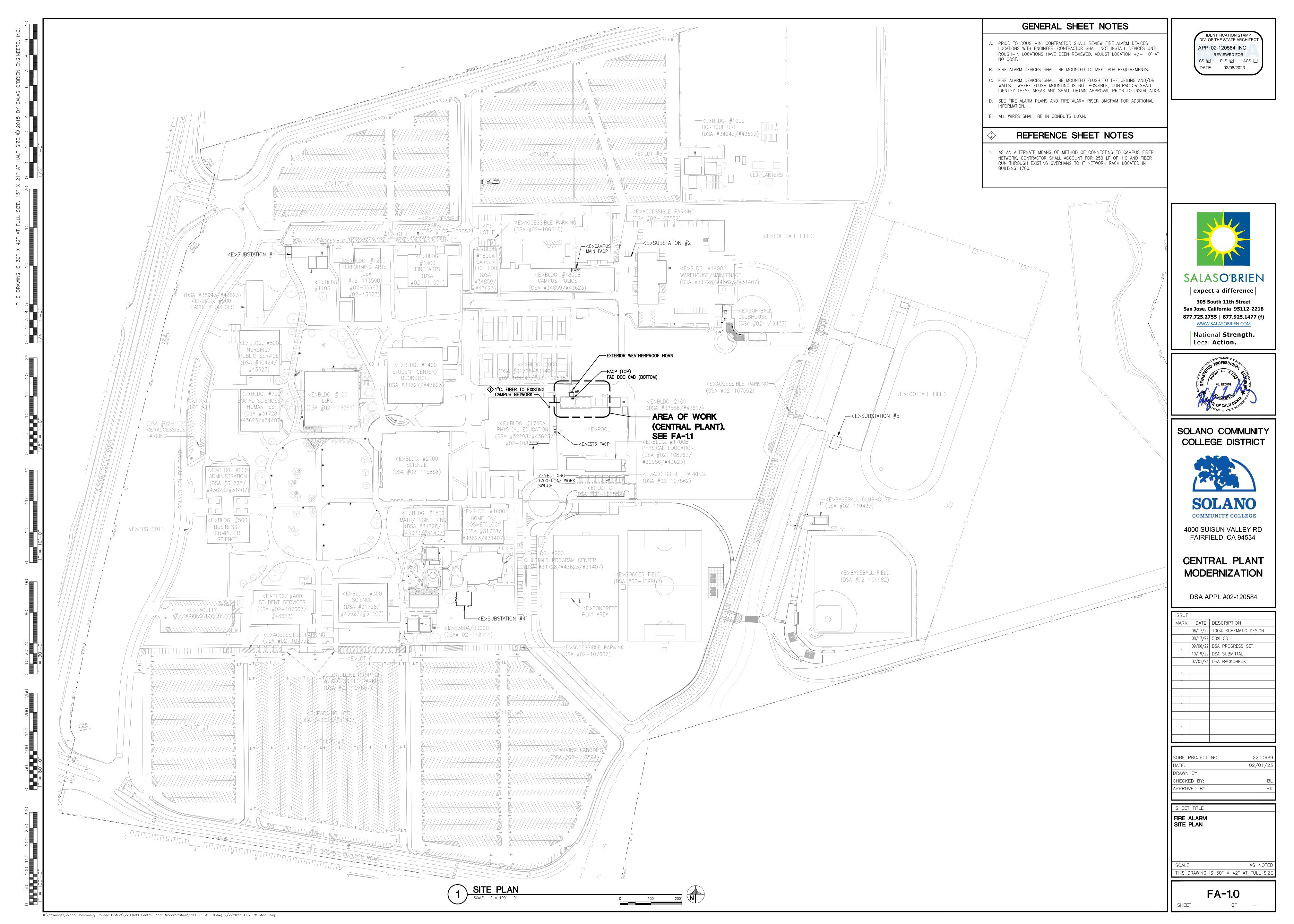
- NOT ALL COMPONENTS USED FOR THE FACP ARE SHOWN.
 QUANTITIES FOR BIDDING PURPOSE ONLY.
- 3. NO CO DETECTION IS REQUIRED FOR BUILDING CONSTRUCTED BEFORE 2016.
- FACP WIEGHT IS LESS THAN 50 LBS.
 ATTACH PANEL TO CONCRETE WALL WITH FOUR (4) ½" DIAMETER EXPANSION ANCHORS WITH 3.75" MIN. EMBEDMENT (ONE ANCHOR AT EACH CORNER), TORQUE-TEST ALL ANCHORS TO 50 FT-LBS. INSTALL PER POST-INSTALLED ANCHORS AND DOWELS NOTES ON S1.0 AND TEST PER TESTING AND SPECIAL INSPECTION NOTES ON SHEET S1.0.

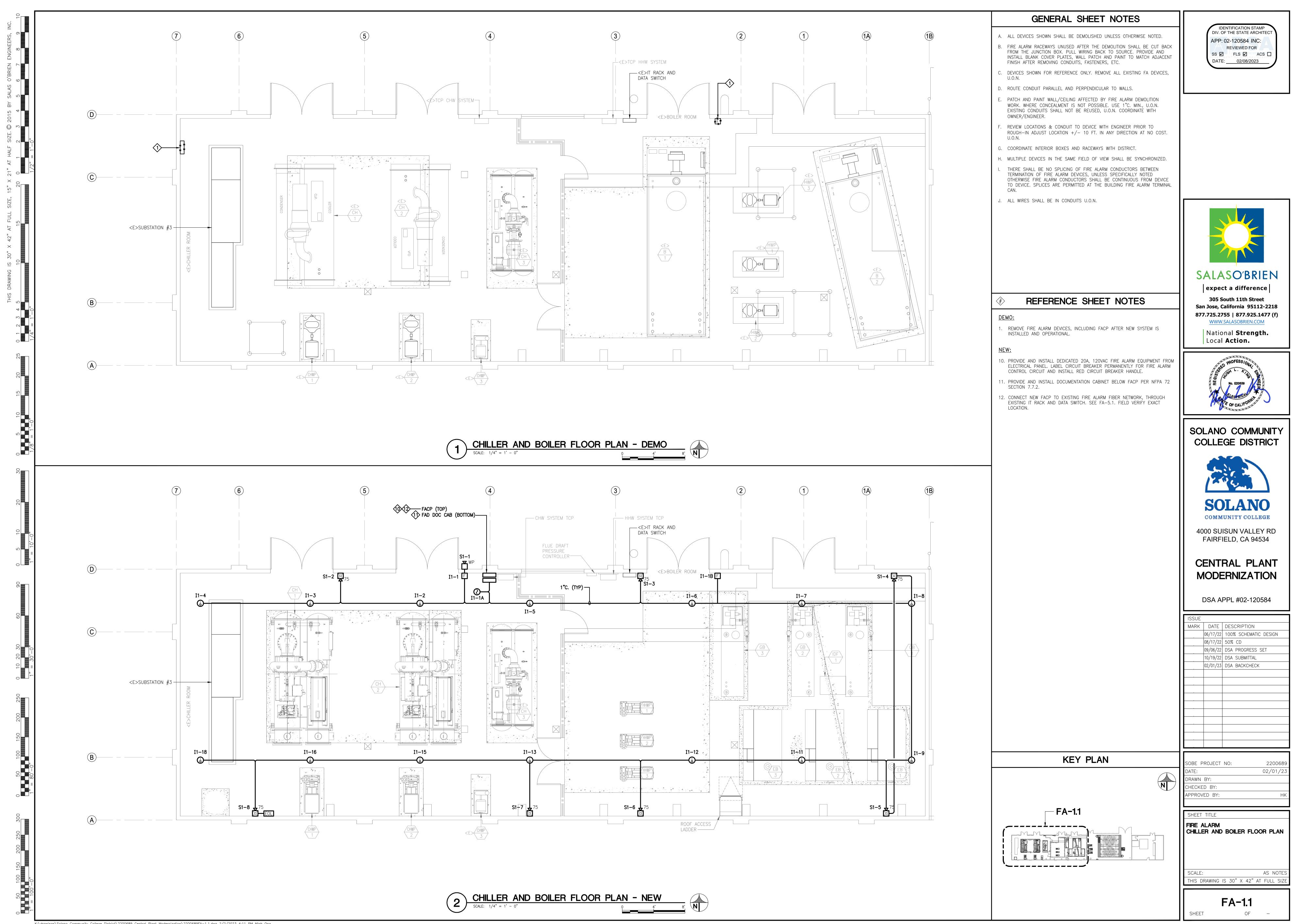
—, REFER TO DETAIL 2/S-5.2.

FIRE ALARM & DETECTION SYSTEMS

- 1. APPLICABLE STANDARD NFPA 72, AS ADOPTED AND AMENDED IN CBC CHAPTER 35.
- INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATION, INCLUDING STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM, HAS BEEN APPROVED BY DSA.
- 3. UPON COMPLETION OF SYSTEM INSTALLATION, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
- 4. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
- 5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF THE PROJECT.
- 6. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND /OR TESTING.
- 7. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
- WALL MOUNTED VISIBLE NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80 "MINIMUM AND 96" MAXIMUM FROM FINISHED FLOOR.
- WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90 "MINIMUM AND 100" MAXIMUM FROM FINISHED FLOOR AND NO CLOSER THEN 6" TO A HORIZONTAL STRUCTURE.
- 10. AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECIBELS (DBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR FIVE DBA ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
- 11. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
- 12. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
- 13. VISIBLE DEVICES SHOULD NOT EXCEED TWO FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN ONE FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELLA. VISIBLE DEVICES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED.
- 14. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
- 15. ALL FIRE ALARM WIRING SHALL BE FPLOR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE TYPE THHN OR THWN.
- 16. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
- 17. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM, DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
- 18. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANOR AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
- 19. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
- 20. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM THE COMMON USE AREA PANEL AND SHALL HAVE NO OTHER OUTLETS. THE BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION. THE CIRCUIT BREAKER SHALL BE LABELED "FIRE ALARM CIRCUIT CONTROL." CIRCUIT ID TO BE LABELED AT FIRE PANEL/EXTENDERS.
- 21. THE INSTALLING CONTRACTOR SHALL PROVIDE A COMPLETED "SYSTEM RECORD OF COMPLETION" PER NFPA 72, FIGURE 17.8.2.
- 22. FIRE ALARM CONTROL PANELS AND REMOTE ANNUNCIATORS SHALL BE INSTALLED WITH THEIR BOTTOMS MOUNTED AT 48" ABOVE THE FINISHED FLOOR.
- 23. MICROPHONES ASSOCIATED WITH EMERGENCY VOICE ALARM COMMUNICATION SYSTEMS (EVAC) SHALL BE ACCESSIBLE FOR USE, INSTALLED IN COMPLIANCE WITH CBC SECTIONS 11B-305 AND 11B-308.
- 24. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
- 25. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
- 26. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.







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FIRE ALARM BATTERY CALCULATION

PROJECT NAME: Solano CC Central Plant

FIRE ALARM CONTROL PANEL

тот	TAL	DESCRIPTION	SUPERVISORY OUR	RENT	ALARM CURRE
OLD	NEW		EACH	TOTAL	EACH
0	1	FIRE A LARM CONTROL PANEL	0.78400	0.7840	0.794
0	1	SMOKE DETECTOR	0.00051	0.0005	0.000
0	0	SMOKE DETECTOR BASE	0.00000		0.000
0	14	HEAT DETECTOR	0.00051	0.0071	0.000
0	0	HEAT DETECTOR BASE	0.00000		0.000
0	2	PULLSTATION	0.00035	0.0007	0.000
0	0	SOUNDER BASE	0.00000		0.035
0	0	DS-SFM MODULE	0.00000		0.060
0	1	REMOTE POWER SUPPLY	0.07000	0.0700	3.220
0	0	STROBE - 15CD	0.07000		0.014
0	0	STROBE - 75CD	0.00000		0.022
0	0	STROBE - 110CD	0.00000		0.017
0	0	HORN/STROBE - 15CD	0.00000		0.006
0	0	HORN/STROBE - 75CD	0.00000		0.013
0	0	SPEAKER	0.00000		0.008
0	0	EXTERIOR SPEAKER	0.00000		0.009
0	0	DUCT DETECTOR	0.00051		0.000
0	0	SYNC MODULE	0.00027		0.000
0	0	DOOR HOLDER	0		0.002
0	0	RELAY MODULE	0.001		0.001
OTALAN	IPS			0.86	
4 HOUR S	UPERVISO	DRY	0.86	24.00	20.
5 MINUTE	ALARM		4.03	0.25	1.
UBTOTAI	:				21.
ESULTED	MINIMUM	BATTERY CAPACITY WITH 25% SAFETY FAC	CTOR:		37.
BATTERY	REQUIREN PROVIDE	IENT: 40.0 AMP-HOUR BATTERY			

