PLUMBING GENERAL NOTES

1. SCOPE:
   CONTRACTOR SHALL PROVIDE SERVICE PIPING AS GENERALLY DELINEATED ON THE PLUMBING DRAWINGS. WORK SHALL INCLUDE DEMOLITION AS GENERALLY SHOWN ON THE DRAWINGS. WORK SHALL INCLUDE SERVICE PIPING AND FINAL CONNECTIONS TO EQUIPMENT FURNISHED AND INSTALLED BY OTHER TRADES AS MAY BE SHOWN ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL OR OTHER DRAWINGS OF THE CONTRACT DOCUMENTS.
2. CALIFORNIA CODE OF REGULATIONS:
   ALL HOT WATER DISTRIBUTION AND CIRCULATION LINES SHALL BE INSULATED IN ACCORDANCE WITH SECTION 120.3 OF THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 6, SUBCHAPTER 3.
3. ALL PLUMBING FIXTURES & EQUIPMENT USED (E.G. SHOWERHEADS, LAVATORY FAUCETS, SINK FAUCET AND WATER HEATERS) SHALL BE CERTIFIED TO COMPLY WITH EFFICIENCY STANDARDS, AS LISTED BY THE CALIFORNIA ENERGY COMMISSION FOR SUCH APPLIANCES, BY ITS MANUFACTURER.
4. CODES:
   ALL WORK, MATERIAL, AND EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY HAVING JURISDICTION. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT THE INSTALLATION OF WORK, MATERIAL OR EQUIPMENT NOT CONFORMING TO THESE OR OTHER CODES APPLICABLE TO THIS PROJECT.
   A. 2025 CALIFORNIA ADMINISTRATIVE CODE (CAC), CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 1.
   B. 2025 CALIFORNIA BUILDING CODE (CBC), CCR TITLE 24, PART 2, BASED ON THE 2024 INTERNATIONAL BUILDING CODE (IBC).
   C. 2025 CALIFORNIA ELECTRICAL CODE (CEC), CCR TITLE 24, PART 3, BASED ON THE 2023 NATIONAL ELECTRICAL CODE (NEC).
   D. 2025 CALIFORNIA MECHANICAL CODE (CMC), CCR TITLE 24, PART 4, BASED ON THE 2024 UNIFORM MECHANICAL CODE (UMC).
   E. 2025 CALIFORNIA PLUMBING CODE (CPC), CCR TITLE 24, PART 5, BASED ON THE 2024 UNIFORM PLUMBING CODE (UPC).
   F. 2025 CALIFORNIA ENERGY CODE (CEC), CCR TITLE 24, PART 6.
   G. 2025 CALIFORNIA FIRE CODE (CFC), CCR TITLE 24, PART 9, BASED ON THE 2024 INTERNATIONAL FIRE CODE (IFC)
   H. 2025 CALIFORNIA GREEN BUILDING STANDARDS CODE, CALGREEN$_{TR}$, CCR TITLE 24, PART 11.
5. WORKMANSHIP:
   ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO THE BEST TRADE PRACTICE BY THOSE SKILLED IN THE PARTICULAR TRADE. EQUIPMENT, FIXTURES, PIPING, ETC., SHALL BE PLUMB, LEVEL, SQUARE AND/OR CENTERED, ETC. EQUIPMENT TO BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. EXISTING INFORMATION:
   LOCATION, SIZE, ELEVATION, MATERIAL, ETC., OF EXISTING UTILITIES IS PROVIDED FROM SOURCES DEEMED RELIABLE BUT IS NOT GUARANTEED. THE CONTRACTOR SHALL FIELD VERIFY ALL DATA BEFORE PROCEEDING WITH ANY WORK. NO EXTRA COST WILL BE ALLOWED FOR SERVICES NOT AS SHOWN.
7. PERMITS AND UTILITY SERVICE FEES:
   THE PLUMBING CONTRACTOR SHALL ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS, AND SERVICE CHARGES REQUIRED FOR THE INSTALLATION OF THE WORK.
8. ACCURACY:
   PLANS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL CONFIRM ALL DIMENSIONS AND LOCATION OF WALLS, PARTITIONS, FIXTURES, ETC., AGAINST DESIGN PLANS FOR CONSISTENCY AND ACCURACY PRIOR TO COMMENCING WORK.
9. PROVIDE AND INSTALL CONDENSATE DRAIN WITH TRAP AT EACH A/C UNIT PER THE CPC, AT LOCATIONS SHOWN ON DRAWINGS. COORDINATE WORK WITH THE MECHANICAL CONTRACTOR.
10. PROVIDE AND INSTALL ACCESS PANELS FOR ALL SHUT-OFF, ISOLATION, OR BRANCH VALVES NOT READILY ACCESSIBLE. ACCESS PANELS SHALL BE PROVIDED AND INSTALLED AT ALL TRAP PRIMER VALVES AND WATER HAMMER ARRESTORS.
11. ALL PIPING PASSING THROUGH CONCRETE FLOORS SHALL BE SLEEVED TO PROTECT PIPING AGAINST BREAKAGE.
12. HORIZONTAL DRAINAGE PIPING LESS THAN 4" IN DIAMETER SHALL BE SLOPED AT A MINIMUM OF 1/4" PER L.F. (2%) DRAINAGE PIPING 4" AND LARGER SHALL BE SLOPED AT A MINIMUM OF 1/8" PER L.F. (1%).
13. ALL PLUMBING FIXTURES AND PIPING SHALL BE LISTED BY AN APPROVED LISTING AND TESTING AGENCY AND PROPERLY LABELED.
14. INSULATING MATERIALS APPLIED TO THE SURFACE OF DUCTS AND PIPES SHALL HAVE A FLAME INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723, PER 2025 CMC, SECTION 602.2.
15. DISINFECT ALL DOMESTIC WATER PIPING PER 2025 CPC SECTION 609.10.
16. PRESSURE TEST WATER PIPING PER 2025 CPC SECTION 609.4.
17. PRESSURE TEST WASTE PIPING PER 2025 CPC SECTION 712.0.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	SS	SOIL, WASTE OR SANITARY SEWER BELOW FLOOR
	SS	SOIL, WASTE OR SANITARY SEWER OVERHEAD
	V	VENT PIPING
	CW, ICW	COLD WATER, INDUSTRIAL COLD WATER
	HW, IHW (110°)	HOT WATER SUPPLY, INDUSTRIAL HOT WATER
	HWR	HOT WATER RETURN
G	G	NATURAL GAS
(E)	(E)	EXISTING TO BE REMOVED
D OR IW	D OR IW	DRAIN OR INDIRECT WASTE
	CD	CONDENSATE DRAIN
	AFG	ABOVE FINISHED GRADE
AD, AP	AD, AP	ACCESS DOOR, ACCESS PANEL
	AC	AIR CHAMBER
	BV	BALL VALVE
		BRANCH - TOP CONNECTION
		BRANCH - BOTTOM CONNECTION
		BRANCH - SIDE CONNECTION
	CBV	CALIBRATED BALANCE VALVE
	BFV	BUTTERFLY VALVE
	CB, RD	CATCH BASIN, ROOF DRAIN
	CKV	CHECK VALVE
CO	CO	CLEANOUT PLUG
	CR	CONCENTRIC REDUCER
Ø	DIA	DIAMETER
	ER	ECCENTRIC REDUCER
	FC	FLEXIBLE CONNECTOR
	FCO	FLOOR CLEANOUT
	FD	FLOOR DRAIN
	GV	GATE VALVE
	GSCK, PC	GAS COCK, PLUG COCK
	GPR	GAS PRESSURE REGULATOR
	GL. V.	GLOBE VALVE
	GCO	GRADE CLEANOUT
	HB	HOSE BIBB
	AN	PIPE ANCHOR
	PG	PIPE GUIDE
	POC	POINT OF CONNECTION
	PRV	PRESSURE REDUCING VALVE
	PG	PRESSURE GAUGE
OR	T&PR	TEMPERATURE & PRESSURE RELIEF VALVE
	STR	STRAINER
	TH	THERMOMETER
TP	TP	TRAP PRIMER
	UN	UNION OR FLANGE
	WCO	WALL CLEANOUT

