

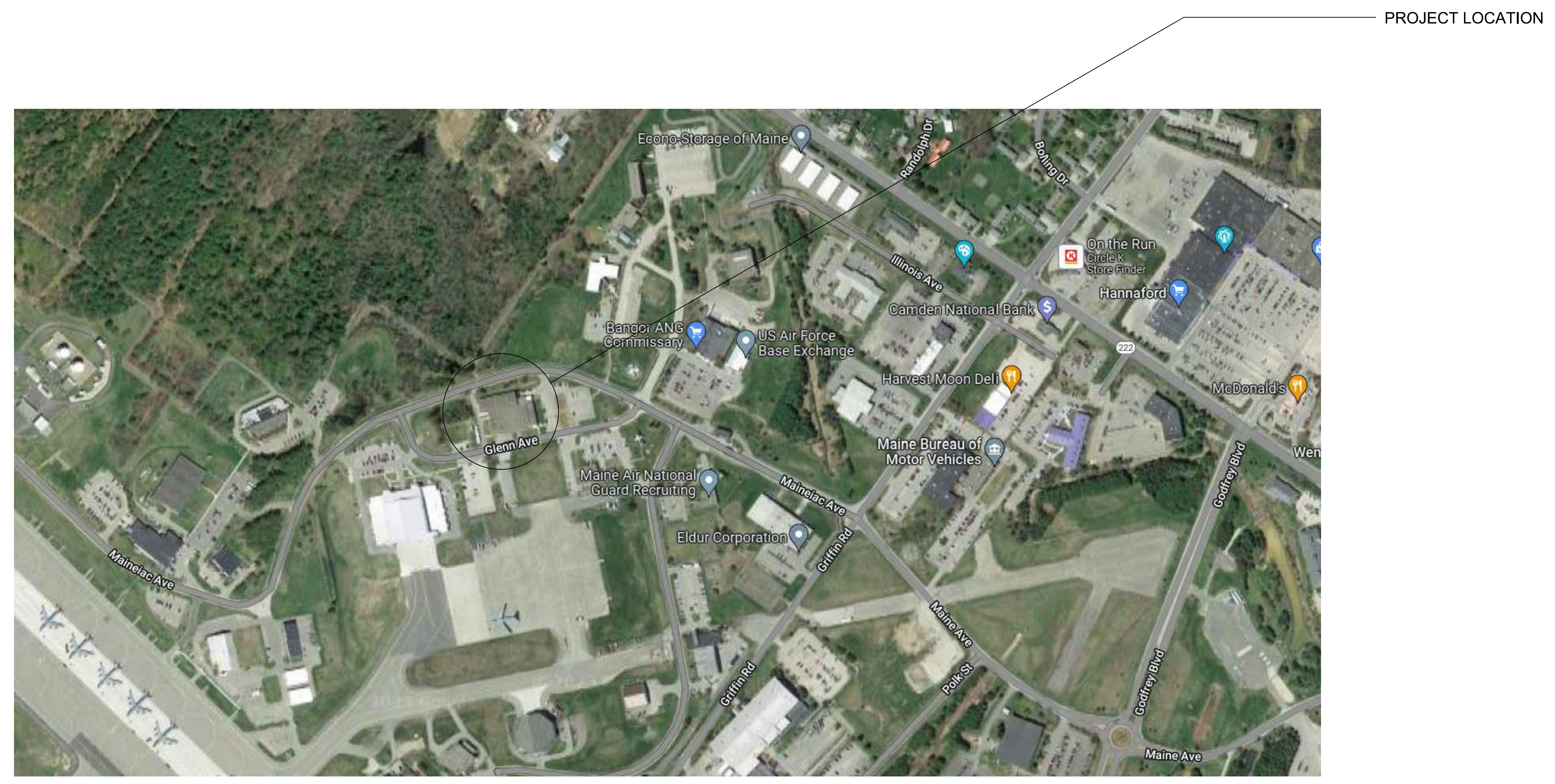
MAINE AIR NATIONAL GUARD BUILDING 493 BOILER REPLACEMENT

BANGOR, ME



INDEX

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G1001 - COVER SHEET
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ME401 - ENLARGED MECHANICAL & ELECTRICAL REMOVAL PLAN
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LOCATION MAP



MAINE AIR NATIONAL GUARD
BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE
Project No. - FKNN22236

SIGNATURE	DATE		
OWNER :			
ARCHITECT :			
CONTRACTOR :			
REV.	DESCRIPTION	DATE	
0	ISSUED FOR BID	07.18.2025	

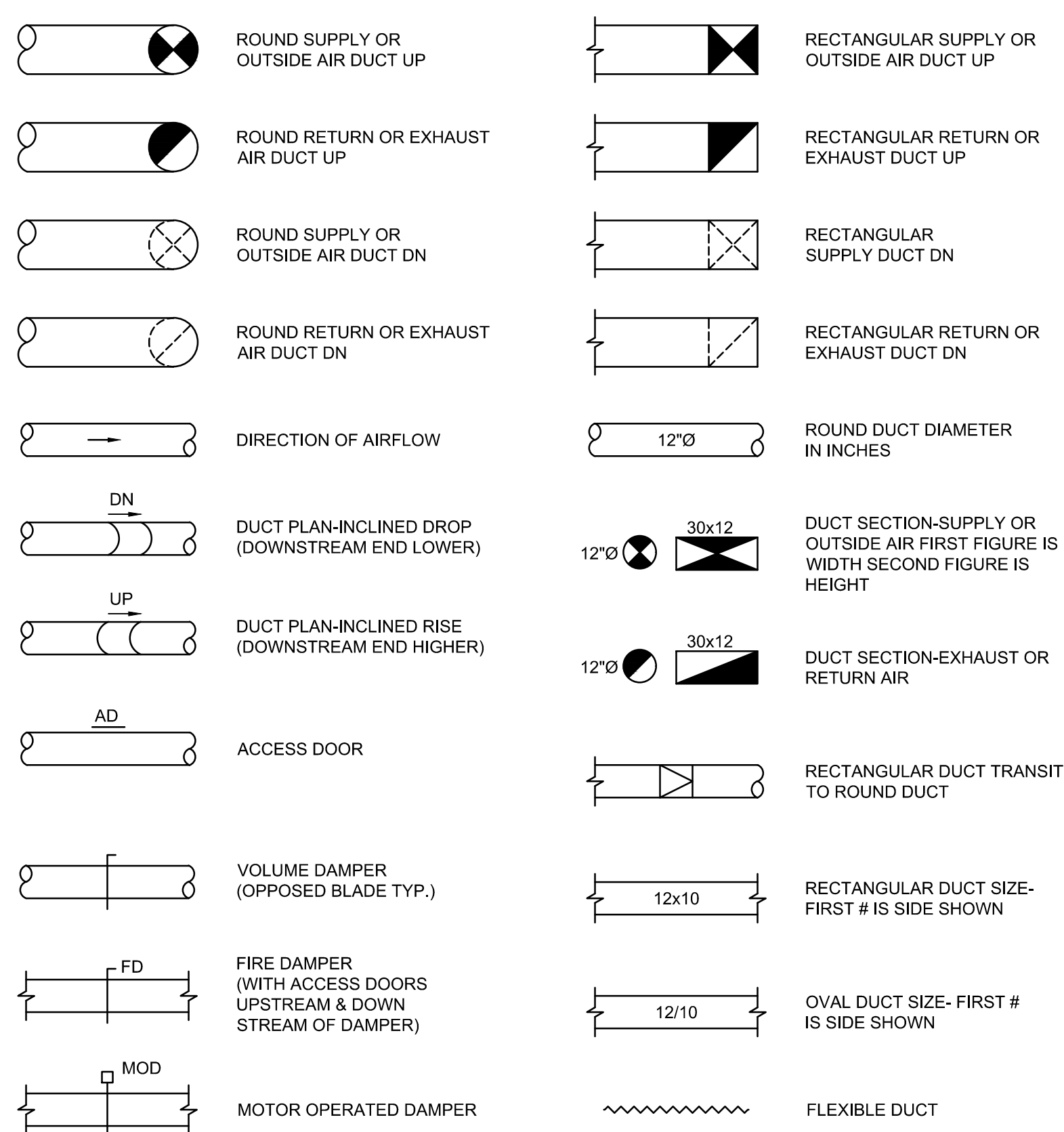
wbrc
BANGOR, MAINE 04401
(207)947-4511
WBRCINC.COM