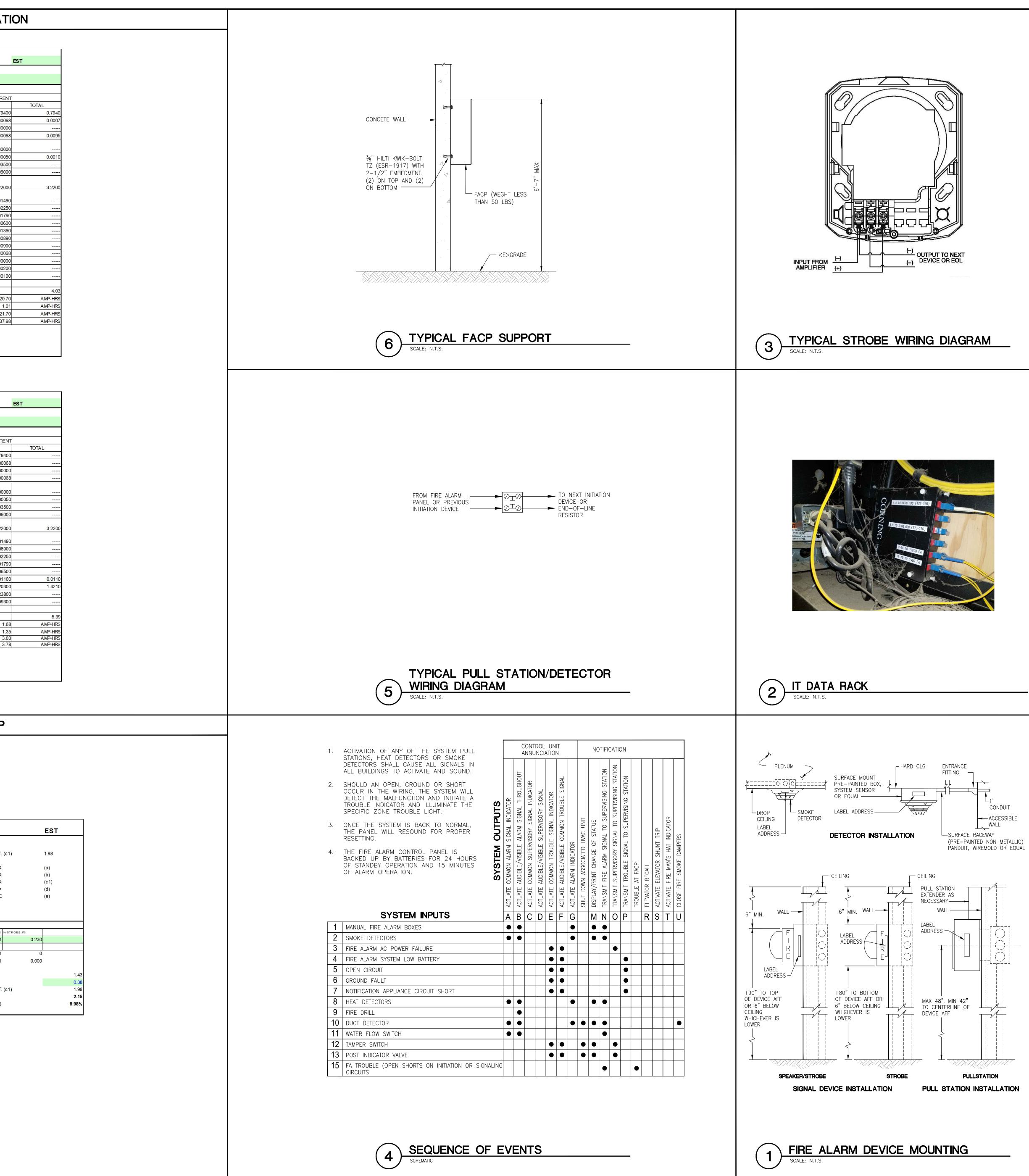
PROJECT NAME: Solano CC Central Plant

TO	TAL	DESCRIPTION	SUPERVISORY CUR	SUPERVISORY CURRENT				
OLD	NEW		EACH	TOTAL	EACH			
		FIRE A LARM CONTROL PANEL	0.78400		0.79			
		SMOKE DETECTOR	0.00051		0.00			
		SMOKE DETECTOR BASE	0.00000		0.00			
		HEAT DETECTOR	0.00051		0.00			
		HEAT DETECTOR BASE	0.00000		0.00			
		PULLSTATION	0.00035		0.00			
	0	SOUNDER BASE	0.00000		0.03			
	0	DS-SFM MODULE	0.00000		0.06			
	1	REMOTE POWER SUPPLY	0.07000	0.0700	3.22			
	0	STROBE - 15CD	0.07000		0.01			
	0	STROBE 30CD	0.00000	0.0000	0.06			
	0	STROBE - 75CD	0.00000		0.02			
	0	STROBE - 110CD	0.00000		0.01			
	0	HORN/STROBE - 15CD	0.00000		0.06			
	1	EXTERIOR HORN	0.00000	0.0000	0.01			
	7	HORN/STROBE - 75CD	0.00000	0.0000	0.20			
	0	HORN/STROBE -110CD	0.00000		0.23			
	0	HORN/STROBE-30CD	0.00000		0.09			
OTALAN	/IPS			0.07				
4 HOUR S	SUPERVIS	ORY	0.07	24.00	1			
	ALARM		5.39	0.25	1			
UBTOTA					3			
RESULTED	MINIMUM	BATTERY CAPACITY WITH 25% SAFETY F/	ACTOR:		3			

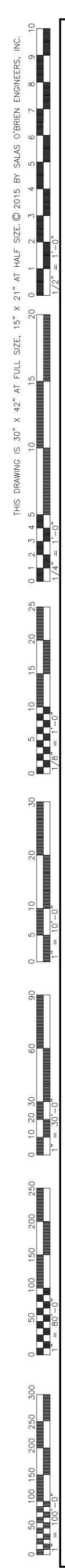
FIRE ALARM VOLTAGE DROP

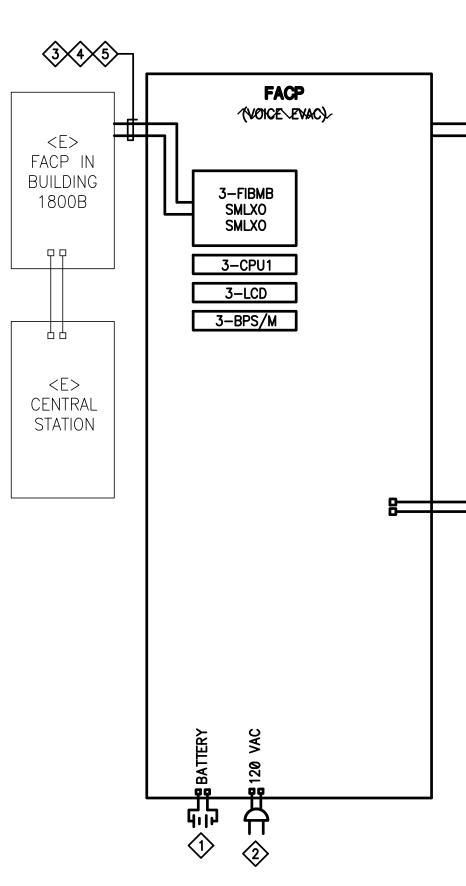
PROJECT NAME:						
Solano CC Central	Plant					
VOLTAGE DROP CALCULAT	ON					
VOLTAGE DROP = (TOTAL AL	ARM CURRENT)	X (LENGTH FT.	/ 1000)X 2 X (0	OHMS PER 1000	FT.)	
#12 A WG COPPER STRANDED	THHN/THWN =					OHM PER 1000 FT.
MAXIMUM ALLOWED VOLTAG	EDROPAT 10%	= 2.4 VOLTS				
FORMULA:				т	OTAL ALARM C	URRENT (AMPS) X
				I	ENGTH (PER T	HOUSAND FEET) X
					OHMS (PER T	HOUSAND FEET) X
			MA	XIMUM VOLTA	GE DROP CALC	ULATED (VOLTS) =
	MAXIMUM VOL	TAGE DROP CA	LCULATED (PE	RCENTAGE) = (d) DIVIDED BY	SY STEM VOLTAGE
CIRCUIT VOLTAGE DROP CALO	CULATED AT 85	% OF NAMEPLA	ATE IMPUT VOLT	TAGE		
SIGNAL ZONE 1	A LA RM CURRE	ENT PER UNIT (A	MPS)			
	H/STROBE-30	STROBE-75	STROBE-110	H/STROBE-15	H/STROBE-75	EXT HORN
LOAD	0.090	0.019	0.015	0.065	0.203	0.011
NEW	0	0	0	0	7	1
SUBTOTAL	0.000	0.000	0.000	0.000	1.421	0.011
TOTAL ALARM CURRENT FOR	ZONE: (a)					
LENGTH (PER THOUSAND FEE	T): (b)					
#12 A WG COPPER STRANDED	THHN/THWN = ([c1)				OHM PER 1000 FT.
MAXIMUM VOLTAGE DROP CA	LCULATED (VO	LTS): (d)				
			MAXIMUM	OLTAGE DROF	CALCULATED	(PERCENTAGE) (e)

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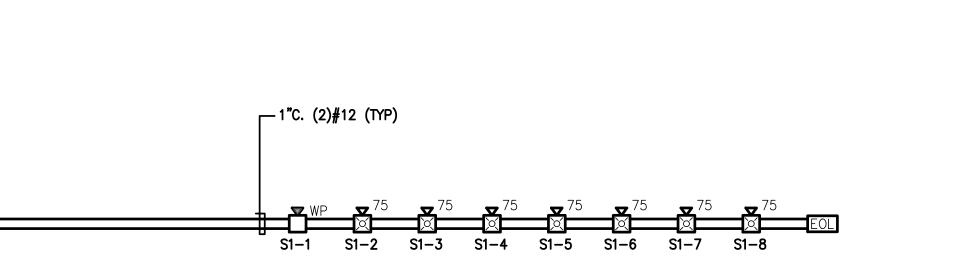


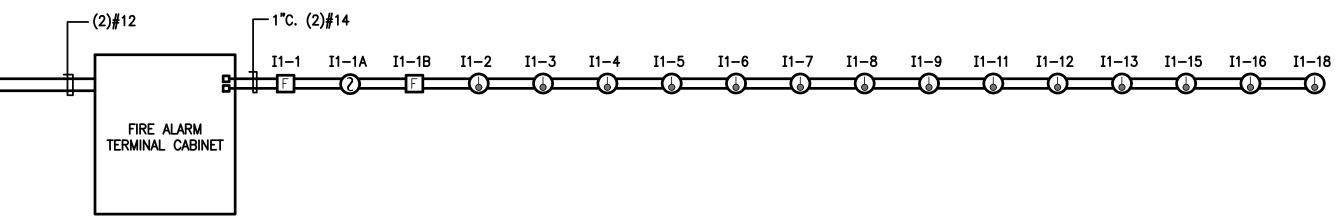
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITEC APP: 02-120584 INC: REVIEWED FOR SS 🗹 FLS 🗹 ACS 🗌 DATE: 02/08/2023 **SALASO'BRIEN** expect a difference 305 South 11th Street San Jose, California 95112-2218 877.725.2755 | 877.925.1477 (f) WWW.SALASOBRIEN.COM National Strength. Local Action. SOLANO COMMUNITY COLLEGE DISTRICT **SOLANO** COMMUNITY COLLEGE 4000 SUISUN VALLEY RD FAIRFIELD, CA 94534 **CENTRAL PLANT** MODERNIZATION DSA APPL #02-120584 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 SOBE PROJECT NO: 2200689 02/01/23 DATE: DRAWN BY: CHECKED BY: APPROVED BY: SHEET TITLE FIRE ALARM DETAILS, BATTERY CALCULATION AND VOLTAGE DROP SCALE: AS NOTE THIS DRAWING IS 30" X 42" AT FULL SIZ FA-5.1 SHEET OF





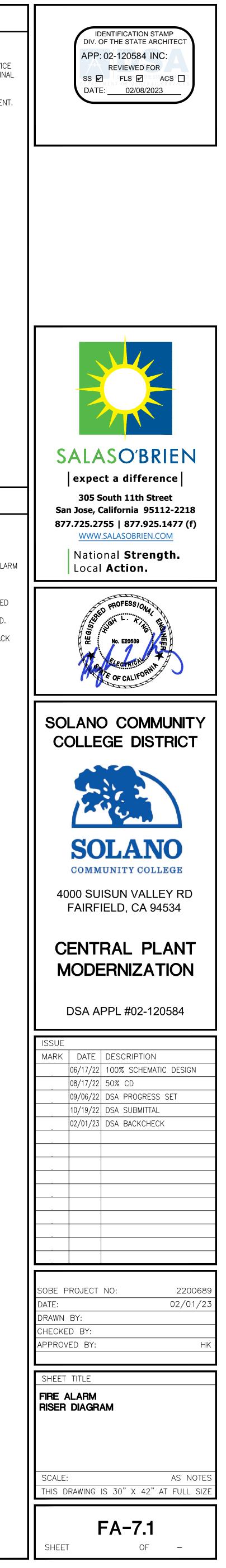
1) RISER DIAGRAM SCHEMATIC



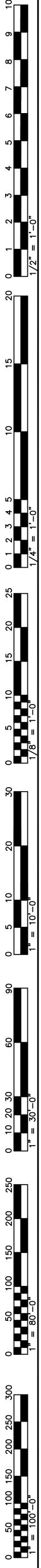


	GENERAL SHEET NOTES
A.	THERE SHALL BE NO SPLICING OF FIRE ALARM CONDUCTORS BETWEEN TERMINATIONS OF FIRE ALARM DEVICES, UNLESS SPECIFICALLY NOTED OTHERWISE. FIRE ALARM CONDUCTORS SHALL BE CONTINUOUS FROM DEVIC TO DEVICE. SPLICES ARE PERMITTED AT THE BUILDING FIRE ALARM TERMIN CAN.
В.	SEE FIRE ALARM PLANS FOR LOCATION OF FIRE ALARM DEVICES/EQUIPMEN
C.	CONTRACTOR SHALL UTILIZE CABLES, FIBER OPTIC PER MANUFACTURER'S GUIDELINES.
D.	SEE FA-0.2 FIRE ALARM SYMBOLS LEGEND.
Ε.	CONSULT EST GUIDELINES FOR FIBER OPTIC MEDIA INSTALLATION AND MANUFACTURER'S INSTALLATION GUIDELINES OF BEND FOR FIBER OPTIC MEDIA.
<#>	REFERENCE SHEET NOTES
1.	SIZE BATTERIES PER BATTERY CALCULATIONS.
2.	FIELD VERIFY AND PROVIDE DEDICATED 120VAC TO FACP FROM NEAREST ELECTRICAL PANEL. LABEL CIRCUIT BREAKER PERMANENTLY WITH "FIRE ALA CONTROL CIRCUIT", AND INSTALL RED CIRCUIT BREAKER HANDLE FOR REMOTE POWER SUPPLY ONLY.
3.	ALL ALARM SIGNALS ARE TO BE TRANSMITTED TO AN APPROVED UL LISTEI SUPERVISING STATION. COORDINATED WITH DISTRICT DEDICATED LINES. CONTRACTOR TO LOCATE TELEPHONE BOARD, AND CONNECT AS REQUIRED.

