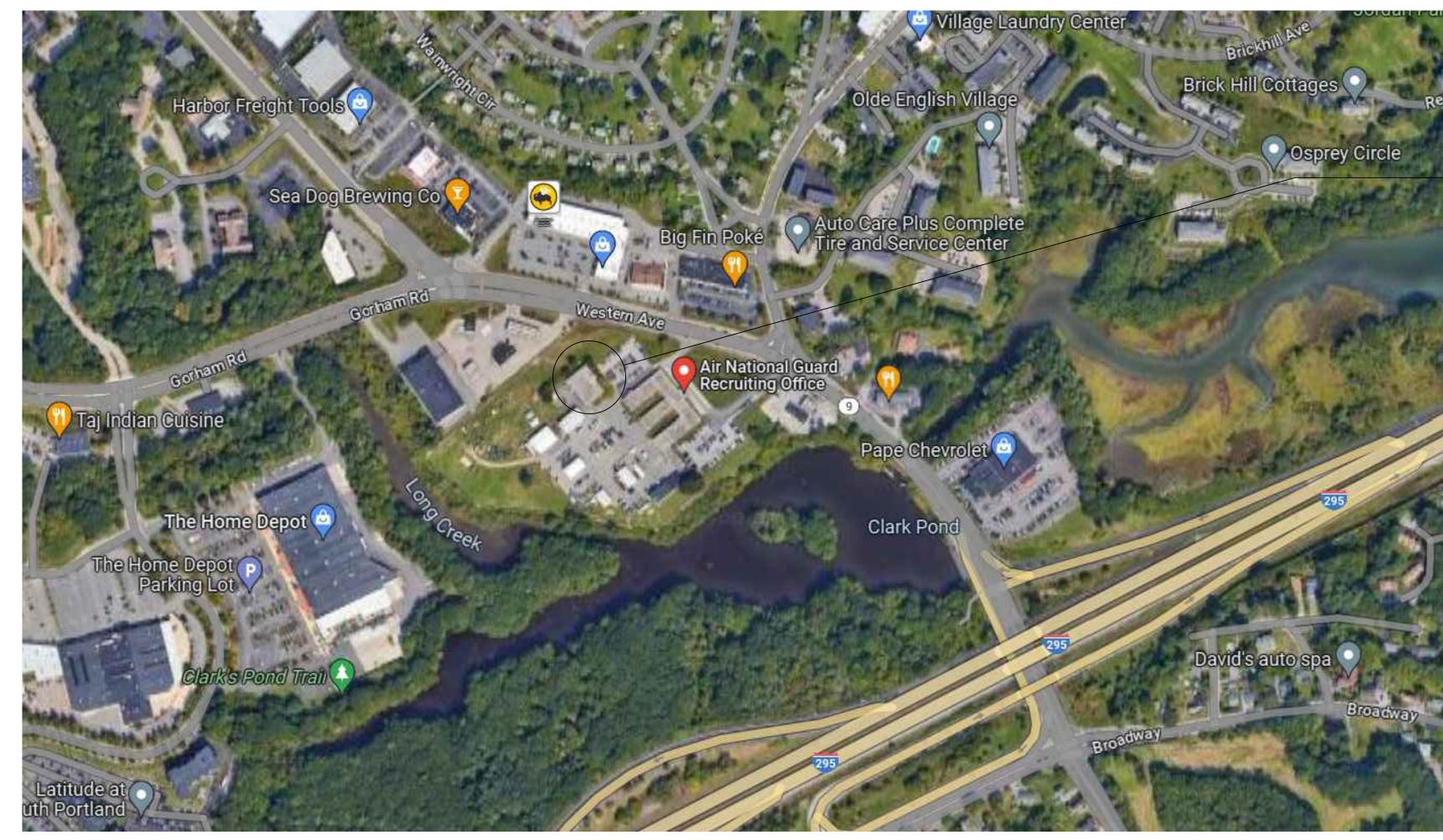
MAINE AIR NATIONAL GUARD BUILDING P8 HVAC RENOVATION

SOUTH PORTLAND, MAINE



LOCATION MAP







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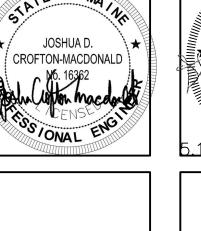
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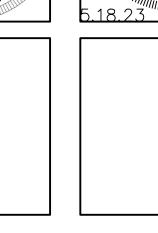