SHEET No.
G1001

PROJECT No.
10057.003

Jul 18, 2025 - 1:55pm - SHEET SIZE: 30x42
C:\Users\andrew.nudnick\OneDrive\Documents\WBRC INC\10057003 MEANG B493 Boilers\Project Files\ME001.dwg\andrew.nudnick

DUCTWORK STANDARDS



PIPING SERVICE LEGEND

PIPING LINE DESIGNATIONS			
PIPE SIZE	SERVICE DESIGNATION	NEW	EXISTING TO REMAIN
6" HWS		—HWS—	—EHWS—
		---HWR---	---EHW---
		---CWS---	---ECWS---
		---CWR---	---ECWR---
		—L—	—EL—
		—S—	—ES—
		—NG—	—ENG—

GENERAL ELECTRICAL DEMO NOTES

- ELECTRICAL CONTRACTOR SHALL REVIEW ALL TRADE'S DRAWINGS. THIS SHALL INCLUDE ALL ELECTRICAL DEVICES, FIXTURES AND/OR SWITCHGEAR. ALL EXISTING EQUIPMENT SHALL REMAIN ON EXISTING SURFACES UNLESS SPECIFICALLY NOTED OTHERWISE.
- WIRING FOR EXISTING BRANCH CIRCUIT DEVICES TO BE DEMOLISHED SHALL BE REMOVED BACK TO THE PANELBOARD. THE ASSOCIATED CIRCUIT BREAKER SHALL BE TURNED OFF AND MARKED AS SPARE IN THE PANELBOARD DIRECTORY. DO NOT ABANDON BRANCH CIRCUIT WIRING ABOVE CEILINGS OR IN WIREWAYS.
- ALL RACEWAYS & CABLES, NO LONGER IN USE, SHALL BE REMOVED.
- MAINTAIN OR RESTORE IF INTERRUPTED BY REMOVALS OR IN PATH OF NEW CONSTRUCTION, ALL CONDUITS, BRANCH CIRCUITS, AND FEEDERS PASSING THROUGH AND SERVING UNDISTURBED AREAS (SHOWN OR NOT SHOWN).
- ALL EXISTING CONDUITS STUBBED THROUGH FLOOR SERVING ITEMS TO BE REMOVED (SHOWN OR NOT SHOWN) AND NOT REQUIRED TO BE REUSED SHALL BE CUT OFF FLUSH WITH THE SLAB DECK AND SEALED.
- IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADES WORK, THE ELECTRICAL CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY ELECTRICAL ITEMS IN THE PATH OF WORK, REINSTALLING AND RECONNECTING SAME AS REQUIRED IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADES WORK IN THAT AREA.
- ENSURE REMOVAL OF ELECTRICAL DEVICES IN CONSTRUCTION AREA DOES NOT AFFECT ADJACENT AREAS.
- ALL ELECTRICAL FIXTURES, DEVICES AND EQUIPMENT SHALL BE TURNED OVER TO THE OWNER. IF OWNER DOES NOT WISH TO KEEP ITEMS, THEY BECOME THE PROPERTY OF THE ELECTRICAL CONTRACTOR AND MUST BE REMOVED FROM THE SITE.

GENERAL NOTES

- ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE, AND IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO NFPA 70, 90A, 101 AND DIRECTION OF AUTHORITY HAVING JURISDICTION.
- EXACT LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRES ELECTRICAL CONNECTION IS SHOWN ON THE MECHANICAL PLANS.
- CONTRACTOR SHALL REVIEW ALL TRADES CONTRACT DOCUMENTS, AND FIELD VERIFY TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT AND CONDUITS.
- COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL CONDUIT AND EQUIPMENT TO PROVIDE FOR EASE OF DISCONNECTING THE EQUIPMENT WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS; TO ALLOW RIGHT OF WAY FOR PIPING INSTALLED AT A REQUIRED SLOPE; AND SO CONNECTING RACEWAYS SHALL BE CLEAR OF OBSTRUCTIONS AND OF THE WORKING AND ACCESS SPACE OF OTHER EQUIPMENT.
- RUN SEPARATE NEUTRAL WIRE FOR EACH DEDICATED BRANCH CIRCUIT SHOWN ON THE PLANS.

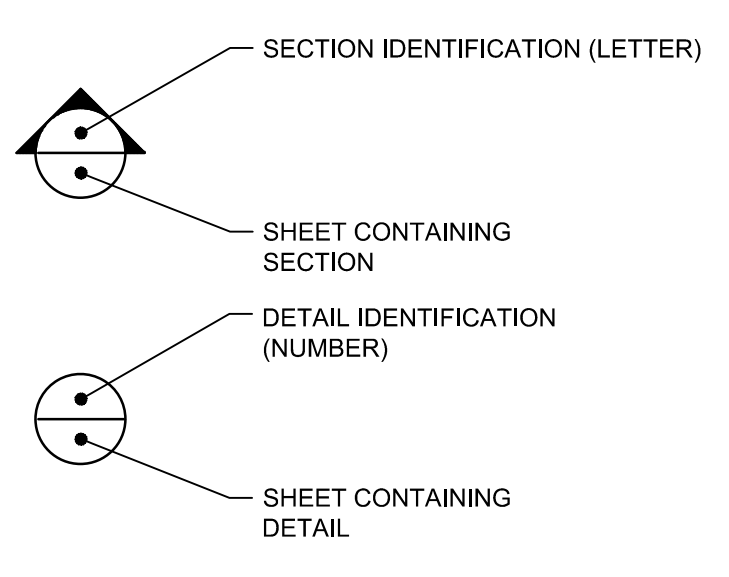
GRILLE, REGISTERS, DIFFUSERS & AIRFLOW

ABBREV.	DESIGNATION	ABBREV.	DESIGNATION
EG	EXHAUST GRILLE	EA	EXHAUST AIR
RG	RETURN GRILLE	OA	OUTDOOR AIR
SD	SUPPLY DIFFUSER	RA	RETURN AIR
LSD	LINEAR SUPPLY DIFFUSER	RLA	RELIEF AIR
SG	SUPPLY GRILLE	SA	SUPPLY AIR
TG	TRANSFER GRILLE		
VD	VOLUME DAMPER		

