ELECTRICAL ABBREVIATIONS

AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AIC	AMPERES INTERRUPTING CAPACITY
AMP, A	AMPERE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
AW	ABOVE WINDOW
C	CONDUIT
°C	CELSIUS
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY
COMM	COMMUNICATIONS
DW	DISH WASHER
EF	EXHAUST FAN
E,Ex, EXIST	EXISTING
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
G, GRD	GROUND
GFCI	GROUND FAULT CURRENT INTERRUPTER
GF	GROUND FAULT PROTECTION
HP	HORSE POWER
IN, "	INCHES
K	DEGREE KELVIN
KCMIL, MCM	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATT
LC	LIGHTING CONTACTOR
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MECH	MECHANICAL
MLO	MAIN LUGS ONLY
MW	MICROWAVE
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NO., #	NUMBER
OFCI	OWNER FURNISHED/ CONTRACTOR INSTALLED
PA	PUBLIC ADDRESS
PC	PHOTO CELL
PH, Ø	PHASE
RECPT, REC	RECEPTACLE
REF	REFRIGERATOR
REQ, REQD	REQUIRED
Re	RELOCATED
TELECOM	TELECOMMUNICATIONS
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VA	VOLT AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER

ELECTRICAL SYMBOLS

LIGHT FIXTURE NOMENCLATURE

P- ## PANEL & CIRCUIT #

GENERAL

DASHED SYMBOL = DEVICE TO BE REMOVED

-------- DASHED LINE = EQUIPEMENT TO BE REMOVED

MOUNTING HEIGHT SCHEDULE

*SWITCHES	4'-0"
*RECEPTACLES	1'-6"
*WEATHERPROOF RECEPTACLES	2'-0"
BRANCH PANELS (TOP)	6'-6"
DISCONNECT SWITCHES (TOP)	5'-6"

MOUNTING HEIGHTS SHALL PREVAIL ON ALL NEW CONSTRUCTION UNLESS OTHERWISE NOTED.

MOUNTING HEIGHTS ARE TO CENTER OF DEVICE AND ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

COORDINATE FINAL MOUNTING HEIGHTS FOR DEVICES ABOVE COUNTERS WITH ARCHITECTURAL ELEVATIONS.

COORDINATE FINAL MOUNTING HEIGHTS FOR DEVICES FOR EQUIPMENT WITH ARCHITECTURAL ELEVATIONS.

MOUNTING FOR DEVICES SHOWN ABOVE BASEBOARD HEATERS, 4" ABOVE HEATER, MOUNTED VERTICALLY.

THESE ARE TYPICAL MOUNTING HEIGHTS. NOT ALL DEVICES ARE NECESSARILY APPLICABLE TO THIS PROJECT.

*MOUNTING HEIGHTS COMPLY WITH ICC/ANSI A117.1-09

POWER DEVICES AND EQUIPMENT

DUPLEX RECEPTACLE / QUADRAPLEX RECEPTACLE

DUPLEX / QUADRAPLEX ABOVE COUNTER RECEPTACLE

GFCI PROTECTED RECEPTACLE

J JUNCTION BOX

ELECTRIC MOTOR

ELECTRIC MOTOR WITH STARTER SWITCH

EF EXHAUST FAN

UH UNIT HEATER

CH CABINET UNIT HEATER

FLUSH MOUNT ELECTRICAL PANEL - 208V & 480V

SURFACE MOUNT ELECTRICAL PANEL - 208V & 480V

NON-FUSED DISCONNECT SWITCH

FUSED DISCONNECT SWITCH

COMBINATION MOTOR/STARTER DISCONNECT SWITCH

VFD VFD DISCONNECT

PB AC PUSH BUTTON OR ACCESS CONTROL BOX

ELECTRICAL SPECIFICATIONS

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

1. PROVIDE MATERIALS AND EQUIPMENT THAT ARE PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS. ALL MATERIALS SHALL BE LISTED AND LABELED FOR THE APPLICATION WITH A NATIONALLY RECOGNIZED TESTING LABORATORY IN ACCORDANCE WITH NFPA 70.
2. MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE, STATE, MUNICIPAL, AND FEDERAL LAWS, AND AMENDMENTS GOVERNING THE PROJECT. INSTALLATION OF EQUIPMENT SHALL BE ACCORDANCE WITH THE WRITTEN INSTRUCTIONS RECOMMENDATIONS OF THE MANUFACTURER.
3. THE CONTRACTOR SHALL BECOME FAMILIAR WITH ALL DETAILS OF WORK AND VERIFY ALL DIMENSIONS IN THE FIELD SO THAT ALL OUTLETS AND EQUIPMENT ARE PROPERLY LOCATED AND READILY ACCESSIBLE.
4. LIGHTING FIXTURES, OUTLETS, AND OTHER EQUIPMENT AND MATERIALS SHALL BE COORDINATED WITH STRUCTURAL FEATURES AND ALL OTHER TRADES PRIOR TO INSTALLATION. IF ANY CONFLICTS OCCUR NECESSITATING DEPARTURES FROM THE DRAWINGS, DETAILS OF, AND REASONS FOR DEPARTURES SHALL BE SUBMITTED AND ACCEPTED PRIOR TO IMPLEMENTING ANY CHANGE.
5. THE LISTED PUBLICATIONS BELOW ESTABLISH MINIMUM REQUIREMENTS FOR MATERIALS, SYSTEMS AND EXECUTION THAT MAY BE SPECIFIED IN THIS SECTION AND UTILIZED FOR THIS PROJECT.
   A. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA): NECA 1 - STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION
   B. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA): NFPA 70 NATIONAL ELECTRICAL CODE, NFPA 70E STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.

SECTION 26 05 19 - POWER CONDUCTORS AND CABLES

1. PROVIDE WIRING, CABLES AND ASSOCIATED SPLICES, CONNECTORS, AND TERMINATIONS FOR WIRING SYSTEMS RATED 600 VOLTS AND LESS. CONDUCTOR AMPACITY SHALL BE BASED ON TABLE 310-16 OF THE NEC UTILIZING THE 60-DEGREE C. RATING COLUMN FOR CIRCUITS TERMINATING ON DEVICES RATED BELOW 100 AMPS AND THE 75-DEGREE C RATING COLUMN FOR CIRCUITS TERMINATING ON DEVICES AND IN ENCLOSURES RATED 100 AMPS AND GREATER.
2. ALL CONDUCTORS SHALL BE COPPER UNLESS NOTED OTHERWISE. ALL CONDUCTORS INSTALLED IN UNHEATED SPACES WITHIN THE BUILDING, UNDERGROUND, OR LOCATED OUTSIDE OF THE BUILDING SHALL HAVE TYPE XHHW 90 DEGREE C INSULATION. ALL CONDUCTORS INSTALLED WITHIN HEATED SPACES MAY HAVE XHHW OR THHN 90 DEGREE C INSULATION.
3. CONDUCTORS NO. 8 AWG AND LARGER DIAMETER SHALL BE STRANDED. CONDUCTORS NO. 12 AWG AND SMALLER SHALL BE SOLID, EXCEPT THAT CONDUCTORS FOR REMOTE CONTROL, ALARM, AND SIGNAL CIRCUITS, CLASSES 1, 2, AND 3 SHALL BE STRANDED.
4. BRANCH CIRCUITS: CONDUCTORS SHALL BE NOT SMALLER THAN NO. 12 AWG. CONDUCTORS FOR BRANCH CIRCUITS OF 120 VOLTS MORE THAN 100 FEET LONG AND OF 277 VOLTS MORE THAN 200 FEET LONG FROM PANEL TO FARTHEST DEVICE OR LOAD, SHALL BE NO SMALLER THAN NO. 10 AWG. CONDUCTORS FOR BRANCH CIRCUITS OF 120 VOLTS MORE THAN 150 FEET LONG AND OF 277 VOLTS MORE THAN 300 FEET LONG FROM PANEL TO FARTHEST DEVICE OR LOAD, SHALL BE NO SMALLER THAN NO. 8 AWG.
5. INSTALL CONDUCTORS IN COMPLIANCE WITH NEC REQUIREMENTS FOR TEMPERATURE AND CONDUIT FILL DERATING AND BOX FILL LIMITATIONS.
6. COLOR CODE CONDUCTORS AS FOLLOWS:
   A. 120/208 VOLT, 3 PHASE, 4 WIRE: BLACK, RED, BLUE, WHITE
7. GROUNDING CONDUCTORS: PROVIDE A GREEN EQUIPMENT GROUNDING CONDUCTOR IN EACH NEW RACEWAY, SIZED IN ACCORDANCE WITH NFPA 70, REGARDLESS OF THE TYPE OF CONDUIT.

SECTION 26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

1. PROVIDE RACEWAYS AND BOXES LISTED AND SUITABLE FOR THE PROPOSED APPLICATION. PROVIDE AN EFFICIENTLY LAID OUT SYSTEM THAT ALLOWS FOR FUTURE GROWTH. COORDINATE RACEWAYS WITH THE WORK OF OTHER TRADES, AND COORDINATE LAYOUT AND CONSTRUCTION WITH OTHER CONSTRUCTION ELEMENTS TO ENSURE MAXIMUM HEADROOM, WORKING CLEARANCE, AND ACCESS.
2. UTILIZE RACEWAY SYSTEMS LISTED AND SUITABLE FOR THE ENVIRONMENT INSTALLED AS DEFINED BELOW:
   A. OUTDOORS (EXPOSED): WEATHERPROOF RIGID STEEL CONDUIT OR EMT SYSTEM.
   B. INDOORS (NOT SUBJECT TO PHYSICAL DAMAGE): EMT OR TYPE MC CABLE.
   C. CONNECTION TO VIBRATING EQUIPMENT: FLEXIBLE METAL CONDUIT, LIQUID-TIGHT IN DAMP AND WET LOCATIONS.

SECTION 26 27 26 - WIRING DEVICES

1. PROVIDE RECEPTACLES, CONNECTORS, SWITCHES, AND FINISH PLATES OF TYPES AND QUANTITIES SUITABLE FOR THE PROJECT AND INTENDED USE. WIRING DEVICES SHALL MEET NEMA WD 1 AND NEMA WD 6. WIRING TERMINALS SHALL BE OF THE SCREW TYPE OR OF THE SOLDERLESS PRESSURE TYPE HAVING SUITABLE CONDUCTOR-RELEASE ARRANGEMENT. WIRING DEVICES SHALL BE IMPACT RESISTANT NYLON WITH WHITE COLOR UNLESS NOTED OTHERWISE.
2. DEVICE PLATES ON UNFINISHED WALLS MAY BE OF ZINC-COATED SHEET STEEL, OR CAST METAL HAVING ROUNDED OR BEVELED EDGES. DEVICE PLATES ON FINISHED WALLS SHALL BE STAINLESS STEEL OR MATCH DEVICE COLOR, COORDINATE WITH ARCHITECT. SCREWS SHALL BE OF METAL WITH COUNTERSUNK HEADS, IN A COLOR TO MATCH THE FINISH OF THE PLATE.
3. SINGLE AND DUPLEX RECEPTACLES SHALL BE RATED 20 AMPERES, 125 VOLTS, 2-POLE, 3-WIRE, GROUNDING TYPE WITH POLARIZED PARALLEL SLOTS, BACK AND SIDE WIRED.
4. TOGGLE SWITCHES SHALL BE RATED 120-277 VOLT AC GROUNDING TYPE, TOTALLY ENCLOSED, GENERAL USE.

EXISTING PANEL M LOAD CALCULATION

60A, 120/208V, **3Ø**, 4W

LOADS REMOVED		
AHU	2,880	VA
GLYCOL PUMP	480	VA
SNOW MELT PANEL	50	VA
TOTAL LOAD REMOVED	**3,410**	**VA**
LOADS ADDED		
AHU	1,728	VA
CP-2A	330	VA
CP-2B	330	VA
DCP-1	370	VA
UH-1	200	VA
GMT-1	84	VA
TV-1	66	VA
TOTAL LOAD ADDED	**3,108**	**VA**
NET LOAD REMOVED FROM PANEL	**302**	**VA**

BASED ON THE ABOVE INFORMATION, THE EXISTING PANEL CAPACITY IS ADEQUATE FOR BOTH EXISTING AND NEW LOADS.

