



AMCC WATER HEATER REPLACEMENT
NOME, ALASKA - 99762

DESIGNED BY: SR
CHECKED BY: JAB
DATE: 10-20-2017
JOB NUMBER: L7206.00
DWG FILE: L7206_MSRISES

SHEET:
M0.1

BOILER SCHEDULE																
			HEATED		INPUT		GROSS	ELECTRICAL								
SYMBOL	MANUFACTURER	MODEL	MEDIUM	FUEL	FUEL OIL GPH	OUTPUT (MBH)	AMPS	VOLTS/PH	LABEL	REMARKS						
B-3	BUDERUS	G-315/6	WATER	#2 FUEL OIL	3.85	454	6	120/1	ASME	PROVIDE WITH BECKETT AFG OIL BURNER.						

HOT WATER GENERATOR SCHEDULE																	
			DOMESTIC HOT WATER						HEATING WATER								
				RECOVERY	CAPACITY	EWT	LWT		FLOW	WPD	EGT	LGT		POWER			
SYMBOL	MANUFACTURER	MODEL	MEDIUM	GPH	(GAL)	DEG F	DEG F	MEDIUM	GPM	PSI	DEG F	DEG F	LABEL	VOLT	AMP	REMARKS	
HWG-1,2	LOCHINVAR	GVG0200JR W/LTWX824 4 PASS	WATER	261	200	35	140	WATER	16	0.2	180	150	ASME	115	0.75	PROVIDE WITH TEMPERATURE AND PRESSURE RELIEF VALVE, DOUBLE WALL HEAT EXCHANGER	

PUMP SCHEDULE																
				PUMPED		HEAD	MOTOR DATA									
SYMBOL	MANUFACTURER	MODEL	FUNCTION	MEDIUM	GPM	FEET	AMPS	POWER	REMARKS							
CP-21,22	GRUNDFOS	UPS 32-80F	HEATING CIRCULATION HWG'S	WATER	16	10	2.7	120/1	SPEED SET BY BALANCING CONTRACTOR.							
CP-23	GRUNDFOS	UPS 32-160F	BOILER CIRCULATION	WATER	32	20	5.8	120/1	SPEED SET BY BALANCING CONTRACTOR.							
CP-24	GRUNDFOS	UPS 26-99BFC	DOMESTIC RECIRCULATION	WATER	5	22	1.8	120/1	NSF 61 RATED, BRONZE CONNECTION.							

TANK SCHEDULE																
						TANK VOLUME										
SYMBOL	MANUFACTURER	MODEL	FUNCTION	MEDIUM	MATERIAL	TOTAL (GAL)	ACCEPTANCE (GAL)	DIMENSIONS	LABEL	REMARKS						
ET-1	AMTROL	ST-30V	DOMESTIC WATER EXPANSION	WATER	BUTYL/STEEL	14	11.3	24" H X 15" DIA	IAPMO	PRECHARGE TO INCOMING WATER PRESSURE. PROVIDE SEISMIC RESTRAINT.						
ET-2	AMTROL	AX-60V	HEATING WATER EXPANSION	WATER	BUTYL/STEEL	33.6	11.3	45" H X 16" DIA	ASME	PRECHARGE TO 12 PSI.						
GT-1	AXIOM	MF-300	GLYCOL FEEDER	P.G	PLASTIC	17.0	--	36" H X 12" W X 12" L	--	PROVIDE WITH CORD AND PLUG CONNECTION. ELECTRICAL: 50 WATTS, 120V/1 PH.						
BT-1,2	AMTROL	HWBT-200-2/2-150	BUFFER TANK	WATER	STEEL	200	--	62" H X 30" DIA	ASME	PROVIDE WITH 4 PORTS FOR HOT WATER BUFFER SYSTEM						

GENERAL NOTES

PLANS – THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM. THE DRAWINGS ARE PARTLY DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL CONTRACTOR TO COORDINATE EQUIPMENT LOCATION WITH ELECTRICAL PLANS TO AVOID CONFLICT.

COMPLETE PROJECT – 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.

CODE – ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), UNIFORM PLUMBING CODE (UPC) AND NATIONAL ELECTRICAL CODE (NEC) CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), UNIFORM PLUMBING CODE (UPC) AND NATIONAL ELECTRICAL CODE (NEC) AS AMENDED BY THE STATE OF ALASKA AND LOCAL JURISDICTION.

WARRANTY – ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM ACCEPTANCE. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER DURING THE GUARANTEE PERIOD.

ELECTRICAL WORK – ALL ELECTRICAL WORK IS TO BE PERFORMED BY A LICENSED ELECTRICIAN.

EQUIPMENT SUBSTITUTIONS – ALL EQUIPMENT LISTED IS REPRESENTATIVE OF THE STANDARD SIZE, WEIGHT AND QUALITY OF EQUAL SUBSTITUTIONS WILL BE CONSIDERED IF THE SUBSTITUTES ARE SHOWN TO BE EQUAL OR BETTER QUALITY, INCLUDING EFFICIENCY OF PERFORMANCE.

MATERIALS – ALL MATERIALS SHALL BE NEW AND UNUSED, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND IN THE BEST PRACTICE OF THE CRAFT. OBTAIN OWNER'S APPROVAL OF ALL PRODUCTS PRIOR TO ORDERING OR INSTALLING ANY PART OF ANY SYSTEM.

SUBMITTALS – SUBMITTALS SHALL BE IN ELECTRONIC FORM. THE DATA SHALL BE ARRANGED AND INDEXED UNDER BASIC CATEGORIES. ARRANGE EQUIPMENT IN THE SAME ORDER AS THE SCHEDULES ON SHEET M1 IN ADDITION PROVIDE SUBMITTALS FOR VALVES, PIPING, UNIONS, FLANGES, AND INSULATION.

OPERATION AND MAINTENANCE MANUAL – PROVIDE THE OWNER WITH AN OPERATING AND MAINTENANCE MANUAL, TO INCLUDE MANUFACTURER'S SPECIFICATIONS, OPERATING AND MAINTENANCE INSTRUCTIONS, WARRANTY INFORMATION ON EACH PIECE OF EQUIPMENT, AND SCHEMATIC DIAGRAMS OF CONTROL SYSTEMS AS–BUILT, AS WELL AS A SOURCE OF SUPPLY FOR SPARE PARTS AND SERVICE.

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

EQUIPMENT INSTALLATION – INSTALL ALL EQUIPMENT WHERE NOTED ON THE DRAWINGS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PROVIDE MISCELLANEOUS APPURTENANCES, ACCESSORIES, SUPPORTS AND CONTROL CONNECTIONS REQUIRED FOR COMPLETE AND OPERATING SYSTEMS. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCES.

PERMITS & INSPECTIONS – OBTAIN AND PAY FOR ALL REQUIRED PERMITS, INSPECTIONS, TESTS, AND APPROVALS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.

PIPING

DOMESTIC WATER & HYDRONIC PIPING – COPPER TUBING: ASTM B88, TYPE L, HARD DRAWN. FITTINGS: ASME B16.18 CAST BRONZE OR ASME B16.22 WROUGHT COPPER. JOINTS: ASTM B32, LEAD FREE SOLDER, WATER SOLUBLE FLUX.

HYDRONICS

IN–LINE CIRCULATORS – MAINTENANCE FREE, SELF–LUBRICATED, PUMP MOUNTED SPEED CONTROLLED INDUSTRIAL/COMMERCIAL SINGLE STAGE, DIRECT DRIVE CIRCULATOR.
SENSORS: DIFFERENTIAL PRESSURE MONITORING.
CASING: CAST IRON OR BRONZE.
IMPELLER: TYPE 304 STAINLESS STEEL.
BEARINGS: UPPER AND LOWER RADIAL BEARINGS TO BE ALUMINUM OXIDE CERAMIC, TUNGSTEN CARBIDE SHAFT BEARING SURFACES.
SHAFT: STAINLESS STEEL WITH TYPE 430F.
WHERE REQUIRED PROVIDE PUMP SEALS COMPATIBLE WITH PROPYLENE GLYCOL (EPDM).
PUMP MANUFACTURED BY GRUNDFOS, MAGNA SERIES.

AIR VENTS – MANUAL TYPE: DISK TYPE VENT WITH BUILT–IN CHECK VALVE FOR MANUAL OR AUTOMATIC OPERATION, DISCS REPLACEABLE WITHOUT DRAINING SYSTEM, 1/8 INCH SHANK, RATED AT 50 PSI; HOFFMAN NO. 500 OR APPROVED EQUAL. FLOAT TYPE: BRASS OR SEMI–STEEL BODY, COPPER FLOAT, STAINLESS STEEL VALVE AND VALVE SEAT; 1/8 INCH NPT CONNECTION TO ATMOSPHERE WITH DRAIN PIPING SUITABLE FOR SYSTEM OPERATING TEMPERATURE AND PRESSURE; WITH ISOLATING VALVE. HOFFMAN NO. 79 OR APPROVED EQUAL. HIGH CAPACITY AUTOMATIC AIR VENT: CAST IRON BODY, STAINLESS STEEL AND BRASS TRIM, EPDM DIAPHRAGM, RATED FOR 250 DEG F, 2 PSIG THROUGH 150 PSIG, 3/4 INCH SYSTEM CONNECTION, 3/8 INCH NPT CONNECTION TO ATMOSPHERE WITH DRAIN PIPING. PROVIDE WITH ISOLATION VALVE UPSTREAM OF VENT, ARMSTRONG AAE–750 OR APPROVED EQUAL.

DIAPHRAGM–TYPE EXPANSION TANKS – WELDED STEEL CONSTRUCTION, RATED FOR WORKING PRESSURE OF 125 PSIG, WITH FLEXIBLE EPDM DIAPHRAGM SEALED INTO TANK. NSF APPROVED LINER, FOR DOMESTIC WATER EXPANSION TANK, AIR–CHARGING FITTING.

FLOW CONTROL VALVES – BRASS OR BRONZE BODY WITH UNION ON INLET AND OUTLET, TEMPERATURE AND PRESSURE TEST PLUG ON INLET AND OUTLET, BLOWDOWN/BACKFLUSH DRAIN. CONTROL FLOW WITHIN 5 PERCENT OF SELECTED RATING, OVER OPERATING PRESSURE RANGE OF 10 TIMES MINIMUM PRESSURE REQUIRED FOR CONTROL, MAXIMUM MINIMUM PRESSURE 3.5 PSIG. CONTROL MECHANISM SHALL BE STAINLESS STEEL OR NICKEL PLATED BRASS PISTON OR REGULATOR CUP, OPERATING AGAINST STAINLESS STEEL HELICAL OR WAVE FORMED SPRING. INCLUDE IN–LINE STRAINER ON INLET AND BALL VALVE ON OUTLET. MANUFACTURED BY IMI FLOW DESIGN, MODEL AC OR APPROVED EQUAL.

PIPING SUPPORTS AND HANGERS

HANGERS OR WALL SUPPORTS FOR 1/2–1 INCH COPPER PIPE: COPPER HORN TYPE "AMPTROL VAN HANGERS", SIZED FOR PIPE SUPPORTED.

HANGERS FOR PIPE SIZES 1/2" TO 1–1/2 INCHES: MALLEABLE IRON, ADJUSTABLE SWIVEL, SPLIT RING FOR STEEL PIPE, COPPER SWIVEL FOR COPPER PIPE; 2" AND LARGER: CARBON STEEL, ADJUSTABLE, CLEVIS.

FLOOR SUPPORT FOR PIPE SIZES TO 4 INCHES AND ALL COLD PIPE SIZES: CAST IRON ADJUSTABLE PIPE SADDLE, LOCKNUT NIPPLE, FLOOR FLANGE, AND CONCRETE PIER OR STEEL SUPPORT.