HEATING HOT WATER BOILER SCHEDULE

FURNISHED BY INSTALED BY	MARK #	MANUFACTURER & MODEL #	DESCRIPTION	GAS				WATER TEMP (°F)	FLOW (GPM)	WPD (FT)	SHIPPING WEIGHT (LBS)	ELECTRICAL DATA			NOTES
				INPUT HI MBH	INPUT LO MBH	OUT HI MBH	OUT LO MBH					VOLTS	PHASE	HERTZ	
OFCI	B-1	RAYPAK #H7-1503A	OUTDOOR BOILER	1500	210	1293	181	180	87	16	840	120	1	60	1, 2, 3, 4 & 5

1. 86.2% THERMAL EFFICIENCY AT FULL RATE, FULL MODULATION FIRING W/ 7:1 TURN DOWN RATIO, NATURAL GAS TRAIN (7-11" WC INPUT), LOW GAS PRESSURE SWITCH, ALL WELDED HEAT EXCHANGER, STAINLESS STEEL BURNER, SCAQMD RULE 1146.2 CERTIFIED, LOW NOx (LESS THAN 20 PPM), 1/1 AIR/GAS RATIO CONTROL & FLOW SWITCH. IGNITION MODULE, STANDARD 3-TRY. 120V, 60 Hz, 1 Ø POWER. PROVIDE 60 PSIG ASME PRESSURE RELIEF VALVE. ANCHOR W/ 1/2" KB TZ2, 3 1/4" EMBEDMENT.
2. THE BOILER SHALL BE PROVIDED WITH AN INTEGRAL BOILER CONTROLLER. THE BOILER CONTROL PANEL WHICH SHALL BE ENABLED & MONITORED BY THE BUILDING MANAGEMENT CONTROL SYSTEM. PROVIDE B-86 LONWORKS BMS SHIP LOOSE. (VERIFY PRIOR TO ORDERING EQUIPMENT.) COORDINATE WORK WITH CONTROLS SERVICE CONTRACTOR FOR TRANSITION OF EQUIPMENT AND CONTROLS.
3. PROVIDE COLD WATER START PROTECTION KIT, P-29. COMBUSTION AIR INTAKE ELBOW MUST BE USED FOR OUTDOOR INSTALLATIONS. IT IS SHIPPED LOOSE. THE ELBOW MUST BE ORIENTED WITH THE OPENING FACING DOWNWARD. PROVIDE AND INSTALL AN AIR FILTER, AIR FILTER KIT INSTALLATION INSTRUCTION PART NO. 241338. USE RAYPAK REPLACEMENT FILTERS KIT NUMBER 012552F (16"x16").
4. FLUE SHALL BE CATEGORY IV, MATERIAL SHALL BE AL29-4C TYPE 316 STAINLESS STEEL. PROVIDE OUTDOOR VENT SUPPORTS, D-23.
5. PROVIDE LOW WATER CUT-OFF REMOTE PROBE, F-10. ADJUSTABLE AUTO RESET, HIGH LIMIT 200°F MAX, I-13.