EXISTING PANEL XC LOAD CALCULATION

250A, 120/208V, **3Ø**, 4W

LOADS REMOVED		
#7 BOILER FEED	1,332	VA
CP-1	1,728	VA
CP-2	1,728	VA
SNOW MELT FEED	1,332	VA
BOILER 1	1,116	VA
BOILER 2	1,116	VA
TOTAL LOAD REMOVED	**8,352**	**VA**
LOADS ADDED		
BLR-1	492	VA
BLR-2	492	VA
BC-1	598	VA
BC-2	598	VA
CP-1A	755	VA
CP-1B	755	VA
TOTAL LOAD ADDED	**3,690**	**VA**
NET LOAD REMOVED FROM PANEL	**4,662**	**VA**

BASED ON THE ABOVE INFORMATION, THE EXISTING PANEL CAPACITY IS ADEQUATE FOR BOTH EXISTING AND NEW LOADS.

EXISTING PANEL 1B LOAD CALCULATION

400A, 120/208V, **3Ø**, 4W

LOADS REMOVED		
AC-1	5,040	VA
TOTAL LOAD REMOVED	**5,040**	**VA**
LOADS ADDED		
CU-1	6,480	VA
TOTAL LOAD ADDED	**6,480**	**VA**
NET LOAD ADDED TO PANEL	**1,440**	**VA**

BASED ON THE ABOVE INFORMATION, THE NET LOAD ADDED TO THE EXISTING PANEL IS NEGLIGIBLE.

STATE OF ALASKA 49 TH
SAMANTHA V. REDICK
EE-117987
09/23/24
REGISTERED PROFESSIONAL ENGINEER

CERTIFICATE OF AUTHORIZATION NO:
T3 ALASKA, LLC AECL #: 1625

sparkdesign,llc
T3 ALASKA LLC
Mechanical & Electrical Engineering
301 Calista Court, Suite 100
Anchorage, AK 99518
Ph: 907-865-7900 Fax: 907-865-7975

BOILER ROOM RENOVATION
Knik Corners
8800 Centennial Circle
Anchorage, Alaska 99504

REVISION SCHEDULE

#	DESCRIPTION	DATE

JOB NO.	2024.091.0
DATE	09/23/2024
DRAWN	SVR
REVIEWED	TCA

SHEET NAME
ABBREVIATIONS, LEGENDS, SCHEDULES, & SPECIFICATIONS

SHEET NO.
E1

PERMIT SET

EXISTING PANEL M

VOLTAGE : 120/208V,3PH,4W | AMPERE RATING: 60 A
MOUNTING: SURFACE | MAIN CIRCUIT BREAKER RATING: MLO
SUPPLIED FROM: MDP | SHORT CIRCUIT CURRENT RATING (SCCR): A

	CKT	AMP	POLE	LOAD DESCRIPTION	PHASE A VA	PHASE B VA	PHASE C VA	LOAD DESCRIPTION	POLE	AMP	CKT	
E	1	20	1	SPARE	576					15	2	
E	3	20	1	SPARE		576		AHU			4	N
E	5	20	1	SPARE			576		3		6	
R	7	20	1	TV-1, GMT-1, UH-1	350					20	8	
E	9	20	1	2ND FLOOR THERMOSTAT				SPARE			10	E
E	11	20	1	SMOKE DAMPER					3		12	
E	13	20	1	SPARE						20	14	
E	15	20	1	SPARE				SPARE			16	E
E	17	20	1	SPARE					3		18	
E	19	20	1	SPARE	1,030			CP-2A, CP-2B, DCP-1	1	20	20	R
E	21	20	1	SPARE				SPARE	1	20	22	E
E	23	20	1	SPARE				SPARE	1	20	24	E
	25	20		SPARE						20	26	
E	27							SPARE			28	E
	29		3						3		30	
CONNECTED LOAD (VA)					1,956	576	576	3,108 VA				
CONNECTED LOAD (AMPERES)					16	5	5	9 A				
DEMAND LOAD (VA) *					1,956	576	576	3,108 VA				
DEMAND LOAD (AMPERES) *					16	5	5	9 A				

E - EXISTING CIRCUIT BREAKER & LOAD TO REMAIN, R - RECONFIGURED LOAD ON EXISTING CIRCUIT BREAKER, N - NEW CIRCUIT BREAKER & LOAD, S - NEW SPARE AS A RESULT OF THIS PROJECT
GF - PROVIDE CLASS A GFI TYPE CIRCUIT BREAKER (5mA), GP - PROVIDE CLASS B EPD TYPE CIRCUIT BREAKER (30mA), SH - PROVIDE SHUNT TRIP TYPE CIRCUIT BREAKER
* - DEMAND LOAD CALCULATED WITH LIGHTING & LARGEST MOTOR LOAD AT 125%

EXISTING PANEL XC

VOLTAGE : 120/208V,3PH,4W | AMPERE RATING: 250 A
MOUNTING: RECESSED | MAIN CIRCUIT BREAKER RATING: MLO
SUPPLIED FROM: ATS | SHORT CIRCUIT CURRENT RATING (SCCR): A

	CKT	AMP	POLE	LOAD DESCRIPTION	PHASE A VA	PHASE B VA	PHASE C VA	LOAD DESCRIPTION	POLE	AMP	CKT	
E	1	20	1	LTG - 1ST FLOOR, HALL				REC - FRONT DOOR KIOSK	1	20	2	E
E	3	20	1	LTG - 1ST FLOOR, HALL, EM				LTG - ELEVATOR CAB	1	20	4	E
E	5	20	1	LTG - 1ST FLOOR ENTRANCE				E HEATER	1	20	6	E
E	7	20	1	ALARM PANEL - 1ST FLOOR				BH-1 BOILER RM	1	20	8	E
E	9	20	1	ENTRY DOORS - 1ST FLOOR				BH-2 BOILER RM	1	20	10	E
E	11	20	1	FIRE PANEL - 1ST FLOOR				SPARE	1	20	12	E
N	13	20		CP-1A & CP-1B	755					20	14	
	15		2			755		SPARE			16	S
N,SH	17	20	1	BOILER 1 & BOILER CIRC 1			1,090		3		18	
	19	-	1	BOILER 1 SHUNT						20	20	
N,SH	21	20	1	BOILER 2 & BOILER CIRC 2		1,090		SPARE			22	S
	23	-	1	BOILER 2 SHUNT					3		24	
S	25	20	1	SPARE				BACKUP GENERATOR HEATERS AND CHARGER	1	20	26	E
S	27	20	1	SPARE				SPACE	1	-	28	
E	29	20	1	SPARE				SPACE	1	-	30	
E	31	20	1	LTG - 1ST FLOOR RESTROOMS, BOILER RM, OFFICE				SPACE	1	-	32	
E	33	20	1	REC - TELECOM				SPACE	1	-	34	
	35	-	1	SPACE				SPACE	1	-	36	
	37	125		PANEL XD				ELEVATOR		125	38	
E	39										40	E
	41		3						3		42	
CONNECTED LOAD (VA)					755	1,845	1,090	3,690 VA				
CONNECTED LOAD (AMPERES)					6	15	9	10 A				
DEMAND LOAD (VA) *					755	1,845	1,090	3,690 VA				
DEMAND LOAD (AMPERES) *					6	15	9	10 A				

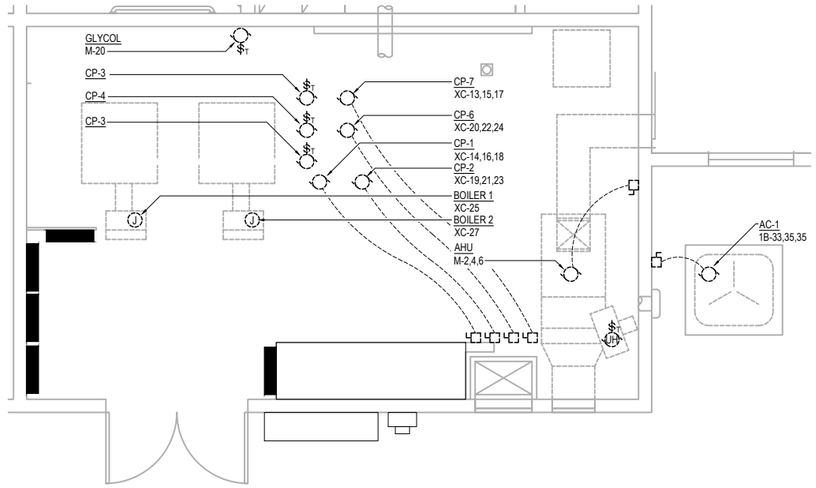
E - EXISTING CIRCUIT BREAKER & LOAD TO REMAIN, R - RECONFIGURED LOAD ON EXISTING CIRCUIT BREAKER, N - NEW CIRCUIT BREAKER & LOAD, S - NEW SPARE AS A RESULT OF THIS PROJECT
GF - PROVIDE CLASS A GFI TYPE CIRCUIT BREAKER (5mA), GP - PROVIDE CLASS B EPD TYPE CIRCUIT BREAKER (30mA), SH - PROVIDE SHUNT TRIP TYPE CIRCUIT BREAKER
* - DEMAND LOAD CALCULATED WITH LIGHTING & LARGEST MOTOR LOAD AT 125%

EXISTING PANEL 1B

VOLTAGE : 120/208V,3PH,4W | AMPERE RATING: 400 A
MOUNTING: SURFACE | MAIN CIRCUIT BREAKER RATING: MLO
SUPPLIED FROM: MDP | SHORT CIRCUIT CURRENT RATING (SCCR): A

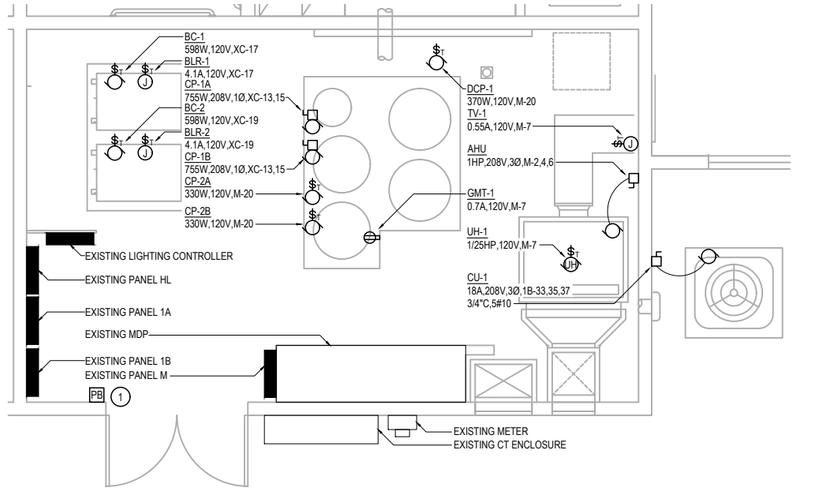
	CKT	AMP	POLE	LOAD DESCRIPTION	PHASE A VA	PHASE B VA	PHASE C VA	LOAD DESCRIPTION	POLE	AMP	CKT	
E	1	20	1	REC - 106 ISLAND				REC - 106 KITCHEN	1	20	2	E
E	3	50		RANGE				REC - ISLAND	1	20	4	E
	5		2					RANGE		50	6	E
E	7	20	1	REC - REF					2		8	
E	9	20	1	LTG - KITCHEN				REC - DISHWASHER	1	20	10	E
E	11	20	1	REC - KITCHEN				REC - DISPOSAL	1	20	12	E
E	13	20	1	REC - DISPOSAL				REC - REF	1	20	14	E
E	15	20	1	REC - DISHWASHER				REC - LIVING ROOM	1	20	16	E
E	17	20	1	REC - GFI				LTG - KITCHEN	1	20	18	E
E	19	20	1	LIVING ROOM, BEDROOM, BATHROOM				BATHROOM, BEDROOM	1	20	20	E
E	21	20	1	SPARE				REC - GFI	1	20	22	E
E	23	20	1	REC - OFFICE, DOOR SECURITY				SPARE	1	20	24	E
E	25	20	1	EXISTING LOAD				SPARE	1	20	26	E
E	27	20	1	EXISTING LOAD				SPARE	1	20	28	E
E	29	20	1	EXISTING LOAD				SPARE	1	20	30	E
E	31	20	1	EXISTING LOAD				REC - GFI	1	20	32	E
	33	30				2,160		SPARE	1	20	34	E
N	35			CU-1			2,160	EXISTING LOAD	1	20	36	E
	37		3		2,160			EXTERIOR BUILDING SIGN	1	20	38	E
E	39	20	1	REC - AC-1				EXISTING LOAD	1	20	40	E
E	41	20	1	EXISTING LOAD				EXISTING LOAD	1	20	42	E
CONNECTED LOAD (VA)					2,160	2,160	2,160	6,480 VA				
CONNECTED LOAD (AMPERES)					18	18	18	18 A				
DEMAND LOAD (VA) *					2,160	2,160	2,160	6,480 VA				
DEMAND LOAD (AMPERES) *					18	18	18	18 A				