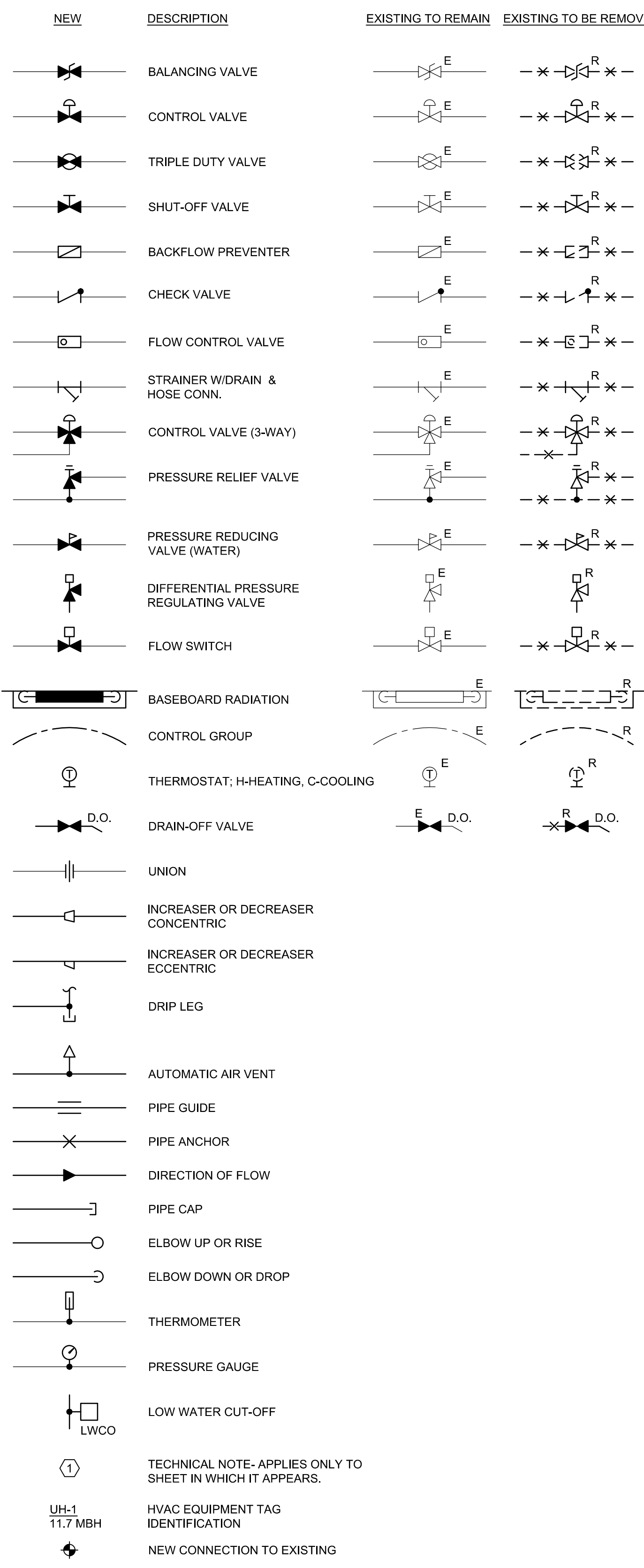
EQUIPMENT TAG LEGEND

TAG	DESIGNATION
AHU-1	AIR HANDLING UNIT DESIGNATION
AS-1	AIR SEPARATOR DESIGNATION
B-1	BOILER DESIGNATION
CONV-1	CONVECTOR UNIT DESIGNATION
CUH-1	CABINET UNIT HEATER DESIGNATION
DWH-1	DOMESTIC WATER HEATER DESIGNATION
EF-1	EXHAUST FAN DESIGNATION
FC-1	FAN COIL DESIGNATION
FTR-1	FINNED TUBE RADIATION DESIGNATION
HE-1	HEAT EXCHANGER DESIGNATION
HRU-1	HEAT RECOVERY UNIT DESIGNATION
L-1	LOUVER DESIGNATION
P-1	PUMP DESIGNATION
RF-1	RETURN FAN DESIGNATION
SF-1	SUPPLY FAN DESIGNATION
TSH-1	TOE SPACE HEATER DESIGNATION
UH-1	UNIT HEATER DESIGNATION
VAV-1	VARIABLE AIR VOLUME BOX DESIGNATION
XT-1	EXPANSION TANK DESIGNATION

SECTION & DETAIL MARKERS



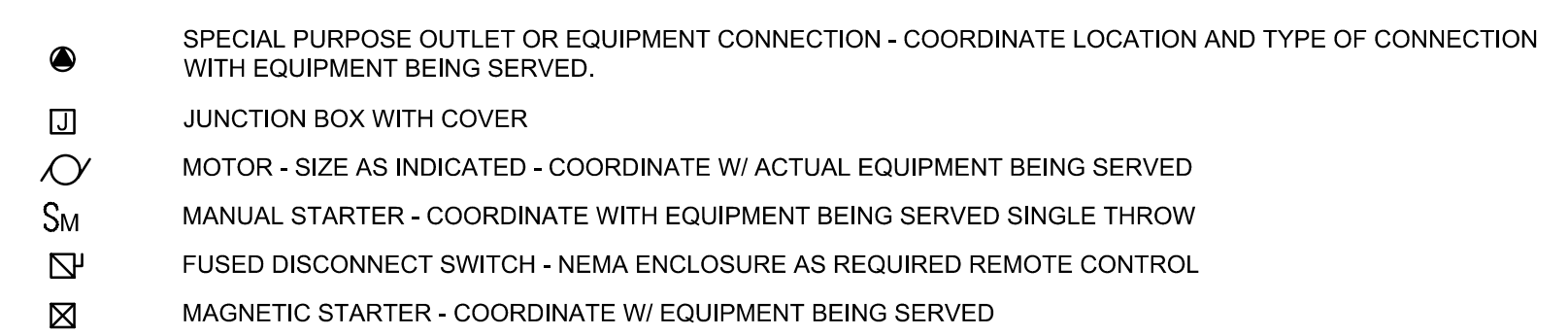
HEATING AND VENTING SYMBOLS



MISCELLANEOUS ABBREVIATIONS

ABBREV.	DESIGNATION
A	ANCHOR
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
AWT	AVERAGE WATER TEMPERATURE
BD	BAROMETRIC DAMPER
BDD	BACKDRAFT DAMPER
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNITS
BV	BRICK VENT
CD	COOLING CONDENSATE DRAINAGE
CFM	CUBIC FEET PER MINUTE
D	DRAIN
DB	DRY BULB
EAT	ENTERING AIR TEMP.
ECC	ECCENTRIC
EL	ELEVATION
EWT	ENTERING WATER TEMPERATURE
FA	FRESH AIR
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HWBB	HOT WATER BASEBOARD
HZ	HERTZ
LAT	LEAVING AIR TEMP.
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LWCO	LOW WATER CUT-OFF
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MD	MANUAL DAMPER
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
MV	MANUAL VENT
N.C.	NORMALLY CLOSED
OA	OUTSIDE AIR
OSV	OIL SAFETY VALVE
PD	PRESSURE DROP
RIC	RUN IN COVER
RPM	REVOLUTIONS PER MINUTE
SP	STATIC PRESSURE
TOS	TOP OF STEEL
TV	TURNING VANES
TYP.	TYPICAL
V	VENT
VD	VOLUME DAMPER
W	WITH
WB	WET BULB
ZD	ZONE DAMPER
E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING

ELECTRICAL SYMBOL LEGEND



GENERAL NOTES

- ALL NEW SPACE THERMOSTATS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR (AFF).
- EQUIPMENT, DUCTWORK AND PIPING LOCATIONS SHOWN ARE APPROXIMATE EXCEPT WHERE DIMENSIONED. EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR TO AVOID INTERFERENCES.
- FLEXIBLE CONNECTIONS SHALL BE PROVIDED BETWEEN MOTORIZED UNITS AND DUCTWORK CONNECTIONS.
- PROVIDE ACCESS DOORS IN EQUIPMENT AND DUCTWORK FOR ACCESS TO DAMPERS, MOTORS, FILTERS, FANS AND ON BOTH SIDES OF HEATING COILS.
- PIPING SHALL BE RUN AS DIRECT AS POSSIBLE, PARALLEL TO & FORMING RIGHT ANGLES TO THE LINES OF THE BUILDING, SUPPORTED FROM THE STRUCTURE, FREE FROM POCKETS & SAGS & PITCHED TO LOW POINT DRAINS.
- LOCATE ALL VALVES FOR EASY ACCESS & OPERATION. DO NOT LOCATE VALVES W/STEMS BELOW HORIZONTAL.
- ALL EXTERIOR WALL PENETRATIONS SHALL BE SEALED WEATHERTIGHT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
- DUCTWORK SHALL BE COORDINATED TO PREVENT ANY INTERFERENCES W/ PLUMBING, PIPING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL AND OTHER WORK.
- ALL DUCT SIZES SHOWN ARE CLEAR INTERNAL DIMENSIONS.
- CONTRACTOR TO FIELD VERIFY ALL EXISTING DUCT SIZES, PIPE SIZES, LOUVERS, ETC, INCLUDING LOCATIONS & ARRANGEMENTS OF SAME. COORDINATE NEW WORK WITH EXISTING CONDITIONS.