HEATING HOT WATER PUMP SCHEDULE

FURNISHED BY INSTALED BY	MARK NUMBER	MANUFACTURER & MODEL #	DESCRIPTION	SIZE	HP/BHP	RPM	IMPELLER DIAMETER	ELECTRICAL			MOTOR ENCLOSURE	FLOW GPM	TOTAL DEVELOPED HEAD, FT	SPECIFIC GRAVITY	WEIGHT LBS	ACCESSORIES		NOTES
								VOLTS	HZ	PHASE						TDV	SUC. DIF	
NA	HHWP-1	BELL & GOSSET #e-1510 SSF 7	END SUCTION, BASE MOUNTED	1.5AD	1.5/0.95	1750	6.875	460	60	3	ODP	56	40	1.0	250	3DS-2.5	NA	1, 3 & 4
OFCI	HHWP-2	BELL & GOSSET #e-1510 SSF 7	END SUCTION, BASE MOUNTED	1.5AD	1.5/0.95	1750	6.875	460	60	3	ODP	56	40	1.0	250	3DS-2.5	NA	1, 3 & 5
OFCI	HHWP-3	ARMSTRONG 4380 - 3x3x6-4P-1HP	IN-LINE, CLOSE-COUPLED VERT	3x3x6	1/0.74	1743	5.05	460	60	3	ODP	87	21	1.0	130	NA	NA	2 & 3

1. HHWP-1 & HHWP-2 ARE CONSTANT VOLUME PUMPS AND SHALL BE PROVIDED W/ MOTOR STARTERS LOCATED IN A NEMA 1 RATED ENCLOSURE. ANCHOR WITH 5/8" KB TZ2, 3 1/4" MIN EMBEDMENT. PROVIDE WITH 50 DUROMETER 1/2" THICK NATURAL RUBBER BEARING PAD.
2. HHWP-3 IS A VARIABLE FLOW PUMP, NEMA PREMIUM 12.12, INVERTED DUTY, CLASS F INSULATION. PROVIDE W/ VFD CONTROLLER LOCATED IN A NEMA 12 RATED ENCLOSURE. PROVIDE WITH WEG VFD #CFW500A02P6T4DB66DSG2, IP66 ENCLOSURE, 460V, 3 Ø, RATED FOR 1 HP MOTOR. 6.5"x8.93"x10.43" (WIDE x DEPTH x HEIGHT) 14.3 LBS.
3. DIVISION 16 SHALL PROVIDE 460V/3Ø.
4. DATE CODE ON EXISTING PUMP IS C42, THIS IS A DATE OF MANUFACTURE OF MARCH, 2024. LOCATE THIS PUMP IN A SECURE LOCATION, SHALL BE UTILIZED IN NEW WORK.
5. DATE CODE ON EXISTING PUMP IS B12, THIS IS A DATE OF MANUFACTURE OF FEBRUARY, 2021. THE PUMP IS TO BE REPLACED BY AN IDENTICAL NEW PUMP. SEE SCHEDULE FOR DETAILS.

MULTI-PURPOSE TANK

FURNISHED BY INSTALED BY	MARK NUMBER	MANUFACTURER & MODEL #	DESCRIPTION	OPERATING WEIGHT LBS
OFCI	MPT-1	TACO MPT0075T2S-125S1CA	MULTI-PURPOSE TANK, CARBON STEEL CONSTRUCTION. 2 1/2" THREADED INLET/OUTLET, (1) 3/4"NPT TEMPERATURE/PRESSURE PORT ON SHELL. (1) 2" NPT INSPECTION OPENING. PROVIDE W/ STAINLESS STEEL INTERNAL PALL RING BASKETS, FACTORY INSTALLED 2" BLOWDOWN VALVE AND INTEGRAL AIR VENT CONNECTIONS, ASME CODE SECTION VIII, DIVISION 1, 125 PSIG, 240°F TEMPERATURE, PROVIDE ANCHOR CLIPS, 2" POLYISOCYANURATE W/ ALUMINUM JACKET. 24"Ø x 58 7/8" TALL.	985.5

ACCESSORIES

FURNISHED BY INSTALED BY	MARK NUMBER	MANUFACTURER & MODEL #	DESCRIPTION	OPERATING WEIGHT LBS
OFCI	PF-1	GRISWOLD #DB-2-SB-CS-Z	2 GAL POT FEEDER, CARBON STEEL, SAFETY BAR, POWDER COATED, DOMED BOTTOM, W/ FUNNEL PACKAGE, BASKET, LEG SUPPORT & DRAIN, HEATING HOT WATER SYSTEM. (4) 3/4" NPT CONNECTION POINTS, 250°F MAX TEMP, 180 PSI WORKING PRESSURE.	40
CFCI	AAV-1	METRAFLEX #3/4-MV15A	AUTOMATIC AIR VENT. CAST IRON BODY & COVER. CARBON STEEL COVER BOLTS. STAINLESS STEEL LEVER FRAME, SEAT, FLOAT, FLOAT ARM, PIVOT PIN AND RETAINER, LOCATOR AND PIPE PLUG. 250°F MAX TEMP, 3/4"NPT INLET, 1/2"NPT OUTLET, 1/16 ORIFICE.	5.5

EXPANSION TANK

FURNISHED BY INSTALED BY		MANUFACTURER & MODEL #	DESCRIPTION	TANK VOL GAL	DIA IN	HEIGHT IN	NPT SYSTEM CONN	SHIPPING WEIGHT LBS	OPERATING WEIGHT LBS
OFCI	ET-1		WESSELS NLA-85	VERTICAL, ASME SECTION VIII DIVISION 1, CARBON STEEL TANK. HEAVY DUTY BUTYL RUBBER DIAPHRAGM WITH INTEGRATED BLADDER INTEGRITY MONITOR. PRE-CHARGED, 25 PSIG, WITH CHARGING VALVE CONNECTION. RED OXIDE PRIMER. PROVIDE MOUNTING CLIPS AND SEISMIC ANCHORING. 125 PSI WORKING PRESSURE, 240°F WORKING TEMPERATURE.	23	16	37	1"	90	290