E - EXISTING CIRCUIT BREAKER & LOAD TO REMAIN, R - RECONFIGURED LOAD ON EXISTING CIRCUIT BREAKER, N - NEW CIRCUIT BREAKER & LOAD, S - NEW SPARE AS A RESULT OF THIS PROJECT
GF - PROVIDE CLASS A GFI TYPE CIRCUIT BREAKER (5mA), GP - PROVIDE CLASS B EPD TYPE CIRCUIT BREAKER (30mA), SH - PROVIDE SHUNT TRIP TYPE CIRCUIT BREAKER
* - DEMAND LOAD CALCULATED WITH LIGHTING & LARGEST MOTOR LOAD AT 125%



1 BOILER ROOM POWER DEMOLITION PLAN

SCALE: 3/8" = 1'-0"



2 BOILER ROOM POWER REMODEL PLAN

SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. EXISTING POWER & CIRCUITRY INFORMATION IS BASED ON EXISTING PANEL SCHEDULES AND RECORD DRAWINGS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS PRIOR TO THE START OF WORK.
2. DASHED SYMBOLS INDICATE DEVICES AND EQUIPMENT TO BE REMOVED. REMOVE ASSOCIATED BRANCH CIRCUIT WIRING BACK TO SOURCE PANEL OR EXISTING UPSTREAM DEVICE TO REMAIN.
3. WHERE CODE COMPLIANT AND SUITABLE FOR INSTALLATION OF NEW DEVICES AND EQUIPMENT THE CONTRACTOR MAY REUSE EXISTING BRANCH CIRCUITRY. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN EACH REUSED CONDUIT SYSTEM WHERE ONE IS NOT CURRENTLY PROVIDED. WHERE EXISTING CIRCUITRY IS UNSUITABLE TO PROVIDE SUPPLY AND CONTROL INDICATED, PROVIDE NEW CIRCUIT AND CONTROL WIRING IN RACEWAY PER SPECIFICATIONS AND AS REQUIRED.
4. UPDATE EXISTING PANELS SCHEDULES TO IDENTIFY REVISED LOADS AND IDENTIFY ANY BREAKERS MADE AS AVAILABLE SPARES AS A RESULT OF THIS REMODEL.

SHEET NOTES

INDICATED BY: (#)

1. BOILER EMERGENCY PUSHBUTTON SHUTOFF, CONNECT TO BOILER SHUNT TRIP CIRCUIT BREAKERS.

STATE OF ALASKA 49 TH
SAMANTHA V. REDICK
EE-117987
09/23/24
REGISTERED PROFESSIONAL ENGINEER

CERTIFICATE OF AUTHORIZATION NO:
T3 ALASKA, LLC AECL #: 1625

sparkdesign,llc
T3 ALASKA LLC
Mechanical & Electrical Engineering
301 Calista Court, Suite 100
Anchorage, AK 99518
Ph: 907-865-7900 Fax: 907-865-7975

BOILER ROOM RENOVATION
Knik Corners
8800 Centennial Circle
Anchorage, Alaska 99504

REVISION SCHEDULE

#	DESCRIPTION	DATE

JOB NO.	2024.091.0
DATE	09/23/2024
DRAWN	SVR
REVIEWED	TCA

SHEET NAME
POWER DEMOLITION & REMODEL PLANS

SHEET NO.
E2

PERMIT SET

MECHANICAL LEGEND

- DENOTES DEMOLITION
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RECIRCULATED PIPING
- WASTE PIPING
- VENT PIPING
- XXX — PIPING, SEE ABBREVIATIONS FOR MEDIA
- DIRECTION OF FLOW
- PIPE ANCHOR
- PIPE GUIDE
- PIPE UP
- PIPE DOWN
- TEE UP
- TEE DOWN
- REDUCER / INCREASER
- CAP
- UNION
- CLEANOUT
- HOSE BIBB
- ISOLATION VALVE
- BALANCE VALVE
- CHECK VALVE
- STRAINER WITH BLOWDOWN
- FLEXIBLE PIPING CONNECTOR
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- PRESSURE REDUCING VALVE
- PRESSURE/TEMPERATURE RELIEF VALVE
- QUARTER TURN BOILER DRAIN VALVE WITH CAP
- THERMOMETER
- PRESSURE GAUGE WITH ISOLATION COCK
- PUMP
- FLOOR OR YARD CLEANOUT
- FLOOR DRAIN
- SUPPLY AIR DUCT UP & DOWN (SQUARE)
- 28/14 — RECTANGULAR DUCT SIZE (FIRST NUMBER - SIDE SHOWN) (SECOND NUMBER - SIDE NOT SHOWN)
- SOUND LINED DUCTWORK
- INSULATED DUCTWORK
- TURNING VANES
- FLEXIBLE DUCT CONNECTION
- VOLUME DAMPER
- MOTORIZED CONTROL DAMPER
- FD — FIRE DAMPER
- FSD — FIRE SMOKE DAMPER
- T — THERMOSTAT OR SENSOR
- POINT OF CONNECTION TO EXISTING
- X — KEY NOTE
- X / MX — DETAIL NUMBER / SHEET LOCATED ON

MECHANICAL SHEET INDEX

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE	MINIMUM CONNECTION SIZE CW	HW	TRAP	VENT	WASTE	MANUFACTURER	MODEL	COLOR	TRIM / REMARKS
FD-1	FLOOR DRAIN	---	---	2"	1-1/2"	2"	J.R. SMITH	2005-A	---	ROUND TOP, TRAP PRIMER CONNECTION WITH 1/2" WATER CONNECTION TO TRAP PRIMER

BOILER SCHEDULE

TAG	MFGR / MODEL	TYPE	FLUID	FUEL	BURNER INPUT (MBH)	GROSS OUTPUT (MBH)	ELECTRICAL DATA MCA	VOLTS/PH	LABEL	REMARKS
BLR-1	LOCHINVAR / KBX 650	STAINLESS STEEL	50% P.G.	NATURAL GAS	650	565	4.1	120/1	ASME	WITH TRIM PER INTERNATIONAL MECHANICAL CODE CHAPTER 10, 180°F OPERATING SETPOINT
BLR-2	LOCHINVAR / KBX 650	STAINLESS STEEL	50% P.G.	NATURAL GAS	650	565	4.1	120/1	ASME	WITH TRIM PER INTERNATIONAL MECHANICAL CODE CHAPTER 10, 180°F OPERATING SETPOINT

PUMP SCHEDULE

TAG	MFGR / MODEL	SERVICE	FLUID	FLOW RATE (GPM)	HEAD (FEET)	MOTOR DATA RPM	HP/W	VOLTS/PH	REMARKS
BC-1	GRUNDFOS / MAGNA3 50-150	BLR-1 CIRCULATOR	50% P.G.	62	25'	4,600	598W	120/1	EC MOTOR, SPEED CONTROL BY BOILER
BC-2	GRUNDFOS / MAGNA3 50-150	BLR-1 CIRCULATOR	50% P.G.	62	25'	4,600	598W	120/1	EC MOTOR, SPEED CONTROL BY BOILER
CP-1A	GRUNDFOS / MAGNA3 50-180	BUILDING HEAT	50% P.G.	60	30'	4,600	755W	208/1	EC MOTOR, INTEGRAL SPEED CONTROLLER AND DIFFERENTIAL PRESSURE SENSOR
CP-1B	GRUNDFOS / MAGNA3 50-180	BUILDING HEAT	50% P.G.	60	30'	4,600	755W	208/1	STANDBY PUMP TO CP-1A, EC MOTOR, INTEGRAL SPEED CONTROLLER AND DIFFERENTIAL PRESSURE SENSOR
CP-2A	GRUNDFOS / MAGNA3 50-80	HWG CIRCULATION	50% P.G.	50	15'	4,600	330W	120/1	EC MOTOR, INTEGRAL SPEED CONTROLLER
CP-2B	GRUNDFOS / MAGNA3 50-80	HWG CIRCULATION	50% P.G.	50	15'	4,600	330W	120/1	STANDBY PUMP TO CP-2A, EC MOTOR, INTEGRAL SPEED CONTROLLER
DCP-1	GRUNDFOS / UPS 26-150 SF	DHW RECIRCULATION	WATER	10	25'	2,900	370W	120/1	RATED FOR OPEN SYSTEMS, LEAD FREE, NSF LABELED

AIR SEPARATOR SCHEDULE

TAG	MFGR / MODEL	SERVICE	FLUID	FLOW RATE (GPM)	WPD (FT HD)	INLET/OUTLET SIZE	DIMENSIONS	LABEL	REMARKS
AS-1	SPIROTHERM / VDT-300M	BUILDING HEAT HYDRONIC SYSTEM	50% P.G.	110	<1.0'	3"	35.4"H x 8.6"Ø	ASME	COMBINATION AIR AND DIRT SEPARATOR WITH AUTO AIR VENT AND MAGNETIC SEPARATOR

EXPANSION TANK SCHEDULE

TAG	MFGR / MODEL	SERVICE	FLUID	TOTAL VOLUME (GALLONS)	ACCEPTANCE VOLUME (GALLONS)	DIMENSIONS	MATERIAL	LABEL	REMARKS
ET-1	AMTROL / AX-144V	HYDRONIC EXPANSION	50% P.G.	77.0	34.0	24"Ø x 50"	STEEL/BUTYL	ASME	PRE-CHARGE TO MATCH EXISTING COLD CHARGE PRESSURE, FIELD VERIFY CHARGE PRESSURE
ET-2	AMTROL / THERM-X-TROL ST-70V-C	DOMESTIC HOT WATER EXPANSION	WATER	34.0	10.9	16"Ø x 45"	STEEL/BUTYL	ASME/NSF	PRE-CHARGE TO WATER SUPPLY STATIC PRESSURE

GLYCOL MAKE-UP TANK SCHEDULE

TAG	MFGR / MODEL	SERVICE	FLUID	STORAGE (GALLONS)	DIMENSIONS	MATERIAL	ELECTRICAL DATA AMPS/WATTS	VOLTS/PH	LABEL	REMARKS
GMT-1	AXIOM / SF100	BUILDING HEAT SYSTEM	50% P.G.	55.0	24"Ø x 49"H	PLASTIC	0.7 AMPS	120/1	ETL	WITH PACKAGED PUMP, CONTROLS, LOW LEVEL ALARM AND REMOTE MONITORING CONTACTS, 3-PRONG PLUG AND CORD

HOT WATER GENERATOR SCHEDULE

TAG	MFGR / MODEL	DOMESTIC HOT WATER RECOVERY (GPH)	STORAGE (GALLONS)	EWT	LWT	HEATING MEDIUM FLUID	FLOW RATE (GPM)	WPD (FT HD)	EFT	LFT	LABEL	REMARKS
HWG-1	TRIANGLE TUBE / SMART 316	295	100	40°F	140°F	50% P.G.	25	< 5'	180°F	160°F	---	316 SSTL CONSTRUCTION, TEMPERATURE AND PRESSURE RELIEF VALVE, SCHEDULED RECOVERY BASED ON DESIGN CONDITIONS
HWG-2	TRIANGLE TUBE / SMART 316	295	100	40°F	140°F	50% P.G.	25	< 5'	180°F	160°F	---	316 SSTL CONSTRUCTION, TEMPERATURE AND PRESSURE RELIEF VALVE, SCHEDULED RECOVERY BASED ON DESIGN CONDITIONS