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COORDINATION



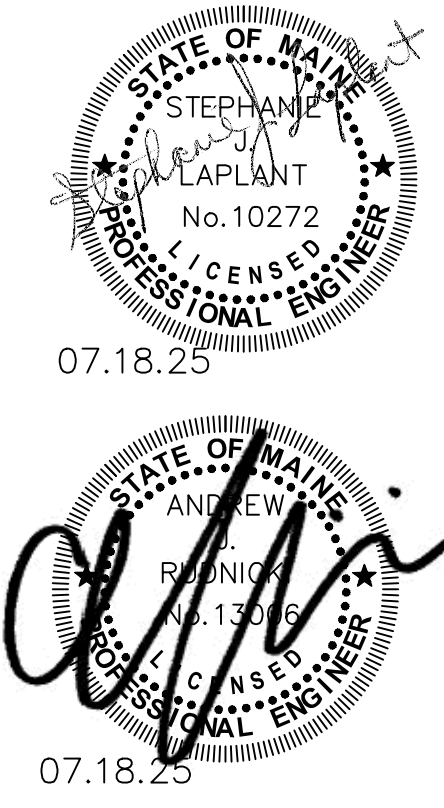
MAINE AIR NATIONAL GUARD
BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE
Project No. - FKNN22236

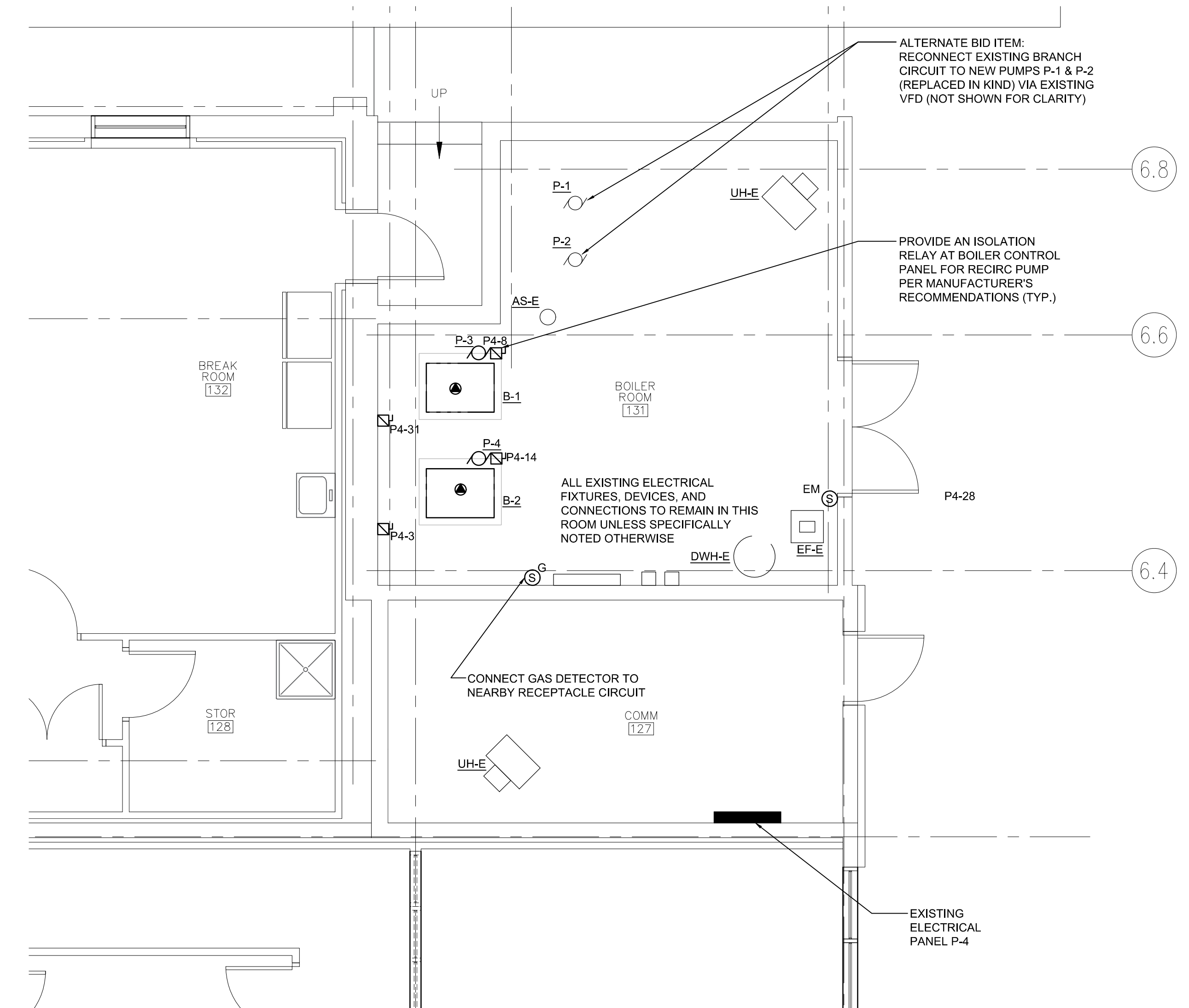
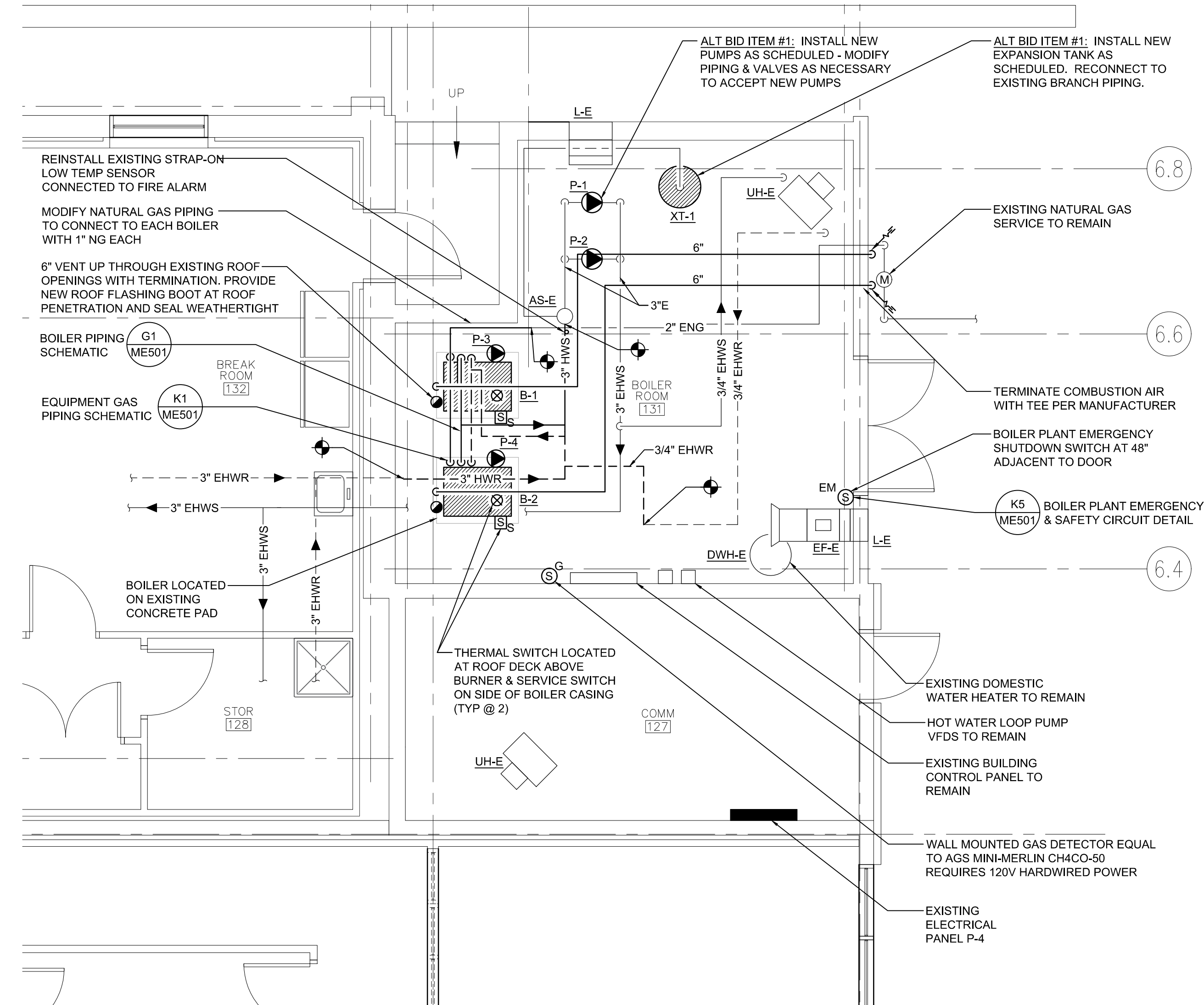
date	designed	checked	detailed
18 JULY 2025	AJR	AJR	DCM



MAINE AIR NATIONAL GUARD
B493 BOILER REPLACEMENT
MECHANICAL & ELECTRICAL
LEGEND

project	contract	
10057.003		
drawing	rev.	
ME001		
sheet	of	sheets
2	7	





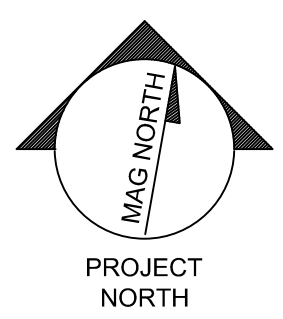
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COORDINATION