- FIELD VERIFY AND PROVIDE FIBER CONNECTION THROUGH EXISTING IT RACK AND DATA SWITCH.
- 5. FIBER PATCH CABLES TO EXISTING CAMPUS FIBER OPTIC NETWORK CONNECTION POINT IN SERVER ROOM







GENERAL

1. ALL CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF THE 2019 CALIFORNIA BUILDING CODE (CBC), TITLE 24, PART 2, VOLUMES 1–2 (2018 INTERNATIONAL BUILDING CODE (IBC) WITH 2019 CALIFORNIA AMENDMENTS, INCLUDING SECTIONS AND 'A' CHAPTERS PERTAINING TO DSA-SS).

2. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER FOR DIRECTION PRIOR TO PROCEEDING.

3. DETAILS OF CONSTRUCTION ARE TYPICAL, UNLESS NOTED OTHERWISE, AND SHALL APPLY AT ALL LOCATIONS OF SIMILAR CONSTRUCTION. TYPICAL DETAILS ARE NOT CUT AT EVERY APPLICABLE LOCATION ON THE PLANS.

4. DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION.

5. SHORING, TEMPORARY BRACING AND OTHER METHODS AND MEANS OF CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR, AND IS NOT INCLUDED IN THE SCOPE OF THE STRUCTURAL DRAWINGS.

6. THE FOLLOWING NOTES ARE FOR GENERAL MATERIAL GRADES AND PROCEDURES. SEE SPECIFICATIONS AND REMAINDER OF DRAWINGS FOR COMPLETE REQUIREMENTS. ITEMS NOTED IN PLANS, SECTIONS AND DETAILS TAKE PRECEDENCE OVER GENERAL NOTES.
7. LOADS:

A) LIVE: ROOF: 20 PSF (REDUCIBLE)

B) WIND:

BUILDING RISK CATEGORY II EXPOSURE C, 95 MPH BASIC WIND SPEED DIRECTIONAL PROCEDURE

GCr=1.19, Kzt=1.00, Kd=0.85, Ke=1.00 Kz=0.85, AT GRADE, qh=17.0 PSF, Ph=21.0 (STRENGTH), 12.6 (ASD)

Pv=21.0 PSF (STRENGTH), 12.6 (ASD) Kz=0.85, HEIGHT=15 FT, gh=17.0 PSF, Ph=33.0 (STRENGTH), 19.8 (ASD)

- Pv=26.0 PSF (STRENGTH), 15.6 (ASD) Kz=0.90, HEIGHT=15 FT, qh=18.0 PSF, Ph=35.0 (STRENGTH), 21.0 (ASD) Pv=27.0 PSF (STRENGTH), 16.2 (ASD)
- C) SEISMIC:
- BUILDING RISK CATEGORY II EQUIVALENT LATERAL FORCE PROCEDURE (ASCE 7–16 SECTION 12.8) LATITUDE: 38.2357, LONGITUDE: –122.1226
- SEISMIC DESIGN CATEGORY (SDC) D SITE CLASS D
- S_s =1.514, S_t =0.600; F_a =1.200, F_v =1.500; S_{MS} =1.817, S_{M1} =0.900; S_{DS} =1.211, S_{D1} =0.600
- IMPORTANCE FACTOR: le=1.00 R=2 FOR INVERTED PENDULUM TYPE STRUCTURES
- C_S =0.606 (STRENGTH), 0.433 (ALLOWABLE STRESS) a_n =2.5, R_n =6.0 (AIR-SIDE HVAC)
- C_{s} =0.606 (STRENGTH), 0.433 (ALLOWABLE STRESS) (WALL/ROOF-MOUNTED UNIT) C_{s} =0.363 (STRENGTH), 0.260 (ALLOWABLE STRESS) (GRADE-MOUNTED UNIT) C_{v} =0.242 (STRENGTH), 0.173 (ALLOWABLE STRESS).
- D) LOAD COMBINATIONS FOR DESIGN:
 CONCRETE: PER CBC SECTION 1605A.2 FOR STRENGTH DESIGN.
 FOUNDATIONS: PER CBC SECTION 1605A.3.2 FOR ALLOWABLE STRESS DESIGN.
 ALL OTHERS: PER CBC SECTION 1605A.3.1 FOR ALLOWABLE STRESS DESIGN.

GEOTECHNICAL & FOUNDATIONS

1. GEOTECHNICAL REPORT NOT PROVIDED. FOUNDATIONS DESIGNED IN ACCORDANCE WITH MINIMUM PRESUMPTIVE LOAD-BEARING CRITERIA PER CBC §1806A. CRITERIA USED FOR FOUNDATION DESIGN:

C) ALLOWABLE SOIL PRESSURES USED FOR FOUNDATION DESIGN: DEAD PLUS LIVE LOAD: 1500 PSF

TOTAL LOAD W/ SEISMIC OR WIND: 2000 PSF w/ 1/3 INCREASE FOR SHORT TERM LOADING.

STRUCTURAL ABBREVIATIONS

A.B.	ANCHOR BOLT	I.D.	INSIDE DIAMETER
ADJ	ADJACENT	IN IN	INCH
APPROX	APPROXIMATE	INT	INTERIOR
ARCH	ARCHITECTURAL		
		LAM	LAMINATE
BLDG	BUILDING	LBS	POUNDS
BLK	BLOCK		
BLKG	BLOCKING	KSI	KIPS PER SQ. IN.
BM	BEAM		
B.N.	BOUNDARY NAILING	MAX	MAXIMUM
BOT	BOTTOM	M.B.	MACHINE BOLT
BP	BASEPLATE	MECH	MECHANICAL
BRG	BEARING	MFR	MANUFACTURER
B.S.	BOTH SIDES	MIN	MINIMUM
D.J.	Born Sides	MISC	MISCELLANEOUS
с то с	CENTER TO CENTER	MISC	MISCELLANEOUS
C.B.	CARRIAGE BOLT	<n></n>	NEW
CJ	CONTROL JOINT OR	N.S.	NEAR SIDE
0	CONSTRUCTION JOINT	N.J.C.	NOT IN CONTRACT
C.I.	CAST IRON	NO.	NUMBER
CL	CENTERLINE	NU. NTS	NOMBER NOT TO SCALE
CLG	CEILING	NI S	NUT TO SCALE
	CONCRETE MASONRY UNIT	0.0	
CMU		0.C.	ON CENTER
COL	COLUMN	0.D.	OUTSIDE DIAMETER
CONC	CONCRETE	OPP	OPPOSITE
CONT	CONTINUOUS	0500	
C.P.	COMPLETE PENETRATION	PERP	PERPENDICULAR
CTRD	CENTERED	PL	STEEL PLATE
CTSK	COUNTERSINK	P.P.	PARTIAL PENETRATION
		PLYWD	PLYWOOD
<d></d>	DEMO	PSF	POUNDS PER SQ. FT.
DBL	DOUBLE	PSI	POUNDS PER SQ. IN.
DIA OR Ø	DIAMETER		
DIAG	DIAGONAL	RAD	RADIUS
DO	DITTO	REINF	REINFORCING
DWG	DRAWING	REQD	REQUIRED
		REV	REVISION
EA	EACH	R.O.	ROUGH OPENING
E.F.	EACH FACE	RWD	REDWOOD
ELEC	ELECTRICAL		
ELEV		S.A.D	SEE ARCH'L DRAWINGS
E.N.		S.M.D.	SEE MECH'L DRAWINGS
EQ	EQUAL	S.L.D.	SEE LANDSCAPE DRAWINGS
E.W.	EACH WAY	S.F.	SQUARE FEET
EXIST OR <e></e>		SIM	SIMILAR
EXTER	EXTERIOR	SPEC	SPECIFICATION
		SQ	SQUARE
<f></f>	FUTURE	STD	STANDARD
F.D.	FLOOR DRAIN	STGRD	STAGGERED
FHWS	FLAT HEAD WOOD SCREW	STIFF	STIFFENER
FIN	FINISH	SYM	SYMMETRICAL
F.O.B.	FACE OF BLOCK	01111	STMMETRICAL
F.O.C.	FACE OF CONCRETE	T&G	TONGUE & GROOVE
F.O.F.	FACE OF FINISH	THRD	
F.O.S.	FACE OF STUD	T.O.C.	THREADED
F.P.	FULL PENETRATION	T.O.F.	TOP OF CONCRETE
F.S.	FAR SIDE	T.O.S.	TOP OF FRAMING
FT	FOOT OR FEET	T.0.3. TS	TOP OF STEEL
FTG	FOOTING	TYP	TUBE STEEL
110	1001110		TYPICAL
GA	GAGE	U.N.O.	
GALV	GAUVANIZED	0.11.0.	UNLESS NOTED OTHERWISE
GALV G.I.	GALVANIZED IRON	VERT	
GLB	GLUE-LAMINATED BEAM		VERTICAL
GLB GYP.BD.	GLOE-LAMINATED BEAM GYPSUM BOARD	\M/ /	
.00.	GTI JUWI DUANU	W/	WITH
מטח		W/0	WITHOUT
HDR HORIZ	HEADER	WT	WEIGHT OR STEEL
	HORIZONTAL		WT SECTION
HR	HOUR	WWF	WELDED WIRE FABRIC
H.S.	HIGH STRENGTH		
H.S.B.	HIGH STRENGTH BOLT		

HSS

HOLLOW STEEL SECTION

STRUCTURAL CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO CHAPTER 19A OF THE 2019 CALIFORNIA BUILDING CODE (CBC) AND 2014 ACI STANDARD 318 AND ASTM C94, SPECIFICATION FOR READY-MIX CONCRETE. CEMENT SHALL BE PORTLAND CEMENT TYPE II AND SHALL COMPLY WITH ASTM C150. CALCIUM CHLORIDE SHALL NOT BE USED. COARSE AND FINE AGGREGATE SHALL COMPLY WITH ASTM C33. CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO AND APPROVED BY TESTING AGENCY PRIOR TO ORDERING CONCRETE.

2. ALL STRUCTURAL CONCRETE MIXES SHALL HAVE MIN. FIVE (5) SACKS CEMENT PER CU. YARD AND MAX. WATER-TO-CEMENT RATIO OF 0.60. CONCRETE MIX PROPERTIES SHALL BE

AS FOLLOWS: A) FOUNDATION PADS & CONCRETE WALLS: 28-DAY COMP. STRENGTH: 3,000 PSI LARGE AGGREGATE SIZE: 1/2" - 1"

> MAX. SLUMP: 4" DENSITY: 145 – 150 PCF (NORMAL WEIGHT, HARD ROCK AGGREGATE)

EXPOSURE CLASS: CO, S1 (ACI 318 TABLE 19.3.1.1) 3. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A615, GR. 60 U.N.O. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

4. CURING COMPOUND SHALL BE APPROVED BY ENGINEER, AND APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

5. REINFORCING STEEL SHALL BE CONTINUOUS WHERE POSSIBLE. SPLICE WITH CONTACT LAP-SPLICES. STAGGER ALL SPLICES. SPLICE LENGTHS SHALL BE 57 BAR-DIAMETERS MINIMUM. WELDED WIRE FABRIC SHALL BE LAPPED TWO (2) FULL SQUARES, BUT NOT LESS THAN 12".

6. WELDING OF REINFORCING SHALL NOT BE ALLOWED.

STRUCTURAL STEEL

1. ALL STEEL AND MISC. IRON SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH A.I.S.C. SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.

2. STEEL MATERIAL SHALL BE AS FOLLOWS: W SHAPES: ASTM A992

- PLATES, CHANNELS & ANGLES: ASTM A36 UNLESS NOTED OTHERWISE RECTANGULAR TUBES (TS OR HSS): ASTM A500 GRADE B, Fy=46 KSI
- PIPES (STD., X-STRG. & XX-STRG.): ASTM ASSOC GRADE B, Fy=35 KSI

ROUND TUBES (HSS): ASTM A500 GRADE B, Fy=42 KSI MACHINE BOLTS (M.B.): ASTM A307 GRADE A, A563 FOR NUTS, F844 FOR WASHERS ANCHOR BOLTS/RODS (A.B.): ASTM F1554 GRADE 36, A307 GRADE C, OR A36 THREADED RODS: ASTM A307 OR A36 (MAY BE THREADED FOR ENTIRE LENGTH) WELDING ELECTRODES: E70XX

4. ALL WELDING ON STRUCTURAL STEEL SHALL CONFORM WITH AWS D1.1 CODE AND SHALL BE PRE-QUALIFIED WELDS CONFORMING TO AWS D1.1. UNLESS SPECIFICALLY INDICATED AS FIELD WELDING, ALL WELDS MAY BE PERFORMED IN SHOP OR FIELD.