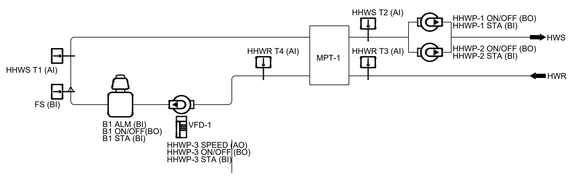
System General Description:
The building was provided a Building Automation System (BAS) upgrade in 2007. A copy construction documents will be available to the contractor for reference.

The BAS shall monitor and control the system's boiler(s), pump(s), and control valves as shown on the heating hot water piping diagram, in the heating plant points list and as detailed in the sequence of operation listed below.

The heating plant system consists of a heating hot water boiler with its piping configuration arranged as a primary / secondary loop supplying hot water to the facility. The boiler shall be integrated to the BAS via the boiler's manufacturer's factory BACnet interface.

The factory boiler system controller shall provide stand-alone control or BAS workstation control of the supply heating water temperature setpoint (adj.).

Heating System Enable/Disable:
The boiler shall be scheduled to be on every weekday morning approximately 30 minutes before the building is occupied. The primary pump, HHWP-3 shall be started, and one of the secondary pumps, HHWP-1 or HHWP-2, shall be started. Upon notice of flow from the flow switch indicator, the boiler will be enabled. The hot water set point will reset between 180° and 160°F based on outside air temperature and disabled if outside air temperature is above 75°F (adjustable). The hot water set point is to be achieved by modulating the firing rate of the boiler. The lead/lag heating hot water secondary pumps shall alternate on a weekly basis. In the event the lead pump fails the lag pump will start. An alarm shall be indicated on the BAS if any pump fails to start or fails for other reason. If the integral boiler controller signals an alarm, an alarm shall be indicated at the BAS.



1 / M0.0 BOILER CONTROL SEQUENCE & CONTROL POINTS
SCALE: NOT TO SCALE

MECHANICAL GENERAL NOTES

1. SCOPE:
   PROVIDE NEW MECHANICAL EQUIPMENT AND WORK AS GENERALLY DELINEATED ON THE PLANS TO PROVIDE A COMPLETE FUNCTIONING BOILER AND HEATING HOT WATER DISTRIBUTION PUMPING SYSTEM. THE BOILER AND CONTROLS SHALL BE INTEGRATED WITH THE EXISTING BUILDING MANAGEMENT SYSTEM. WORK SHALL INCLUDE, BUT IS NOT LIMITED TO: DEMOLITION AND/OR REMOVAL OF BOILER, HEATING HOT WATER PUMPS, PIPING AND ACCESSORIES. PROVIDE NEW BOILER, PUMPS, PIPING AND ACCESSORIES AS GENERALLY DETAILED IN THE CONSTRUCTION DOCUMENTS. ALL NEW EQUIPMENT AND WORK SHALL COMPLY WITH TITLE 24 CALIFORNIA CODE OF REGULATIONS.
2. CODES:
   ALL WORK MATERIAL AND EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY HAVING JURISDICTION. NOTHING IN THESE PLANS SHALL BE CONSTRUED TO PERMIT THE INSTALLATION OF WORK, MATERIAL OR EQUIPMENT NOT CONFORMING TO THESE OR OTHER CODES APPLICABLE TO THIS PROJECT:
   A. 2025 CALIFORNIA ADMINISTRATIVE CODE (CAC), CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 1.
   B. 2025 CALIFORNIA BUILDING CODE (CBC), CCR TITLE 24, PART 2, BASED ON THE 2024 INTERNATIONAL BUILDING CODE (IBC).
   C. 2025 CALIFORNIA ELECTRICAL CODE (CEC), CCR TITLE 24, PART 3, BASED ON THE 2023 NATIONAL ELECTRICAL CODE (NEC).
   D. 2025 CALIFORNIA MECHANICAL CODE (CMC), CCR TITLE 24, PART 4, BASED ON THE 2024 UNIFORM MECHANICAL CODE (UMC).
   E. 2025 CALIFORNIA PLUMBING CODE (CPC), CCR TITLE 24, PART 5, BASED ON THE 2024 UNIFORM PLUMBING CODE (UPC).
   F. 2025 CALIFORNIA ENERGY CODE (CEC), CCR TITLE 24, PART 6.
   G. 2025 CALIFORNIA FIRE CODE (CFC), CCR TITLE 24, PART 9, BASED ON THE 2024 INTERNATIONAL FIRE CODE (IFC)
   H. 2025 CALIFORNIA GREEN BUILDING STANDARDS CODE (CGBSC), CCR TITLE 24, PART11.
3. WORKMANSHIP:
   ALL WORKMANSHIP SHALL BE DONE IN A NEAT AND ORDERLY MANNER ACCORDING TO THE BEST TRADE PRACTICE BY THOSE SKILLED IN THE PARTICULAR TRADE. EQUIPMENT, DUCTS, GRILLES, ETC., SHALL BE PLUMB, LEVEL, SQUARE OR CENTERED ETC., TO GIVE A NEAT AND PLEASING APPEARANCE. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. AVAILABLE POWER:
   THE MECHANICAL CONTRACTOR SHALL CONFIRM ALL SYSTEMS VOLTAGES BEFORE BIDDING OR ORDERING EQUIPMENT, AND SHALL ALLOW FOR BUCK & BOOST TRANSFORMERS IF REQUIRED.
5. AIR BALANCE:
   NOT APPLICABLE TO THIS PROJECT.
6. PERMITS AND UTILITY SERVICE FEES:
   THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND SERVICE CHARGES REQUIRED IN THE INSTALLATION OF THE WORK.
7. EXISTING INFORMATION:
   LOCATION, SIZE, MATERIAL, ETC. OF EXISTING SYSTEMS, ETC., IS PROVIDED FROM SOURCES DEEMED TO BE RELIABLE BUT IS NOT GUARANTEED. THE CONTRACTOR SHALL FIELD VERIFY ALL DATA BEFORE PROCEEDING WITH ANY WORK. NO EXTRA COST WILL BE ALLOWED FOR CONDITIONS NOT AS SHOWN.
8. ACCURACY:
   THE PLANS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL CONFIRM ALL DIMENSIONS AND LOCATIONS OF AC UNITS, EXHAUST FANS, WALLS, PARTITIONS ETC., AGAINST ARCHITECTURAL AND STRUCTURAL DESIGN PLANS FOR LOCATION CONSISTENCY & ACCURACY PRIOR TO COMMENCING WITH ANY WORK.
9. PAINTING: NOT APPLICABLE TO THIS PROJECT.
10. SIZES:
    NOT APPLICABLE TO THIS PROJECT.
11. MECHANICAL EQUIPMENT:
    ALL EQUIPMENT SHALL BE LISTED BY AN APPROVED TESTING AGENCY AND INSTALLED IN ACCORDANCE WITH ITS INSTALLATION INSTRUCTIONS AND LISTING.
12. ALL PIPES, DUCTS AND CONDUITS SHALL BE SUPPORTED AND SEISMICALLY BRACED PER CBC, CMC, CPC, OR BY DETAILS PROVIDED WITHIN THESE DRAWINGS.
13. INSULATING MATERIALS APPLIED TO THE SURFACE OF DUCTS AND PIPES SHALL HAVE A FLAME INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723, PER 2025 CMC, SECTION 602.2