SHIELD FOR INSULATED PIPING 1–1/2 INCHES AND SMALLER: 18 GAUGE GALVANIZED STEEL SHIELD, OVER INSULATION IN 180° SEGMENTS, MINIMUM 12 INCHES LONG AT PIPE SUPPORT.
HANGER RODS: THREADED BOTH ENDS, OR CONTINUOUS THREADED.

SEISMIC RESTRAINT

SEISMIC RESTRAINT – ALL PIPING, AND EQUIPMENT INSTALLED UNDER THIS PROJECT SHALL BE SEISMICALLY RATED AND RESTRAINED FOR A SEISMIC EVENT IN ACCORDANCE WITH THE 2009 EDITION OF THE INTERNATIONAL BUILDING CODE AND ASCE 7. SEISMIC CATEGORY D, COMPONENT IMPORTANCE FACTOR 1.0.

VALVES AND UNIONS ETC.

BALANCE VALVES – ANGLE OR STRAIGHT PATTERN, INSIDE SCREW GLOBE VALVE FOR 125 PSIG WORKING PRESSURE, WITH BRONZE BODY AND INTEGRAL UNION FOR SCREWED CONNECTIONS, RENEWABLE COMPOSITION DISC, PLASTIC WHEEL HANDLE FOR SHUT–OFF SERVICE, AND LOCKSHIELD KEY CAP FOR BALANCING SERVICE. INSTALL PER MANUFACTURER'S INSTRUCTIONS. B&G CIRCUIT SETTER OR APPROVED EQUAL.

BALL VALVES – UP TO 2 INCHES: CLASS 150, BRONZE TWO PIECE BODY, FULL PORT, FORGED BRASS, CHROME PLATED BALL, TEFLON SEATS AND STUFFING BOX RING, BLOW–OUT PROOF STEM, LEVER HANDLE, SOLDER OR THREADED ENDS; OVER 2 INCHES: CAST STEEL, TWO PIECE BODY, FULL PORT CHROME PLATED STEEL BALL, TEFLON SEAT AND STUFFING BOX SEALS, LEVER HANDLE, FLANGED. SEAT MATERIAL TO BE COMPATIBLE WITH LIQUID HANDLED.

SPRING LOADED CHECK VALVES – BRASS OR BRONZE BODY, BRONZE TRIM, STAINLESS STEEL SPRING, RENEWABLE COMPOSITION DISC, SCREWED, WAFER OR FLANGED ENDS.

TRIPLE DUTY VALVES: STRAIGHT PATTERN, GLOBE VALVE DESIGN WITH SPRING LOADED CHECK VALVE TO PREVENT BACKFLOW, MULTI–TURN STEM CALIBERATION, CAST IRON VALVE BODY BRASS DISC WITH EPDM RUBBER SEAL, STAINLESS STEEL STEM, STAINLESS STEEL SPRING, PROVIDE FLANGED OR GROOVED END CONNECTIONS. VALVE SHALL BE RATED FOR 175 PSI MAX WORKING PRESSURE AND 250 F MAX TEMPERATURE. PROVIDE PRESSURE TEMPERATURE PORT. B&G TRIPLE DUTY VALVE MODEL 3DS OR APPROVED EQUAL.

STRAINERS – SIZE 2 INCH AND UNDER: SCREWED BRASS OR IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN. SIZE 2–1/2" TO 4 INCH: FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 3/64 INCH STAINLESS STEEL PERFORATED SCREEN.

RELIEF VALVES – BRONZE BODY, TEFLON SEAT, STAINLESS STEEL STEM AND SPRINGS, AUTOMATIC, DIRECT PRESSURE ACTUATED, CAPACITIES ASME CERTIFIED AND LABELED. RELIEF VALVES TO BE RATED ATLEAST 150 PSI.

DIELECTRIC CONNECTIONS: UNION WITH GALVANIZED OR PLATED STEEL THREADED END, COPPER SOLDER END, WATER IMPERVIOUS ISOLATION BARRIER; CLEAR FLOW PRODUCTS ALLOWED.

FLANGES, UNIONS, AND COUPLINGS – 150 PSIG MALLEABLE IRON UNIONS FOR THREADED FERROUS PIPING; BRONZE UNIONS AND FLANGES FOR COPPER PIPE, SOLDERED JOINTS.

INSULATION

TYPE A: GLASS FIBER, RIGID, MOLDED, NON–COMBUSTIBLE INSULATION; ANSI/ASTM C547; 'K' VALUE OF 0.24 AT 750 DEG F, RATED TO 850 DEG F, VAPOR RETARDER JACKET OF KRAFT PAPER BONDED TO ALUMINUM FOIL; JOHNS–MANVILLE "MICRO–LOK" OR EQUAL.

	TYPE	SIZE, IN	INSULATION THICKNESS, IN
DOMESTIC WATER & HYDRONIC	A	ALL SIZES	1"
BUFFER TANKS	G,H		2"
EXPANSION TANKS	G,H		2"

TYPE G: RIGID FIBERGLASS BOARD WITH FSK OUTER FACING. JOHNS MANVILLE 814 FSK, 3.0 LBS/CU.FT DENSITY, ASTM C612, K=0.23 @ 75°F, 450°F MAXIMUM SERVICE TEMPERATURE, JOHNS MANVILLE 1000 SERIES " SPIN–GLAS" OR APPROVED EQUAL.

TYPE H: REUSABLE THERMAL INSULATION COVERS, HVAC EQUIPMENT: 2" THERMAL INSULATING WOOL, 2.4 LB/ CU.FT DENSITY, MAXIMUM TEMPERATURE RATING OF 1000 DEG F. INTERIOR/EXTERIOR FABRIC: 17 OZ/ SQ.YD. SILICONE COATED FIBERGLASS CLOTH, MAXIMUM TEMPERATURE RANGE OF –80 TO 500 DEG F; SECUREMENT: LACING ANCHORS, FOURTEEN GAUGE STAINLESS STEEL WITH 1.5" DIAMETER STAINLESS STEEL CORE, ALL BLANKET SEAMS TO BE SINGLE SOWN LOCK STICK INTERIOR SEAMS, SIX TO NINE STITCHES PER INCH; DRAWCORD: 0.125" DIAMETER #4 ULTRA STRENGTH POLYESTER. THERMAL ENERGY PRODUCTS "ENERGY WRAP EW.2T.NM.SH.SC" OR APPROVED EQUAL.

TESTING AND BALANCING

DISINFECTION OF POTABLE WATER SYSTEM – THE NEW PORTIONS OF THE DOMESTIC WATER PIPING SYSTEM SHALL BE DISINFECTED IN ACCORDANCE WITH SECTION 609.9 OF THE UPC.

TEST AND START–UP – TEST ALL PIPING SYSTEMS WITH 60 PSIG FOR ONE HOUR BEFORE FILLING. FILL ALL HEATING PIPING WITH "CH2O CLEAN–N–FLUSH SOLUTION" OR APPROVED EQUAL, AND OPERATE FOR TWO HOURS AT NORMAL OPERATING TEMPERATURE BEFORE FLUSHING AND FILLING WITH GLYCOL SOLUTION.

BALANCE – THE CONTRACTOR SHALL BALANCE THE NEW HYDRONIC SYSTEM TO THE SATISFACTION OF THE OWNER.

FLUE

BOILER CHIMNEY – INSULATED DOUBLE WALL METAL FLUE STACK FOR OIL FIRED EQUIPMENT – PROVIDE INSULATED DOUBLE WALL METAL STACKS, TESTED TO UL 103 HT AND UL LISTED, FOR USE WITH BUILDING HEATING EQUIPMENT, IN COMPLIANCE WITH NFPA 211. FABRICATE WITH 1 INCH MINIMUM AIR SPACE BETWEEN WALLS. CONSTRUCT INNER JACKET OF MINIMUM 28 GAUGE ANSI/ASTM A167 TYPE 430 STAINLESS STEEL. CONSTRUCT OUTER JACKET OF TYPE 430 STAINLESS STEEL 30 GAUGE, UP TO 8 INCHES IN DIAMETER.

- PROVIDE ACCESSORIES EACH BEARING FACTORY APPLIED UL LABEL.
1. STACK CAP: CONSISTS OF CONICAL RANISHIELD WITH INVERTED CONE FOR PARTIAL RAIN PROTECTION WITH LOW FLOW RESISTANCE.
 2. ROOF BRACE KIT AND WALL BANDS

INSTRUMENTATION

SOLAR POWERED DIGITAL THERMOMETERS –HI–IMPACT ABS CASE; –50/ 300°F (–45/150° C) SWITCHABLE RANGE; 1/2" LCD DIGITS, WIDE AMBIENT FORMULA DISPLAY; 1% ACCURACY; 1/10' BETWEEN –19.9/199.9 °F (–28/93°C) RESOLUTION; 10 LUX (ONE FOOT–CANDLE) LUX RATING; 10 SECOND UPDATE RATE; –30/140°F (–35/60°C) AMBIENT OPERATING RANGE; GLASS PASSIVATED THERMISTOR –NTC SENSOR. MODEL DIGITAL VARI–ANGLE AS MANUFACTURED BY WEISS PRODUCTS.

PRESSURE GAUGES –4–1/2 INCH DIAMETER CAST ALUMINUM CASE, PHOSPHOR BRONZE BOURBON TUBE, ROTARY BRONZE MOVEMENT, BRASS SOCKET, WITH SILICONE FLUID DAMPENING BLACK FIGURES ON WHITE BACKGROUND, ONE PERCENT MID–SCALE ACCURACY, SCALE CALIBRATED IN PSI. MODEL 600C AS MANUFACTURED BY TRERICE.

PRESSURE GAUGE TAPS: GAUGE ISOLATION VALVE: LEVER HANDLE BALL VALVE, FORGED BRASS BODY, CHROME PLATED BRASS BALL, VITON O–RINGS FOR MAXIMUM 150 PSIG. MODEL MINI T–82–M AS MANUFACTURED BY JOMAR.
A. NEEDLE VALVE: BRASS FOR MAXIMUM 150 PSIG. MODEL 735 AS MANUFACTURED BY TRERICE.
B. PULSATION DAMPER: PRESSURE SNUBBER, BRASS WITH 1/4 INCH CONNECTIONS. SERIES 870 AS MANUFACTURED BY TRERICE.
COIL SIPHON: BRASS, ¼", MALE PIPE THREAD EACH END. 885 SERIES.

THERMOMETER SUPPORTS
A. SOCKET: BRASS SEPARABLE SOCKETS FOR THERMOMETER STEMS WITH OR WITHOUT EXTENSIONS AS REQUIRED, AND WITH CAP AND CHAIN.
B. FLANGE: 3 INCH OUTSIDE DIAMETER REVERSIBLE FLANGE, DESIGNED TO FASTEN TO SHEET METAL AIR DUCTS, WITH BRASS PERFORATED STEM.

TEST PLUGS
A. TEST PLUG: 1/4 INCH OR 1/2 INCH BRASS FITTING AND CAP FOR RECEIVING 1/8 INCH OUTSIDE DIAMETER PRESSURE OR TEMPERATURE PROBE WITH NORDEL OR VITON CORE FOR TEMPERATURES UP TO 350 DEGREES F.
B. TEST KIT: CARRYING CASE, INTERNALLY PADDED AND FITTED CONTAINING ONE 2–1/2 INCH DIAMETER PRESSURE GAUGE, TWO GAUGE ADAPTERS WITH 1/8 INCH PROBES, TWO 1–1/2 INCH DIAL THERMOMETERS.

STATIC PRESSURE GAUGES – 4 INCH DIAMETER DIAL IN CAST ALUMINUM CASE, MAGNEHELIC DIFFERENTIAL PRESSURE GAUGE, BLACK FIGURES ON WHITE BACKGROUND, FRONT RECALIBRATION ADJUSTMENT WITH TUBING, STATIC PRESSURE TIPS, ADJUSTABLE SIGNAL FLAG. SERIES 2000 AS MANUFACTURED BY DWYER.