6. ALL COMPLETE AND FULL PENETRATION GROOVE WELDS (DESIGNATED BY "C.P." OR "F.P.") SHALL USE BACK-UP PLATES UNLESS NOTED OTHERWISE. ALL PARTIAL-PENETRATION WELDS (DESIGNATED BY "P.P.") SHALL HAVE LARGEST EFFECTIVE THROAT ALLOWED BY AWS. GROOVE WELDS NOT NOTED WITH "C.P.", "F.P." OR "P.P" SHALL BE COMPLETE PENETRATION WELDS.

7. WELDING PROCEDURE SPECIFICATIONS SHALL BE SUBMITTED TO THE ARCHITECT AND THE TEST AND INSPECTION AGENCY'S WELDING INSPECTOR FOR REVIEW AND APPROVAL PRIOR TO START OF FABRICATION.

8. MINIMUM SPACING OF ALL BOLTS, 7/8" (AND SMALLER IN STEEL SHALL BE 3" o.c. AND THE MINIMUM EDGE DISTANCE FROM CENTERLINE OF HOLE TO EDGE OF PLATE OR MEMBER SHALL BE 1-1/2", UNLESS NOTED OTHERWISE ON DRAWINGS. WHERE BOLTS ARE INSTALLED THROUGH FLANGES OF "W" OR SIMILAR SHAPES, THE BOLT GAGE SHALL BE AS RECOMMENDED BY AISC.

9. HOLES FOR BOLTS IN STEEL SHALL BE 1/16" MAXIMUM LARGER IN DIAMETER THAN BOLTS. HOLES FOR ANCHOR BOLTS SHALL NOT BE MORE THAN 5/16" LARGER FOR A.B.'S UP TO 1"Ø, AND NOT MORE THAN 1/2" LARGER FOR A.B.'S OVER 1"Ø. ALL HOLES SHALL BE DRILLED OR PUNCHED. BURNING OF HOLES IS NOT ALLOWED, WHETHER IN FIELD OR SHOP.

10. ALL STRUCTURAL STEEL IN EXTERIOR SPACES OR EXPOSED TO VIEW IN INTERIOR SPACES SHALL BE PAINTED WITH TWO (2) COATS OF ALKYD RED OXIDE PRIMER, COMPLYING WITH SSPC-PAINT 25 OR U.S. FEDERAL SPEC TT-P-645, WITH MIN. DRY THICKNESS OF 2 MILS. SEE ARCHITECTURAL SPECS FOR FINISH PAINTING. STRUCTURAL STEEL IN ENCLOSED SPACES AND NOT EXPOSED TO WEATHER NEED NOT BE PAINTED OR PRIMED UNLESS NOTED OTHERWISE. STEEL TO BE EMBEDDED IN CONCRETE SHALL NOT BE PAINTED.

11. ALL NON-PAINTED STEEL FASTENERS EXPOSED TO WEATHER OR IN UNENCLOSED SPACES SHALL BE HOT-DIPPED GALVANIZED, UNLESS NOTED OTHERWISE. GALVANIZED BOLTS AND NUTS SHALL BE PROVIDED BY SAME MANUFACTURER.

12. ALL STRUCTURAL STEEL SPECIFIED ON DRAWINGS TO BE GALVANIZED SHALL BE HOT-DIPPED ZINC GALVANIZED WITH MIN. 1.8 OZ./SQ. FT. ON ALL SURFACES. GALVANIZING SHALL BE TOUCHED UP AT FIELD-WELDED CONNECTIONS, FIELD-DRILLED HOLES, OR FIELD-CUT EDGES WITH A HIGH-ZINC DUST-CONTENT PAINT.

WOOD

1. ALL WOOD FRAMING SHALL CONFORM TO CHAPTER 23 OF THE 2019 CALIFORNIA BUILDING CODE (CBC), INCLUDING SECTIONS PERTAINING TO DSA-SS.

 ALL FRAMING LUMBER, UNLESS SPECIFIED OTHERWISE ON DRAWINGS, SHALL BE DOUGLAS FIR-LARCH, WITH STRESS GRADES AS FOLLOWS: 2x SISTERED ROOF JOISTS: NO. 1

2x OR 3x PLATES OR BLOCKING: NO. 1 4x OR 6x BEAMS: NO. 1

PLYWOOD SHEATHING: ALL SHEATHING SHALL BE APA-RATED C-D SHEATHING AND SHALL HAVE EXTERIOR GLUE. SEE PLANS/SCHEDULES FOR THICKNESS AND GRADES. ALL SOLID SAWN LUMBER SHALL HAVE A MOISTURE CONTENT OF NOT GREATER THAN 19% AT THE TIME OF INSTALLATION.

3. ALL NAILS SHALL BE COMMON WIRE TYPE. ALL NAILS INSTALLED IN PRESSURE-TREATED MEMBERS OR EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED STEEL. WHERE NAILS TEND TO SPLIT FRAMING, HOLES SHALL BE PRE-BORED.

4. UNLESS SPECIFIED OTHERWISE, BOLTS AND THREADED RODS THROUGH WOOD MEMBERS SHALL CONFORM TO ASTM A307 OR A36.

5. ALL BOLT HOLES IN WOOD SHALL BE DRILLED 1/32" OVERSIZE. THE LENGTH OF THE THREADED PORTION SHALL BE SUCH THAT THE THREADS DO NOT BEAR AGAINST THE WOOD. ANCHOR BOLT HOLES IN SHEAR WALL SOLE PLATES SHALL NOT BE MORE THAN 1/16" LARGER IN DIAMETER THAN A.B. OVERSIZE HOLES WILL NOT BE ALLOWED.

 HEAVY CUT STEEL WASHERS SHALL BE PROVIDED BETWEEN BOLT HEADS/NUTS AND WOOD.
 PREDRILL LAG SCREW HOLES WITH BIT SIZE 40% TO 70% OF THE SHANK DIAMETER FOR THE THREADED PORTION. DRILL THE LEAD HOLE FOR THE SHANK THE SAME DIAMETER AND LENGTH AS THE SHANK. LAGS SHALL BE SCREWED, NOT DRIVEN, INTO PLACE.

8. NAILS THROUGH PLYWOOD SHEATHING SHALL BE 3/8" OR 1/2" FROM PLYWOOD EDGES INTO 2x OR 3x FRAMING, RESPECTIVELY. ALL NAILS THAT SPLIT OR MISS FRAMING SHALL BE REMOVED AND RENAILED.

9. FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. FASTENERS FOR WOOD FOUNDATIONS SHALL BE AS REQUIRED PER AF&PA PERMANENT WOOD FOUNDATIONS. FASTENERS EXPOSED TO WEATHER OR REQUIRED TO BE CORROSION RESISTANT SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER.

POST-INSTALLED ANCHORS & DOWELS

A. GENERAL – APPLICABLE TO ALL ANCHORS: 1. ANCHORS SHALL BE INSTALLED ONLY WHERE SPECIFIED ON DRAWINGS, PER

MANUFACTURER'S INSTRUCTIONS, USING MANUFACTURER'S EQUIPMENT, WHERE APPLICABLE. INSTALLER SHALL HAVE ON SITE A COPY OF MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ICC-ES OR IAPMO-UES REPORT.

2. ANCHORS SHALL BE INSTALLED ONLY INTO CURED CONCRETE OR MASONRY GROUT THAT HAS ATTAINED THE MIN. DESIGN COMPRESSIVE STRENGTH AT MIN. 28 DAY AGE, EXCEPT AS NOTED BELOW FOR ADHESIVE ANCHORS. IF INSTALLATION OF ANCHORS INTO CONCRETE OR MASONRY ELEMENTS PRIOR TO 28–DAY AGE IS ANTICIPATED, CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO INSTALLATION IN ORDER TO ALLOW SPECIFYING PROVISIONS FOR SUCH. PROVISIONS MAY INCLUDE COMPRESSION TEST CYLINDERS BE FIELD–CURED IN CONDITIONS MATCHING SUBJECT CONCRETE OR MASONRY ELEMENTS, PLUS USE OF CEMENT TYPES AND/OR ADMIXTURES IN MIX DESIGNS TO PROVIDE THE REQUIRED COMPRESSIVE STRENGTHS AT ANTICIPATED AGES LESS THAN 28 DAYS. INSTALLATION OF ANCHORS INTO CONCRETE OR MASONRY GROUT BEFORE CURING FOR 28 DAYS WILL NOT BE APPROVED WITHOUT THESE PROVISIONS BEING SPECIFIED, AND MET BY CONTRACTOR.

3. WHERE POST-INSTALLED ANCHORS ARE USED TO MITIGATE OMITTED OR MISPLACED CAST-IN-PLACE ANCHORS, ADDED SPECIAL INSPECTION AND TESTING COSTS ASSOCIATED WITH THE POST-INSTALLED ANCHORS WILL BE PAID FOR BY THE DISTRICT, HOWEVER, SUCH COSTS WILL BE BACK-CHARGED TO THE CONTRACTOR.

4. PRIOR TO DRILLING HOLES FOR ANY POST-INSTALLED ANCHORS INTO NEW OR EXISTING CONCRETE OR MASONRY, ALL REINFORCING BARS IN AREA OF NEW ANCHORAGE HOLES SHALL BE LOCATED WITH PACHOMETER OR OTHER SUITABLE DEVICE AND CLEARLY MARKED IN THE FIELD. NEW ANCHORS SHALL BE INSTALLED NOT LESS THAN 1" CLEAR FROM REINFORCING. WHERE REINFORCING BARS CANNOT BE LOCATED, CARE SHALL BE TAKEN WHILE DRILLING HOLES SO THAT REINFORCING BARS ARE NOT CUT OR DAMAGED AND HOLES SHALL BE REPAIRED & RELOCATED AS REQUIRED. USE OF DRILLS WITH GROUND FAULT INTERRUPTERS (GFI) IS RECOMMENDED.

5. PROVIDE TESTING AND INSPECTIONS OF ANCHOR INSTALLATIONS PER TESTING AND SPECIAL INSPECTION NOTES, THIS SHEET.

6. ANCHORS OTHER THAN THOSE SPECIFIED BELOW MAY BE USED ONLY WHEN <u>CURRENT</u> ICC-ES OR IAPMO-UES REPORT FOR SUCH IS SUBMITTED FOR REVIEW AND APPROVAL IN WRITING. ANCHORS SHALL NOT BE INSTALLED UNTIL ANCHORS ARE APPROVED BY STRUCTURAL ENGINEER AND DSA, AND TEST LOADS ARE DETERMINED AND ISSUED.

7. ANCHORS IN CONTACT WITH PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL OR STAINLESS STEEL. ANCHORS EXPOSED TO WEATHER OR REQUIRED TO BE CORROSION RESISTANT SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL OR STAINLESS STEEL.

A. EXPANSION ANCHORS: 1. EXPANSION ANCHORS SHALL BE WEDGE TYPE ANCHORS ONLY AND SHALL HAVE ICC-ES OR IAPMO-UES APPROVAL, INCLUDING APPROVAL FOR RESISTANCE TO SEISMIC AND WIND LOADS, PASSING ICC-ES CRITERIA AC193 (CONCRETE) & AC01 (MASONRY). USE ONE OF THE FOLLOWING ICC-ES OR IAPMO-UES APPROVED SYSTEMS:

- a) HILTI KWIK BOLT TZ2 (ESR-4266), (TYP. ANCHOR SPECIFIED U.N.O.)
- b) SIMPSON STRONG-BOLT 2 ANCHORS (ESR-3037),
 c) DEWALT/POWERS POWER-STUD+ SD2, SD4 & SD6 ANCHORS (ESR-2502).

MASONRY: a) HILTI KWIK BOLT 3 (ESR-1385), <u>(TYP. ANCHOR SPECIFIED U.N.O.)</u>

b) SIMPSON WEDGE-ALL ANCHORS (ESR-1396),
c) DEWALT/POWERS POWER-STUD+ SD1 (ESR-2966)
d) ITW RED HEAD TRUBOLT+ WEDGE ANCHORS (ESR-4058).

NOTE: OTHER EXPANSION ANCHORS MAY BE USED ONLY WHEN ICC-ES OR IAPMO-UES REPORT FOR SUCH IS SUBMITTED TO AND APPROVED BY ENGINEER AND DSA AND TEST LOADS ARE DETERMINED AND ISSUED.

2. EXPANSION ANCHORS SHALL HAVE EMBEDMENT NOT LESS THAN EIGHT (8) ANCHOR DIAMETERS, OR AS OTHERWISE SPECIFIED IN DETAILS. TORQUE ANCHORS DURING INSTALLATION TO THE RECOMMENDED INSTALLATION TORQUE VALUES SPECIFIED IN MANUFACTURER'S ICC-ES OR IAPMO-UES REPORT.

 B. CHEMICAL ADHESIVE ANCHORS AND DOWELS:
 1. ALL THREADED RODS AND REBAR DOWELS INSTALLED IN HARDENED CONCRETE OR MASONRY GROUT WITH "ADHESIVE" SHALL BE A TWO-PART NOZZLE-MIXED ICC-ES OR IAPMO-UES APPROVED CHEMICAL ADHESIVE SYSTEM, PASSING ICC-ES CRITERIA AC308 (CONCRETE) & AC58 (MASONRY). USE ONE OF THE FOLLOWING ICC-ES OR IAPMO-UES APPROVED SYSTEMS: CONCRETE:

- a) HILTI "HIT-RE 500-V3" ADHESIVE ANCHOR SYSTEM (ESR-3814), (SPECIFIED U.N.O.)
 b) SIMPSON "SET-XP" ADHESIVE ANCHOR SYSTEM (ESR-2508),
 c) DEWALT/POWERS "PURE110+" ADHESIVE ANCHOR SYSTEM (ESR-3298),
 d) ITW PED UEAD "CE +" ADUESIVE ANCHOR SYSTEM (ESR-4138)
- d) ITW RED HEAD "G5+" ADHESIVE ANCHOR SYSTEM (ESR-4138). MASONRY:
- a) HILTI "HIT" SYSTEM WITH HY-200 ADHESIVE (ESR-3963), (SPECIFIED U.N.O.)
 b) SIMPSON "SET-XP" ADHESIVE ANCHOR SYSTEM (IAPMO ER-0265),

c) DEWALT/POWERS "AC100+ GOLD" ADHESIVE ANCHOR SYSTEM (ESR-3200). NOTE: OTHER CHEMICAL ADHESIVE ANCHOR SYSTEMS MAY BE USED ONLY WHEN ICC-ES OR IAPMO-UES REPORT FOR SUCH IS SUBMITTED TO AND APPROVED BY ENGINEER AND DSA AND TEST LOADS ARE DETERMINED AND ISSUED.