TEMPERING VALVE SCHEDULE

TAG	MFGR / MODEL	INLETS SIZE	OUTLET SIZE	FLOW RATE AT 5 PSI (GPM)	CV	CONSTRUCTION	ELECTRICAL DATA AMPS	VOLTS/PH	LABEL	REMARKS
TV-1	POWERS / LFIS150VL	1-1/2"	1-1/2"	50	22.5	STAINLESS STEEL	0.55 AMPS	120/1	ASSE 1017, NSF	SET OUTLET TEMPERATURE FOR 120°F, LEAD FREE, CONTROL MODULE, COLD WATER PROBE, HOT WATER PROBE AND MIX WATER PROBE

UNIT HEATER SCHEDULE

TAG	MFGR / MODEL	CAPACITY (MBH)	FLUID	FLOW RATE (GPM)	FPD (FT HD)	EFT	LFT	AIRFLOW (CFM)	MINIMUM BRANCH PIPING SIZE	MOTOR DATA HP	VOLTS/PH	WEIGHT (LBS)	COLOR	REMARKS
UH-1	MODINE / HC-33	21.9	50% P.G.	2.3	<3'	180°F	160°F	630	3/4"	1/25	120/1	34	---	---

STATE OF ALASKA 49 TH
ALEC C. THOMSON
ME-8694
09/23/2024
REGISTERED PROFESSIONAL ENGINEER

CERTIFICATE OF AUTHORIZATION NO:
T3 ALASKA, LLC AECL #: 1625

sparkdesign,llc
T3 ALASKA LLC
Mechanical & Electrical Engineering
301 Calista Court, Suite 100
Anchorage, AK 99518
Ph: 907-865-7900 Fax: 907-865-7975

BOILER ROOM RENOVATION
Knik Corners
8800 Centennial Circle
Anchorage, Alaska 99504

REVISION SCHEDULE

#	DESCRIPTION	DATE

JOB NO.	2024.091.0
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DRAWN	NZS
REVIEWED	ACT

SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M1

PERMIT SET

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFT	AVERAGE FLUID TEMPERATURE
AL	ALUMINUM
ALT	ALTERNATE
AMB	AMBIENT
AMPS	AMPERES
APD	AIR PRESSURE DROP
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
C/A	COMBUSTION AIR
CFM	CUBIC FEET PER MINUTE
COND	CONDENSATE
CONN	CONNECTION
Cu	COPPER
CW	COLD WATER
Ø	DIAMETER
DIA	DIAMETER
DB	DRY BULB
dB	DECIBELS
DEG	DEGREE
DWG	DRAWING
(E)	EXISTING
E/A	EXHAUST AIR
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EFT	ENTERING FLUID TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
°F	DEGREES FAHRENHEIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPERES
FPD	FLUID PRESSURE DROP
FPF	FINS PER FOOT
FPM	FEET PER MINUTE
FSD	FIRE SMOKE DAMPER
FT	FEET
G	NATURAL GAS
GA	GAUGE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HEIGHT
HD	HEAD
HGR	HEATING GLYCOL RETURN
HGS	HEATING GLYCOL SUPPLY
HR	HOUR
HW	HOT WATER
HWC	HOT WATER CIRCULATED
HP	HORSEPOWER
ID	INSIDE DIAMETER
IN	INCH
IMC	INTERNATIONAL MECHANICAL CODE
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LDB	LEAVING DRY BULB TEMPERATURE
LF	LINEAL FEET
LFT	LEAVING FLUID TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MFGR	MANUFACTURER
MFS	MAXIMUM FUSE SIZE
MIN	MINIMUM
MOP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NO.	NUMBER
NOM	NOMINAL
NSF	NATIONAL SANITARY FOUNDATION
O/A	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OPD	OVERCURRENT PROTECTION DEVICE
PD	PRESSURE DROP
P.G.	PROPYLENE GLYCOL
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
R/A	RETURN AIR
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
S/A	SUPPLY AIR
SNGR	SNOWMELT GLYCOL RETURN
SNGS	SNOWMELT GLYCOL SUPPLY
SP	STATIC PRESSURE
SSTL	STAINLESS STEEL
SQ	SQUARE
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPC	UNIFORM PLUMBING CODE
V	VENT
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
WC	WATER COLUMN
WG	WATER GAUGE
WCO	WALL CLEAN OUT
WB	WET BULB
WPD	WATER PRESSURE DROP

AIR HANDLING UNIT SCHEDULE

TAG	MFGR / MODEL	SERVICE	FAN TYPE	AIRFLOW (CFM)	TSP / ESP (IN WG)	HEAT COIL	COOL COIL	MOTOR DATA HP	MOTOR DATA VOLTS/PH	REMARKS
AHU-1	TRANE / BCHE 054	BUILDING VENTILATION	CENTRIFUGAL	1,200	1.00" / 1.50"	HC-1	CC-1	1	208/3	MERV 8 INLET FILTER, DOUBLE WALL PANELS, HEATING COIL, COOLING COIL

HEATING COIL SCHEDULE

TAG	MFGR / MODEL	SIZE	LOCATION	AIRFLOW (CFM)	MAXIMUM AIR PD (IN WC)	MAXIMUM VELOCITY (FPM)	EAT	APPROX LAT	HEAT EXCHANGED (MBH)	FLUID	FLOW RATE (GPM)	FPD (FT HD)	EFT	APPROX LFT	MINIMUM BRANCH PIPING SIZE	REMARKS
HC-1	BY AHU MANUFACTURER	PER MFGR	AHU-1	1,200	<0.10"	<500	-23°F	75°F	127	50% P.G.	9.5	<7.5'	180°F	150°F	1-1/4"	2-ROW

COOLING COIL SCHEDULE

TAG	MFGR / MODEL	SIZE	LOCATION	REFRIGERANT	NOMINAL TONS	AIRFLOW (CFM)	AIR PD (IN WC)	VELOCITY (FPM)	EDB	EWB	LDB	AMB TEMP	REMARKS
CC-1	BY AHU MANUFACTURER	PER MFGR	AHU-1	R-410A	3.0	1,200	<0.3"	<500	75°F	62°F	55°F	85°F	4-ROW DX COIL

SPLIT SYSTEM AIR CONDITIONING CONDENSING UNIT SCHEDULE

TAG	MFGR / MODEL	SERVICE	ASSOCIATED EVAPORATOR	REFRIGERANT	NOMINAL TONS	AMB TEMP	ELECTRICAL DATA MCA	ELECTRICAL DATA MCB	ELECTRICAL DATA VOLTS/PH	REMARKS
CU-1	BY AHU MANUFACTURER	AHU-1	CC-1	R-410A	3.0	85°F	18 A	30 A	208/3	----

SEQUENCE OF OPERATIONS

DOMESTIC HOT WATER SYSTEM (HWG-1, HWG-2, CP-2A, CP-2B, TV-1, DCP-1, AND CONTROL VALVES)

INDIRECT WATER HEATERS, HWG-1 AND HWG-2, SHALL MAINTAIN INTERNAL AQUASTAT TEMPERATURE OF 140°F (ADJUSTABLE).

ON CALL FOR HEAT FROM AQUASTAT SIGNAL DHW CALL FOR HEAT TO BOILER PLANT; ASSOCIATED CONTROL VALVE SHALL OPEN; AND CIRCULATION PUMPS CP-2A/B SHALL OPERATE.

CP-2A/B SHALL OPERATE IN LEAD-STANDBY. LEAD PUMP STATUS SHALL BE ROTATED AUTOMATICALLY BY INTEGRAL CONTROLS. INTEGRAL CONTROLS SHALL MODULATE PUMP TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT. APPROPRIATE SETPOINT TO BE DETERMINED AT BALANCING TO PROVIDE SCHEDULED FLOW THROUGH WATER HEATERS.

TEMPERING VALVE TV-1 SHALL BE SET TO DELIVER 120°F (ADJUSTABLE).

HOT WATER RECIRCULATION PUMP DCP-1 SHALL OPERATE CONTINUOUSLY.

BOILERS AND BOILER CIRCULATION PUMPS (BLR-1, BLR-2, BC-1, AND BC-2)

BOILER PLANT SHALL BE OPERATED PRIMARILY BY BOILER INTEGRAL CONTOLS. ADDITIONAL STANDALONE CONTROLS MAY BE PROVIDED AS REQUIRED.

BOILER INTEGRAL CONTROLS SHALL BE CAPABLE OF INTERCOMMUNICATION ALLOWING SEQUENCING OF BOILERS TO OPTIMIZE BOILER PLANT ENERGY EFFICIENCY. BLR-1 SHALL BE DESIGNATED THE MANAGING BOILER.

SYSTEM SUPPLY TEMPERATURE SETPOINT SHALL BE MAINTAINED FOR BUILDING HEAT WHEN OUTOOR AIR TEMPERATURE IS AT OR BELOW THE OUTDOOR AIR SHUTDOWN TEMPERATURE (65°F). BUILDING HEAT SHALL BE DISABLED WHEN OUTDOOR AIR TEMPERATURE IS ABOVE THIS SETPOINT. THE SYSTEM SUPPLY TEMPERATURE SETPOINT SHALL RESET LINEARLY BETWEEN 120°F AND 180°F BASED ON AN OUTDOOR AIR RESET SCHEDULE BETWEEN 65°F AND 10°F RESPECTIVELY.

ON CALL FOR HEAT FROM INDIRECT WATER HEATER (HWG-1 OR HWG-2) THE SYSTEM SUPPLY TEMPERATURE SETPOINT SHALL BE 180°F. HOT WATER HEATERS SHALL BE CONFIGURED AS A ZONE.

ALL RESET TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE.

BOILER INTEGRAL CONTROLS SHALL MODULATE THE BURNER AND OPERATE VARIABLE-SPEED BOILER CIRCULATION PUMPS. ALL DIRECT BURNER CONTROL AND SAFETY INTERLOCKS SHALL BE CONTROLLED BY BOILER FACTORY CONTROLS.

BUILDING HEAT CIRCULATION PUMPS (CP-1A AND CP-1B)

PUMPS SHALL BE ENABLED WHEN OUTOOR AIR TEMPERATURE IS AT OR BELOW THE OUTDOOR AIR SHUTDOWN TEMPERATURE SETPOINT (SEE BOILER SEQUENCE). PUMPS SHALL BE DISABLED WHEN OUTDOOR AIR TEMPERATURE IS ABOVE SETPOINT.

CP-1A/B SHALL OPERATE IN LEAD-STANDBY. LEAD PUMP STATUS SHALL BE ROTATED AUTOMATICALLY BY INTEGRAL CONTROLS. INTEGRAL CONTROLS SHALL MODULATE PUMP TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT. APPROPRIATE SETPOINT SHALL BE DETERMINED AT BALANCING TO PROVIDE PROPER OPERATION OF ALL TERMINAL HEATING EQUIPMENT. RECORD SETPOINT ON RECORD DRAWINGS.

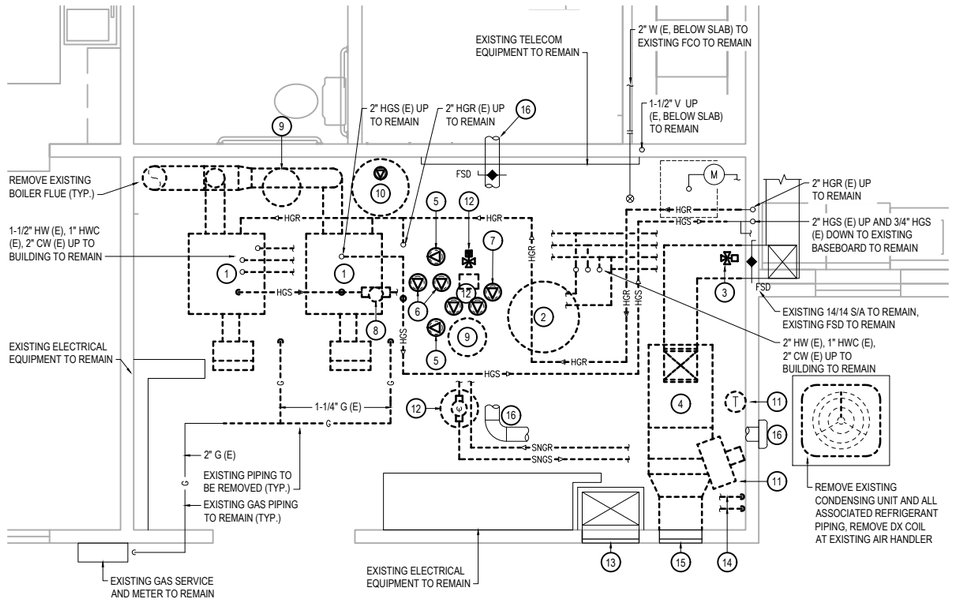
UNIT HEATER (UH-1)

ON CALL FOR HEAT FROM WALL MOUNTED THERMOSTAT UNIT FAN SHALL OPERATE. COIL SHALL RUN WILD.