MAINE AIR NATIONAL GUARD
BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE
Project No. - FKN222236

date	18 JULY 2025	detailed	AJR
designed	AJR	checked	DCM

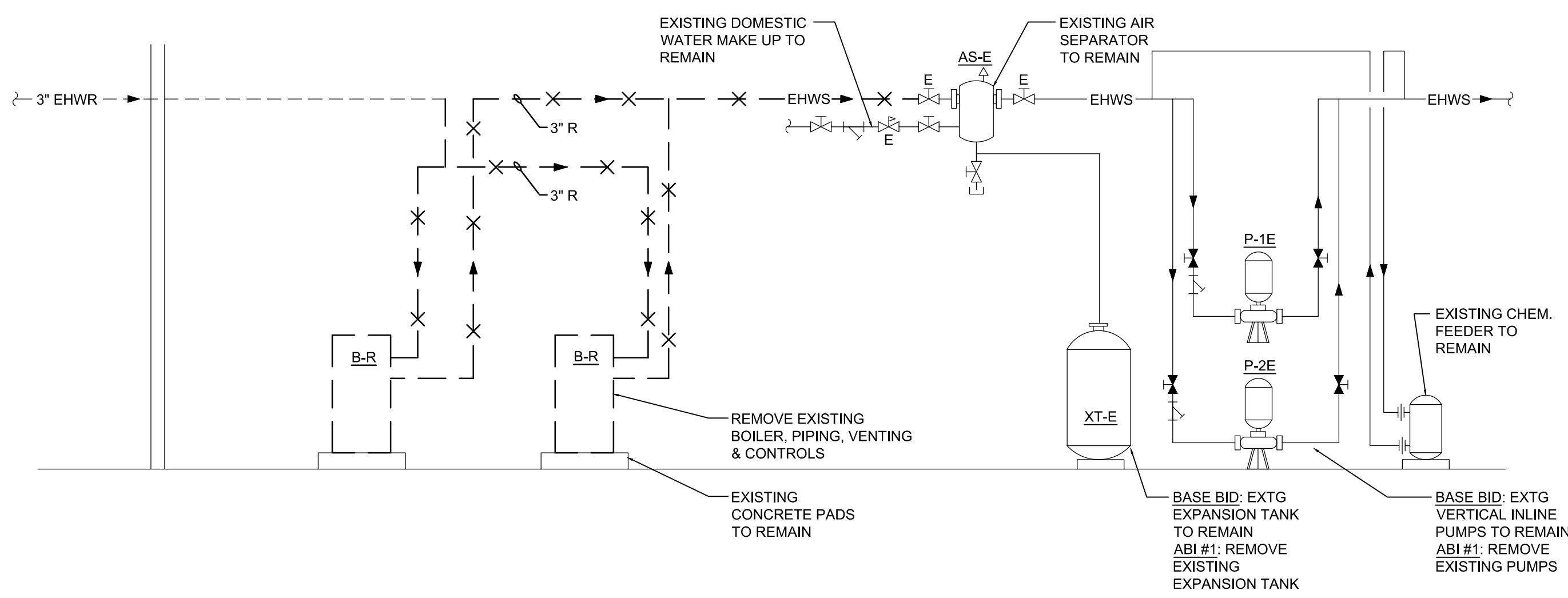


MAINE AIR NATIONAL GUARD
B493 BOILER REPLACEMENT
ENLARGED MECHANICAL & ELECTRICAL PLAN

project	10057.003	contract	
drawing	ME401	rev.	
sheet	5	of	7 sheets
file			

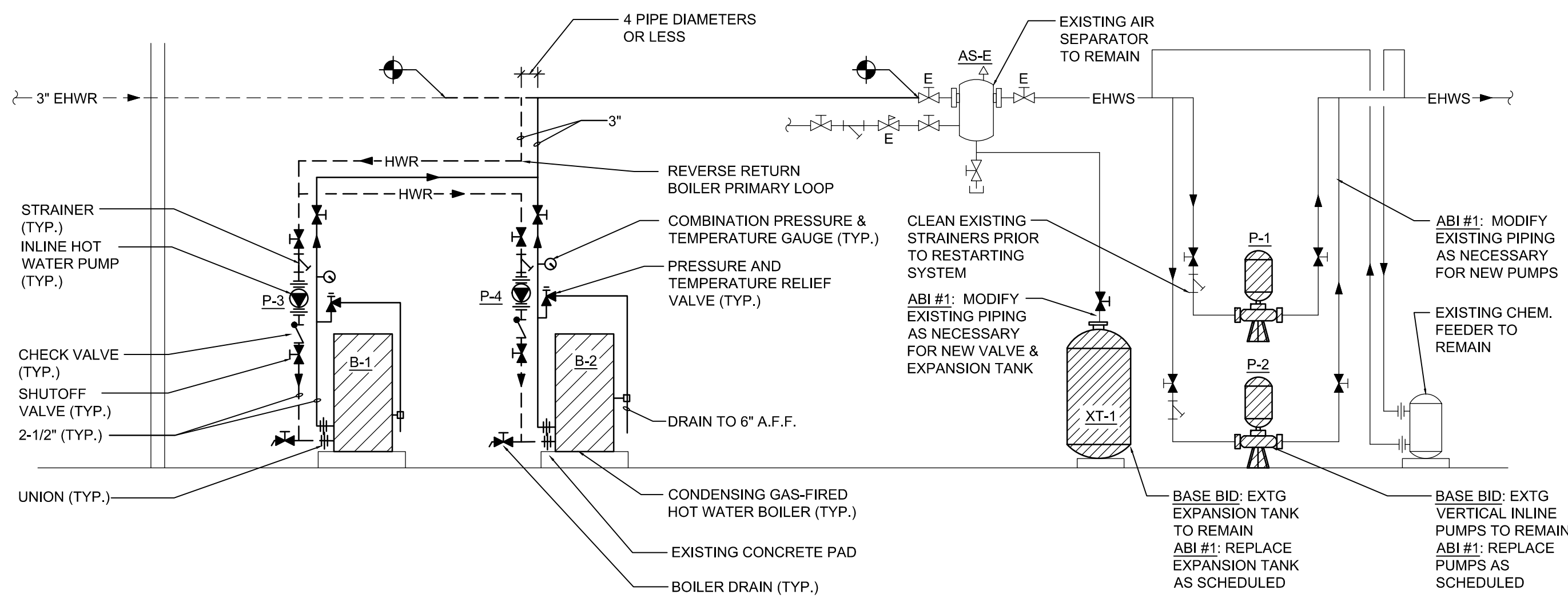
N1 FIRST FLOOR ENLARGED MECHANICAL PLAN
1/4" = 1'-0"

N9 FIRST FLOOR ENLARGED ELECTRICAL PLAN
1/4" = 1'-0"