2. ANCHORS SHALL BE INSTALLED ONLY INTO CURED CONCRETE OR MASONRY GROUT OF MIN. 21 DAY AGE. IF INSTALLATION OF ANCHORS INTO CONCRETE OR MASONRY ELEMENTS PRIOR TO 21-DAY AGE IS ANTICIPATED, CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO INSTALLATION FOR DIRECTION.

3. INSTALLATION OF CHEMICAL ADHESIVE ANCHORS IN HORIZONTAL OR OVERHEAD APPLICATIONS SHALL BE INSTALLED BY AN ACI/CSRI CERTIFIED ADHESIVE ANCHOR INSTALLER.
4. HOLES SHALL BE DRILLED 1/8" TO 1/4" LARGER IN DIAMETER THAN ROD OR BAR OUTER

DIAMETER, AS SPECIFIED IN ICC-ES OR IAPMO-UES REPORT. 5. BARS/RODS SHALL HAVE EMBEDMENT IN ADHESIVE NOT LESS THAN TEN (10) NOMINAL BAR/ROD DIAMETERS IN CONCRETE AND NINE (9) NOMINAL BAR/ROD DIAMETERS IN MASONRY, OR AS OTHERWISE SPECIFIED IN DETAILS.

6. INSTALLATION TORQUE FOR ALL ANCHORS SHALL BE REDUCED ACCORDING TO MANUFACTURER'S RECOMMENDATION DUE TO THE VICINITY OF ANCHOR TO EDGE OF CONCRETE.
7. THE BOND STRESSES AS SPECIFIED IN ICC-ES OR IAPMO-UES REPORT SHALL BE BASED ON LONG TERM ELEVATED TEMPERATURES OF NOT LESS THAN 110 DEGREES F.

CHANNEL STRUTS & SYSTEMS

1. ALL CHANNEL STRUTS, ASSOCIATED FIXTURES, BRACKETS AND FASTENERS SHALL BE AS MANUFACTURED BY UNISTRUT CORPORATION, OR APPROVED EQUIVALENT.

2. CHANNEL STRUTS SHALL BE P1000 OR P1001; 12 GA. x 1-5/8" SQ. PRE-GALVANIZED CHANNELS. WHERE STRUTS ARE TO BE PRE-DRILLED, USE 'HS' PRE-DRILLED STRUTS (9/16"Ø ROUND HOLES @ 1-7/8" o.c. USE OF STRUTS WITH SLOTTED HOLES IS <u>NOT</u> ALLOWED).

3. ALL BOLTS, NUTS & WASHERS THROUGH STRUTS SHALL BE 1/2"Ø ASTM A576, GR. 1015, ELECTRO GALVANIZED PER ASTM B633, AS MFRD. BY UNISTRUT. NUTS FOR BOLTS THROUGH OPEN SIDE OF CHANNEL SHALL BE P1010 NUTS. ALL NUTS SHALL BE TORQUED TO 50 – 65 FT-LBS. NON-UNISTRUT BOLTS & NUTS SHALL BE ASTM A307, H.D. GALVANIZED. ALL BOLTS, NUTS & WASHERS EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.

4. ALL FIXTURES & BRACKETS SHALL BE INSTALLED WITH ALL HOLES FILLED w/ 1/2 % FASTENERS UNLESS NOTED OTHERWISE. DRILL 9/16 % HOLES IN CLOSED SIDES OF CHANNELS WHERE NECESSARY, AT CENTERLINE OF STRUT.

TESTING AND SPECIAL INSPECTIONS

- GENERAL

 ALL TESTS AND SPECIAL INSPECTIONS SHALL CONFORM TO APPLICABLE
 REQUIREMENTS OF 2019 CALIFORNIA BUILDING CODE (CBC) SECTION 1701A AND APPROVED FORM DSA-103, "STATEMENT OF STRUCTURAL TESTS AND SPECIAL
- INSPECTIONS." B) ALL TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE
- WITH 2019 CALIFORNIA ADMINISTRATIVE CODE (CAC) SECTION 4-335. C) THE OWNER SHALL EMPLOY AND PAY THE INSPECTION/TESTING LABORATORY.
- COSTS OF RE-TESTING MAY BE BACK-CHARGED TO THE CONTRACTOR. D) INSPECTOR SHALL BE APPROVED BY DSA. INSPECTIONS SHALL BE IN ACCORDANCE
- WITH CAC SECTION 4-333(b), AND THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH CAC SECTION 4-342.
 E) COPIES OF ALL TEST/INSPECTION REPORTS SHALL BE SUBMITTED TO ARCHITECT,
- 2. FOUNDATIONS (DRILLED PIERS, FOOTINGS, GRADE BEAMS), WALLS AND SLABS-ON-GRADE:
 A) NOTIFY ENGINEER AND PROJECT INSPECTOR 48 HOURS BEFORE CONCRETE IS TO BE PLACED OR FORMS CLOSED TO ALLOW FOR INSPECTION OF EXCAVATIONS AND
- REINFORCING PLACEMENT. B) SPECIAL INSPECTION IS REQUIRED PER CBC SECTION 1705A.3.

STRUCTURAL ENGINEER, PROJECT INSPECTOR. AND DSA-SSS.

- C) THE TESTING AGENCY SHALL PERFORM THE FOLLOWING:
 * REVIEW ALL CONCRETE MIX DESIGNS. ALL DESIGNS SHALL BE SUBMITTED TO AND APPROVED BY TESTING AGENCY PRIOR TO ORDERING
- CONCRETE.
 * FOR EACH CONCRETE MIX PLACED, AGENCY SHALL CAST (4) TEST CYLINDERS IN ACCORDANCE WITH ASTM C31 FOR EACH 50 CUBIC YARDS OR 2000 SQUARE FEET, OR FRACTION THEREOF, OF CONCRETE PLACED EACH DAY, AND TRANSPORT CYLINDERS TO LAB.
- TEST CYLINDERS IN ACCORDANCE WITH ASTM C39. TEST (1) CYLINDER AT 7 DAYS AND (2) CYLINDERS AT 28 DAYS. HOLD LAST TEST CYLINDER FOR 60 DAYS. * INSPECT FINAL PLACEMENT OF ALL REINFORCING AND STEEL EMBEDS AS
- INDICATED ON DETAILS PRIOR TO CONCRETE PLACEMENT. * CONTINUOUS INSPECTION OF CONCRETE PLACEMENT FOR ALL DRILLED PIERS AND GRADE BEAM FOOTINGS.
- 3. POST-INSTALLED ANCHORS IN CONCRETE AND CONCRETE MASONRY:
 A) <u>GENERAL APPLICABLE TO ALL ANCHORS AND DOWELS:</u>
- 1) ALL EXPANSION ANCHORS, SCREW ANCHORS AND ADHESIVE ANCHOR SYSTEMS USED SHALL HAVE ICC-ES OR IAPMO-UES APPROVAL.
- 2) PERIODIC SPECIAL INSPECTION IS REQUIRED FOR ALL ANCHORS. B) <u>EXPANSION ANCHORS IN CONCRETE & MASONRY:</u>
 - PULL-TEST OR TORQUE-TEST 100% OF ANCHORS EXCEPT AS NOTED; PULL-TEST OR TORQUE-TEST 10% OF SOLE PLATE ANCHOR BOLTS AND 50% OR ALTERNATE ANCHORS FOR EQUIPMENT ANCHORAGE AND IN NON-STRUCTURAL APPLICATIONS.
 PULL-TEST LOAD VALUES SPECIFIED BELOW ARE BASED ON (1-1/4) TIMES THE MAXIMUM DESIGN TENSION STRENGTHS AS PROVIDED IN THE ICC-ES REPORT FOR <u>HILTI KWIK-BOLT TZ2 (ESR-4266)</u> IN CONCRETE, IN ACCORDANCE WITH CBC SECTION 1910A.5.4, AND (2) TIMES THE MAXIMUM ALLOWABLE TENSION LOADS AS PROVIDED IN THE ICC-ES REPORT FOR <u>HILTI KWIK-BOLT 3</u>
 - (ESR-1385) IN MASONRY.
 PULL-TEST ANCHORS IN TENSION WITH CALIBRATED HYDRAULIC RAM TO VALUES SPECIFIED BELOW.
 ANCHOR NOMINAL EMBEDMENT CONC. TEST MASONRY TEST INSTALLATION DIAMETER (CONC./MASONRY) LOAD (LBS.) LOAD (LBS.) TORQUE (FT.-LBS.)

				<u>1011000 (111 E</u>
3⁄8"	21/2" / 21/2"	1905	1250	30
1⁄2"	3 ³ ⁄ ₄ " / 3 ¹ ⁄ ₂ "*(3"**)	4050	1450*(1035**)	50
5⁄8"	4 ¹ ⁄ ₂ " / 4"*(3 ¹ ⁄ ₂ "**)	5525	1990*(1365**)	60
3/4"	51/2" / 43/8"	7150	2630	125
* [·] - AT	ANCHOR INSTALLED IN	N THE FACE	OF GROUT-FILLED	MASONRY

** - AT ANCHOR INSTALLED IN THE TOP OF GROUT-FILLED MASONRY
4) ALTERNATIVELY, TORQUE-TEST ANCHORS WITH CALIBRATED TORQUE WRENCH TO VALUES SPECIFIED IN MANUFACTURER'S ICC-ES OR IAPMO-UES REPORT FOR RECOMMENDED INSTALLATION TORQUE WITHIN 1/4 TURN OF THE NUT FOR 3/8"Ø SLEEVE ANCHOR ONLY AND WITHIN 1/2 TURN OF THE NUT FOR ALL OTHER ANCHORS.

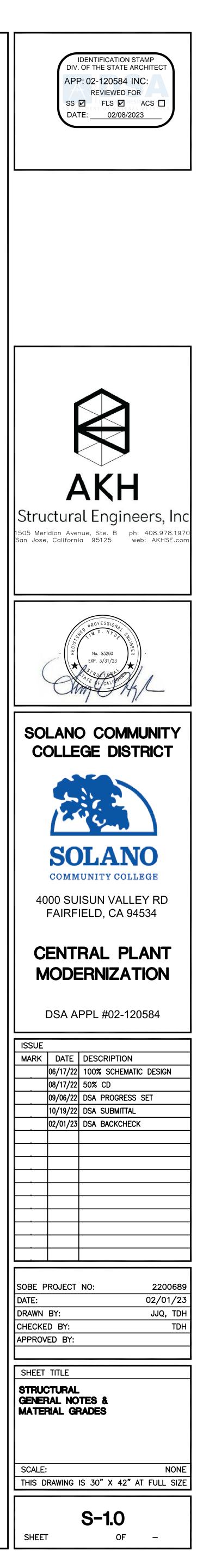
C) <u>RODS & DOWELS WITH CHEMICAL ADHESIVE IN CONCRETE & MASONRY:</u> 1) PULL-TESTING OF RODS INSTALLED IN CHEMICAL ADHESIVE IS REQUIRED FOR