GREEN BUILDING MEASURES

1. ALL EQUIPMENT AND SYSTEMS SHALL BE TESTED BY AN INDEPENDENT TESTING AND BALANCING (TAB) CONTRACTOR. THE TAB CONTRACTOR SHALL PROVIDE A REPORT FOR THE MEOR APPROVAL. A COPY OF THE APPROVED REPORT SHALL BE PROVIDED TO THE BUILDING OWNER.
2. THE BUILDING OWNER SHALL BE PROVIDED WITH ADEQUATE TRAINING, DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES AND/OR WARRANTIES FOR EACH SYSTEM AND ALL EQUIPMENT.

MECHANICAL PIPING MATERIAL SPECIFICATIONS

A. HYDRONIC PIPING 2 1/2" & SMALLER (HHWS&R)
   PIPE: COPPER TYPE L PER ASTM B-88
   FITTINGS: WROUGHT COPPER PER ANSI 16.22
   INSULATION: (HHWS/R), 0.27 K, 1 1/2" FIBERGLASS WITH ALL SERVICE JACKET (ASJ). PROVIDE ALUMINUN JACKET COVER OVER ASJ FOR INSULATION EXPOSED TO WEATHER.
B. INDUSTRIAL COLD WATER 2" & SMALLER (ICW) (ABOVE GRADE)
   PIPE: COPPER TYPE L PER ASTM B-88-96
   FITTINGS: WROUGHT COPPER PER ASME B16.22-95
   INSULATION: (ICW EXPOSED TO WEATHER), 0.27 K, 1/2" FIBERGLASS WITH ALL SERVICE JACKET (ASJ). PROVIDE ALUMINUN JACKET COVER OVER ASJ FOR INSULATION EXPOSED TO WEATHER.

PLUMBING PIPING MATERIAL SPECIFICATIONS

A. DOMESTIC WATER ABOVE GRADE: (CW & ICW)
   PIPE: COPPER TYPE L PER ASTM B-88
   FITTINGS: WROUGHT COPPER PER ANSI 16.22
   INSULATION: INSULATE HOT WATER AND HOT WATER RETURNS: 1"Ø AND LESS - 1" FIBERGLASS INSULATION W/ ALL SERVICE JACKET. GREAT THAN 1"Ø - 1 1/2" FIBERGLASS INSULATION W/ ALL SERVICE JACKET.
B. CONDENSATE DRAIN: (CD)
   PIPE: COPPER TYPE L PER ASTM B-88
   FITTINGS: WROUGHT COPPER PER ANSI 16.22
C. TEMPERATURE & PRESSURE RELIEF (T&PR)
   PIPE: SCH 40 BLACK STEEL, THREADED PER ASTM A-53
   FITTINGS: SCREWED MALLEABLE IRON PER ANSI B-16.3
   PAINT: EXTERIOR LOCATIONS, W/ RUST INHIBITING PAINT, MATCH ADJACENT SURFACE.
D. NATURAL GAS: G (ABOVE GRADE - 2 1/2"Ø & SMALLER)
   PIPE: SCH 40 BLACK STEEL, THREADED PER ASTM A-53
   FITTINGS: SCREWED MALLEABLE IRON PER ANSI B-16.3
   PAINT: EXTERIOR LOCATIONS, W/ RUST INHIBITING PAINT, MATCH ADJACENT SURFACE.