IDENTIFICATION

IDENTIFICATION – LABEL ALL EQUIPMENT WITH HEAT RESISTANT LAMINATED PLASTIC LABELS HAVING ENGRAVED LETTERING 1/2" HIGH. IF ITEMS ARE NOT SPECIFICALLY LISTED ON THE SCHEDULES, CONSULT THE ENGINEER CONCERNING DESIGNATION TO USE. SETON ENGRAVED SETON–PLY NAMEPLATES OR EQUAL. IDENTIFY PIPING TO INDICATE CONTENTS AND FLOW DIRECTION OF EACH PIPE EXPOSED TO VIEW BY A LABELED SLEEVE OR PIPE MARKER IN LETTERS READABLE FROM FLOOR AT LEAST ONCE IN EACH ROOM AND AT INTERVALS OF NOT MORE THAN 20' APART AND ON EACH SIDE OF PARTITION PENETRATIONS. COLORING SCHEME IN ACCORDANCE WITH ANSI A13.1–1981, SETON OPTI–CODE OR EQUAL. PROVIDE LABELING FOR ALL POTABLE AND NON–POTABLE WATER PER THE REQUIREMENTS OF UPC 601.2.

SEQUENCE OF OPERATION

BOILER (B–3): THE BOILER SHALL BE CONTROLLED USING INTEGRAL BOILER CONTROLLER. THE CONTROLLER SHALL BE CAPABLE OF MAINTAINING HYDRONIC CIRCULATION LOOP TEMPERATURE BY CYCLING BOILER AND BOILER PUMP (CP–23).

TANK SCHEDULE (ADJUSTABLE):	
HOT WATER TEMP	HEATING WATER SUPPLY SETPOINT
140	180

BOILER SHUTDOWN: PROVIDE EMERGENCY BOILER SHUTDOWN SWITCHES (MANUFACTURER: EATON, MODEL #10250T5B62–S106) AT EACH EXIT OF THE BOILER ROOM. INTERLOCK B–1,2,3 WITH EMERGENCY BOILER SHUTDOWN SWITCH(S) SO THAT ALL BOILERS WILL BE DISABLED WHEN ACTIVATED.

CP–21: PUMP INTERLOCKED TO OPERATE WITH HWG–1. UPON CALL FOR HEATING FROM THE TANK TEMPERATURE SENSOR, CIRCULATION PUMP CP–21 SHALL OPERATE UNTIL SET POINT IS SATISFIED.

CP–22: PUMP INTERLOCKED TO OPERATE WITH HWG–2. UPON CALL FOR HEATING FROM THE TANK TEMPERATURE SENSOR, CIRCULATION PUMP CP–22 SHALL OPERATE UNTIL SET POINT IS SATISFIED.

DOMESTIC HOT WATER RE–CIRCULATION PUMP (CP–24): PUMP SHALL RUN CONTINUOUSLY.

GT–1: INTEGRAL CONTROLS SHALL MAINTAIN SYSTEM PRESSURE.

BUILDING DDC: BUILDING DDC SHALL MONITOR BOILER STATUS, TEMPERATURE, AND PRESSURE; DOMESTIC HOT WATER SUPPLY TEMPERATURE; CP–21,22,23,24 START/STOP STATUS.

B–3 BACKUP HEAT: IF B–3 IS INOPERABLE, MANUALLY OPEN N.C. ISOLATION VALVES CONNECTING B–3 PIPING TO EXISTING BOILER SYSTEM. CV–1 SHALL OPEN IF EITHER HWG–1 OR HWG–2 CALLS FOR HEAT.



MECHANICAL AND ELECTRICAL
ENGINEERING BY:

RSA ENGINEERING, INC.
191 E Swanson Ave, Suite 101
Wasilla, AK 99654
Phone (907) 357-1521 Fax (907) 357-1751
Corporate No: AEC0542

AMCC WATER HEATER REPLACEMENT

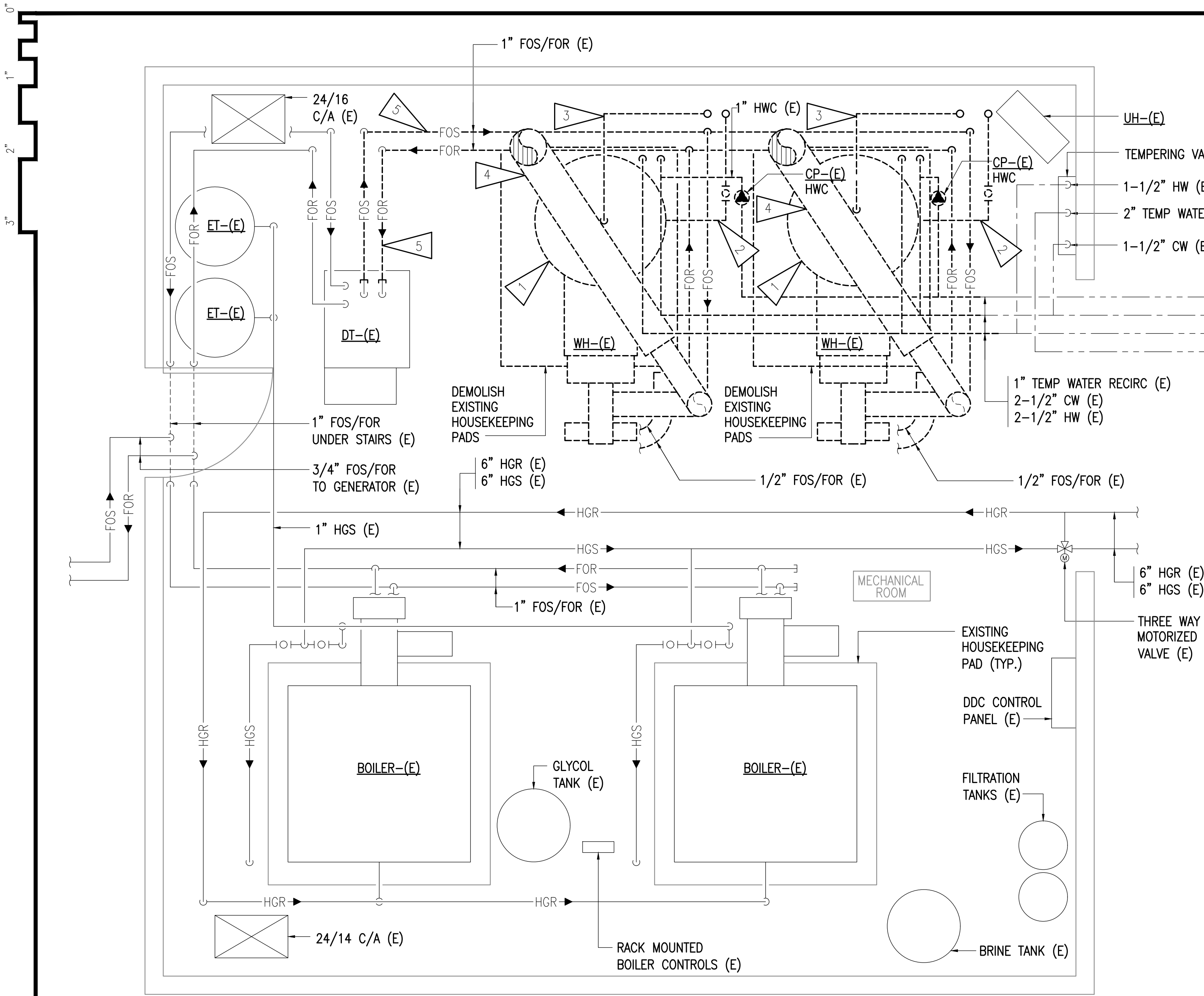
NOME, ALASKA - 99762

REVISIONS:

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DRAWING TITLE:
MECHANICAL
SPECIFICATIONS

SHEET:
M0.2



1

Mechanical Room Demolition Plan

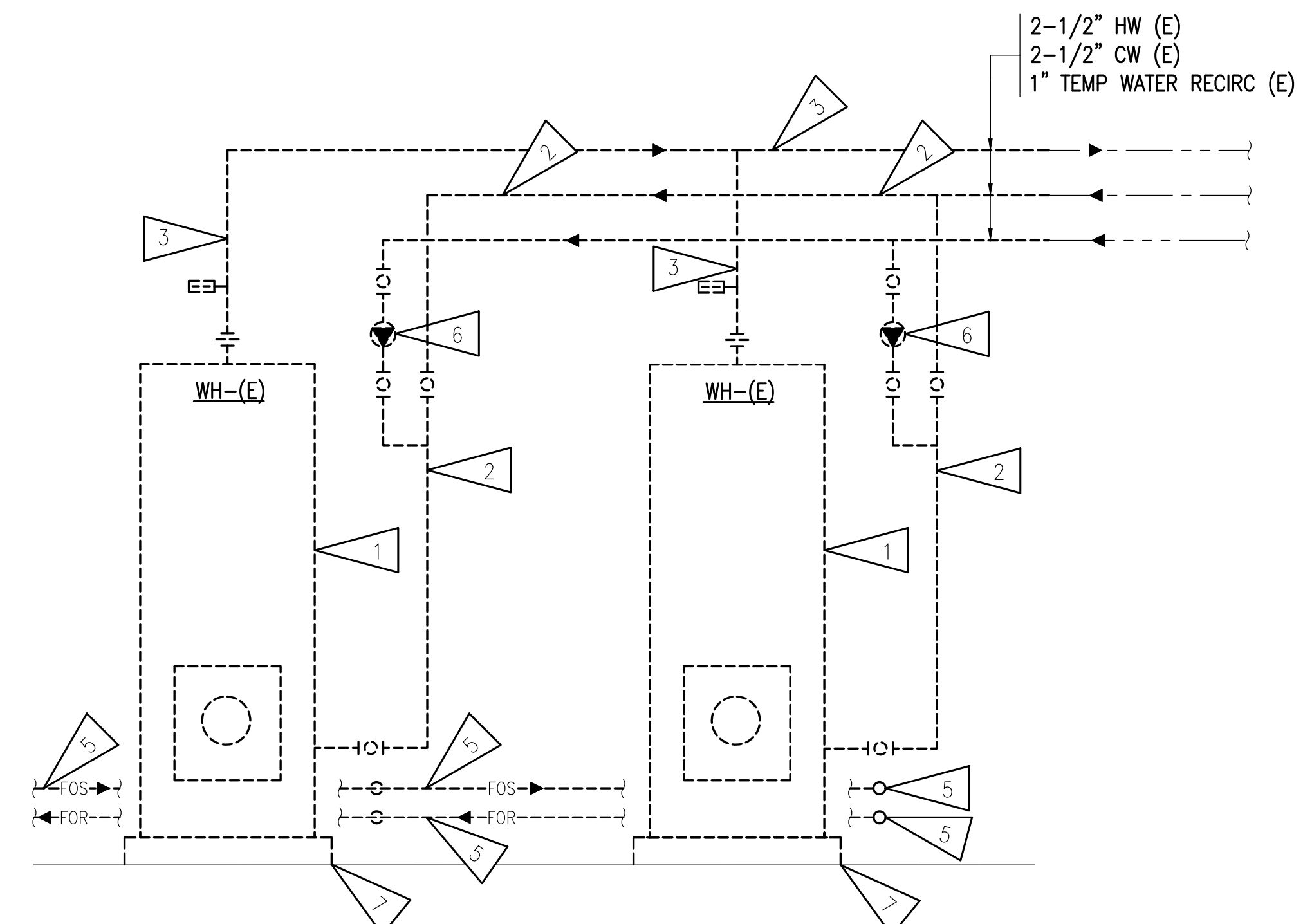
Scale: 1/2" = 1'-0"

GENERAL NOTE:

A. THE INFORMATION SHOWN ON THIS DRAWING IS TAKEN FROM AS-BUILT DRAWINGS AND A NON-DESTRUCTIVE WALKTHROUGH OF THE FACILITY. THE CONTRACTOR SHALL FIELD VERIFY ALL ITEMS SCHEDULED FOR DEMOLITION PRIOR TO START OF WORK.