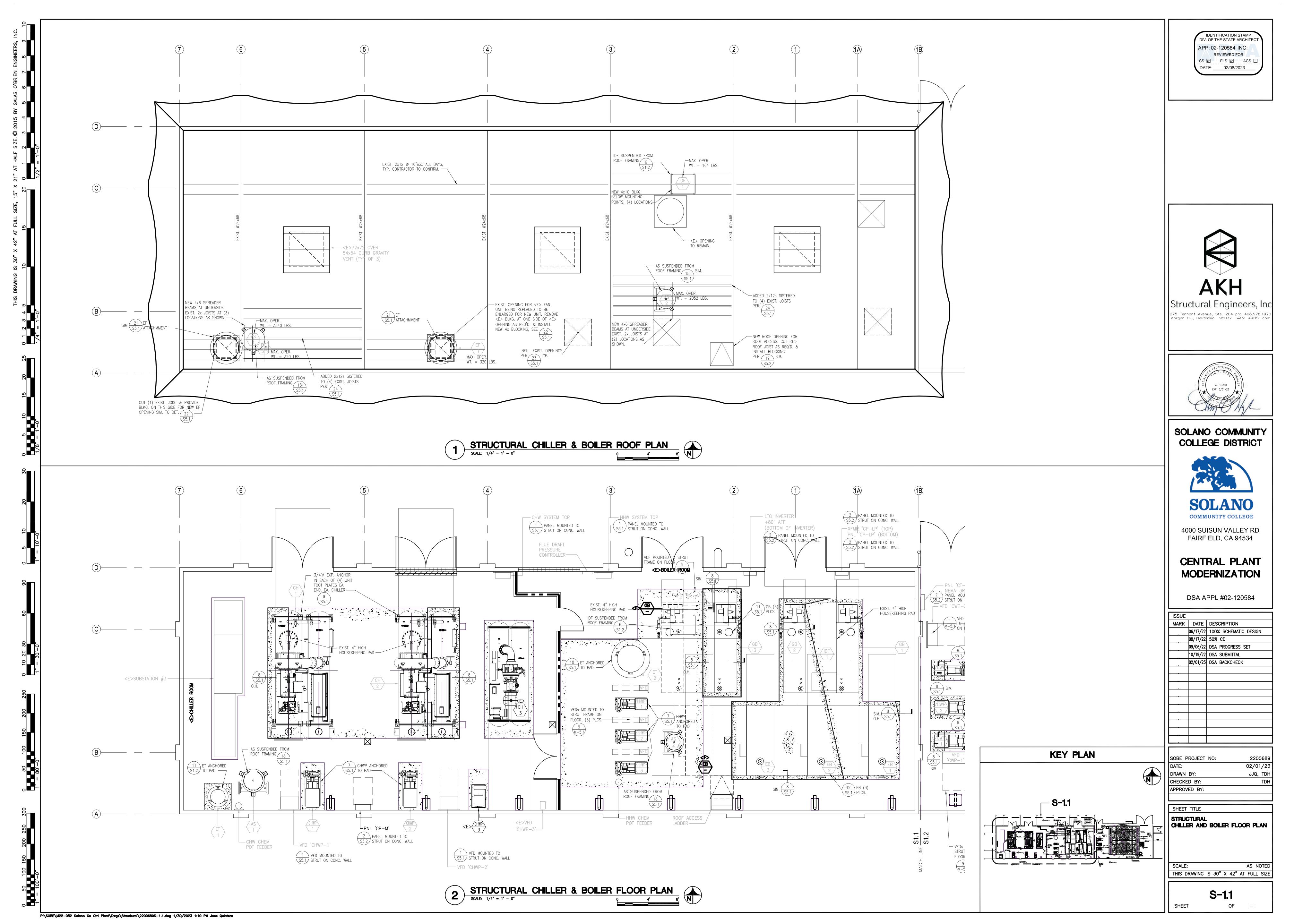
- ALL ANCHORS. TESTING OF REBAR USED ONLY AS SHEAR DOWELS ACROSS COLD JOINTS IN SLABS-ON-GRADE, WHERE SLAB IS NOT PART OF THE LATERAL FORCE-RESISTING SYSTEM, IS NOT REQUIRED.
 2) PULL-TEST LOAD VALUES SPECIFIED BELOW ARE BASED ON (1-1/4) TIMES THE MAXIMUM DESIGN TENSION STRENGTHS AS PROVIDED IN THE ICC-ES REPORT FOR <u>HILTI HIT-RE 500-V3 (ESR-3814)</u> IN CONCRETE, IN ACCORDANCE WITH CBC SECTION 1910A.5.4, AND (2) TIMES THE MAXIMUM ALLOWABLE TENSION LOADS AS PROVIDED IN THE ICC-ES REPORT FOR HILTI HIT HY-200
- (ESR-3963) IN MASONRY.
 PULL-TEST ANCHORS IN TENSION WITH CALIBRATED HYDRAULIC RAM TO VALUES SPECIFIED BELOW, BASED ON MIN. EMBEDMENT OF 10Ø IN CONCRETE & 9Ø IN MASONRY, U.N.O.
- ANCHOR/BAR MIN. EMBEDMENT CONC. TEST MASONRY TEST <u>DIAMETER</u> (CONC./MASONRY) LOAD (LBS.) LOAD (LBS.) $\frac{3}{8}$ ", #3 $\frac{3}{4}$ " / $\frac{3}{8}$ "* 2910 1510* $\frac{1}{2}$ ", #4 5" / $\frac{4}{2}$ "*(4"**) 5165 2290*(1760**) $\frac{5}{8}$ ", #5 $\frac{6}{4}$ " / $\frac{5}{8}$ "*(4"**) 8245 2220*(1960**)
- $\frac{3}{4}$ ", #6 7½" / 6 $\frac{3}{4}$ "* 10150 2720 * – AT ANCHOR INSTALLED IN THE FACE OF GROUT–FILLED MASONRY ** – AT ANCHOR INSTALLED IN THE TOP OF GROUT–FILLED MASONRY
- 4. WELDING OF STRUCTURAL STEEL. TESTING LAB SHALL:
- A) VERIFY CERTIFICATION OF WELDERS AT START OF WORK.B) REVIEW WELDING PROCEDURE SPECIFICATIONS SUBMITTED BY FABRICATOR.
- C) PROVIDE CONTINUOUS INSPECTION OF ALL COMPLETE AND PARTIAL PENETRATION
 CROOVE WELDS AND ALL FULET WELDS 7 (8" AND LADGED
- GROOVE WELDS, AND ALL FILLET WELDS 3/8" AND LARGER.
 D) PROVIDE PERIODIC INSPECTION OF ALL FILLET WELDS 5/16" AND SMALLER.
 E) TEST WELDS AS DEEMED NECESSARY BY THE INSPECTION AGENCY TO ENSURE ADEQUACY OF WELDS AND CONFORMANCE TO THE DRAWINGS AND SPECIFICATIONS.
- ADDITIONAL INSPECTIONS BY STRUCTURAL ENGINEER: ARCHITECT AND ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO THE FOLLOWING TO ALLOW FOR INSPECTION OF THE RESPECTIVE WORK PRIOR TO
- ENCLOSING IN FINISHES: A) AT SUBSTANTIAL COMPLETION OF ANY AREA OF FOUNDATION WORK PRIOR TO CLOSING
- OF FORMS OR PLACEMENT OF CONCRETE. B) AT SUBSTANTIAL COMPLETION OF ANY AREA OF STRUCTURAL STEEL FRAMING.

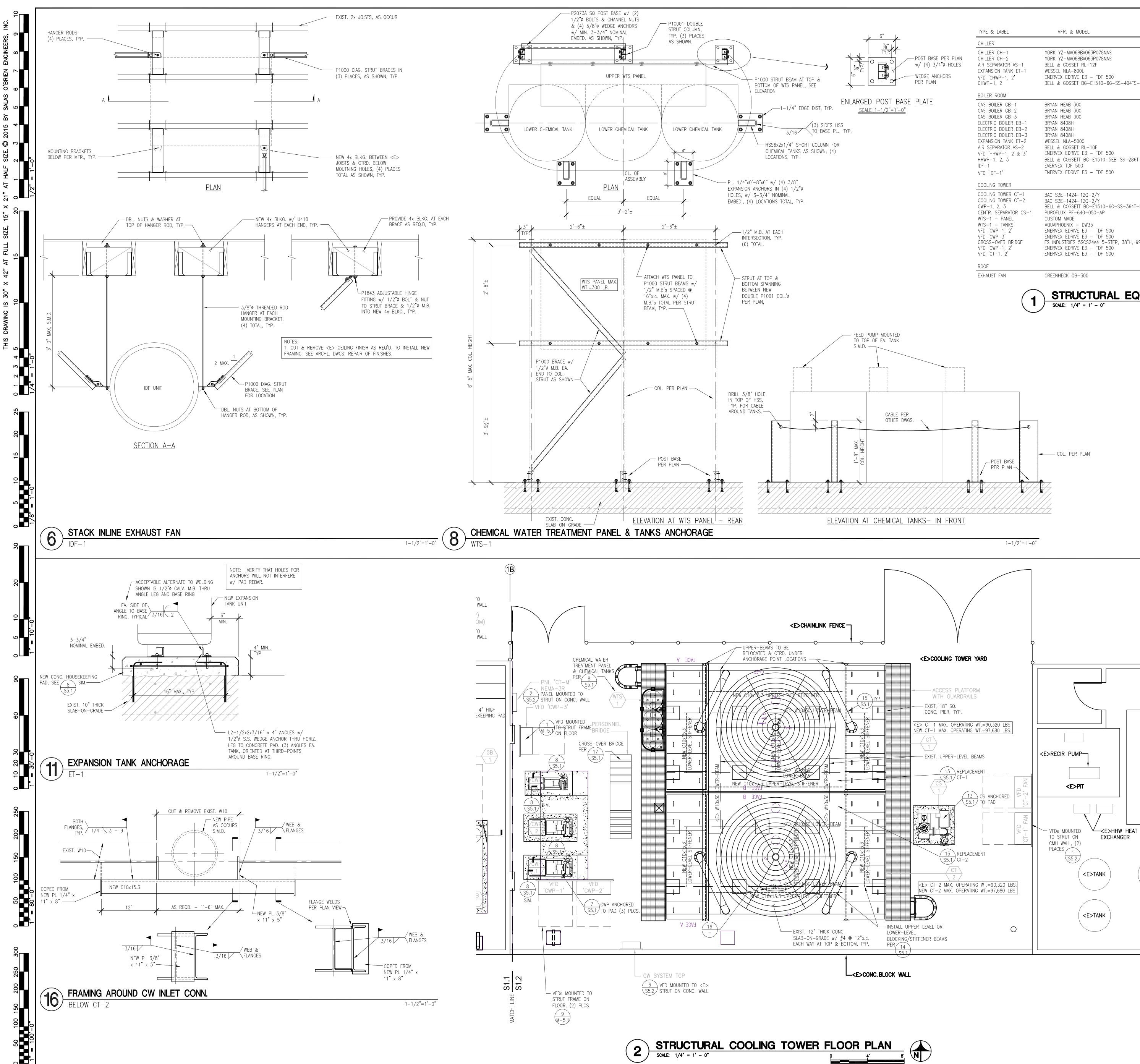
SHOP DRAWING SUBMITTALS

- PROVIDE SHOP DRAWINGS FOR THE FOLLOWING MATERIALS/PRODUCTS:

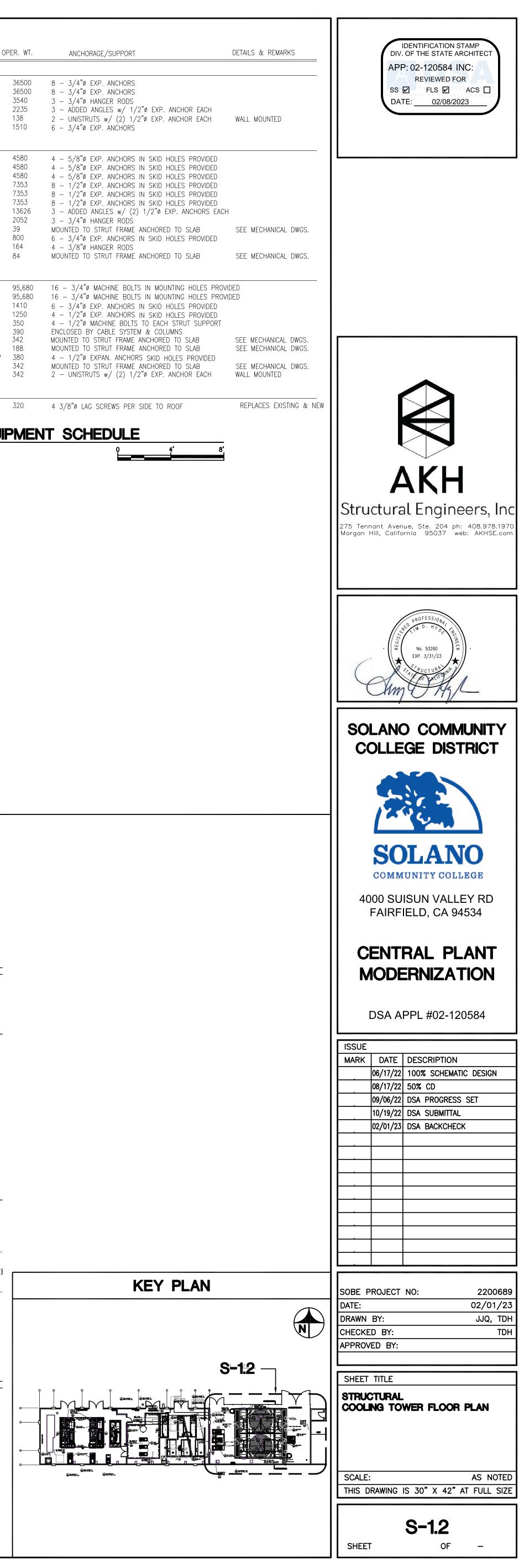
 A) CONCRETE MIX DESIGNS (SUBMIT TO TESTING/INSPECTION AGENCY)
 B) CONCRETE REINFORCING
 C) CONCRETE PAD AND WALL CONTROL/CONSTRUCTION JOINT LAYOUT
 D) STRUCTURAL STEEL AND MISC. METALS
- 2. SEE SPECIFICATIONS FOR OTHER SUBMITTALS AND SUBMITTAL PROCEDURE.