AIR HANDLER (AHU-1 WITH HC-1, CC-1, CU-1, AND CONTROL DAMPER)

AIR HANDLER SHALL OPERATE CONTINUOUSLY. HEAT COIL CONTROL VALVE AND DX COOLING COIL SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT (65°F, ADJUSTABLE). CONTROL DAMPER AT INTAKE SHALL CLOSE ON SHUTDOWN OR FAILURE OF AIR HANDLER.

IF SUPPLY AIR TEMPERATURE IS BELOW FREEZE ALARM SETPOINT (37ºF, ADJUSTABLE) UNIT SHALL STOP AND CONTROL DAMPER SHALL CLOSE.



1 BOILER ROOM DEMOLITION PLAN

SCALE: 3/8" = 1'-0"

SHEET NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND A NON-DESTRUCTIVE WALK THROUGH. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. THE DRAWINGS MAY NOT SHOW ALL EXISTING SYSTEMS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, SERVICE, AND SIZES BEFORE START OF WORK.
2. COORDINATE WITH BUILDING OWNER FOR WORK REQUIRING SHUT DOWN OF BUILDING SYSTEMS.
3. HEATING SYSTEM SHALL BE FULLY DRAINED AND RECHARGED WITH FRESH GLYCOL PER SPECIFICATION.

KEY NOTES

1. REMOVE EXISTING BOILER (BURNHAM V905). REMOVE ASSOCIATED HYDRONIC PIPING, GAS PIPING, AND FLUE.
2. REMOVE EXISTING INDIRECT WATER HEATER (TRIANGLE TUBE SMART 120). REMOVE ALL ASSOCIATED PIPING.
3. REMOVE EXISTING DOMESTIC HOT WATER TEMPERING VALVE. REMOVE ALL ASSOCIATED PIPING AS INDICATED OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
4. REMOVE EXISTING AIR HANDLER. REMOVE ASSOCIATED HYDRONIC PIPING AND VALVING. REMOVE ASSOCIATED DUCTWORK AS INDICATED OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
5. REMOVE EXISTING PUMP SERVING BUILDING HEAT. REMOVE ASSOCIATED HYDRONIC PIPING AS INDICATED OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
6. REMOVE EXISTING PUMP SERVING INDIRECT WATER HEATER. REMOVE ASSOCIATED PIPING AS INDICATED OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
7. REMOVE EXISTING DOMESTIC HOT WATER RECIRCULATION PUMP. REMOVE ASSOCIATED PIPING AS INDICATED OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
8. REMOVE EXISTING AIR SEPARATOR.
9. REMOVE EXISTING EXPANSION TANK AND ALL ASSOCIATED PIPING.
10. REMOVE EXISTING GLYCOL FEED SYSTEM AND ALL ASSOCIATED PIPING.
11. REMOVE EXISTING HYDRONIC UNIT HEATER. REMOVE ASSOCIATED PIPING AND THERMOSTAT.
12. REMOVE PUMPS, HEAT EXCHANGER, VALVING, AIR SEPARATOR, EXPANSION TANK, AND PIPING SERVING SNOWMELT SYSTEM.
13. EXISTING COMBUSTION AIR OPENING AND DUCTWORK TO REMAIN.
14. REMOVE EXISTING SNOWMELT MANIFOLD. REMOVE ALL SNOWMELT PIPING AND EQUIPMENT WITHIN MECHANICAL ROOM. FULLY DRAIN THE SNOWMELT SYSTEM AND CAP PIPING WHERE IT LEAVES THE MECHANICAL ROOM. CLEARLY MARK AS ABANDONED AND DENOTE SERVICE / FLOW DIRECTION.
15. EXISTING INTAKE LOUVER SERVING EXISTING AIR HANDLER TO REMAIN. ASSOCIATED DUCTWORK SHALL BE REMOVED TO THE EXTENTS SHOWN OR AS REQUIRED FOR CONNECTIONS SHOWN IN REMODEL PLANS.
16. EXISTING 6"Ø EXHAUST TO REMAIN. ASSOCIATED FSD AND WALL CAP TO REMAIN.

STATE OF ALASKA 49 TH
ALEC C. THOMSON
ME-8694
09/23/2024
REGISTERED PROFESSIONAL ENGINEER

CERTIFICATE OF AUTHORIZATION NO: T3 ALASKA, LLC AECL #: 1625

sparkdesign,llc
T3 ALASKA LLC
Mechanical & Electrical Engineering
301 Calista Court, Suite 100
Anchorage, AK 99518
Ph: 907-865-7900 Fax: 907-865-7975

BOILER ROOM RENOVATION
Knik Corners
8800 Centennial Circle
Anchorage, Alaska 99504

REVISION SCHEDULE

#	DESCRIPTION	DATE

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SHEET NAME
MECHANICAL SCHEDULES, DEMOLITION PLAN AND SEQUENCE OF OPERATIONS

SHEET NO.
M2

PERMIT SET

SPECIFICATIONS

GENERAL

.01 THE CONTRACTOR SHALL PROVIDE ALL THE MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY FOR THE INSTALLATION OF COMPLETE AND OPERABLE MECHANICAL SYSTEMS SHOWN OR DESCRIBED IN THE CONTRACT DOCUMENTS.

.02 THE CONTRACTOR SHALL FIELD VERIFY AND COORDINATE WITH EXISTING SYSTEMS BEFORE THE START OF WORK TO AVOID CONFLICTS.

.03 THE CONTRACTOR SHALL VERIFY EXACT SIZE, QUANTITIES, LOCATION, ROUTING, SERVICE, ETC. OF ALL EXISTING SYSTEMS WHICH ARE TO BE REMOVED, REPLACED, ABANDONED, CONNECTED TO, OR REMODELED AS REQUIRED AND INDICATED ON THE PLANS.

.04 THE CONTRACTOR SHALL BRING ALL SURFACES BACK TO ORIGINAL CONDITION AFTER ANY MODIFICATIONS HAVE BEEN MADE.

.05 THE PLANS ARE PARTLY DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL OFFSETS AND FITTINGS OR EXACT LOCATIONS OF PIPING AND DUCTS UNLESS SPECIFICALLY DIMENSIONED. PROVIDE FITTINGS, OFFSETS, AND ACCESSORIES AS REQUIRED TO INSTALL THE WORK.

.06 COORDINATE ANY SERVICE DISRUPTION PERIODS WITH THE OWNER AND ANY AFFECTED TENANTS BEFORE START OF WORK. OBTAIN SPECIFIC AGREEMENT BY THE OWNER OF THE TIMES AND DURATION OF SYSTEM SHUT DOWN PERIODS BEFORE STARTING WORK.

CODES AND STANDARDS

.01 ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE FOLLOWING CODES AS AMENDED BY THE MUNICIPALITY OF ANCHORAGE, TITLE 23:

- INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION.
- INTERNATIONAL EXISTING BUILDING CODE (IEBC), 2018 EDITION.
- INTERNATIONAL MECHANICAL CODE (IMC), 2018 EDITION.
- INTERNATIONAL FUEL GAS CODE (IFGC), 2018 EDITION.
- INTERNATIONAL FIRE CODE (IFC), 2018 EDITION.
- INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2018 EDITION.
- UNIFORM PLUMBING CODE (UPC), 2018 EDITION.
- NATIONAL ELECTRICAL CODE (NEC), 2020 EDITION.
- ALASKA STATUTES, TITLE 18, CHAPTER 60 - BOILERS AND UNFIRED PRESSURE VESSELS.

.02 ASHRAE STANDARD 90.1-2022: ENERGY STANDARD FOR BUILDINGS EXCEPT LOW RISE RESIDENTIAL BUILDINGS.

.03 AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE/SEI 7-10: MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

PERMITS

.01 THE CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND FEES.

COMPLETE PROJECT

.01 THE INTENT OF THIS PROJECT IS TO LET ONE CONTRACT WHICH INCLUDES ALL WORK REQUIRED FOR A COMPLETE JOB. THIS INCLUDES ALL ELECTRICAL, CARPENTRY, PLUMBING, SHEET METAL, PAINTING, CLEAN UP, ETC. AS REQUIRED.

INSURANCE

.01 CONTRACTOR MUST PROVIDE BUILDERS' ALL RISK INSURANCE, WORKERS' COMPENSATION INSURANCE, AND GENERAL LIABILITY INSURANCE AT ALL TIMES WHILE WORKING ON THIS PROJECT.

WARRANTY

.01 ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM ACCEPTANCE.

.02 ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER DURING THE GUARANTEE PERIOD.

SALVAGE EQUIPMENT AND MATERIALS

.01 PRESENT ALL REMOVED EQUIPMENT AND MATERIALS TO THE OWNER. THE OWNER SHALL RETAIN THE RIGHT TO CLAIM ANY AND ALL SALVAGED EQUIPMENT AND MATERIALS.

.02 ANY ITEMS THAT ARE NOT CLAIMED BY THE OWNER ARE TO BE HAULED OFF AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

PRODUCTS

.01 ALL PRODUCTS SHALL BE NEW AND UNUSED UNLESS INDICATED AS EXISTING TO BE REUSED IN THE DRAWINGS, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND IN THE BEST PRACTICE OF THE CRAFT.

.02 PRODUCTS INDICATED TO BE REUSED SHALL BE PROTECTED AND PROPERLY STORED DURING CONSTRUCTION AND CLEANED BEFORE REINSTALLATION.

.03 PRODUCTS SHALL BE SPECIFICALLY DESIGNED AND LISTED FOR THE TYPE OF OPERATION OR SERVICE FOR THE SYSTEMS IN WHICH THEY ARE BEING INSTALLED.

.04 ALL PRODUCTS SHALL BE ASBESTOS FREE AND LEAD FREE.

.05 OBTAIN OWNER'S APPROVAL OF ALL PRODUCTS PRIOR TO ORDERING OR INSTALLING ANY PART OF ANY SYSTEM.

PRODUCTS SUBSTITUTIONS

.01 ALL EQUIPMENT LISTED IS REPRESENTATIVE OF THE STANDARD OF QUALITY AND PERFORMANCE REQUIRED.

.02 SUBSTITUTED EQUIPMENT, SUCH AS PUMPS AND FANS, SHALL BE SELECTED IN THE MIDDLE OF THE EQUIPMENT'S RECOMMENDED OPERATION RANGE TO ALLOW INCREASE OR DECREASE FIELD ADJUSTMENTS OF UNIT'S OPERATION IF NEEDED.

.03 "APPROVED EQUAL" SUBSTITUTIONS WILL BE CONSIDERED IF THE SUBSTITUTES ARE SHOWN TO BE EQUAL OR BETTER QUALITY, INCLUDING EFFICIENCY OF PERFORMANCE, SIZE AND WEIGHT.

.04 WHERE ACCEPTED SUBSTITUTED EQUIPMENT VARIES IN SIZE AND/OR CONFIGURATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE CHANGES.

SUBMITTALS

.01 THE CONTRACTOR SHALL SUBMIT THE MECHANICAL SYSTEM'S EQUIPMENT AND MATERIALS AS AN ELECTRONIC PDF FILE FOR REVIEW. THE SUBMITTAL PRODUCT DATA PDF SHALL BE ARRANGED IN BASIC CSI CATEGORIES AND BOOKMARKED SEPARATING CATEGORIES, EQUIPMENT, AND DRAWINGS UNDER BASIC CATEGORIES. THE PDF SHALL BE LIMITED ONLY TO PRODUCT DATA RELEVANT FOR REVIEW.

.02 THE PRODUCT DATA SHALL BE CLEARLY MARKED TO INDICATE THE PROPOSED PRODUCT.

.03 THE PRODUCT DATA SHALL CLEARLY IDENTIFY AND INDICATED VARIATIONS OR DEVIATIONS FROM SPECIFIED OR SCHEDULED EQUIPMENT INCLUDING DEVIATIONS FROM ANY REQUIRED SEQUENCE OF OPERATION.