GAS PIPING NOTES

1. GAS PIPING SHALL BE INSPECTED AND TESTED PER 2025 CPC 1213.0. THE PRESSURE TESTED SHALL BE CONDUCTED PER 2025 CPC 1213.3. WHERE LEAKAGE OF DEFECT IS DETECTED, THE AFFECTED PORTION OF THE PIPING SYSTEM SHALL BE REPAIRED OR REPLACED AND RETESTED.

HILTI KWIK BOLT TZ2 CARBON AND STAINLESS STEEL ANCHORS
NORMAL OR LIGHT WEIGHT CONCRETE (f'c = 3000 PSI)
ICC-ES ESR-4266

		GENERAL CONCRETE						UNDERSIDE OF CONCRETE OVER STEEL DECK		TOP OF CONCRETE OVER STEEL DECK	
ANCHOR DIAMETER	da	3/8"	1/2"		5/8"		3/4"	3/8"	1/2"	3/8"	1/2"
EFFECTIVE EMBEDMENT	hef	2"	2"	3½"	3½"	4"	3½"	4½"	2"	2"	2"	2"
MINIMUM CONCRETE THICKNESS	hmin	4"	4"	5½"	5½"	6"	6"	8"	2½"	2½"	2½"	3½"
REQUIRED INSTALLATION TORQUE (FT-LBS) CARBON STEEL ANCHORS	Tinst	30	50		40		110		30	50	30	50
REQUIRED INSTALLATION TORQUE (FT-LBS) STAINLESS STEEL ANCHORS	Tinst	30	40		60		125		30	50	30	50

MECHANICAL LEGEND

DESCRIPTION	SYMBOL
SUPPLY AIR DUCT SECTION	SA
RETURN AIR DUCT SECTION	RA
DUCT SIZE NET INSIDE DIMENSION	12 X 8
EXHAUST AIR DUCT SECTION	EA
SPLITTER DAMPER W/ LOCKING QUADRANT	
FLEXIBLE DUCT CONNECTION	
DUCT DROP/RISE	
DOOR LOUVER	
AIR EXTRACTOR	
ACCESS DOOR - A.D.	AD
VOLUME DAMPER W/ LOCKING QUADRANT	MD
AUTO MOTORIZED CONTROLLED DAMPER	MD / MD
FIRE DAMPER / CEILING FIRE DAMPER	FD / FD/CFD
MOTORIZED FIRE / SMOKE DAMPER	FSD / FSD
1ST LETTER - LOCATION: C-CEILING, W-WALL, F-FLOOR	CS-5 1300 CFM 12x12 / CS-5 300 CFM 12x12
2ND LETTER - SERVICE: S-SUPPLY, R-RETURN, E-EXHAUST	
NUMBER: 5-SEE SCH FOR TYPE	WS-1 300 CFM 14x8
300 CFM = AIRFLOW, 12 X 12 = NECK SIZE	TA-TRANSFER AIR
SMOKE DETECTOR	SD
DUCT WITH ACOUSTICAL LINING	
TO BE REMOVED	
THERMOSTAT	T 1-8
SENSOR	S 1-8
2-WAY CONTROL VALVE	
3-WAY CONTROL VALVE	
BALANCE VALVE	
BUTTERFLY VALVE	
CHECK VALVE	
FLEXIBLE COUPLING	
GLOBE VALVE	
AUTOMATIC AIR VENT - AAV	
MANUAL AIR VENT - MAV	
PETES PLUG	
PRESSURE GAUGE	P
REDUCER	
SHUT OFF COCK	
SHUT OFF VALVE	
STRAINER	
THERMOMETER	T
UNION	
CONDENSATE DRAIN	CD

ABOVE	ABV
ABOVE FINISHED FLOOR	A.F.F.
ACCESS DOOR / ACCESS PANEL	A.D. / A.P.
ANALOG INPUT / ANALOG OUTPUT	AI / AO
AUTOMATIC AIR VENT	AAV
BELOW	BEL.
CEILING	CLG
CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	CFCI
CONCRETE	CONC.
CUBIC FEET PER HOUR (1000 BTU)	CFH
CUBIC FEET PER MINUTE	CFM
DIFFERENTIAL PRESSURE TRANSDUCER	DPT
DIGITAL INPUT / DIGITAL OUTPUT	DI / DO
EXISTING	(E)
FLOW SWITCH	FS
GALLONS PER MINUTE	GPM
THOUSANDS OF BTU'S PER HOUR	MBH
MECHANICAL ENGINEER OF RECORD	MEOR
NEW	(N)
NOT IN MECHANICAL CONTRACT	N.I.M.C.
OUTSIDE AIR	OSA
OWNER FURNISH, CONTRACTOR INSTALLED	OFCI
POINT OF CONNECTION	POC
REFRIGERANT LIQUID / REFRIGERANT SUCTION	RL / RS
TEMPERATURE CONTROL PANEL	TCP
VALVE	V
WELL TEMPERATURE SENSOR	WTS

SHEET INDEX

BUFFER TANK CALCULATION

BTR= (CT/MBO- MBL)) / (DT+300)
BTR= MINIMUM BUFFER TANK SIZE
CT= MINIMUM RUNTIME, MINUTES
MBO= MINIMUM OUTPUT OF HEAT SOURCE, BTU/HR
MBL= MINIMUM SYSTEM LOAD, BTU/HR
DT= ALLOWABLE SYSTEM DIFFERENTIAL, °F

BTR= 70 GALLONS
CT= 5 MINS
MBO= 210000 BTU/HR
MBL= 0 BTU/HR
DT= 30 °F

BOUDREAU ENGINEERING INCORPORATED
257 N PALM ST
TURLOCK, CA 95380
(209)606-7052
CONSULTING MECHANICAL ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — BRIAN E. BOUDREAU — MECHANICAL — STATE OF CALIFORNIA — EXPIRES: JUNE 30, 2027