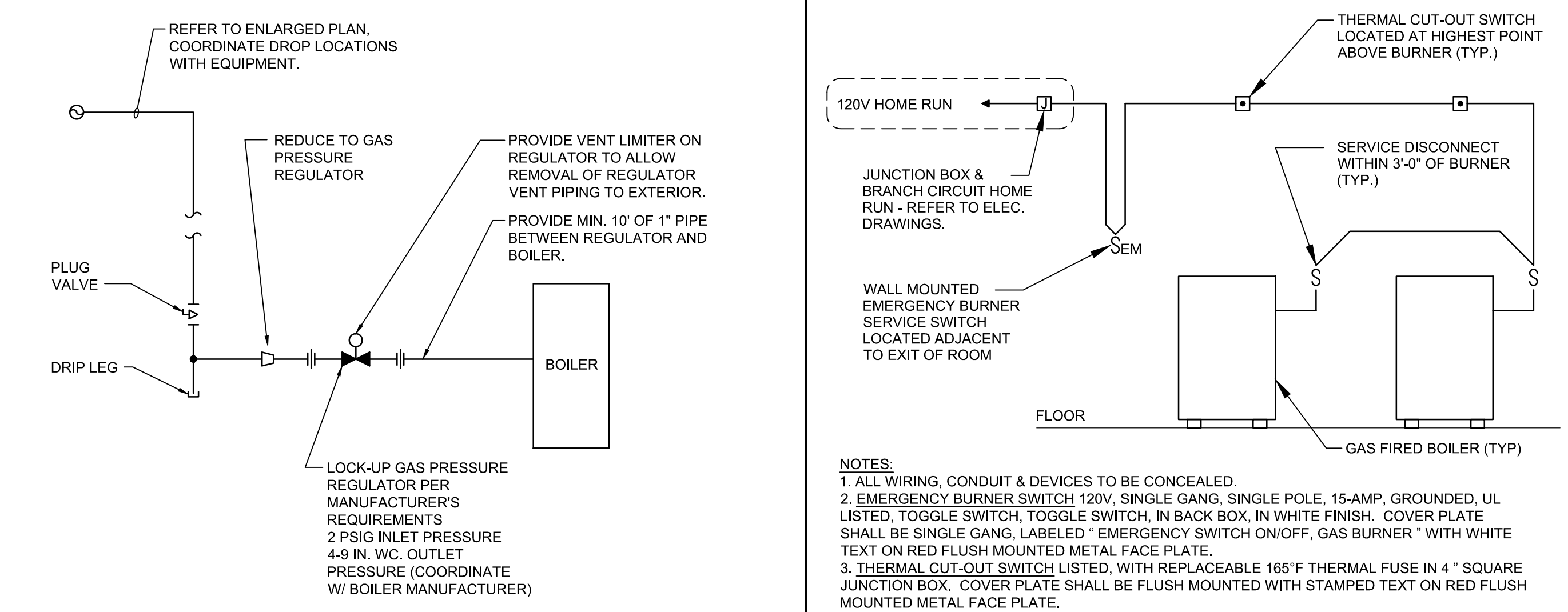
D1 BOILER PLANT REMOVALS SCHEMATIC

NTS



G1 BOILER PLANT PIPING SCHEMATIC

NTS



K1 EQUIPMENT GAS PIPING SCHEMATIC

NTS

K5 BOILER PLANT EMERG. & SERVICE CONTROLS

NTS

D8

NTS

G8

NTS

K8

NTS

PLUMBING SYSTEM PERFORMANCE SPECIFICATIONS:

1. **CODES AND GENERAL REQUIREMENTS:** DESIGN AND CONSTRUCT ALL PLUMBING SYSTEMS IN ACCORDANCE WITH THE 2021 UNIFORM PLUMBING CODE AS ADOPTED BY THE STATE OF MAINE, ADA, AND ASHRAE 90.1. PLUMBING SHOWN ON DRAWINGS IS GENERALLY SCHEMATIC AND ACTUAL LOCATIONS OF PIPING SHALL BE FULLY COORDINATED WITH ALL TRADES. ALL PIPING SHALL BE CONCEALED UNLESS NOTED OTHERWISE. ALL PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION USING OFFSETS, SWING JOINTS, EXPANSION FITTINGS OR JOINTS, TO PREVENT UNDUE STRAIN ON PIPING AND EQUIPMENT. NO WATER PIPING SHALL BE INSTALLED IN EXTERIOR WALLS OR OTHER SPACES WHERE SUSCEPTIBLE TO FREEZING.
2. **DOMESTIC WATER PIPING:** ALL INTERIOR DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER WITH LEAD FREE SOLDERED FITTINGS. ALL PIPING SHALL BE FINISHED WITH YELLOW EPOXY PAINT MATCHING EXISTING. COMPLETED PIPING SYSTEM SHALL BE LEAK TESTED AND REPORT SUBMITTED TO THE OWNER. PROVIDE LOCK-UP REGULATORS FOR USE WITH PEERLESS BOILERS.
3. **NATURAL GAS PIPING:** ALL NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK IRON PIPE WITH THREADED OR WELDED CAST FITTINGS. ALL PIPING SHALL BE FINISHED WITH YELLOW EPOXY PAINT MATCHING EXISTING. COMPLETED PIPING SYSTEM SHALL BE LEAK TESTED AND REPORT SUBMITTED TO THE OWNER. PROVIDE LOCK-UP REGULATORS FOR USE WITH PEERLESS BOILERS.
4. **NATURAL GAS DETECTOR:** PROVIDE HARDWIRED, WALL MOUNTED, NATURAL GAS DETECTOR EQUAL TO ASS MINI-MERLIN CH4CO-50 WITH LCD DISPLAY AND 120V INPUT POWER. OUTPUTS SHALL BE AVAILABLE FOR FIRE ALARM, BMS, OR VALVE OPERATION.
5. **LABELING:** PROVIDE PIPE LABELS AND FLOW ARROWS ON ALL NEW DOMESTIC WATER PIPING AND NATURAL GAS PIPING AT 20' INTERVALS.

MECHANICAL SYSTEM PERFORMANCE SPECIFICATIONS:

1. **CODES & GENERAL REQUIREMENTS:** DESIGN AND CONSTRUCT ALL HVAC SYSTEMS IN ACCORDANCE WITH UFC-3-410-01, UFC-3-430-11, NFPA 54, ASHRAE 62 & 90.1, ADA, STATE OF MAINE REGULATORY REQUIREMENTS. REFRIGERANT PIPING SHOWN ON DRAWINGS IS GENERALLY SCHEMATIC AND ACTUAL LOCATIONS OF PIPING SHALL BE FULLY COORDINATED WITH ALL TRADES. ALL PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION USING OFFSETS, SWING JOINTS, EXPANSION FITTINGS OR JOINTS, TO PREVENT UNDUE STRAIN ON PIPING AND EQUIPMENT. NO WATER PIPING SHALL BE INSTALLED IN EXTERIOR WALLS, ATTICS, OR OTHER SPACES WHERE SUSCEPTIBLE TO FREEZING.
2. **PHASING OF WORK:** CONTRACTOR SHALL PERFORM WORK IN COORDINATION WITH THE OWNER. BOILER PLANT SHALL BE SHUT DOWN ONCE HEATING IS NOT LONGER NEEDED. REVISED BUILDING LOOP PIPING SHALL BE COMPLETED FIRST WITH TEES AND VALVES INSTALLED FOR CONNECTION OF BOILER INJECTION PIPING. THE BOILER INJECTION LOOP CONSTRUCTED NEXT WITH ALL BOILER BRANCHES WITH ISOLATION VALVES TO PERMIT BOILERS TO BE CONNECTED AS WORK IS COMPLETED TO PROVIDE HEAT TO THE BUILDING. BOILER PLANT MUST BE TESTED AND FUNCTIONAL BY THE START OF THE HEATING SEASON.
3. **LABELING:** PROVIDE PIPE LABELS AND FLOW ARROWS ON ALL NEW HOT WATER PIPING AT 20' INTERVALS. PROVIDE ENGRAVED PLASTIC EQUIPMENT LABELS ON ALL NEW EQUIPMENT. FASTEN LABELS TO EQUIPMENT WITH FOAM TAPE OR RIVETS. MINIMUM TEXT SIZE 1/2" LETTER HEIGHT. APPLY EQUIPMENT LABELS ABOVE CEILING WHERE EXPOSED IN FINISHED SPACE.
4. **HOT WATER PIPING SYSTEMS:** ALL INTERIOR HOT WATER PIPING SHALL BE EITHER TYPE L COPPER TUBING WITH SOLDERED FITTINGS OR SCH. 40 BLACK IRON PIPE WITH THREADED OR WELDED FITTINGS. INSULATE ALL HOT WATER PIPING INCLUDING VALVES AND FITTINGS WITH 1" THICK PREFORMED MINERAL FIBER PIPE INSULATION FOR PIPING 1-1/4" AND SMALLER. PIPING 1-1/2" AND LARGER SHALL BE INSULATED WITH 2" THICK MINERAL FIBER. LEAVE ALL VALVE HANDLES AND REMOVABLE CAPS VISIBLE AND ACCESSIBLE. SUPPORT HOT WATER PIPING WITH INSULATION SADDLES AND CLEVIS HANGERS OR UNISTRUT AND PIPE CLAMPS SIZED FOR OD OF INSULATION. SUPPORT PIPING AT 60" ON CENTER AND WITHIN 12" OF CHANGE IN DIRECTIONS.
5. **HOT WATER PUMPS:** INLINE HOT WATER PUMPS SHALL BE CLOSE COUPLED WITH CONSTANT SPEED MOTOR. PUMP BODY SHALL BE CAST IRON WITH A STAINLESS STEEL IMPELLER AND STAINLESS STEEL SHAFT. IMPELLER SHALL BE TRIMMED TO SUIT PERFORMANCE REQUIREMENTS. PUMP SHALL BE INSTALLED WITH THE PUMP SHAFT HORIZONTAL. MOTOR SHALL BE HERMETICALLY SEALED FROM IMPELLER. MOTOR ORIENTATION SHALL BE FIELD ADJUSTABLE FROM PUMP BODY. SUPPORT PUMP INDEPENDENTLY OF PIPING.
6. **ALTERNATE BID ITEM #1:** PROVIDE REPLACEMENT VERTICAL INLINE HOT WATER PUMPS WITH VARIABLE SPEED MOTORS AS SCHEDULED. CONNECT EXISTING VFDS TO NEW PUMPS. PROVIDE NEW FIELD-BUILT STEEL STANDS TO SUPPORT NEW PUMPS AND ALLOW CONNECTION TO EXISTING SUCTION PIPING. MODIFY DISCHARGE PIPING AS NECESSARY FOR DIFFERENCES IN PUMP DIMENSIONS. PROVIDE NEW FLOOR MOUNTED EXPANSION TANK AS SCHEDULED. MODIFY PIPING FOR DIFFERENCES IN TANK DIMENSIONS.
7. **HOT WATER BOILERS:** FLOOR MOUNTED HIGH-EFFICIENCY GAS-FIRED CONDENSING BOILERS SHALL BE PEERLESS ONLY AS SCHEDULED PER OWNER'S PROJECT REQUIREMENTS. BOILERS SHALL HAVE STAINLESS STEEL BURNER AND HEAT EXCHANGER, 10:1 TURN DOWN MODULATING BURNER, PRESSURE & TEMPERATURE RELIEF VALVE, AND INTEGRAL CONDENSATE NEUTRALIZATION. FACTORY CONTROLS SHALL INCLUDE OUTDOOR RESET, CASCADE CONTROL, OF MULTIPLE BOILERS, OUTPUTS FOR INJECTION AND HW SYSTEM PUMP, DIGITAL DISPLAY FOR USER ADJUSTMENT AND MONITORING OF BOILER.
8. **BOILER VENTING:** COMBUSTION AIR PIPING SHALL BE 6" SCHEDULE 40 SOLID CORE PVC WITH CEMENTED JOINTS. COMBUSTION AIR TERMINATION SHALL BE TEE WITH SCREEN. BOILER VENT PIPING SHALL BE EITHER 6" SCHEDULE 40 CPVC OR POLYPROPYLENE PIPING WITH CEMENTED OR FUSED JOINTS. VENT TERMINATION SHALL BE BOILER MANUFACTURER'S STANDARD ROOF TERMINATION WITH SCREEN.
9. **TESTING, ADJUSTING & BALANCING:** ALL SYSTEMS AND EQUIPMENT SHALL BE TESTED, ADJUSTED, AND BALANCED AT PROJECT COMPLETION TO OBTAIN AND VERIFY PERFORMANCE INDICATED ON DRAWINGS. ALL TAB WORK SHALL BE PERFORMED BY AN INDEPENDENT CONTRACTOR WITHIN THE CONTRACT.