.04 ALL PRODUCT DATA SHALL BE SUBMITTED AT ONE TIME. PARTIAL SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.

OPERATION AND MAINTENANCE MANUAL

.01 PROVIDE THE OWNER WITH AN OPERATION AND MAINTENANCE MANUAL.

.02 INCLUDE MANUFACTURER'S SPECIFICATIONS, OPERATING AND MAINTENANCE INSTRUCTIONS, WARRANTY INFORMATION ON EACH PIECE OF EQUIPMENT, START-UP REPORTS, TESTING REPORTS, BALANCE REPORT, SCHEMATIC DIAGRAMS OF CONTROLS, A SOURCE OF SUPPLY FOR SPARE PARTS AND SERVICE, AND AS-BUILTS.

EQUIPMENT INSTALLATION

.01 INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDED SERVICE CLEARANCES.

.02 PROVIDE ALL MISCELLANEOUS MATERIALS, APPURTENANCES, ACCESSORIES, SUPPORTS, AND CONTROL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERATING PIECE OF EQUIPMENT.

ACCESS

.01 PROVIDE WORKABLE ACCESS TO ALL SERVICEABLE AND/OR OPERABLE EQUIPMENT.

.02 PROVIDE ACCESS DOOR OF REQUIRED RATING FOR ACCESS TO ALL SERVICEABLE AND/OR OPERABLE EQUIPMENT LOCATED ABOVE HARD CEILINGS OR IN WALLS.

PENETRATIONS

.01 PIPING SLEEVES THROUGH NON-FIRE RATED ASSEMBLIES SHALL BE 18 GAUGE MINIMUM GALVANIZED STEEL.

.02 PROVIDE ESCUTCHEONS ON PIPE AND DUCT PENETRATIONS IN NORMALLY OCCUPIED AREAS WHERE EXPOSED TO VIEW AND AS INDICATED ON THE DRAWINGS.

SUPPORTS AND ANCHORS

.01 PIPING, DUCTWORK, AND EQUIPMENT SHALL BE ADEQUATELY SUPPORTED IN ACCORDANCE WITH CODE REQUIREMENTS, SEISMIC REQUIREMENTS AND GOOD PRACTICE.

.02 PIPING SUPPORTS SHALL BE CARBON STEEL, ADJUSTABLE SWIVEL HANGERS WITH THREADED ROD SUPPORT.

.03 INSULATED PIPING SHALL BE ROUTED THROUGH HANGERS AND PROVIDED WITH SHEET METAL INSULATION PROTECTION SADDLES.

.04 ALL SUPPORTS SHALL BE SECURED TO BUILDING STRUCTURAL ELEMENTS.

.05 PIPE ANCHORS SHALL BE CONTRACTOR FABRICATED AND SECURED TO BUILDING STRUCTURE TO RESIST PIPING MOVEMENT.

SEISMIC RESTRAINT

.01 PIPING AND DUCTWORK SYSTEMS SHALL BE SEISMICALLY RESTRAINED IN ACCORDANCE WITH SMACNA GUIDELINES FOR SEISMIC RESTRAINT - THIRD EDITION (2008).

.02 EQUIPMENT, PIPING, AND DUCTWORK SYSTEMS SHALL BE SEISMICALLY RESTRAINED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND ASCE 7-10, CHAPTER 13; AND THE MUNICIPALITY OF ANCHORAGE REQUIREMENTS.

.03 THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEISMIC RESTRAINT DESIGN FOR ALL EQUIPMENT, PIPING, AND DUCTWORK SYSTEMS USING PREMANUFACTURED SYSTEMS, AMBER BOOTH OR APPROVED EQUAL, OR BY RETAINING THE SERVICES OF A PROFESSIONAL STRUCTURAL ENGINEER LICENSED BY THE STATE OF ALASKA.

.04 THE CONTRACTOR SHALL PROVIDE STRUCTURAL ENGINEERING CALCULATIONS AND SHOP DRAWINGS OF THE PROPOSED RESTRAINT SYSTEMS FOR REVIEW AND APPROVAL BASED ON ACTUAL EQUIPMENT, ACTUAL PIPING LAYOUT, AND ACTUAL DUCT LAYOUT TO BE USED ON THE PROJECT TO THE MUNICIPALITY OF AS A DEFERRED SUBMITTAL.

MECHANICAL IDENTIFICATION

.01 PIPING AND EQUIPMENT SHALL BE PROVIDED WITH IDENTIFICATION.

.02 PIPING SHALL BE LABELED WITH ADHESIVE BACKED WRAP AROUND PIPE MARKERS INDICATING SERVICE AND FLOW DIRECTION. LABELS BE SHALL BE READABLE FROM FLOOR AND NOT MORE THAN 20 FEET ON CENTER. COLOR SCHEME IN ACCORDANCE WITH ANSI A13.1.

.03 EQUIPMENT SHALL BE LABELED WITH HEAT RESISTANT LAMINATED THREE LAYER PLASTIC NAMEPLATES. PROVIDE WITH ENGRAVED BLACK LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR.

PIPING

.01 SANITARY WASTE AND VENT PIPING SHALL MATCH EXISTING. ASTM A74 HUB AND SPIGOT CAST IRON, ASTM A888/CISPI 301 NO-HUB CAST IRON WITH HEAVY DUTY COUPLINGS (HUSKY HD 2000 OR APPROVED EQUAL), ASTM D2661 ABS DWV, OR ASTM D2665 SOLID WALL PVC DWV. SLOPE PIPING AT A MINIMUM OF 1/4" PER FOOT UNLESS OTHERWISE NOTED.

.02 ABOVEGROUND DOMESTIC WATER PIPING SHALL BE ASTM B88 TYPE L COPPER, HARD DRAWN. JOINTS FOR COPPER PIPES SHALL BE SOLDERED ASTM B32 95-5 TA OR LEAD-FREE OR BRAZED ANSI/AWS A5.8 BCUP. PROPRESS STYLE FITTINGS/JOINTS ALLOWED. PIPING SHALL COMPLY WITH ANSI/NSF 61 AS SUITABLE FOR POTABLE WATER USE.

.03 UNDERGROUND TRAP PRIMER PIPING SERVING FLOOR DRAINS SHALL BE CONTINUOUS WITH NO JOINTS. ASTM B88 TYPE K ANNEALED COPPER OR PEX PIPING.

.04 HEATING GLYCOL PIPING SHALL BE ASTM B88 TYPE L COPPER FOR SIZES 3" AND SMALLER AND ASTM A53 SCHEDULE 40 STEEL FOR SIZES 4" AND LARGER. JOINTS FOR COPPER PIPING SHALL BE SOLDERED ASTM B32 95-5 TA OR LEAD-FREE OR BRAZED ANSI/AWS A5.8 BCUP AND FOR STEEL PIPING SCHEDULE 40 STEEL WELDED FITTINGS. PROPRESS STYLE FITTINGS/JOINTS ALLOWED. VICTAULIC NOT ALLOWED.

.05 CONDENSATE PIPING FROM CONDENSING APPLIANCES SHALL BE SHALL BE ASTM D1784 SCHEDULE 40 PVC PIPE OR PER APPLIANCE MANUFACTURER'S REQUIREMENTS.

.06 ABOVEGROUND NATURAL GAS PIPING SHALL BE ASTM A53 SCHEDULE 40 STEEL. THREADED FITTINGS FOR LOW PRESSURE OR VIEGA MEGAPRESS-G SYSTEM. WELDED FITTINGS FOR MEDIUM PRESSURE OR VIEGA MEGAPRESS-G SYSTEM.

.07 REFRIGERANT PIPING SHALL BE ASTM B280 ACR COPPER TUBING, WITH ASME B16.22 WROUGHT COPPER FITTINGS. JOINTS SHALL BE BRAZED ANSI/AWS A5.8 BCUP. LINESETS ALLOWED.

.08 AIR HANDLING UNIT COOLING COIL SECTION DRAINS SHALL BE ASTM B88 TYPE L COPPER, HARD DRAWN OR ASTM D1784 SCHEDULE 40 PVC PIPE. JOINTS FOR COPPER PIPES SHALL BE SOLDERED ASTM B32 95-5 TA OR LEAD-FREE OR BRAZED ANSI/AWS A5.8 BCUP.

.09 ROUTE PIPES PARALLEL WITH BUILDING LINES UNLESS OTHERWISE INDICATED.

.10 PROVIDE DIELECTRIC UNIONS OR NIPPLES AT PIPING JOINTS BETWEEN DISSIMILAR METALS.

VALVES

.01 ISOLATION VALVES SHALL BE BALL VALVES OR BUTTERFLY VALVES, LINE SIZE, AND FULL PORT.

.02 VALVES FOR GAS SERVICE SHALL BE AGA APPROVED.

.03 BALANCE VALVES ON HYDRONIC SYSTEMS SHALL BE TACO ACCU-FLOW OR APPROVED EQUAL.

.04 BALANCING VALVES ON DOMESTIC WATER SYSTEMS SHALL B&G CIRCUIT SETTER OR APPROVED EQUAL. VALVES SHALL BE LOW LEAD, NSF-61.

.05 TWO POSITION CONTROL VALVES SHALL BE LINE SIZE AND FULL PORT, BRONZE BODY AND SEAT WITH STAINLESS STEEL STEM AND SCREWED ENDS. ANSI CLASS 250 BODY. SUITABLE FOR FLUID TEMPERATURES OF UP TO 300°F. PROVIDE ELECTRONIC ACTUATORS WITH SUFFICIENT CLOSE-OFF PRESSURE TO CLOSE VALVE AGAINST SYSTEM PUMP PRESSURE.

.06 PROVIDE GAS ISOLATION VALVES AT EACH GAS APPLIANCE.

.07 PROVIDE BALANCE VALVES AT PUMPS AND WHERE INDICATED ON DRAWINGS. INSTALL PER MANUFACTURER'S REQUIREMENTS.

.08 PRESSURE GAUGES SHALL MEET ASME B40.1 GRADE 1A WITH METAL CASING, BLACK SCALE ON WHITE BACKGROUND AND PSI SCALE. THE INDICATION RANGE SHALL BE SUITABLE FOR APPLICATION.

HEATING

.01 HEATING EQUIPMENT SHALL BE COMMERCIAL GRADE WITH MANUFACTURER AND MODEL AS INDICATED ON THE EQUIPMENT SCHEDULES OR APPROVED EQUAL.

.02 AUTOMATIC AIR VENTS SHALL BE PROVIDED AT ALL HIGH POINTS OF THE PIPING SYSTEM, HEATING COILS AND UNIT HEATERS.

.03 LOW POINT DRAINS SHALL BE PROVIDED AT ALL LOW POINTS OF THE PIPING SYSTEMS.

.04 VENTING PER EQUIPMENT MANUFACTURER'S INSTRUCTIONS. FLUE PIPING SHALL BE LISTED FOR USE WITH CATEGORY IV CONDENSING APPLIANCES OR AS APPROVED BY EQUIPMENT MANUFACTURER.

GLYCOL

.01 FULLY DRAIN AND DISPOSE OF EXISTING GLYCOL FROM SYSTEM.

.02 PROVIDE PRE-MIXED HYDRONIC GRADE PROPYLENE GLYCOL WITH INHIBITORS AT A RATE OF 50% GLYCOL TO 50% WATER FOR A -20°F PROTECTION OR BETTER. DOWFROST HD OR APPROVED EQUAL.

.03 PROVIDE AN ADDITIONAL 40 GALLONS OF MIX AT THE END OF THE PROJECT IN THE GLYCOL MAKE-UP TANK.

.04 TEST GLYCOL AT PROJECT COMPLETION. TESTING SHALL BE BY THE GLYCOL MANUFACTURER OR AN INDEPENDENT TESTING FACILITY APPROVED BY THE GLYCOL MANUFACTURER. PROVIDE ANY CORRECTIVE ACTIONS RECOMMENDED BY THE TESTING AND RETEST. SUBMIT ALL TEST REPORT(S) TO OWNER AND PROVIDE A RECOMMENDED TESTING SCHEDULE FOR THE OWNER TO FOLLOW.