CONTRA COSTA COUNTY
OFFICE OF EDUCATION
BOILER REPLACEMENT
77 SANTA BARBARA ROAD
PLEASANT HILL, CA 94523

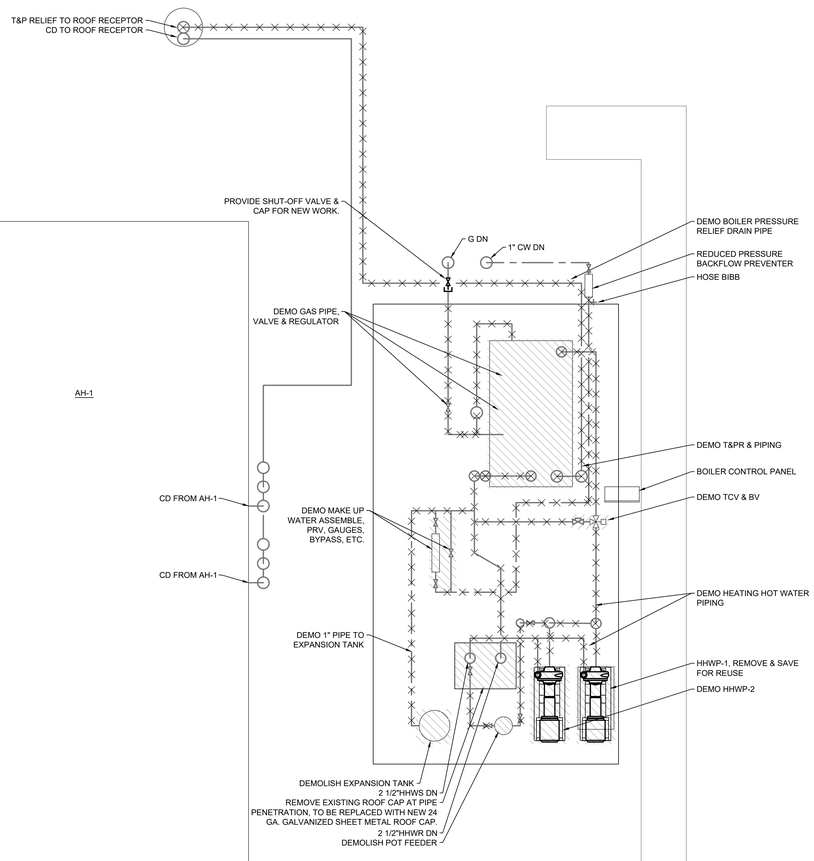
Rev No.	Description	Date

AHU number	--
Project number	26110
Date	JUNE 2026
Drawn by	JCK
Checked by	BEB
Scale	As indicated

MECHANICAL LEGEND, NOTES & SCHEDULES

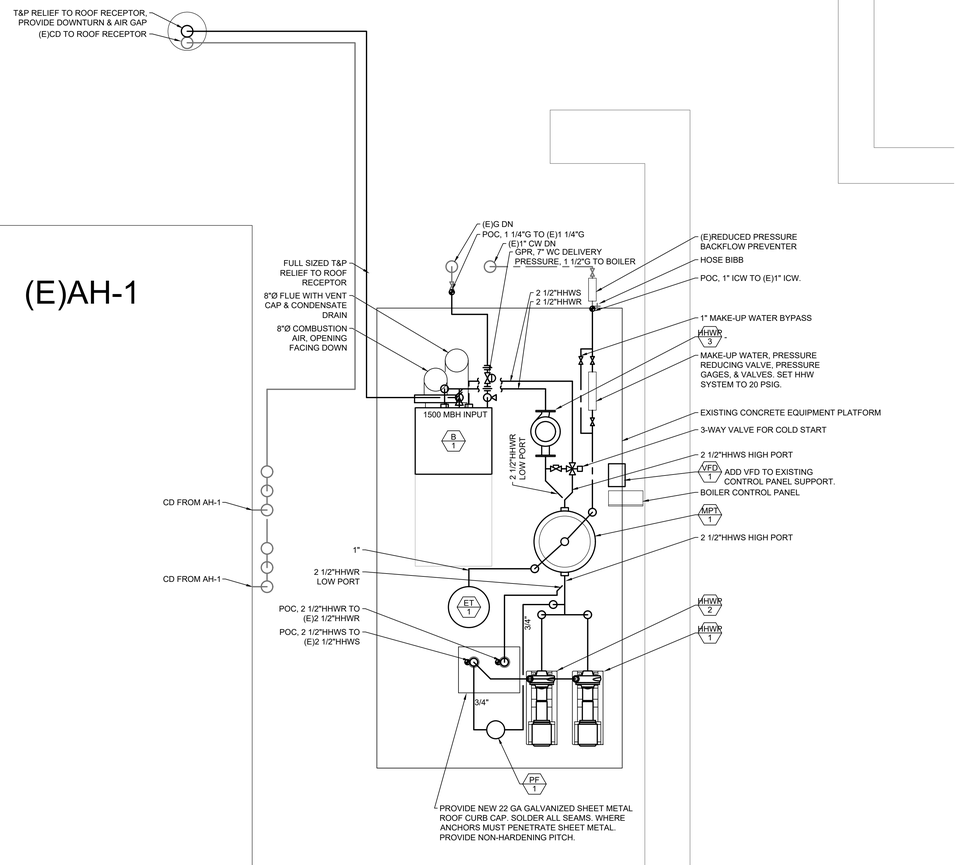
Sheet number
M0.0

If this sheet is not 30"x42" it has been reduced, scale is not accurate



NOTES:
REMOVE ALL EQUIPMENT FROM ROOF CURB. DEMOLISH GALVANIZED SHEET METAL ROOF CAP. NEW GALVANIZED ROOF CAP IS TO BE PROVIDED.