SHEET NOTES:

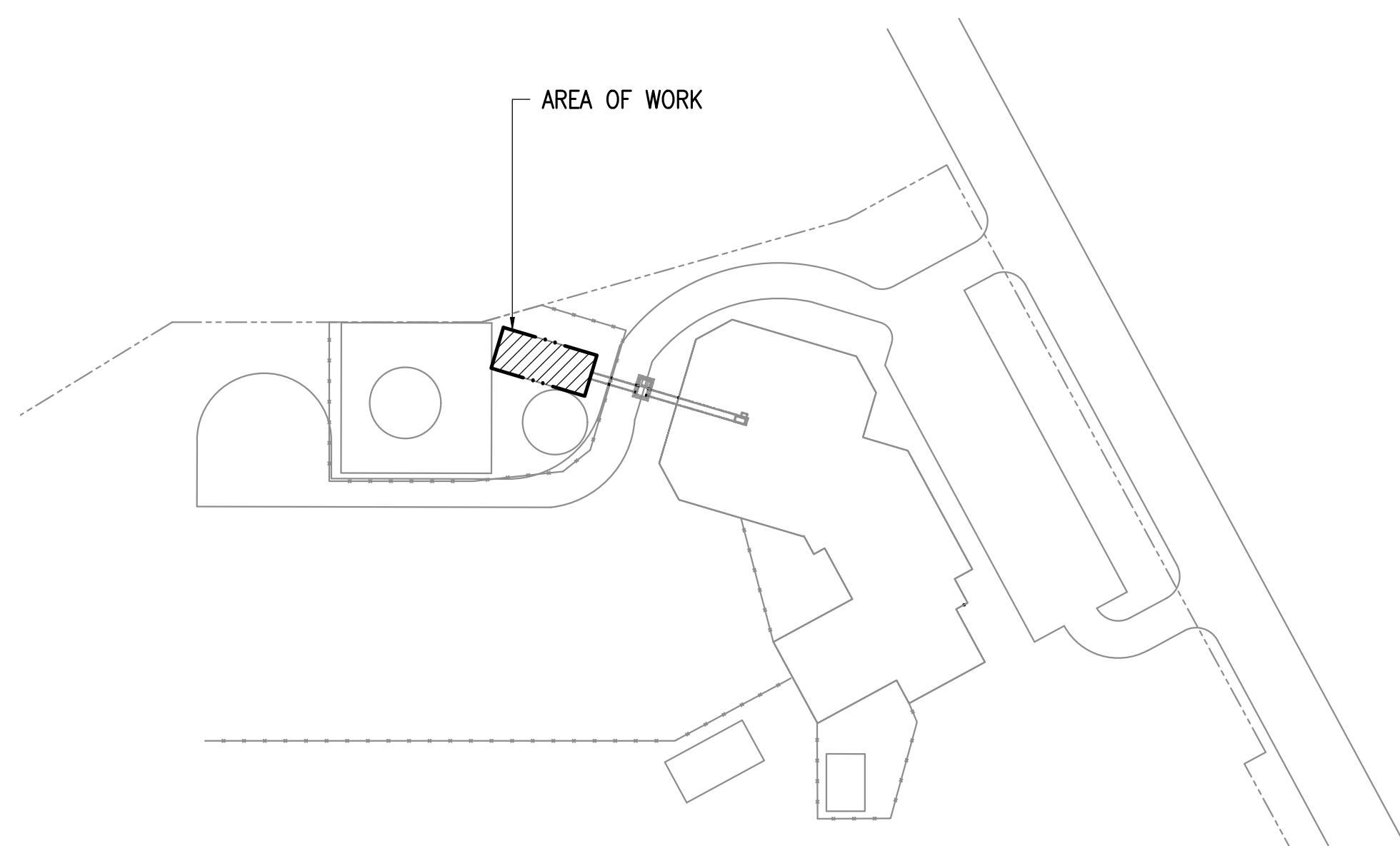
- 1
- DEMOLISH EXISTING WATER HEATER AND ASSOCIATED APPURTENANCES.
- 2
- DEMOLISH CW PIPING UP TO EXTENT NECESSARY FOR THE DEMOLITION OF THE EXISTING WATER HEATER AND THE INSTALLATION OF THE NEW WATER HEATERS.
- 3
- DEMOLISH HW PIPING UP TO EXTENT NECESSARY FOR THE DEMOLITION OF THE EXISTING WATER HEATER AND THE INSTALLATION OF THE NEW WATER HEATERS.
- 4
- DEMOLISH FLUES FROM THE WATER HEATER THROUGH ROOF. SEE REMODEL PLANS FOR REUSING FLUE PENETRATION. PATCH THE ROOF AND CEILING PENETRATION TO MATCH ADJACENT CONSTRUCTION MATERIALS.
- 5
- DEMOLISH AND CAP FUEL OIL PIPING SUPPLY AND RETURN AS INDICATED SERVING WATER HEATERS. SEE REMODEL PLANS FOR NEW FUEL OIL SUPPLY CONNECTION.
- 6
- DEMOLISH EXISTING HOT WATER RE-CIRCULATION PUMPS AND ASSOCIATED APPURTENANCES, DEMOLISH HOT WATER CIRCULATION PIPING TO EXTENT NECESSARY FOR INSTALLING HOT WATER NEW RE-CIRCULATION PUMP.
- 7
- DEMOLISH EXISTING HOUSEKEEPING PADS.



2

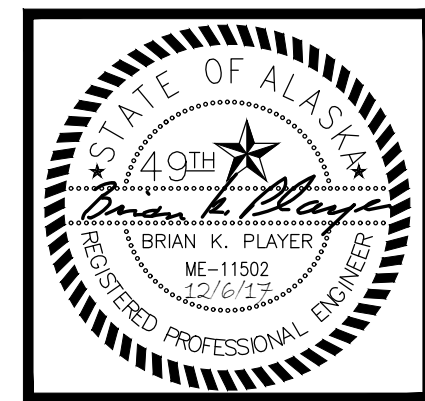
Water Heater Demolition Piping Schematic

NO SCALE



Key Plan

NO SCALE



MECHANICAL AND ELECTRICAL
ENGINEERING BY:

RSA ENGINEERING, INC.
191 E Swanson Ave, Suite 101
Wasilla, AK 99654
Phone (907) 357-1521 Fax (907) 357-1751
Corporate No: AEOC542

AMCC Water Heater Replacement

NOME, ALASKA - 99762

REVISIONS:

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DRAWING TITLE:
MECHANICAL DEMOLITION, PLAN AND SCHEMATIC

SHEET:
M1.1

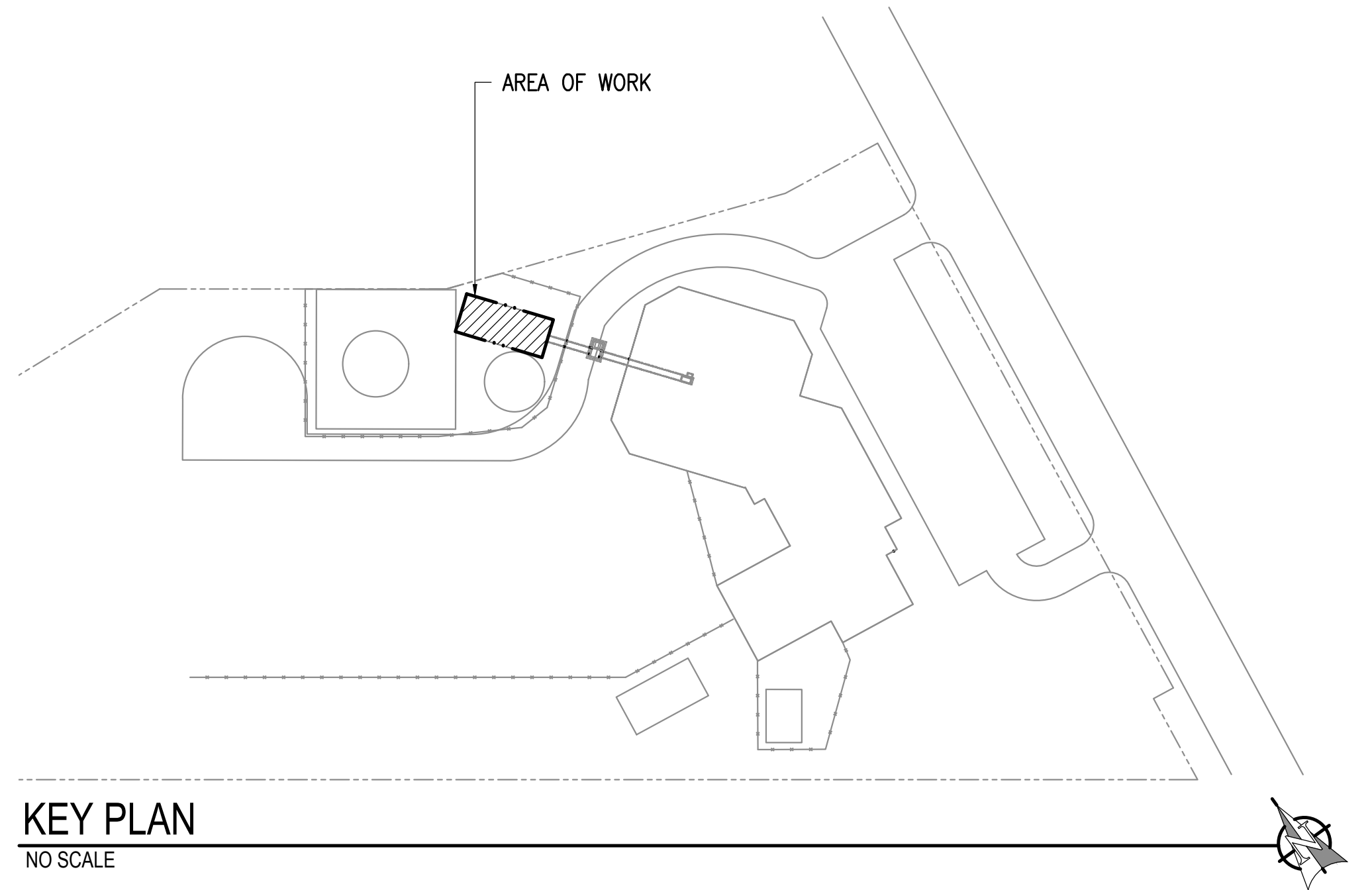


NUMIL, ALASKA - 99702

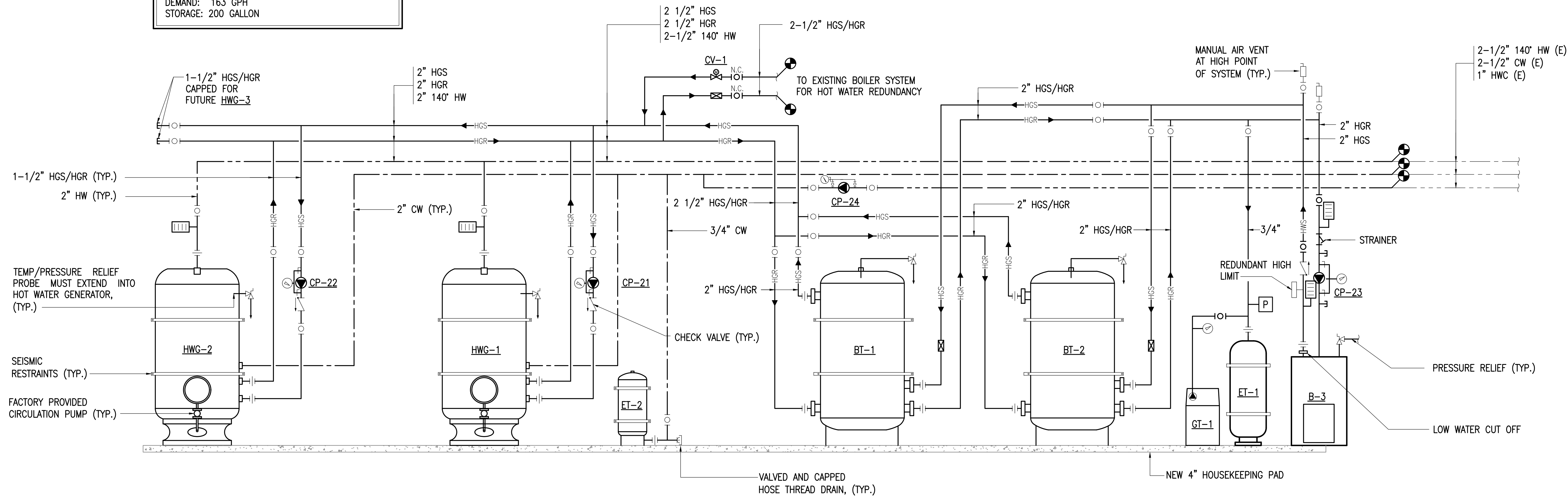
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CHECKED BY: JAB
DATE: 10-20-2017
JOB NUMBER: L7206.00
DWG FILE: L7206_MSERIES