VENTILATION

.01 VENTILATION SYSTEM SHALL BE PROTECTED DURING CONSTRUCTION PER SMACNA RECOMMENDATIONS. DUCT OPENINGS SHALL BE COVERED DURING CONSTRUCTION TO PREVENT THE ENTRANCE OF DUST AND DEBRIS.

.02 VENTILATION EQUIPMENT SHALL BE COMMERCIAL GRADE WITH MANUFACTURER AND MODEL AS INDICATED ON THE EQUIPMENT SCHEDULES OR APPROVED EQUAL.

.03 DUCT SIZES INDICATED ON THE DRAWINGS REPRESENT THE INSIDE DIMENSIONS. FOR INTERIOR LINED DUCTWORK THE DUCT SHALL BE UPSIZED TO MAINTAIN INSIDE DIMENSIONS.

.04 DUCTWORK SHALL BE CONSTRUCTED, AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. APPLY DUCT MASTIC AT DUCT CONNECTIONS, PLENUM EDGES AND CORNERS.

.05 DUCTWORK SHALL BE GALVANIZED SHEET METAL, RECTANGULAR OR ROUND AS INDICATED ON PLANS.

.06 TURNING VANES SHALL BE PROVIDED AT SQUARE DUCTWORK ELBOWS. ACOUSTICAL TURNING VANES SHALL BE PROVIDED AT SOUND LINED SQUARE DUCTWORK ELBOWS.

.07 PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL ROTATING EQUIPMENT.

.08 CONTROL DAMPERS AT EXTERIOR WALL APPLICATIONS SHALL BE INSULATED MULTI_BLADE, PARALLEL ACTION. FRAMES SHALL BE EXTRUDED ALUMINUM, WELDED OR RIVETED WITH CORNER REINFORCEMENTS AND TWO THERMAL ISOLATION BREAKS FILLED WITH POLYURETHANE AND DEBRIDGED. BLADES SHALL BE EXTRUDED ALUMINUM WITH AIRFOIL SHAPED INJECTED WITH HIGH DENSITY POLYURETHANE CFC FREE FOAM, MAXIMUM 6" BLADE WIDTH, FIELD REPLACEABLE -50°F TO 250°F OPERATION VINYL BLADE SEALS. R-VALUE SHALL NOT BE LESS THAN 0.549 HR-SQ.FT.-°F/BTU. LEAKAGE SHALL BE LESS THAN 6 CFM/SQ. FT. AT 4" W.G., TESTED PER AMCA 500-D-97.

INSULATION

.01 ALL INSULATION INSTALLED INSIDE THE BUILDING SHALL HAVE 25 OR LESS FLAME SPREAD, 50 OR LESS SMOKE DEVELOPED RATING.

.02 FIBERGLASS PIPING INSULATION, ASTM C547, SHALL HAVE A MAXIMUM K VALUE OF 0.23 AT 75°F MEAN TEMPERATURE, ASTM C1045.

.03 FLEXIBLE FIBERGLASS DUCT INSULATION, ASTM C553, SHALL HAVE A MAXIMUM K VALUE OF 0.29 AT 75°F MEAN TEMPERATURE, ASTM C518.

.04 RIGID FIBERGLASS DUCT INSULATION, ASTM C612, SHALL HAVE A MAXIMUM K VALUE OF 0.24 AT 75°F MEAN TEMPERATURE, ASTM C518.

.05 FLEXIBLE CLOSED CELL ELASTOMERIC PIPING INSULATION, ASTM C534 - TYPE 1 - GRADE 1, SHALL HAVE A MAXIMUM K VALUE OF 0.25 AT 75°F MEAN TEMPERATURE, ASTM C177 AND PERMEABILITY OF 0.05 PERMS - INCH, ASTM E96.

.06 UNDERGROUND TRAP PRIMER PIPING SHALL BE INSULATED WITH 1/2" MIN. FLEXIBLE CLOSED CELL ELASTOMERIC INSULATION.

.07 ABOVEGROUND DOMESTIC COLD WATER, HOT WATER AND HOT WATER CIRCULATING PIPING SHALL BE INSULATED WITH PRE-FORMED FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER ALL SERVICE JACKET AND PREMANUFACTURED PLASTIC FITTING INSULATION.

1/2" MIN. INSULATION THICKNESS FOR COLD WATER PIPE 1-1/4" AND SMALLER.

1" MIN. INSULATION THICKNESS FOR COLD WATER PIPE 1-1/2" AND LARGER.

1" MIN. INSULATION THICKNESS FOR HOT WATER PIPE 1-1/4" AND SMALLER.

1-1/2" MIN. INSULATION THICKNESS FOR HOT WATER PIPE 1-1/2" AND LARGER.

.08 HEATING GLYCOL PIPING SHALL BE INSULATED WITH PRE-FORMED FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER ALL SERVICE JACKET AND PREMANUFACTURED PLASTIC FITTING INSULATION.

1-1/2" INSULATION THICKNESS FOR PIPE 1-1/4" AND SMALLER.

2" INSULATION THICKNESS FOR PIPE 1-1/2" AND LARGER.

.09 REFRIGERANT PIPING SHALL BE INSULATED WITH 1-1/2" FLEXIBLE CLOSED CELL ELASTOMERIC INSULATION WITH ANTIMICROBIAL PROTECTION. FOR EXTERIOR PIPING PROVIDE WATERTIGHT, STUCCO FINISH ALUMINUM METAL JACKETING WITH MOISTURE BARRIER.

.10 COMBUSTION AIR AND OUTSIDE AIR DUCTWORK SHALL BE INSULATED WITH 2" RIGID FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER WITH AND FOIL SCRIM FACING.

.11 DUCTWORK SHALL BE INTERNALLY INSULATED WITH 1" THICK FIBERGLASS DUCT LINER WITH SMOOTH COATED AIRSTREAM SURFACE AND EDGES WHERE INDICATED ON THE PLANS TO PROVIDE SOUND ATTENUATION.

CONTROLS

.01 PROVIDE A COMPLETE AND OPERATIONAL CONTROL SYSTEM AS REQUIRED TO PROVIDE EQUIPMENT CONTROL AS SPECIFIED UNDER THE SEQUENCE OF OPERATIONS.

.02 PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, POWER, WIRING, CONDUIT, CONTROLLERS, THERMOSTATS, ACTUATORS, TRANSFORMERS, AND ASSOCIATED CONTROL COMPONENTS FOR A COMPLETE AND OPERATIONAL SYSTEM.

.03 ALL CONTROL WIRING SHALL BE ROUTED IN CONDUIT.

TEST AND START-UP

.01 TEST ALL PLUMBING PIPING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE.

.02 TEST ALL GAS PIPING SYSTEMS IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE.

.03 TEST ALL HYDRONIC PIPING SYSTEMS IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE.

.04 FLUSH AND DISINFECT THE DOMESTIC POTABLE WATER PIPING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE.

.05 FLUSH AND CLEAN HYDRONIC PIPING SYSTEMS IN ACCORDANCE WITH GLYCOL MANUFACTURER'S REQUIREMENTS, WATER TREATMENT RECOMMENDATIONS AND GOOD PRACTICE.

.06 PROVIDE BOILER START-UP WITH THE SERVICES OF BOILER MANUFACTURER'S AUTHORIZED REPRESENTATIVE. PERFORM PROCEDURES AND TESTS REQUIRED BY THE MANUFACTURER AND PROVIDE THE OWNER WITH A COPY OF THE START-UP REPORT AT END OF PROJECT.

TESTING, ADJUSTING, AND BALANCING (TAB)

.01 TEST, ADJUST, AND BALANCE THE AIR AND HYDRONIC SYSTEMS IN AREA OF REMODEL.

.02 FLOWS ARE TO BE BALANCED TO WITHIN +-10% OF DESIGN VALUES. BALANCING PROCEDURES SHALL BE IN ACCORDANCE WITH NEBB OR AABC REQUIREMENTS.

.03 PRIOR TO START OF TAB, VERIFY THE SYSTEMS AND EQUIPMENT ARE READY FOR THIS WORK.

.04 CORRECT ANY DEFICIENCIES FOUND DURING INITIAL TESTING PRIOR TO FINAL TESTING.

.05 NOTIFY THE ENGINEER OF ANY PROBLEMS ENCOUNTERED DURING THE BALANCING PROCEDURE.

.06 PERMANENTLY MARK THE FINAL SETTING OF VALVES, DAMPERS AND OTHER ADJUSTMENT DEVICES.

RECORD DRAWINGS

.01 MAINTAIN ACCURATE PROJECT RECORD DRAWINGS INDICATING ALL FIELD CHANGES IN RED INK FROM THE ORIGINAL PLANS MADE DURING INSTALLATION OF WORK.

.02 SUBMIT RECORD DRAWINGS TO OWNER AT COMPLETION OF PROJECT.

TRAINING

.01 PROVIDE ON-SITE INSTRUCTION FOR THE OWNER'S PERSONNEL IN THE OPERATION, CARE AND MAINTENANCE OF ALL SYSTEMS AND EQUIPMENT.

PERMIT SET

STATE OF ALASKA
49 TH
ALEC C. THOMSON
ME-8694
09/23/2024
REGISTERED PROFESSIONAL ENGINEER

CERTIFICATE OF AUTHORIZATION NO:
T3 ALASKA, LLC AECL #: 1625

sparkdesign,llc
T3 ALASKA LLC
Mechanical & Electrical Engineering
301 Calista Court, Suite 100
Anchorage, AK 99518
Ph: 907-865-7900 Fax: 907-865-7975

BOILER ROOM RENOVATION
Knik Corners
8800 Centennial Circle
Anchorage, Alaska 99504

REVISION SCHEDULE

#	DESCRIPTION	DATE

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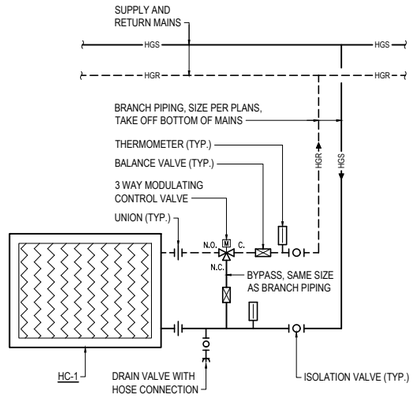
DRAWN	NZS
REVIEWED	ACT

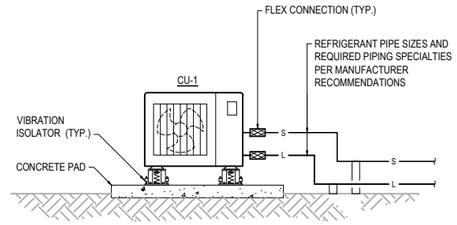
SHEET NAME
MECHANICAL SPECIFICATIONS

SHEET NO.
M3



4 HEAT COIL DETAIL

SCALE: NONE



5 CONDENSER DETAIL

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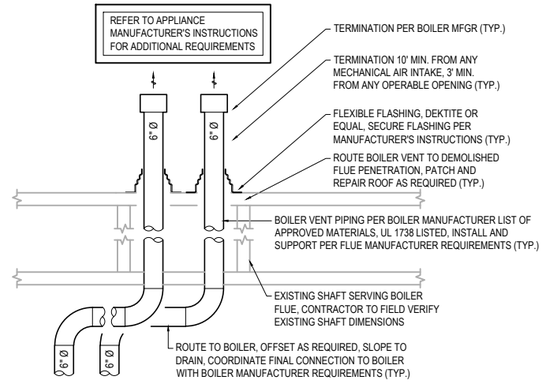
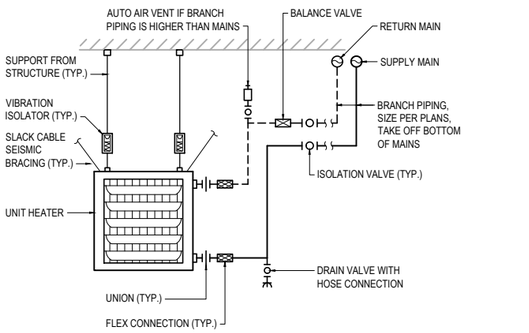