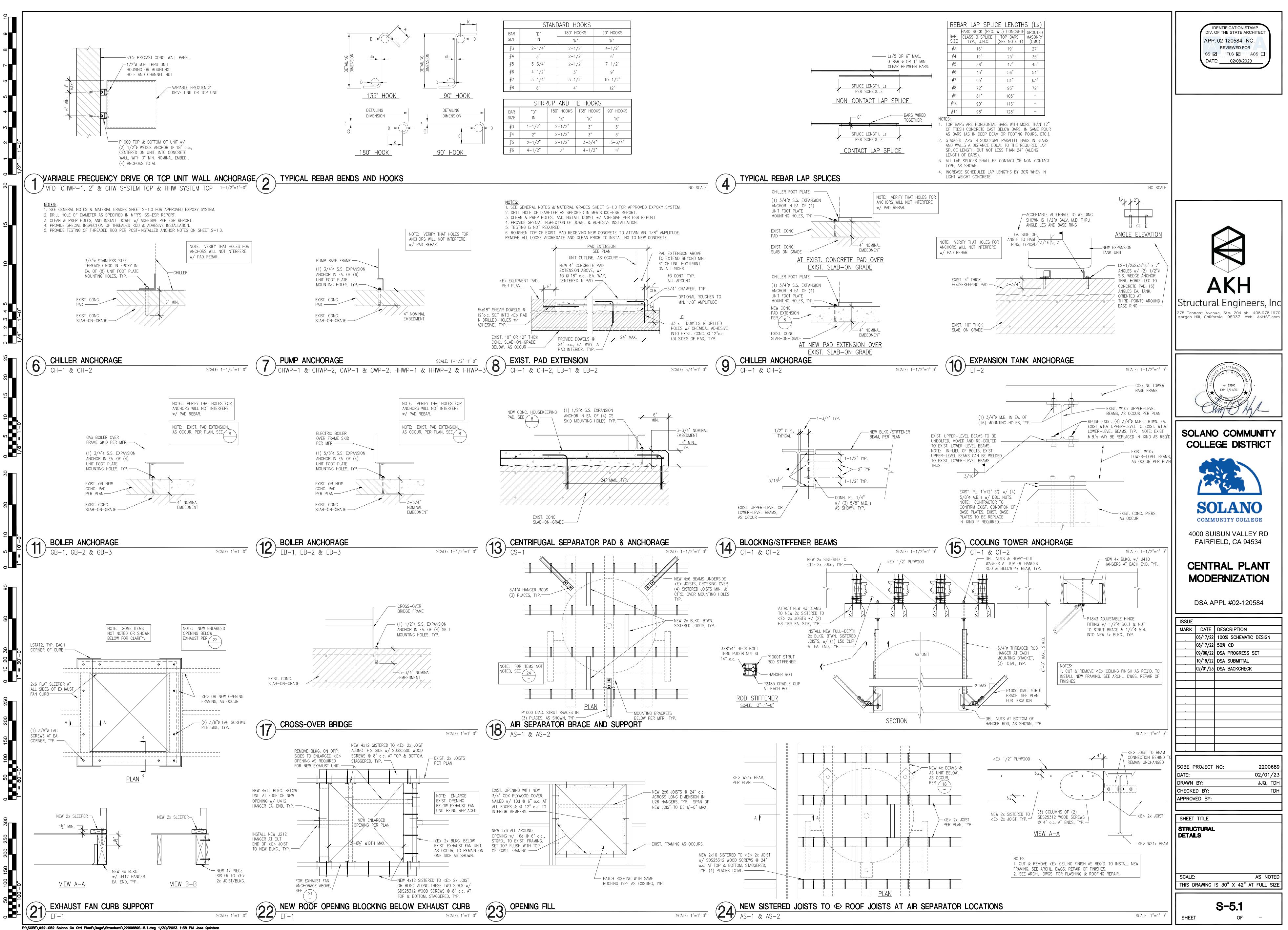


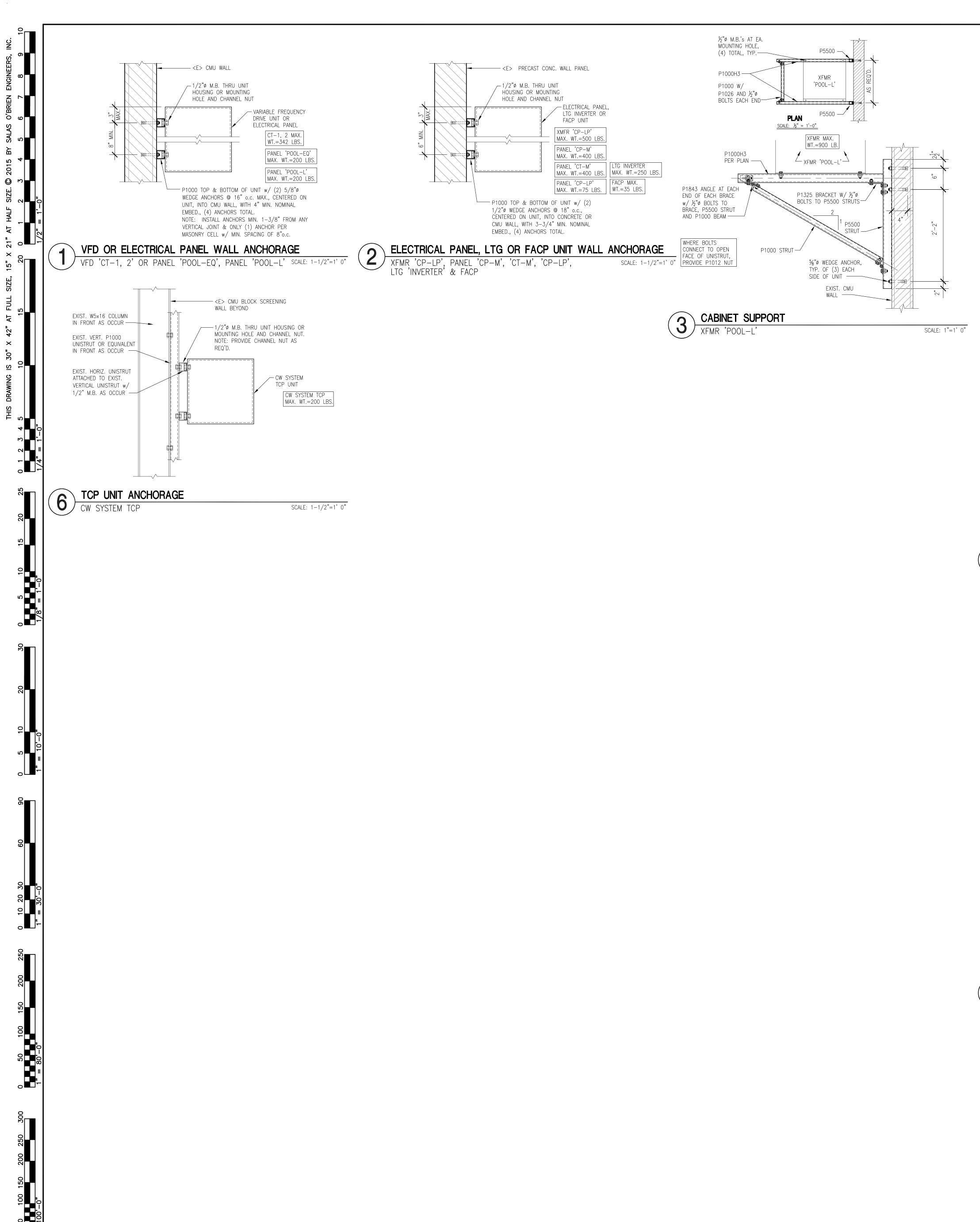




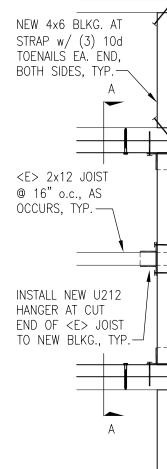
_	TYPE & LABEL	MFR. & MODEL	OPER. WT.	ANCHORAGE/SUPPORT	DETAILS & REMARKS
- POST BASE PER PLAN w/ (4) 3/4ӯ HOLES WEDGE ANCHORS PER PLAN	CHILLER CHILLER CH-1 CHILLER CH-2 AIR SEPARATOR AS-1 EXPANSION TANK ET-1 VFD 'CHWP-1, 2' CHWP-1, 2	YORK YZ-MA068BV063P078NAS YORK YZ-MA068BV063P078NAS BELL & GOSSET RL-12F WESSEL NLA-800L ENERVEX EDRIVE E3 - TDF 500 BELL & GOSSET BG-E1510-6G-SS-404TS-	36500 36500 3540 2235 138 -L 1510	8 – $3/4$ "Ø EXP. ANCHORS 8 – $3/4$ "Ø EXP. ANCHORS 3 – $3/4$ "Ø HANGER RODS 3 – ADDED ANGLES w/ $1/2$ "Ø EXP. ANCHOR EACH 2 – UNISTRUTS w/ (2) $1/2$ "Ø EXP. ANCHOR EACH 6 – $3/4$ "Ø EXP. ANCHORS	WALL MOUNTED
BASE PLATE <u>0"</u>	BOILER ROOM GAS BOILER GB-1 GAS BOILER GB-2 GAS BOILER GB-3 ELECTRIC BOILER EB-1 ELECTRIC BOILER EB-2 ELECTRIC BOILER EB-3 EXPANSION TANK ET-2 AIR SEPARATOR AS-2 VFD 'HHWP-1, 2 & 3' HHWP-1, 2, 3 IDF-1 VFD 'IDF-1'	BRYAN HEAB 300 BRYAN HEAB 300 BRYAN HEAB 300 BRYAN 8408H BRYAN 8408H WESSEL NLA-5000 BELL & GOSSET RL-10F ENERVEX EDRIVE E3 - TDF 500 BELL & GOSSETT BG-E1510-5EB-SS-286T EVERNEX TDF 500 ENERVEX EDRIVE E3 - TDF 500	4580 4580 7353 7353 7353 13626 2052 39 -L 800 164 84	4 – 5/8"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 4 – 5/8"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 4 – 5/8"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 8 – 1/2"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 8 – 1/2"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 8 – 1/2"¢ EXP. ANCHORS IN SKID HOLES PROVIDE 3 – ADDED ANGLES w/ (2) 1/2"¢ EXP. ANCHORS 3 – 3/4"¢ HANGER RODS MOUNTED TO STRUT FRAME ANCHORED TO SLAB 6 – 3/4"¢ HANGER RODS MOUNTED TO STRUT FRAME ANCHORED TO SLAB 4 – 3/8"¢ HANGER RODS	D D D D EACH SEE MECHANICAL DWGS.
	COOLING TOWER COOLING TOWER CT-1 COOLING TOWER CT-2 CWP-1, 2, 3 CENTR. SEPARATOR CS-1 WTS-1 - PANEL WTS-1 - TANKS VFD 'CWP-1, 2' VFD 'CWP-3' CROSS-OVER BRIDGE VFD 'CWP-1, 2' VFD 'CT-1, 2'	BAC S3E-1424-12Q-2/Y BAC S3E-1424-12Q-2/Y BELL & GOSSETT BG-E1510-6G-SS-364T- PUROFLUX PF-640-050-AP CUSTOM MADE AQUAPHOENIX - DW35 ENERVEX EDRIVE E3 - TDF 500 ENERVEX EDRIVE E3 - TDF 500 FS INDUSTRIES 5SCS24A4 5-STEP, 38"H, 9 ENERVEX EDRIVE E3 - TDF 500 ENERVEX EDRIVE E3 - TDF 500	1250 350 390 342 188	16 – $3/4$ "Ø MACHINE BOLTS IN MOUNTING HOLES F 16 – $3/4$ "Ø MACHINE BOLTS IN MOUNTING HOLES F 6 – $3/4$ "Ø EXP. ANCHORS IN SKID HOLES PROVIDE 4 – $1/2$ "Ø EXP. ANCHORS IN SKID HOLES PROVIDE 4 – $1/2$ "Ø MACHINE BOLTS TO EACH STRUT SUPPO ENCLOSED BY CABLE SYSTEM & COLUMNS MOUNTED TO STRUT FRAME ANCHORED TO SLAB MOUNTED TO STRUT FRAME ANCHORED TO SLAB 4 – $1/2$ "Ø EXPAN. ANCHORS SKID HOLES PROVIDED MOUNTED TO STRUT FRAME ANCHORED TO SLAB 2 – UNISTRUTS w/ (2) $1/2$ "Ø EXP. ANCHOR EACH	PROVIDED D RT SEE MECHANICAL DWGS. SEE MECHANICAL DWGS.
	ROOF EXHAUST FAN	GREENHECK GB-300	320	4 3/8"ø LAG SCREWS PER SIDE TO ROOF	REPLACES EXISTING &
		SCALE: 1/4" = 1' - 0"			
PER DWGS.	POST BASE	- COL. PER PLAN			
L TANKS- IN FRONT	PER PLAN				
	1-1/2"=1'-0)"			
COOLING TOWER	ORM				