SHEET:

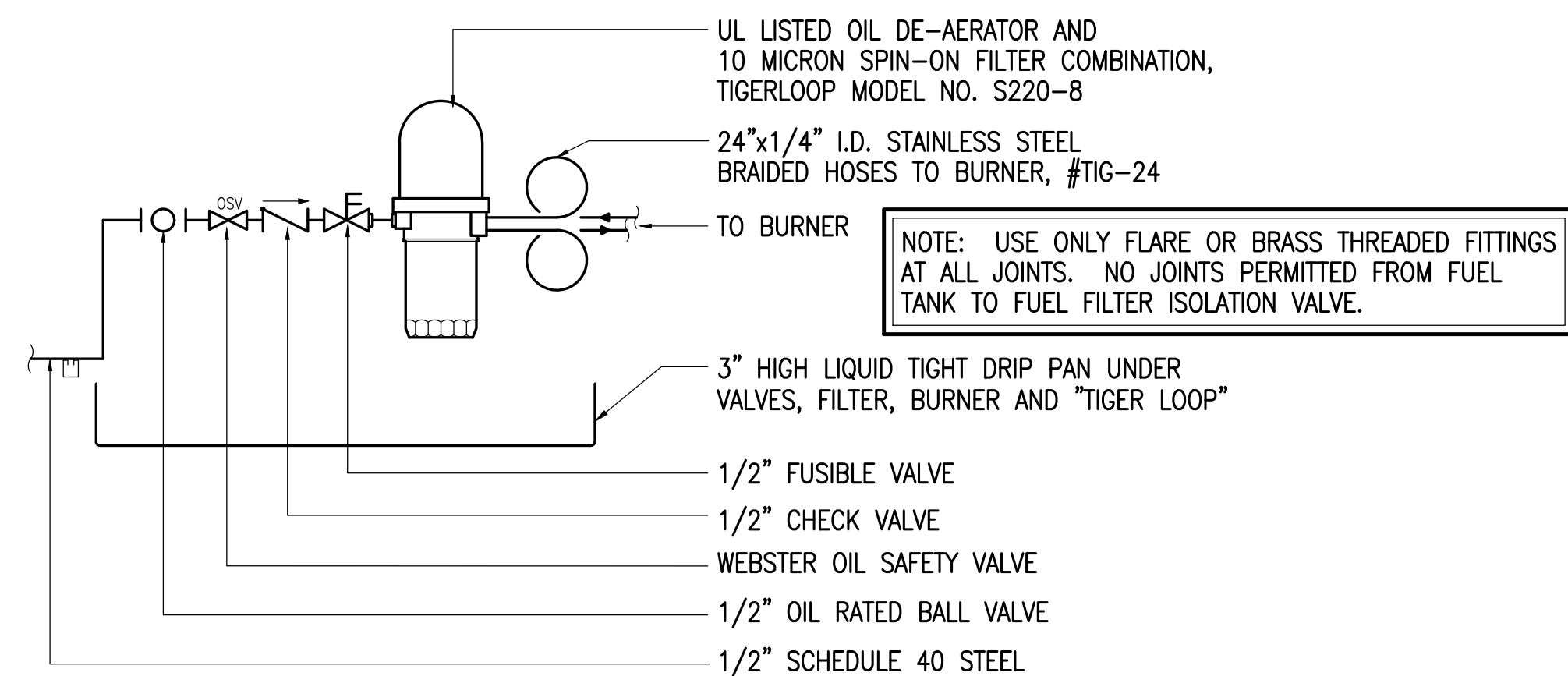
M2.1



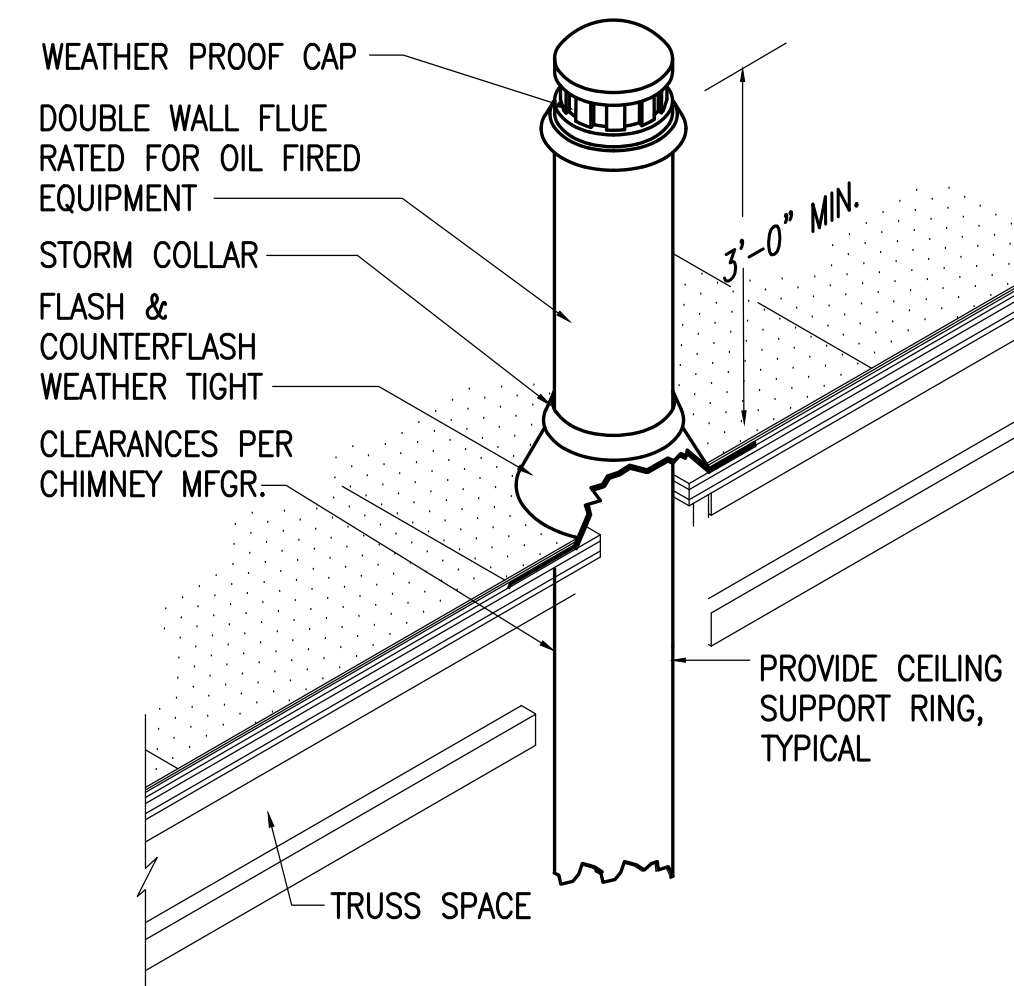
NOTE:
CAPACITY FOR TEMPORARY HOT WATER:
DEMAND: 163 GPH
STORAGE: 200 GALLON



1 HOT WATER GENERATOR AND BOILER REMODEL PIPING SCHEMATIC
NO SCALE



2 TIGER LOOP DETAIL
NO SCALE



3 FLUE DETAIL
NO SCALE



MECHANICAL AND ELECTRICAL
ENGINEERING BY:

RSA ENGINEERING, INC.
191 E Swanson Ave, Suite 101
Wasilla, AK 99654
Phone (907) 357-1521 Fax (907) 357-1751
Corporate No: AEC0542

AMCC WATER HEATER REPLACEMENT

NOME, ALASKA - 99762

REVISIONS:












DESIGNED BY: SR
CHECKED BY: JAB
DATE: 10-20-2017
JOB NUMBER: L7206.00
DWG FILE: L7206_MSERIES

DRAWING TITLE:
MECHANICAL REMODEL
SCHEMATIC

SHEET:

M2.2

0"
1"
2"
3"

LEGEND	
	CONDUIT, EXPOSED
	NUMBER AND SIZE OF WIRES (NO MARKS = 3 #12)
	HOMERUN TO PANEL (PANEL AND CIRCUIT No.)
	PANEL
	DUPLEX RECEPTACLE
	JUNCTION BOX
	MOTOR (SIZED AS NOTED)
	FRACTIONAL HORSEPOWER MOTOR STARTER
	COMBINATION DISCONNECT/MAGNETIC MOTOR STARTER
	EMERGENCY PUSHBUTTON SWITCH
	NOTE TAG (No. INDICATES NOTE)
C	CONDUIT
(E)	DENOTES EXISTING ITEM
NEC	NATIONAL ELECTRICAL CODE
TYP	TYPICAL

ELECTRICAL SERVICE CALCULATION			
EXISTING SERVICE:	600A, 120 / 208V, 3P		
CALCULATED DEMAND LOAD (FROM AS-BUILTS):			
	54.2 kW @ .9 PF =		60.3 kVA
LOADS REMOVED:			
	CIRCULATION PUMPS x2	0.076 kVA	
	WATER HEATER x2	2.352 kVA	
	TOTAL LOAD REMOVED:	2.428 kVA	
NEW LOADS ADDED:			
	B-3,HWG-1,2	1.2 kVA	
	TEKMAR,CP-21,22	0.9 kVA	
	CP-23,24	0.9 kVA	
	TOTAL LOAD ADDED:	3.0 kVA	
TOTAL NEW CALCULATED DEMAND LOAD:	60.8 kVA		
TOTAL NEW CALCULATED DEMAND LOAD (IN AMPS):	169.0 A		
BASED ON THE ABOVE CALCULATION, THE EXISTING SERVICE IS ADEQUATELY SIZED FOR BOTH NEW AND EXISTING LOADS.			