MECHANICAL SYSTEM SEQUENCE OF CONTROL:

GENERAL: EXISTING BUILDING IS SERVED BY A HONEYWELL BUILDING MANAGEMENT SYSTEM. THIS SYSTEM SHALL REMAIN AND BE MODIFIED AND/OR EXPANDED FOR THE NEW WORK.

COMBUSTION & VENT AIR DAMPERS: COMBUSTION AIR DAMPER SHALL NOT BE REQUIRED WITH DIRECT VENT BOILERS. DDC SEQUENCE SHALL BE REVISED TO OPEN BOTH COMBUSTION AIR AND VENT AIR DAMPER IF BOILER ROOM TEMPERATURE EXCEEDS 80°F (ADJUSTABLE).

P-1 & P-2: EXISTING VARIABLE SPEED HOT WATER PUMPS SHALL CONTINUE TO OPERATE WITH EXISTING CONTROL SEQUENCES.

P-1 & P-2: REPLACEMENT PUMPS SHALL BE CONFIGURED TO OPERATE WITH EXISTING VFDS AND CONTROL SEQUENCE.

BOILER PLANT:

1. BOILERS SHALL HAVE FACTORY INSTALLED, WIRED CONTROLS CAPABLE OF INJECTION PUMP CONTROL, STAGING OF BOILERS, OUTDOOR RESET AND MODULATING FIRING.
2. MOVE EXISTING DDC CONTROLS ENABLE SIGNAL TO MASTER BOILER (B-1).
3. FACTORY PROVIDED OUTDOOR AIR TEMPERATURE SENSOR SHALL BE LOCATED ON THE NORTH SIDE OF BUILDING.
4. PRIOR TO BOILER FIRING, ASSOCIATED INJECTION PUMP (P-3 OR P-4) SHOULD START AND PROVE FLOW.
5. BOILERS SHALL MODULATE AND STAGE AS NECESSARY TO MAINTAIN HOT WATER SUPPLY SETPOINT BASED ON THE RESET SCHEDULE AS FOLLOWS (ADJUSTABLE):

OUTDOOR TEMPERATURE:	HOT WATER TEMPERATURE:
0°F OR LESS	160°F
50°F OR HIGHER	140°F

NATURAL GAS DETECTION:

1. IF NATURAL GAS CONCENTRATION EXCEEDS SETPOINT, VISUAL AND AUDIBLE ALARM SHALL BE GENERATED FROM DETECTOR. OUTPUT TO BMS SHALL GENERATE AN ALARM AT USER INTERFACE.
2. WHEN CONCENTRATION REDUCES BELOW SETPOINT, ALARMS SHALL BE OFF.

SPECIFICATION FOR ELECTRICAL SYSTEMS:

1. **CONDUCTORS:** BRANCH CIRCUITS SHALL BE COPPER, WITH TYPE THHN-2/THWN-2 INSULATION WITHIN CONDUITS. NON-METALLIC SHEATHED CABLE MAY NOT BE USED. RUN SEPARATE NEUTRAL WIRE FOR EACH DEDICATED BRANCH CIRCUIT SHOWN ON THE PLANS.
2. **RACEWAYS & BOXES:** CONDUIT FOR INTERIOR SPACES SHALL BE EMT IN DRY LOCATIONS. MINIMUM RACEWAY SIZE SHALL BE 3/4-INCH TRADE SIZE. USE MANUFACTURER'S ELBOWS FOR RIGHT ANGLES. CONDUITS MAY BE EXPOSED WHERE DEVICES ARE TO BE INSTALLED ON EXISTING MASONRY OR BLOCK WALLS OR WITHIN UNFINISHED SPACES. INSTALL ALL CONDUITS ORTHOGONALLY TO THE ROOM IN WHICH THEY ARE INSTALLED, KEEPING EXPOSED CONDUIT TO A MINIMUM. ALL PENETRATIONS OF RATED CEILINGS, WALLS AND PARTITIONS SHALL BE SEALED WITH A UL LISTED AND APPROVED FIRE SEALANT MATERIAL TO MAINTAIN THE RATING OF SEPARATION. ALL OUTLET AND DEVICE BOXES SHALL BE SHEET METAL.
3. **IDENTIFICATION:** PROVIDE SELF-ADHESIVE VINYL LABELS ON INDOOR ELECTRICAL EQUIPMENT DEVICES SUCH AS DISCONNECTS, MOTOR STARTERS, RECEPTACLES, SWITCHES, AND JUNCTION BOXES INDICATING PANEL AND CIRCUIT OR HOMERUN DESTINATION. PROVIDE UPDATED COMPUTER GENERATED PANEL SCHEDULE INSIDE EXISTING PANEL.
4. **WIRING DEVICES:** ALL RECEPTACLES SHALL BE STRAIGHT BLADE DUPLEX TYPE AND RATED FOR 20 AMPS. GFCI RECEPTACLES SHALL BE SELF-TESTING NON-FEED THROUGH TYPE. EXTERIOR DEVICES SHALL BE WEATHER-PROOF GFCI TYPE AND SHALL BE PROVIDED WITH IN-USE COVERS. FINISH COLORS SHALL BE DETERMINED BY ARCHITECT.
5. **ENCLOSED DISCONNECTS:** EQUIPMENT DISCONNECTS SHALL BE UNFUSED TYPE, UNLESS NOTED OTHERWISE. INTERIOR DISCONNECTS SHALL BE IN NEMA 1 ENCLOSURES, EXCEPT IN DAMP LOCATIONS AND THEN NEMA 3R.
6. **PANELBOARDS:** NEW CIRCUIT BREAKERS IN THE EXISTING PANEL SHALL MATCH EXISTING ADJACENT CIRCUIT BREAKERS FOR TYPE AND AIC RATING.
7. **FIRE ALARM:** SYSTEM IS EXISTING TO REMAIN.