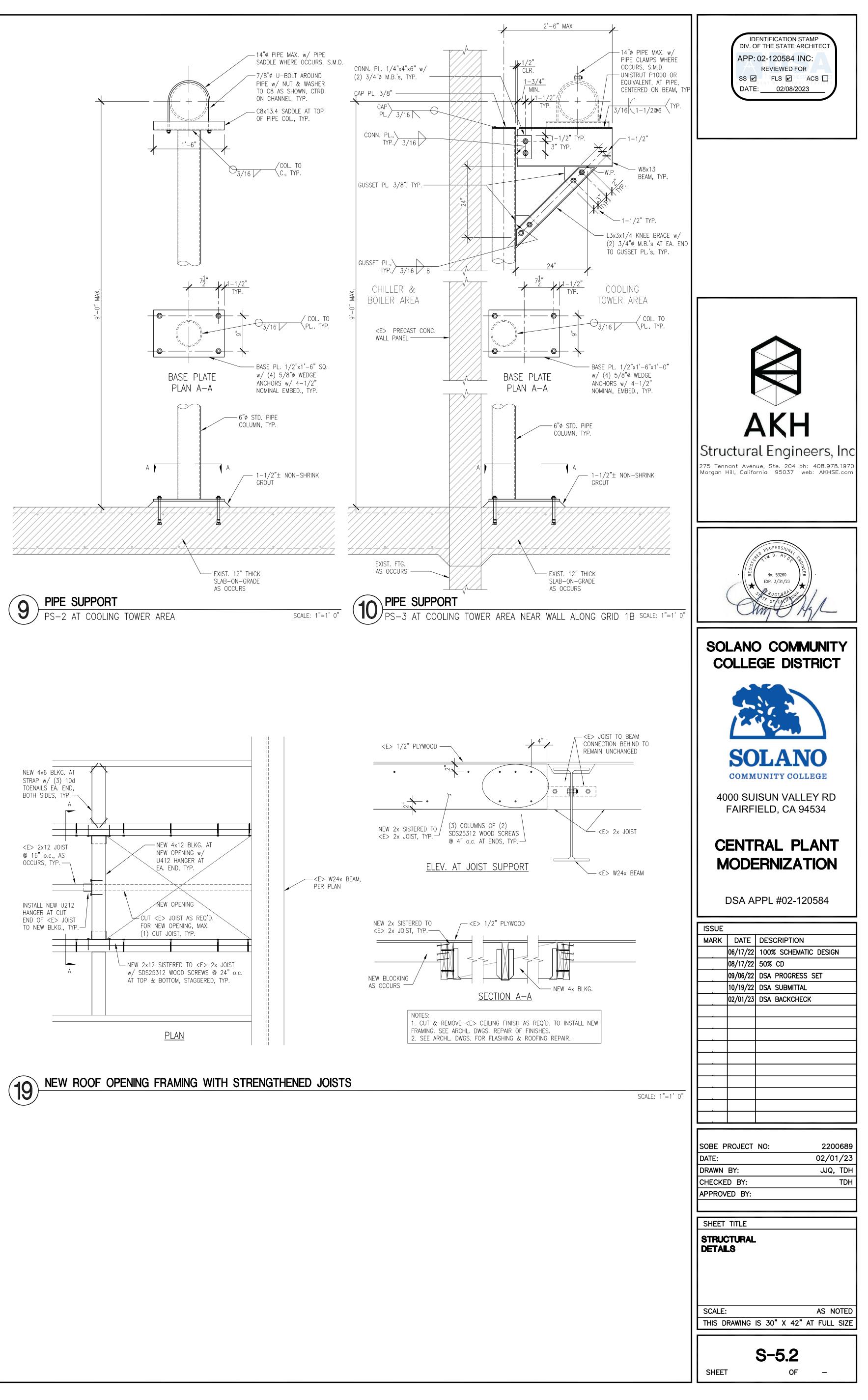


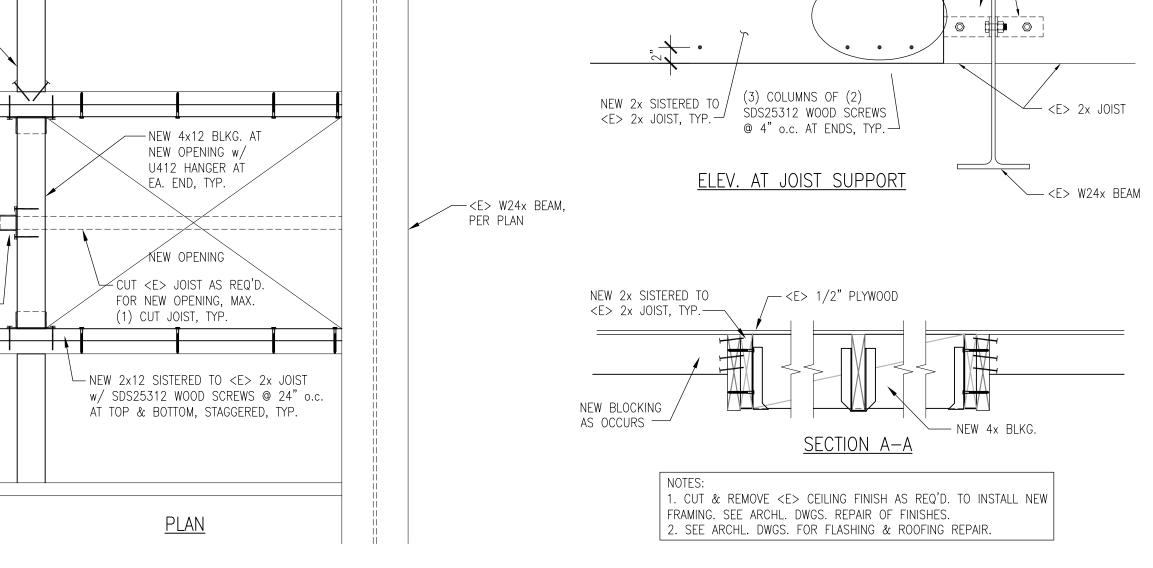


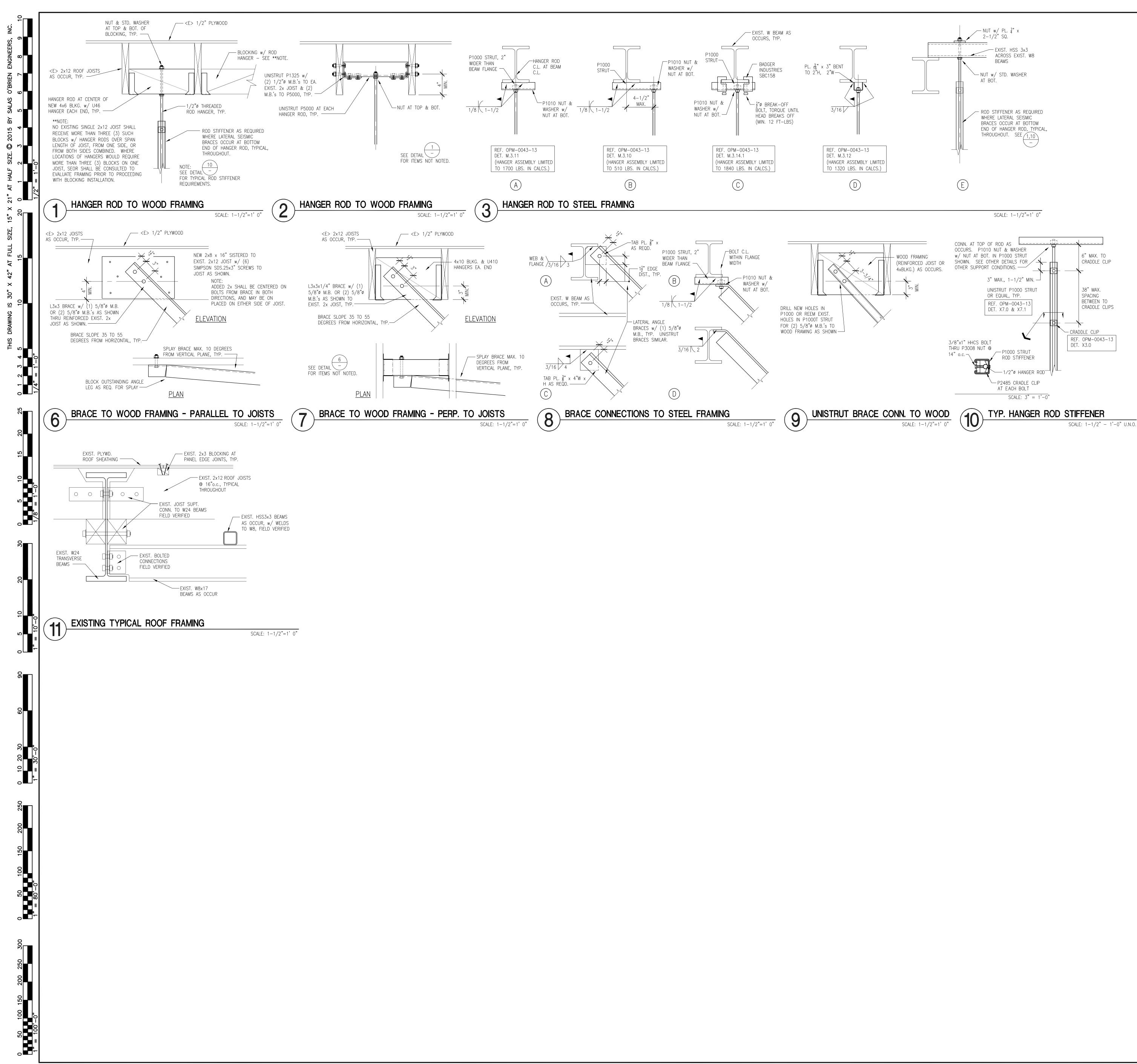


9 PIPE SUPPORT PS-2 AT COOLING









PIPE/CONDUIT SUPPORT AND LATERAL BRACING

A. HANGER RODS:

- 1. VERTICAL HANGER RODS SHALL BE $\frac{1}{2}$ " ϕ ASTM A36, A307 OR F1554 GR. 36 THREADED ROD. SEE MECHANICAL DRAWINGS FOR CONNECTION OF HANGER ROD TO PIPE CLEVIS/CLAMP BEING SUPPORTED. SEE **NOTE AT DETAIL 1/S5.3 FOR LIMITATIONS ON NUMBER OF HANGER RODS SUPPORTED SUPPORTED BY INDIVIDUAL JOISTS.
- 2. HANGER RODS SHALL BE SLOPED NOT MORE THAN 5% FROM VERTICAL (1H:20V).
- HANGER RODS SHALL BE ATTACHED TO FRAMING AT ROOF LEVEL PER DETAILS 1 THROUGH 3 ON S5.3 AS APPROPRIATE ACCORDING TO WHERE TOP OF ROD OCCURS RELATIVE TO SPECIFIC FRAMING MEMBERS.
- 4. WHERE LATERAL BRACES OCCUR AT BOTTOM OF HANGER RODS, RODS SHALL HAVE CONTIGUOUS STIFFENERS PER DETAIL 10/S5.

B. LATERAL BRACES:

- LATERAL BRACES SHALL BE ONE OF THE FOLLOWING:
 * ASTM A36 L3-1/2"x3-1/2"x1/4" OUTSTANDING ANGLE LEGS SHALL OCCUR AT TOP SIDE OF SLOPED BRACES
 * UNISTRUT P1000 OR P1000T OR EQUIVALENT; 1-5/8" SQ. X 12 GA. CHANNEL STRUT
- 2. CONNECTIONS OF LATERAL BRACES TO WOOD FRAMING SHALL USE NOT LESS THAN TWO (2) $\frac{5}{8}$ "Ø BOLTS TO WOOD MEMBERS, AND ONE $\frac{5}{8}$ "Ø BOLT TO STEEL MEMBERS. CONNECTION AT BOTTOM OF BRACES SHALL USE (1) 5/8"Ø M.B. TO PIPE CLEVIS/CLAMP AS SHOWN ON MECHANICAL DRAWINGS.
- 3. LATERAL BRACING SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF CALIFORNIA HCAI (OSHPD) OPM-0043-13 "MASON WEST, INC. SEISMIC RESTRAINT GUIDELINES FOR SUSPENDED DISTRIBUTION SYSTEMS, 7TH ED., 2020." WHERE SPECIFIC DETAILS FROM OPN-0043 ARE REFERENCED, CONNECTIONS SHALL COMPLY WITH ALL REQUIREMENTS SPECIFIED IN DETAIL.
- 4. BRACING HARDWARE COMPONENTS SHALL BE BY MASON WEST, INC. AS SPECIFIED IN OPM-0043-13, OR EQUIVALENT PRODUCTS FROM ATKORE UNISTRUT OR EATON B-LINE. PRODUCTS FROM OTHER MANUFACTURERS MAY BE PROVIDED ONLY AFTER COMPREHENSIVE PRODUCT INFORMATION IS SUBMITTED AND APPROVED BY SEOR; USE OF PRODUCTS BY MANUFACTURERS OTHER THAN THOSE SPECIFIED ABOVE WILL REQUIRE DEVELOPMENT/ SUBMITTAL OF CCD (CONSTRUCTION CHANGE DOCUMENT) BY SEOR TO DSA, AND WOULD BE DEPENDENT ON DSA-APPROVAL. DEVELOPMENT AND SUBMITTAL OF CCD AND REQUIRED REVISIONS WOULD BE AT CONTRACTOR'S EXPENSE.
- 5. SEE MECHANICAL DRAWINGS FOR ATTACHMENT OF LATERAL BRACES TO PIPES/CONDUITS
- 6. SLOPE OF LATERAL BRACES SHALL BE BETWEEN 35 AND 55 DEGREES FROM
- HORIZONTAL. 7. LATERAL BRACES SHALL GENERALLY OCCUR IN A VERTICAL PLANE PERPENDICULAR TO AXIS OF SUBJECT PIPE/CONDUIT. BRACES SHALL BE SPLAYED NOT MORE THAN 10

DEGREES FROM THIS VERTICAL PLANE PERPENDICULAR TO PIPE/CONDUIT AXIS.

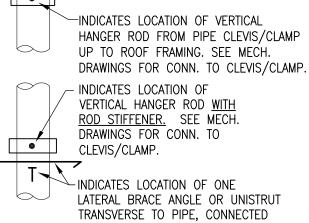
C. PIPE HANGER AND BRACE LEGEND AND NOTES:

BEING BRACED.

- LATERAL (DIAGONAL) BRACES MAY EXTEND UP FROM PIPES IN EITHER TRANSVERSE DIRECTION. GENERALLY, BRACE DIRECTION CHOSEN SHOULD PROVIDE SHORTEST POSSIBLE LENGTH OF BRACE TO ROOF FRAMING.
- 2. REFER TO "CHILLER AND BOILER FLOOR PLAN NEW" ON M-1.1.2: <u>HANGER ROD</u> LOCATIONS ON

LATERAL BRACE LOCATIONS ON PLAN ARE SHOWN THUS:

PLAN ARE SHOWN THUS:



TRANSVERSE TO PIPE, CONNECTED TO PIPE CLEVIS/CLAMP. SEE MECH. DRAWINGS FOR CONN. TO CLEVIS/CLAMP.