EXISTING PANEL 'SL (SECTION 1)'															
MFR/MODEL: SIEMENS TYPE P1						VOLTS: 120/208V,3PH,4W			ENCLOSURE: NEMA 1				250 A		
NOTE	CIRC	POLE	AMPS	SERVICE	TYPE	VOLT-AMPS			MTG: SURFACE						
						A	B	C	TYPE	SERVICE	AMPS	POLE	CIRC	NOTE	
	1	1	20	AIR COMP/DOM WATER						CP-1	20	3	2		
	3	1	20	DAY TANK						AAA	20	3	4		
b	5	1	20	HWG-2, CP-22	MOTR			564		AAA	20	3	6		
b	7	1	20	HWG-1, CP-21	MOTR	564				CP-2	20	3	8		
	9	1	15	CP-11						AAA	20	3	10		
	11	1	15	CP-12						AAA	20	3	12		
	13	1	20	SPARE						UTILIDOR LIGHTS	20	1	14		
	15	1	15	FIRE BELL						UTILIDOR VAULT RECP	20	1	16		
	17	1	20	UH'S						WATER TANK CTRL PNL	20	1	18		
	19	3	15	B-1						SPARE	20	1	20		
	21	3	15	AAA						SPARE	20	1	22		
	23	3	15	AAA				540	MOTR	CP-24,GT-1,TEKMAR	20	1	24	b	
	25	3	15	B-2						SUMP PUMP RECP	20	1	26		
	27	3	15	AAA						CP-18,19	20	1	28		
	29	3	15	AAA						SPARE	20	1	30		
	31	1	20	RECP						SUMP PUMP	20	1	32		
	33	1	20	RECP						SPARE	20	1	34		
	35	1	20	SPARE				720	MOTR	B-3	20	1	36	b	
	37	1	20	BATT CHARGER		696			MOTR	CP-23	20	1	38	b	
	39	1	20	GEN DAMPER						LIFT STATION	30	2	40		
	41	1	30	BLOCK HEATER						AA	30	2	42		
TOTAL V-A						1260	0	1824	3,084 VA						
TOTAL AMPS						11	0	15	9 A						
A.I.C. RATING: 10,000															
PANEL NOTES:									PANEL OPTIONS:						
a ALL CIRCUITS EXISTING UNLESS OTHERWISE NOTED.									MAIN CIRCUIT BREAKER (200A)						
b EXISTING CIRCUIT BREAKER WITH NEW LOAD SHOWN.															



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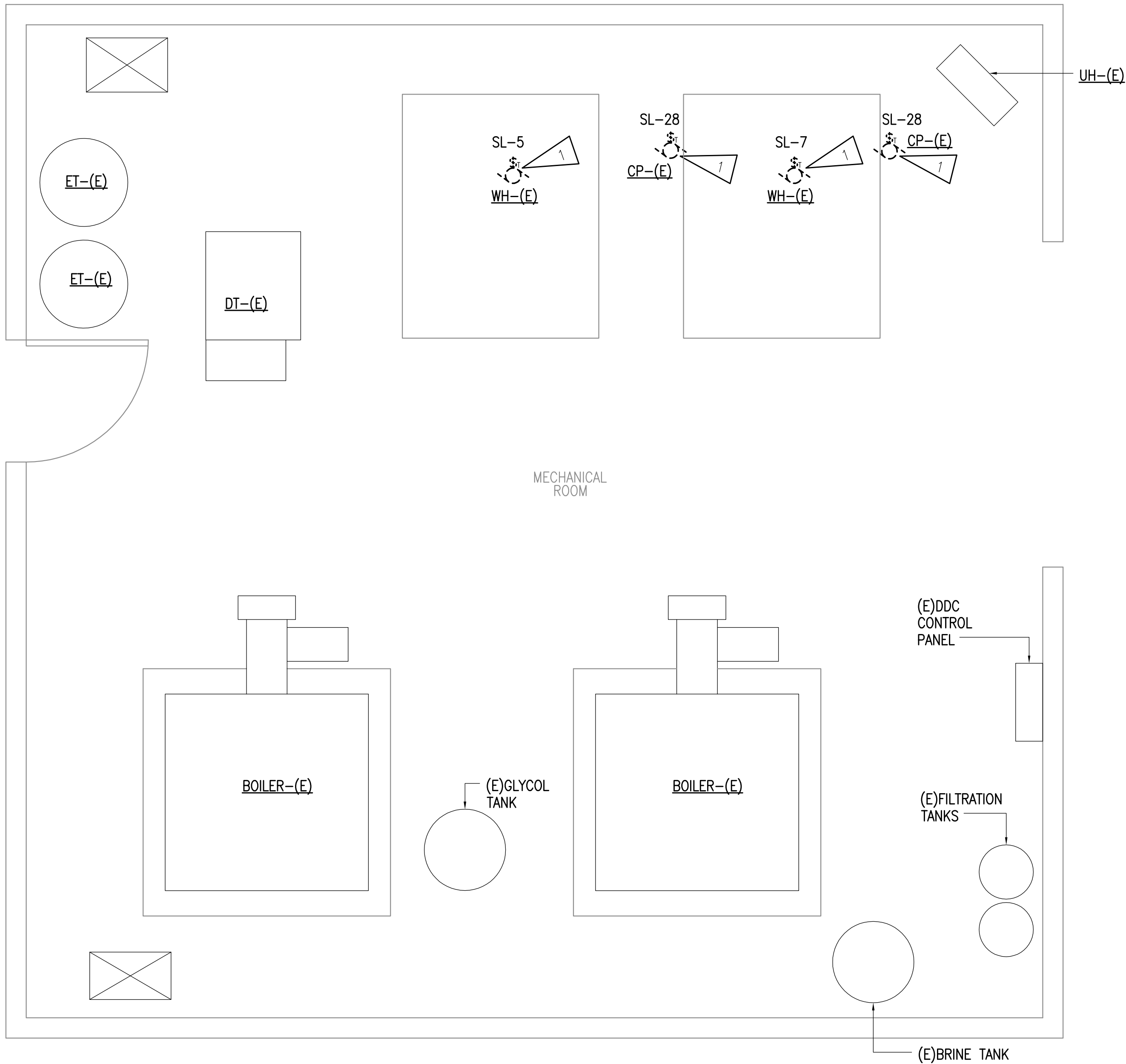
DESIGNED BY: ECO
CHECKED BY: BJR
DATE: 10-20-2017
JOB NUMBER: L7206.00
DWG FILE: L7206_ESERIES

DRAWING TITLE:
ELECTRICAL LEGEND,
LOAD CALCULATION,
AND PANEL SCHEDULE

SHEET:

E1

0"
1"
2"
3"



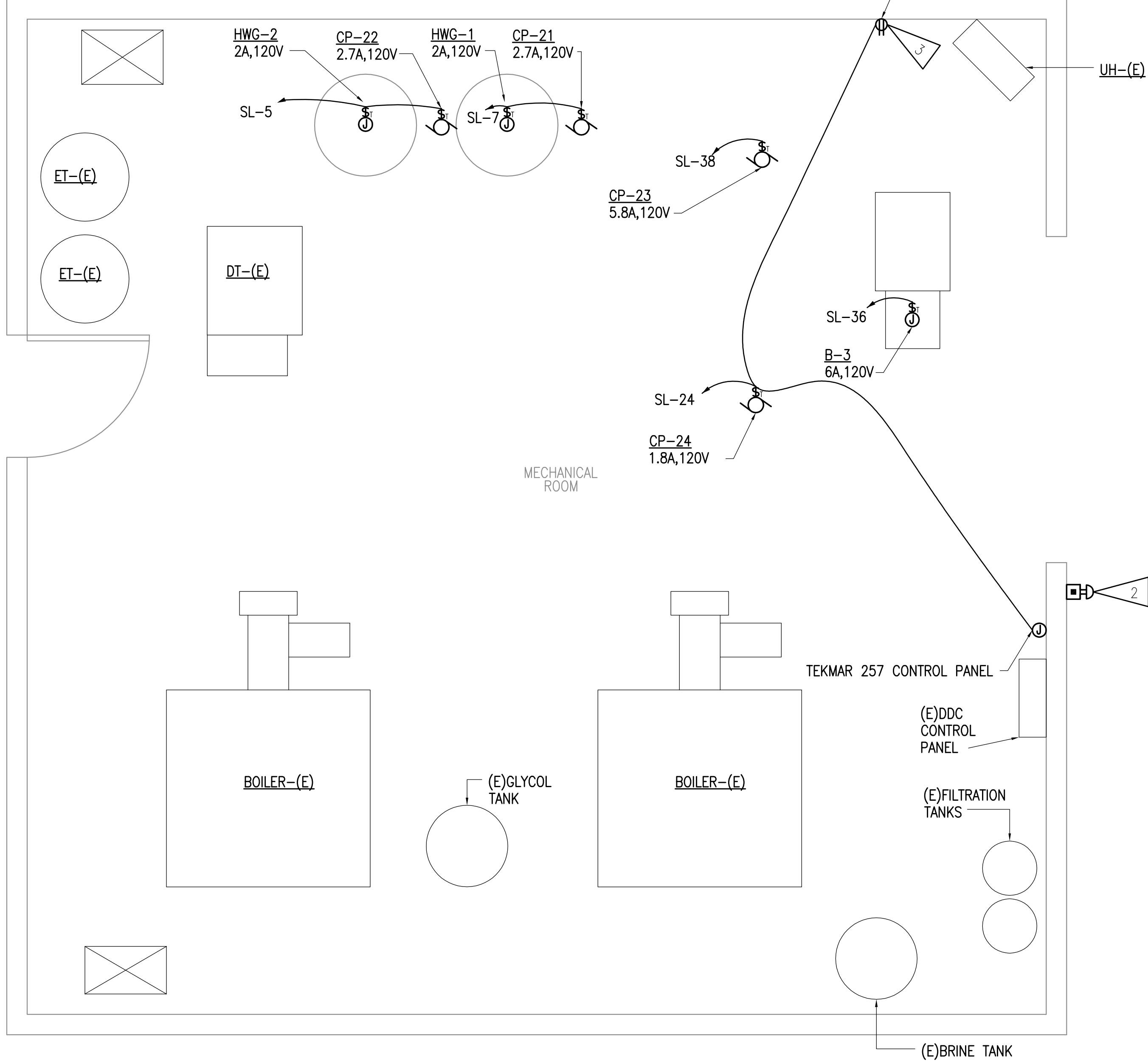
1 ELECTRICAL DEMOLITION PLAN
SCALE: 1/2" = 1'-0"

GENERAL NOTES:

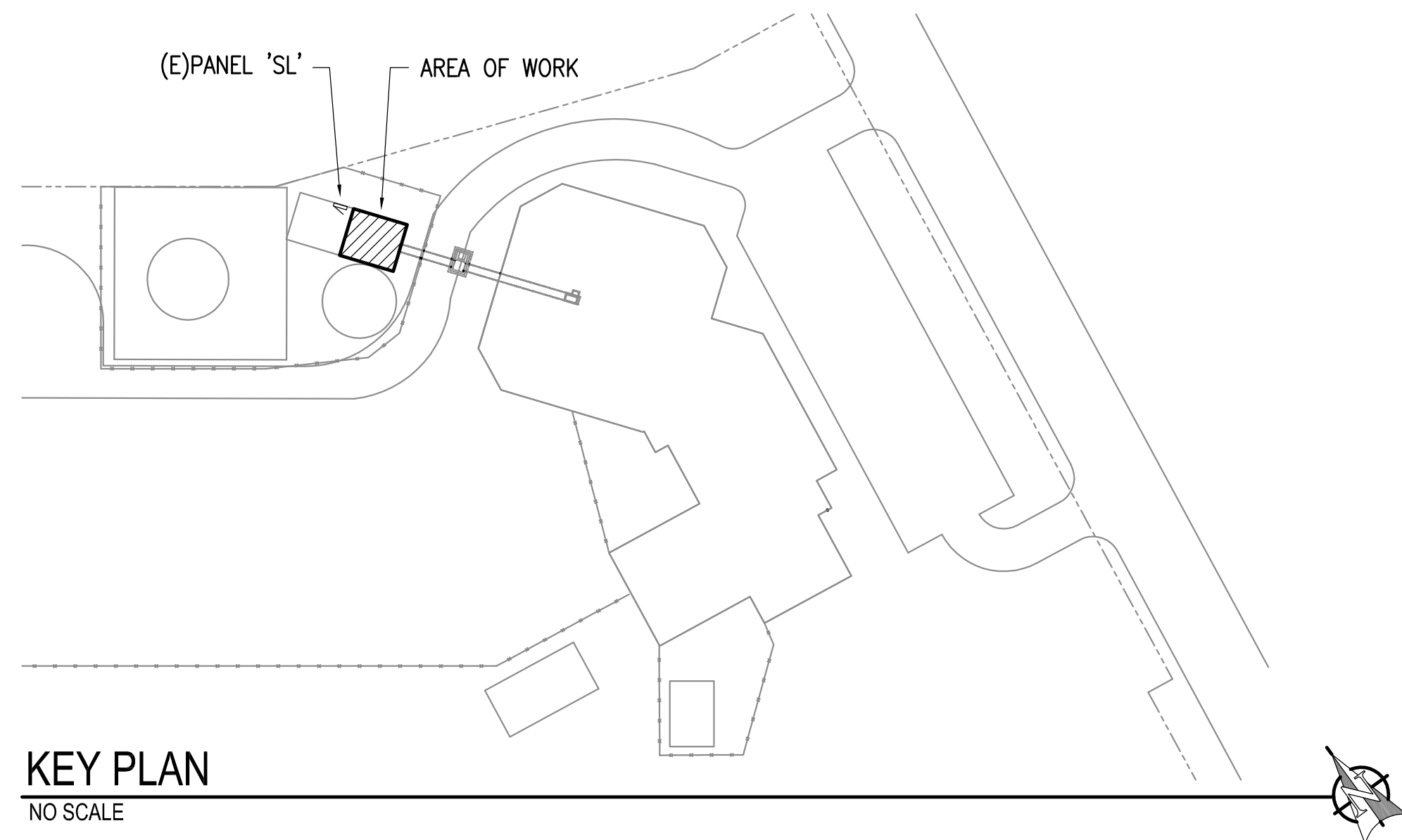
- THE INFORMATION SHOWN ON THIS DRAWING IS TAKEN FROM AS-BUILT DRAWINGS AND A NON-DESTRUCTIVE WALK THROUGH OF THE FACILITY. THERE IS NO WARRANTY OR GUARANTEE AS TO THE ACCURACY OF THE INFORMATION SHOWN HERE-IN. THE CONTRACTOR SHALL FIELD VERIFY ALL ITEMS SCHEDULED FOR DEMOLITION PRIOR TO START OF WORK.
- THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL SALVAGEABLE MATERIALS. THE CONTRACTOR SHALL DELIVER SALVAGED MATERIALS TO A WAREHOUSE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL DISPOSE OF, OFF-SITE, ALL UNWANTED MATERIALS.
- DASHED OR DOTTED LINES INDICATE ITEMS TO BE REMOVED. SOLID THIN LINES INDICATE EXISTING ITEMS TO REMAIN. SOLID BOLD LINES INDICATE NEW WORK.
- SEE KEY PLAN FOR PANEL 'SL' LOCATION.

SHEET NOTES:

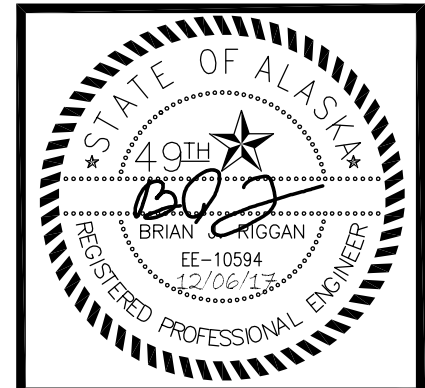
- DEMOLISH EXISTING MECHANICAL EQUIPMENT, CONDUIT AND CABLING BACK TO EXISTING PANEL 'SL'.
- PROVIDE CONDUIT AND WIRING TO ALL BOILERS, FOR EMERGENCY SHUTDOWN. INTERCEPT BOILER SAFETY CIRCUITS WITH NORMALLY CLOSED RELAYS. COORDINATE WITH MECHANICAL.
- MOUNT ON UNISTRUT RACK.



2 ELECTRICAL REMODEL PLAN
SCALE: 1/2" = 1'-0"



KEY PLAN
NO SCALE



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DRAWING TITLE:
ELECTRICAL DEMOLITION
& REMODEL PLANS

SHEET:

E2

ELECTRICAL SPECIFICATIONS

26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

- A. SCOPE OF WORK: FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT FOR AN EXTENSION TO THE EXISTING ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
- B. STANDARDS, CODES AND REGULATIONS: COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, INTERNATIONAL BUILDING CODE, AND INTERNATIONAL FIRE CODE INCLUDING ALL STATE AND LOCAL AMENDMENTS TO THESE CODES. COMPLY WITH THE LATEST PUBLISHED VERSION OF THE NECA STANDARD OF INSTALLATION.
- C. DRAWINGS: THE DRAWINGS ARE DIAGRAMMATIC, NOT NECESSARILY SHOWING ALL OFFSETS OR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC. UNLESS SPECIFICALLY DIMENSIONED. REVIEW THE DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT FURNISHED BY OTHER CRAFTS BUT INSTALLED IN ACCORDANCE WITH THIS SECTION. BRING QUESTIONABLE OR OBSCURE ITEMS, APPARENT CONFLICTS BETWEEN PLANS AND SPECIFICATIONS, GOVERNING CODES OR UTILITIES REGULATIONS TO THE ATTENTION OF THE DEPARTMENT. CODES, ORDINANCES, REGULATIONS, MANUFACTURER’S INSTRUCTIONS OR STANDARDS TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS.
- D. RECORD DRAWINGS: MARK UP A CLEAN SET OF DRAWINGS AS THE WORK PROGRESSES TO SHOW COMPLETE ROUTING AND SIZING OF ANY SIGNIFICANT REVISIONS TO THE SYSTEMS SHOWN.
- E. WORKMANSHIP: INSTALLATION OF ALL WORK SHALL BE MADE SO THAT ITS SEVERAL COMPONENT PARTS SHALL FUNCTION AS A WORKABLE SYSTEM COMPLETE WITH ALL ACCESSORIES NECESSARY FOR ITS OPERATION. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER’S RECOMMENDATIONS, INSTRUCTIONS AND/OR INSTALLATION DRAWINGS AND IN ACCORDANCE WITH NECA STANDARDS. MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL CONFORM WITH APPLICABLE INDUSTRY STANDARDS, NEMA STANDARDS AND UNDERWRITERS LABORATORIES STANDARDS WHERE APPLICABLE.
- F. SUBMITTALS: PROVIDE MATERIAL AND EQUIPMENT SUBMITTALS CONTAINING A COMPLETE LISTING OF MATERIAL AND EQUIPMENT SHOWN ON THE DRAWINGS. INCLUDE CATALOG NUMBERS, WIRING DIAGRAMS, ROUGH-IN DIMENSIONS AND PERFORMANCE DATA FOR ALL MATERIAL AND EQUIPMENT. SUBMITTALS SHALL BE IN ELECTRONIC .PDF FORMAT, SEPARATE FROM WORK FURNISHED UNDER OTHER DIVISIONS. INDEX AND CLEARLY IDENTIFY ALL MATERIAL AND EQUIPMENT BY ITEM, NAME OR DESIGNATION USED ON THE DRAWINGS. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND ARRANGEMENT ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE SUBMITTALS ARE NOT CHECKED FOR QUANTITY, DIMENSION, OR FOR PROPER OPERATION. WHERE DEVIATIONS OF A SUBSTITUTE PRODUCT OR SYSTEM PERFORMANCE HAVE NOT BEEN SPECIFICALLY NOTED IN THE SUBMITTAL BY THE CONTRACTOR, PROVISIONS OF A COMPLETE AND SATISFACTORY WORKING INSTALLATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- G. OPERATION AND MAINTENANCE MANUALS: PROVIDE OPERATION AND MAINTENANCE MANUALS FOR TRAINING OF THE DEPARTMENT’S PERSONNEL. DESCRIBE THE PROCEDURES NECESSARY TO OPERATE THE SYSTEM INCLUDING START–UP, OPERATION, EMERGENCY OPERATION AND SHUTDOWN. PROVIDE INSTRUCTIONS AND A SCHEDULE OF PREVENTIVE MAINTENANCE IN TABULAR FROM FOR ALL ROUTINE CLEANING, INSPECTION AND LUBRICATION WITH RECOMMENDED LUBRICANTS. PROVIDE INSTRUCTIONS FOR MINOR REPAIR OR ADJUSTMENTS REQUIRED FOR PREVENTIVE MAINTENANCE ROUTINES. PROVIDE MANUFACTURER’S DESCRIPTIVE LITERATURE INCLUDING APPROVED SHOP DRAWINGS COVERING DEVICES USED IN ANY CONTRACTOR–PROVIDED EQUIPMENT OR SYSTEMS WITH ILLUSTRATION, EXPLODED VIEWS, ETC.
- H. WARRANTY: THE CONTRACTOR SHALL GUARANTEE ALL WORK EXECUTED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM BENEFICIAL OCCUPANCY. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE DEPARTMENT DURING THE GUARANTEE PERIOD.
- I. PERMITS: SECURE AND PAY FOR ALL FEES, PERMITS, ETC. REQUIRED BY LOCAL AND STATE AGENCIES.
- J. REFERENCE SYMBOLS: THE ELECTRICAL "LEGEND" ON THE DRAWINGS IS A STANDARDIZED VERSION, AND ALL SYMBOLS SHOWN MAY NOT BE USED. USE THE "LEGEND" AS A REFERENCE FOR THE SYMBOLS USED ON THE DRAWINGS.
- K. PENETRATION OF FIRE BARRIERS: ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED BARRIERS SHALL BE SEALED IN ACCORDANCE WITH NEC ARTICLE 300.21 AND THE FOLLOWING:
1. ALL HOLES OR VOIDS CREATED TO EXTEND ELECTRICAL SYSTEMS THROUGH FIRE RATED FLOORS, WALLS OR CEILING SHALL BE SEALED WITH AN ASBESTOS–FREE INTUMESCENT FIRE STOPPING MATERIAL CAPABLE OF EXPANDING 8 TO 10 TIMES WHEN EXPOSED TO TEMPERATURES 250 DEGREES F OR HIGHER.
 2. MATERIALS SHALL BE SUITABLE FOR THE FIRE STOPPING OF PENETRATIONS MADE BY STEEL, GLASS, PLASTIC AND SHALL BE CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES IN COMPLIANCE WITH THE REQUIREMENTS OF ASTM E814, UL 1479 AND THE UL FIRE RESISTANCE DIRECTORY REQUIREMENTS FOR THROUGH–PENETRATION FIRESTOP DEVICES (XHCR).
 3. THE RATING OF THE FIRE STOPS SHALL BE THE SAME AS THE TIME–RATED FLOOR, WALL OR CEILING ASSEMBLY.
 4. INSTALL FIRE STOPPING MATERIALS IN ACCORDANCE WITH THE MANUFACTURER’S INSTRUCTIONS.
 5. UNLESS PROTECTED FROM POSSIBLE LOADING OR TRAFFIC, INSTALL FIRE STOPPING MATERIALS IN FLOORS HAVING VOID OPENINGS OF FOUR (4) INCHES OR MORE TO SUPPORT THE SAME FLOOR LOAD REQUIREMENTS AS THE SURROUNDING FLOOR."

26 05 05 – SELECTIVE DEMOLITION FOR ELECTRICAL

- A. DEMOLITION DRAWINGS ARE BASED ON A NON–DESTRUCTIVE FIELD OBSERVATION. REPORT DISCREPANCIES TO DEPARTMENT BEFORE DISTURBING THE EXISTING INSTALLATION. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN ALL EXISTING ELECTRICAL SYSTEMS (TELEPHONE, FIRE ALARM, LIGHTING, ELECTRICAL SERVICE, ETC.) IN SERVICE DURING CONSTRUCTION. DISABLE SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS.
- B. OBTAIN PERMISSION FROM DEPARTMENT AT LEAST 24 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION AND MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
- C. REMOVE, RELOCATE AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. WHERE ABANDONED CONDUIT ENTERS EXISTING SURFACES TO REMAIN, CUT CONDUIT FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES. DISCONNECT ABANDONED OUTLETS AND REMOVE DEVICES. REMOVE ABANDONED OUTLETS IF CONDUIT SERVICING THEM IS ABANDONED AND REMOVED. PROVIDE BLANK COVER FOR ABANDONED OUTLETS WHICH ARE NOT REMOVED.
- D. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE.