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COORDINATION



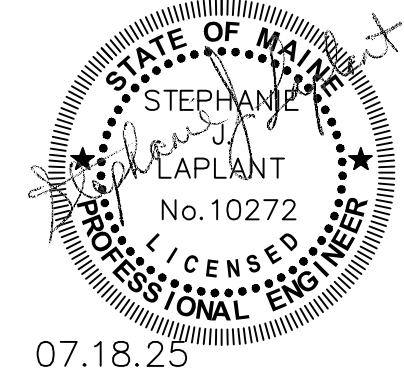
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BANGOR INTERNATIONAL AIRPORT
BANGOR, MAINE
Project No. - FKNN22236

date	18 JULY 2025	detailed	SRJ
designed	AJR	checked	DCM



MAINE AIR NATIONAL GUARD
B493 BOILER REPLACEMENT
MECHANICAL & ELECTRICAL
DETAILS

project	10057.003	contract	
drawing	ME501	rev.	
sheet	6	of	7 sheets
file			





BOILER SCHEDULE												
TAG	MODEL	LP GAS INPUT (MBH)	NET I-B-R OUTPUT (MBH)	AFUE %	TURNDOWN	NAT. GAS PRESSURE (IN-WC)	VENT AIR CONNECTION (IN)	COMB. AIR CONNECTION (IN)	ELECTRICAL			NOTES
									MOCP	VOLT	PHASE	
B-1	PFC-1000	1000	840	96	10 : 1	4 - 13	6	6	20A + 30A	120	1	1, 2, 3, 4, 5
B-2	PFC-1000	1000	840	96	10 : 1	4 - 13	6	6	20A + 30A	120	1	1, 2, 3, 4, 5

BOILER SCHEDULE NOTES:
 1. BASED ON PEERLESS
 2. BUILT-IN CONDENSATE NEUTRALIZATION SYSTEM
 3. PROVIDE CPVC ROOF TERMINATION
 4. INTEGRAL CONTROLS WITH LED SCREEN INCL. SYSTEM SENSORS, PUMP CONTROL AND BOILER CASCADE CONTROL AND BMS INTEGRATION
 5. ONE 20A 120V CIRCUIT SHALL SERVE BOILER CONTROLS AND BURNER POWER; ONE 30A 120V CIRCUIT SHALL SERVE INJECTION PUMPS

PUMP SCHEDULE												
TAG	LOCATION	SERVES	MODEL	TYPE	GPM	HEAD FT	EFF %	MOTOR RPM	ELECTRICAL			NOTES
									BHP	HP	POWER	
P-1E	MECH ROOM	BUILDING HEATING LOOP	EXISTING	VERT. INLINE	134				7.5	208/3		4, 5
P-2E	MECH ROOM	BUILDING HEATING LOOP	EXISTING	VERT. INLINE	134				7.5	208/3		4, 5
P-1	MECH ROOM	BUILDING HEATING LOOP	KV2009D	VERT. INLINE	120	90	70	1760	3.87	7.5	208/3	1, 3, 6
P-2	MECH ROOM	BUILDING HEATING LOOP	KV2009D	VERT. INLINE	120	90	70	1760	3.87	7.5	208/3	1, 3, 6
P-3	MECH ROOM	BOILER B-1 INJECTION	1935	INLINE	65	26	63	1760	0.65	3/4	120/1	1, 2
P-4	MECH ROOM	BOILER B-2 INJECTION	1935	INLINE	65	26	63	1760	0.65	3/4	120/1	1, 2

PUMP SCHEDULE NOTES:
 1. BASED ON TACO
 2. BASED ON 30" THROUGH BOILER
 3. PROVIDE UNTRIMMED IMPELLER
 4. BASED ON EXISTING PACO
 5. FLOWRATE BASED ON SUM OF EXISTING EQUIPMENT
 6. ALTERNATE BID ITEM #1

EXPANSION TANK SCHEDULE							
TAG	SERVICE	MODEL #	TANK			ACCEPTANCE VOLUME (GAL)	NOTES
			VOLUME (GAL)	DIA. (IN)	HEIGHT (IN)		
XT-1	BUILDING HEATING LOOP	CBX-254	67	24	48	34	1, 2

EXPANSION TANK SCHEDULE NOTES:
 1. BASED ON TACO
 2. ALTERNATE BID ITEM #1

EXISTING PANEL												
P4												
VOLTAGE 120/208V												
225A MCB												
PHASES: 3 WIRE: 4 TYPE:												
LOCATION: COMM 127												
MOUNTING SURFACE												
SERVICE	KW	BRKR	NOTE	NO	PHASE	NO	NOTE	BRKR	KW	SERVICE		
FIRE ALARM PANEL		1P20	1	1	A	2	1	1P20		FIRE ALARM PANEL		
BOILER B-2		1P20	3	3	B	4	1	2P30		BITI RM 127 RACK 3		
BITI RM 127 RACK		1P30	1	5	C	6						
REC SIPERNET RM 123		1P20	1	7	A	8	3	1P30		INJECTOR PUMP P-3		
EXTERIOR LIGHT		1P25	1	9	B	10	1	1P20		RECEPTACLE BOILER ROOM		
BITI RM 127 RACK 4		1P20	1	11	C	12	1	1P20		RECEPTACLE BOILER ROOM		
BOILER CONTROL		1P20	1	13	A	14	2	1P30		INJECTOR PUMP P-4		
RECEPTACLE COM ROOM		1P20	1	15	B	16	1	2P30		BITI RM 127 RACK 3		
RECEPTACLE COM ROOM		1P20	1	17	C	18						
RECEPTACLE COM ROOM		1P20	1	19	A	20	1	1P20		BOILER ROOM LIGHTS		
RECEPTACLE SIPERNET RTM 123		1P20	1	21	B	22	1	1P20		GAS METER		
HOT WATER HEATER		2P30	1	23	C	24	1	1P30		RECEPTACLE TELEPHONE RACK		
RECEPTACLE COM ROOM		1P20	1	25	A	26	1	1P30		RECEPTACLE TELEPHONE RACK		
RECEPTACLE COM ROOM		1P20	1	27	B	28	2	1P20		EMERGENCY GAS SHUT-OFF		
EXIT LIGHTS		1P20	1	29	C	30	1	1P20		LTS RM 112, 115, 118, 123		
BOILER B-1		1P20	3	31	A	32						
EXT LIGHT CONTROL PANEL		1P20	1	33	B	34	1,4	3P30		PUMPS 1,2 VFD		
RECEPTACLE EXTERIOR		1P15	1	35	C	36						
AC DATA ROOM		2P20	1	37	A	38	1	1P20		LTS RM 100, 102, 107, 121, 103, 131		
RECEPTACLE BOILER ROOM		1P20	1	39	B	40	1	1P20		LTS RM 103, 105, 106, 109, 111		
				41	C	42	1	1P20		LTS RM 108, 113, 114, 119, 120, 125		

PANELBOARD NOTES:
 1. EXISTING CIRCUIT BREAKER AND LOAD TO BE MAINTAINED.
 2. EXISTING SPARE CIRCUIT BREAKER WITH NEW LOAD APPLIED.
 3. EXISTING CIRCUIT BREAKER REMOVED AND REPLACED WITH NEW CIRCUIT BREAKER AND NEW LOAD APPLIED.
 4. ALTERNATE BID ITEM: CONNECT EXISTING CIRCUIT TO NEW LOAD REPLACING EXISTING LOAD IN KIND.

07.18.25	ISSUED FOR BID
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COORDINATION



MAINE AIR NATIONAL GUARD
 BANGOR INTERNATIONAL AIRPORT
 BANGOR, MAINE
 Project No. - FKNN22236

date	detailed
18 JULY 2025	AJR
designed	checked
AJR	DCM



WBRC INC
 BANGOR, MAINE 207-947-4511

MAINE AIR NATIONAL GUARD
 B493 BOILER REPLACEMENT
 MECHANICAL & ELECTRICAL
 SCHEDULES

project	10057.003	contract	
drawing	ME601	rev.	
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file			