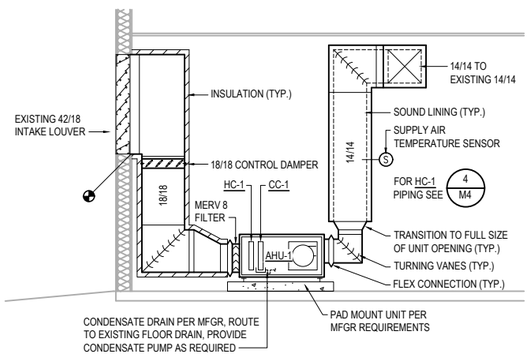
6 BOILER VENT DETAIL

SCALE: NONE



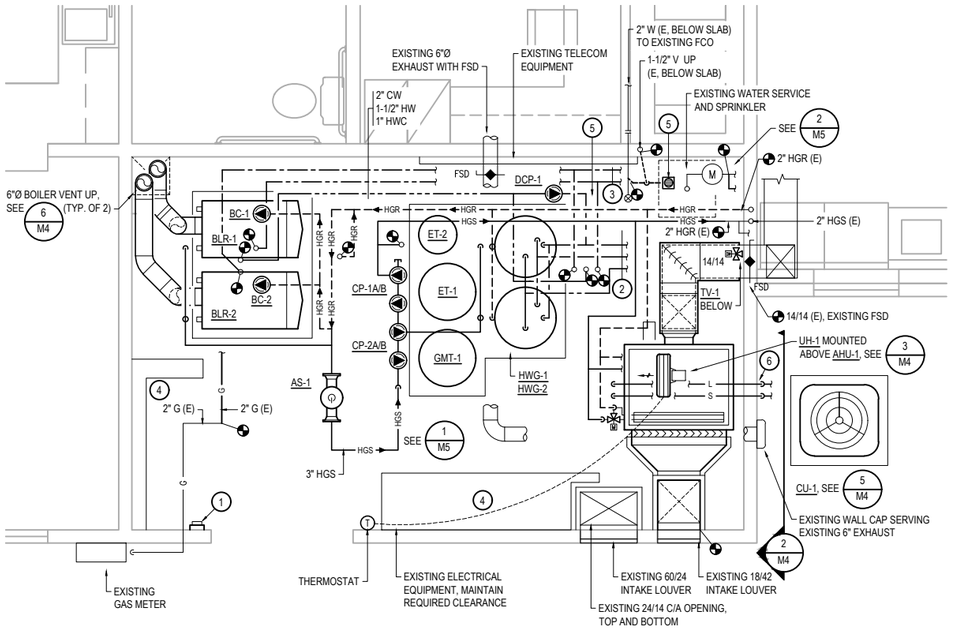
3 UNIT HEATER DETAIL

SCALE: NONE



2 AHU-1 SECTION

SCALE: 3/8" = 1'-0"



1 BOILER ROOM REMODEL PLAN

SCALE: 3/8" = 1'-0"

SHEET NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND A NON-DESTRUCTIVE WALK THROUGH. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. THE DRAWINGS MAY NOT SHOW ALL EXISTING SYSTEMS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, SERVICE, AND SIZES BEFORE START OF WORK.
2. COORDINATE WITH BUILDING OWNER FOR WORK REQUIRING SHUT DOWN OF BUILDING SYSTEMS.
3. HEATING SYSTEM SHALL BE FULLY DRAINED AND RECHARGED WITH FRESH GLYCOL PER SPECIFICATION.

KEY NOTES

1. ASME IV EMERGENCY BOILER SHUTDOWN SWITCH. PROVIDE WITH CLEAR FLIP COVER TO PROTECT AGAINST ACCIDENTAL ACTIVATION. LABEL SWITCH "EMERGENCY BOILER SHUTDOWN". COORDINATE WITH ELECTRICAL.
2. 2" CW, 1-1/4" HWC, 2" HW (120°F), 2" HW (140°F). ROUTE TO WATER SERVICE AND TV-1. SEE 2/M5.
3. 2" CW, 2" HW. ROUTE TO WATER SERVICE AND TV-1. SEE 2/M5.
4. EXISTING ELECTRICAL EQUIPMENT, MAINTAIN REQUIRED CLEARANCE.
5. FD-1. WASTE AND VENT PIPING SHOWN IN THIS PLAN IS BELOW SLAB. ORIGINAL AREA DRAIN INDICATED IN RECORD DRAWINGS COULD NOT BE LOCATED AND MAY HAVE BEEN REMOVED IN PRIOR WORK. RE-CONNECT TO EXISTING PIPING IN THE AREA, 2" W AND 1-1/2" V OR LARGER. CONNECT TO EXISTING ABANDONED TRAP PRIMER IN THE AREA. FIELD VERIFY SIZE LOCATION AND SERVICE OF EXISTING PIPING. CUT EXISTING SLAB AS REQUIRED AND REPAIR TO MATCH EXISTING.
6. REFRIGERANT PIPE SIZING PER SPLIT SYSTEM MANUFACTURER. PROVIDE SUPPLIER WITH FINAL CONNECTION LAYOUT FOR SIZING. TYPICAL OF ALL REFRIGERANT PIPING. SLEEVE AND SEAL WALL PENETRATION.

PROVIDE STRUCTURAL AND SEISMIC CALCULATIONS PLUS FASTENING DETAILS FOR BOILERS AND TANKS INCLUDING THE ENGINEER'S STAMP AND SIGNATURE, FOR STRUCTURAL REVIEW ON A DEFERRED SUBMITTAL BASIS. REFER TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

TOTAL BOILER ROOM FLOOR AREA OF 283 SQ.FT. DOES NOT REQUIRE TWO EXIT ACCESS DOORWAYS PER IBC 1006.2.2.1

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ALEC C. THOMSON
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REGISTERED PROFESSIONAL ENGINEER

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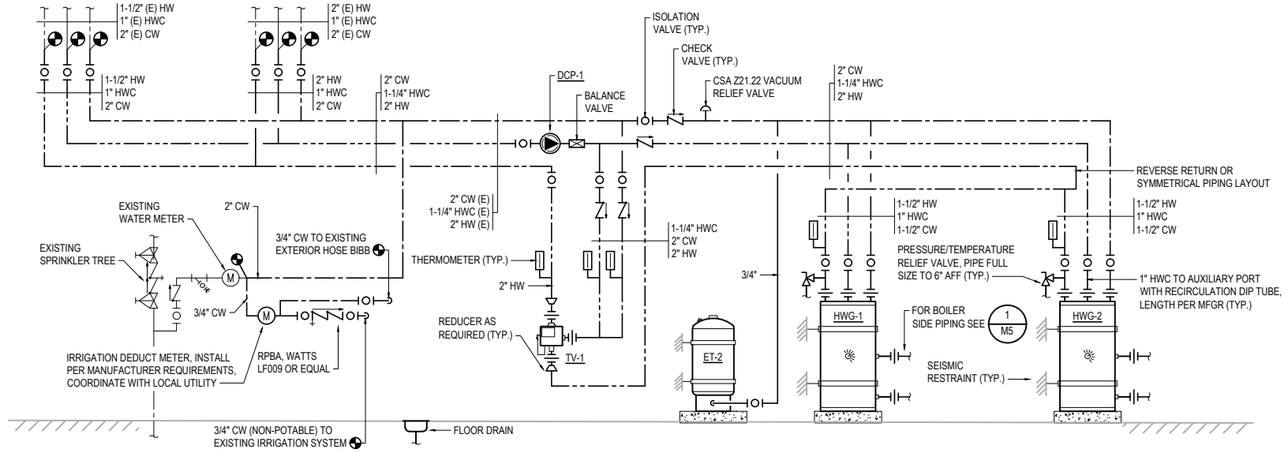
BOILER ROOM REMODEL PLAN AND DETAILS

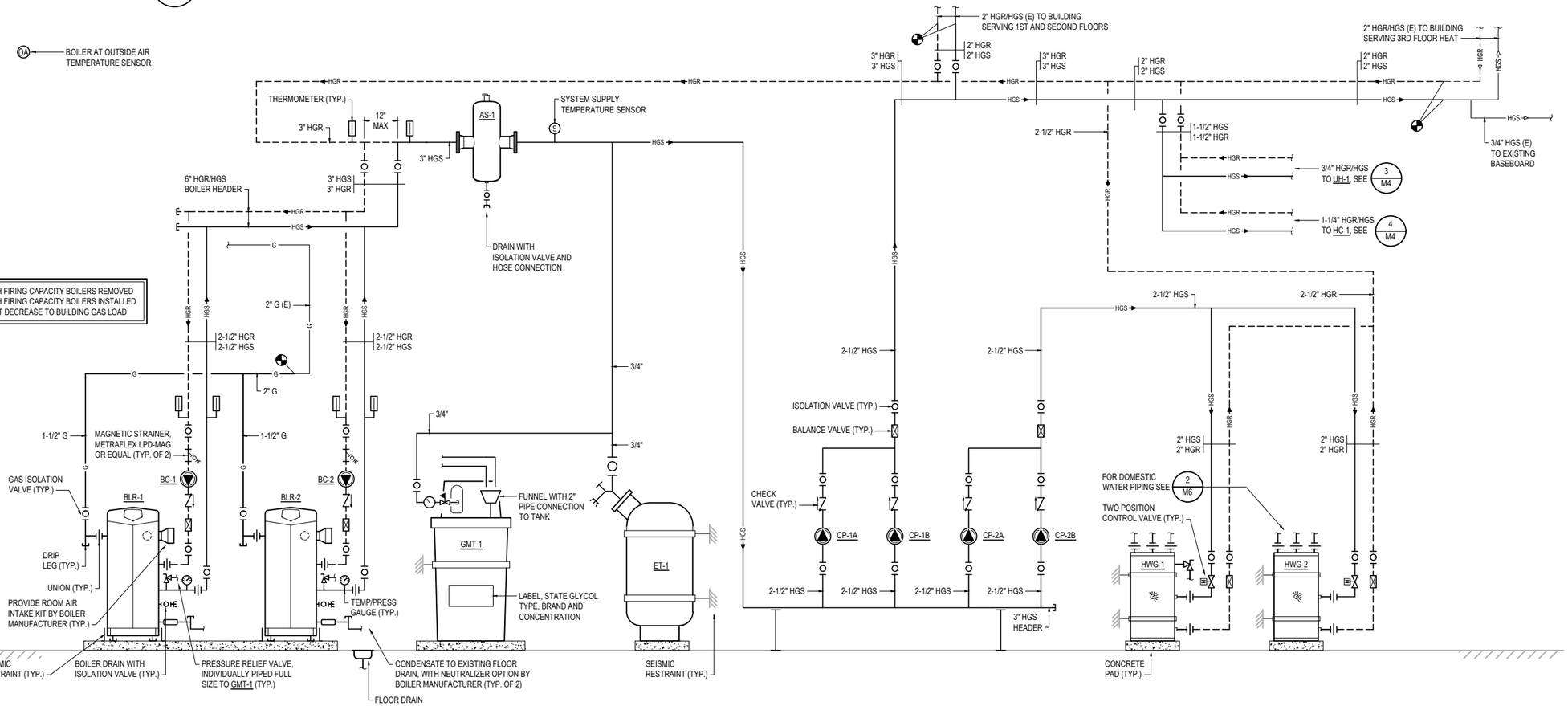
SHEET NO.
M4

PERMIT SET



2 DOMESTIC WATER SYTEM PIPING DIAGRAM

SCALE: NONE



1 BOILER SYSTEM PIPING DIAGRAM

SCALE: NONE

SHEET NOTES

1. EXISTING SYSTEMS SHOWN ON THE DRAWINGS ARE FROM RECORD DRAWINGS AND A NON-DESTRUCTIVE WALK THROUGH. ACTUAL SYSTEMS MAY VARY FROM THE INFORMATION INDICATED ON THE DRAWINGS. THE DRAWINGS MAY NOT SHOW ALL EXISTING SYSTEMS. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, LOCATIONS, SERVICE, AND SIZES BEFORE START OF WORK.
2. COORDINATE WITH BUILDING OWNER FOR WORK REQUIRING SHUT DOWN OF BUILDING SYSTEMS.
3. AIR SEPARATORS ARE TO BE SUPPORTED AND RESTRAINED FOR UNIT WEIGHT AND FULL WATER CAPACITY.

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301 Calista Court, Suite 100
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MECHANICAL
PIPING DIAGRAMS

SHEET NO.
M5

PERMIT SET