26 05 19 – WIRE AND CABLE

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. MATERIALS:
1. ALL CONDUCTORS SHALL BE COPPER WITH TYPE XHHW, THWN, THW OR THHN INSULATION. MINIMUM BRANCH CIRCUIT CONDUCTOR SIZE SHALL BE #12 AWG. MINIMUM CONTROL CIRCUIT CONDUCTOR SIZE SHALL BE #18 AWG.
- C. INSTALLATION:
1. COLOR CODE WIRES BY LINE OR PHASE. COLOR CODE THE 120/208V CONDUCTORS BLACK, RED, BLUE, AND WHITE.
 2. DO NOT SHARE NEUTRAL CONDUCTORS. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT THAT REQUIRES A NEUTRAL.
 3. USE PROPERLY SIZED INSULATED SPRING WIRE CONNECTORS WITH PLASTIC CAPS FOR ALL CONDUCTORS #8 AWG AND SMALLER.
 4. INSTALLATION SCHEDULE: BUILDING WIRE IN RACEWAYS AT ALL LOCATIONS UNLESS OTHERWISE NOTED.

26 05 26 – GROUNDING AND BONDING

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. INSTALLATION:
1. PROVIDE A SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL NEW BRANCH CIRCUITS. TERMINATE EACH END ON A GROUNDING LUG, BUS, OR BUSHING.
 2. MECHANICAL CONNECTORS: NON–REVERSIBLE CRIMP TYPE LUGS ONLY. USE FACTORY MADE COMPRESSION LUG FOR ALL TERMINATIONS.
 3. BOND TOGETHER EXPOSED NON–CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT, METAL RACEWAY SYSTEMS, GROUNDING CONDUCTOR IN RACEWAYS AND CABLES, RECEPTACLE GROUND CONNECTORS, AND PLUMBING AND FUEL SYSTEMS.

26 05 29 – HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. MATERIAL: SUPPORT CHANNEL SHALL BE GALVANIZED OR PAINTED STEEL. HARDWARE SHALL BE CORROSION RESISTANT.
- C. INSTALLATION: EQUIPMENT WEIGHING MORE THAN 50 POUNDS SHALL BE ADEQUATELY ANCHORED TO THE BUILDING STRUCTURE TO RESIST LATERAL EARTHQUAKE FORCES.

26 05 33 – RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. MATERIALS:
1. ELECTRICAL METALLIC TUBING CONDUIT (EMT): ANSI C80.3. GALVANIZED TUBING. FITTINGS AND CONDUIT BODIES: ANSI/NEMA FB 1; STEEL OR MALLEABLE IRON, COMPRESSION TYPE OR SET SCREW FITTINGS WITH INSULATED THROAT BUSHINGS. DIE–CAST FITTINGS ARE NOT ACCEPTABLE.
 2. FLEXIBLE METAL CONDUIT: FS WW–C–566; STEEL, FULL WALL OR REDUCED WALL THICKNESS. FITTINGS AND CONDUIT BODIES: ANSI/NEMA FB 1; STEEL OR MALLEABLE IRON WITH INSULATED THROAT BUSHINGS. DIE CAST FITTINGS ARE NOT ACCEPTABLE.
 3. LIQUIDTIGHT FLEXIBLE CONDUIT: FLEXIBLE METAL CONDUIT WITH PVC JACKET. FITTINGS AND CONDUIT BODIES: ANSI/NEMA FB 1; STEEL OR MALLEABLE IRON WITH INSULATED THROAT BUSHINGS. DIE CAST FITTINGS ARE NOT ACCEPTABLE.
 4. PROVIDE GALVANIZED OR CADMIUM PLATED, ONE PIECE PRESSED STEEL OUTLET BOXES 4 INCH SQUARE OR OCTAGONAL, 1–1/2 INCHES DEEP MINIMUM SIZE FOR USE IN INTERIOR AREAS.
 5. PROVIDE CAST ALUMINUM OR FERALLLOY TYPE BOXES WITH GASKETED COVER, THREADED HUBS AND NEMA 3R RATING FOR USE IN EXTERIOR OR WET LOCATIONS.
- C. INSTALLATION:
1. INSTALL CONDUIT FOR ALL SYSTEMS UNLESS OTHERWISE NOTED, 1/2 INCH MINIMUM SIZE, EXCEPT CONDUIT FOR SPECIAL SYSTEMS SHALL BE 3/4" MINIMUM.
 2. EXPOSED DRY INTERIOR LOCATIONS SHALL BE ELECTRICAL METALLIC TUBING AND MAY BE USED EXPOSED WHEN INSTALLED ON THE CEILING, A MINIMUM OF TEN FEET ABOVE THE FLOOR OR WHERE NOT SUBJECT TO PHYSICAL DAMAGE. EMT MAY ALSO BE USED FOR CONCEALED, DRY, INTERIOR LOCATIONS.
 3. MOTOR AND EQUIPMENT CONNECTIONS SHALL BE SHORT EXTENSIONS OF FLEXIBLE METAL CONDUIT TO ALLOW FOR VIBRATION. LIQUIDTIGHT FLEXIBLE CONDUIT AND FITTINGS SHALL BE USED FOR THESE CONNECTIONS IN DAMP OR WET LOCATIONS.
 4. PAINT ALL EXPOSED CONDUIT TO MATCH SURFACE TO WHICH IT IS ATTACHED OR CROSSES. CLEAN GREASY OR DIRTY CONDUIT PRIOR TO PAINTING IN ACCORDANCE WITH PAINT MANUFACTURER’S INSTRUCTIONS.
 5. PROVIDE OUTLET BOXES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS, DEVICE INSTALLATION AND CODE COMPLIANCE.
 6. USE MULTIPLE–GANG BOXES WHERE MORE THAN ONE DEVICE ARE MOUNTED TOGETHER; DO NOT USE SECTIONAL BOXES.
 7. SUPPORT BOXES INDEPENDENTLY OF CONDUIT.

26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. MATERIALS:
1. NAMEPLATES: ENGRAVED THREE–LAYER LAMINATED PLASTIC, WHITE LETTERS ON A BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED TO IDENTIFY ALL ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT AND LOADS SERVED.
 2. TAPE LABELS: ADHESIVE TAPE LABELS, WITH 3/16 INCH BOLD BLACK LETTERS ON CLEAR BACKGROUND MADE USING DYMO RHINOPRO 5000 OR EQUAL LABEL PRINTER.
 3. WIRE AND CABLE MARKERS: CLOTH MARKERS, SPLIT SLEEVE OR TUBING TYPE.
- C. INSTALLATION:
1. JUNCTION BOXES: MARK ALL CIRCUIT NUMBERS OF WIRING ON ALL JUNCTION BOXES WITH SHEET STEEL COVERS. MARK WITH INDELIBLE BLACK MARKER. ON EXPOSED JUNCTION BOXES IN PUBLIC AREAS, MARK ON INSIDE OF COVER. MARK ALL OTHER SPECIAL SYSTEM JUNCTION BOXES WITH SHEET STEEL COVERS.
 2. WIRE IDENTIFICATION: PROVIDE WIRE MARKERS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT LOAD CONNECTION. MARKERS SHALL BE LOCATED WITHIN ONE INCH OF EACH CABLE END, EXCEPT AT PANELBOARDS, WHERE MARKERS FOR BRANCH CIRCUIT CONDUCTORS SHALL BE VISIBLE WITHOUT REMOVING PANEL DEADFRONT.
 3. DEVICE PLATES: LABEL EACH RECEPTACLE DEVICE PLATE OR POINT OF CONNECTION DENOTING THE PANELBOARD NAME AND CIRCUIT NUMBER. INSTALL LABEL ON THE TOP OF EACH PLATE.

26 24 16 – PANELBOARDS

- A. SUBMITTALS: NONE REQUIRED FOR THIS SECTION.
- B. INSTALLATION:
1. TEST FOR PROPER OPERATION. UPDATE CIRCUIT DIRECTORY TO REFLECT ALL CHANGES.

26 27 26 – WIRING DEVICES

- C. SUBMITTALS: SUBMIT PRODUCT DATA FOR APPROVAL.
- D. MATERIALS:
1. RECEPTACLES: CONVENIENCE AND STRAIGHT BLADE RECEPTACLES SHALL BE NEMA AND FEDERAL SPECIFICATION FS W–C–596, TYPE 5–20R, WHITE NYLON FACE. SPECIFIC USE RECEPTACLES SHALL BE NEMA WD1 OR WD5; AS REQUIRED TO MATCH LOAD SERVED, BLACK PHENOLIC FACE. GFCI RECEPTACLES SHALL BE 20A, DUPLEX CONVENIENCE RECEPTACLE WITH INTEGRAL CLASS 'A' GROUND FAULT CURRENT INTERRUPTER AND LOCKOUT FEATURE.
 2. WALL PLATES: DECORATIVE COVER PLATES IN FINISHED AREAS SHALL BE 430 OR 302 STAINLESS STEEL. PROVIDE 1/2 INCH RAISED, SQUARE, GALVANIZED OR CADMIUM PLATED, PRESSED STEEL COVER PLATE SUPPORTING DEVICES INDEPENDENT OF THE OUTLET BOX FOR ALL EXPOSED WORK.
- E. INSTALLATION:
1. UNLESS OTHERWISE NOTED ON THE DRAWINGS, INSTALL RECEPTACLES 18 INCHES ABOVE FINISH FLOOR WITH GROUNDING POLE ON BOTTOM. UNLESS OTHERWISE NOTED DIMENSIONS ARE TO CENTERLINE OF OUTLET.
 2. INSTALL GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE–MOUNTED OUTLETS.

26 29 13 – ENCLOSED CONTROLLERS

- A. SUBMITTALS: SUBMIT PRODUCT DATA FOR APPROVAL.
- B. MATERIALS:
1. MANUFACTURERS: SQUARE D, GE, EATON, OR EQUAL.
 2. MANUAL AND FRACTIONAL MOTOR STARTERS: NEMA ICS 2, AC GENERAL PURPOSE CLASS A, MANUALLY OPERATED UNIT WITH NUMBER OF POLES AS REQUIRED BY THE LOAD SERVED, FULL–VOLTAGE CONTROLLER FOR FRACTIONAL HORSEPOWER INDUCTION MOTORS, WITH THERMAL OVERLOAD UNIT, RED PILOT LIGHT, AND TOGGLE OPERATOR.
- C. INSTALLATION:
1. AFTER FINAL CONNECTIONS ARE MADE, CHECK AND CORRECT THE ROTATION OF ALL MOTORS.
 2. MOTOR STARTING EQUIPMENT SHALL BE LISTED FOR USE AND PROPERLY SIZED FOR OPERATION WITH THE MOTORS SPECIFIED BY MECHANICAL.



MECHANICAL AND ELECTRICAL
ENGINEERING BY:

RSA ENGINEERING, INC.
191 E Swanson Ave, Suite 101
Wasilla, AK 99654
Phone (907) 357-1521 Fax (907) 357-1751
Corporate No: AEC0542

AMCC WATER HEATER REPLACEMENT

NOME, ALASKA - 99762

REVISIONS:

DESIGNED BY: ECO
CHECKED BY: BJR
DATE: 10-20-2017
JOB NUMBER: L7206.00
DWG FILE: L7206_ESERIES

DRAWING TITLE:
ELECTRICAL
SPECIFICATIONS

SHEET:
E3