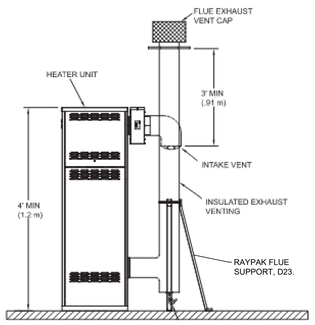
1 M2.3 MECHANICAL - DEMOLITION ROOF PLAN
SCALE: 1/2" = 1' - 0"



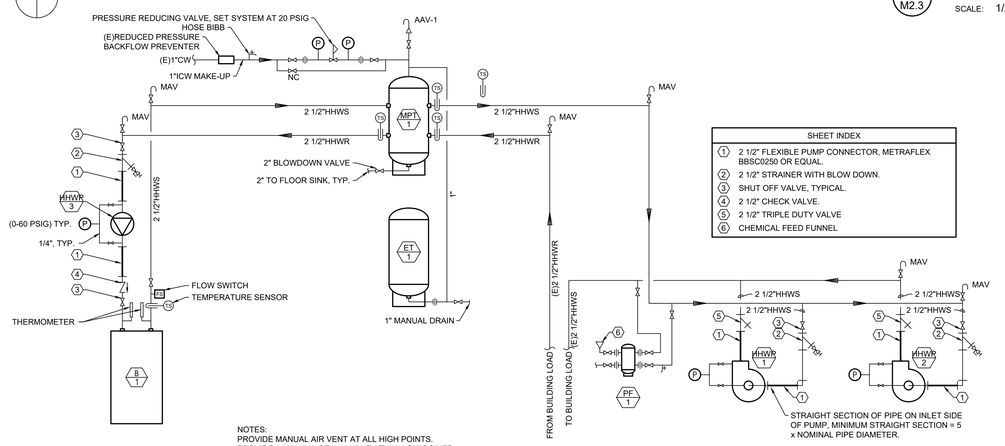
RAYPAK BOILER OUTDOOR CLEARANCES		
BOILER SIDE	MIN. CLEARANCE FROM COMBUSTIBLES, INCHES	MIN. SERVICE CLEARANCE, INCHES
REAR	12	24
FRONT	OPEN	24
RIGHT SIDE	1	1
LEFT SIDE	1	1
TOP	UNOBSTRUCTED	10
VENT TERMINATION	12	12

NOTES:
1. PROVIDE NEW 22 GA GALVANIZED SHEET METAL ROOF CURB CAP. SOLDER ALL SEAMS. WHERE ANCHORS MUST PENETRATE SHEET METAL. PROVIDE NON-HARDENING PITCH.
2. PROVIDE GAS PRESSURE REGULAR TO STEP DOWN GAS PRESSURE TO 7" WC. CONTRACTOR SHALL VERIFY EXISTING GAS DISTRIBUTION PRESSURE. PROVIDE MINIMUM 6" DIRT LEG AND FLEXIBLE CONNECTION.
3. ANCHOR BOILER TO CONCRETE EQUIPMENT CURB W/ 1/2" KB TZ2 @ 3 1/4" EMBEDMENT. TYPICAL AT EACH CORNER.
4. ANCHOR HHWP-1 AND HHWP-2 TO CONCRETE EQUIPMENT CURB WITH 5/8" KB TZ2 @ 3 1/4" EMBEDMENT. PROVIDE WITH
5. INSTALLATION OF EXPANSION ANCHORS SHALL BE WITNESSED AND TESTED BY A THIRD PARTY.
6. GAS PIPING PRESSURE TESTING SHALL BE WITNESSED BY A THIRD PARTY.
7. PRESSURE TESTING OF HEATING HOT WATER PIPING SHALL BE TESTED PER 2025 CMC 1205.0 AND WITNESSED BY A THIRD PARTY.

2 M2.3 MECHANICAL - ROOF PLAN
SCALE: 1/2" = 1' - 0"



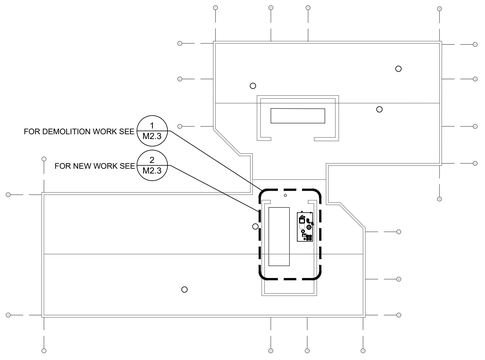
3 M2.3 VENT DETAIL
SCALE: NOT TO SCALE



SHEET INDEX	
1	2 1/2" FLEXIBLE PUMP CONNECTOR, METRAFLEX BBSC02050 OR EQUAL.
2	2 1/2" STRAINER WITH BLOW DOWN.
3	SHUT OFF VALVE, TYPICAL.
4	2 1/2" CHECK VALVE.
5	2 1/2" TRIPLE DUTY VALVE
6	CHEMICAL FEED FUNNEL

NOTES:
PROVIDE MANUAL AIR VENT AT ALL HIGH POINTS.
PROVIDE A MANUAL DRAIN VALVE AT ALL LOW POINTS.

4 M2.3 HEATING HOT WATER PIPING DIAGRAM
SCALE: NOT TO SCALE



5 M2.3 KEY PLAN
SCALE: 1/32" = 1' - 0"

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MECHANICAL ROOF PLANS

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