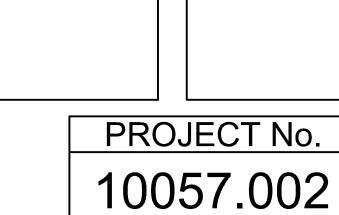


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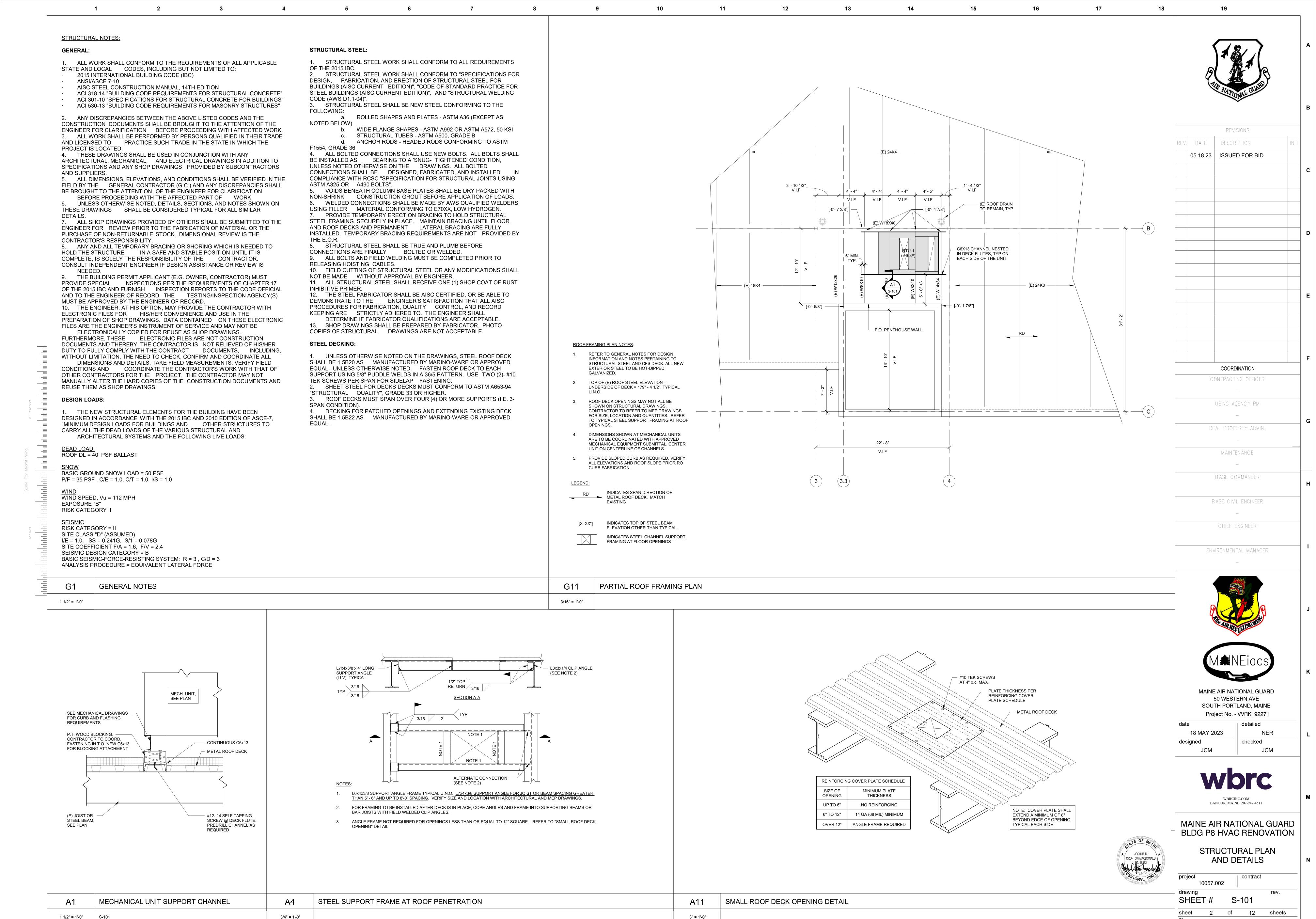
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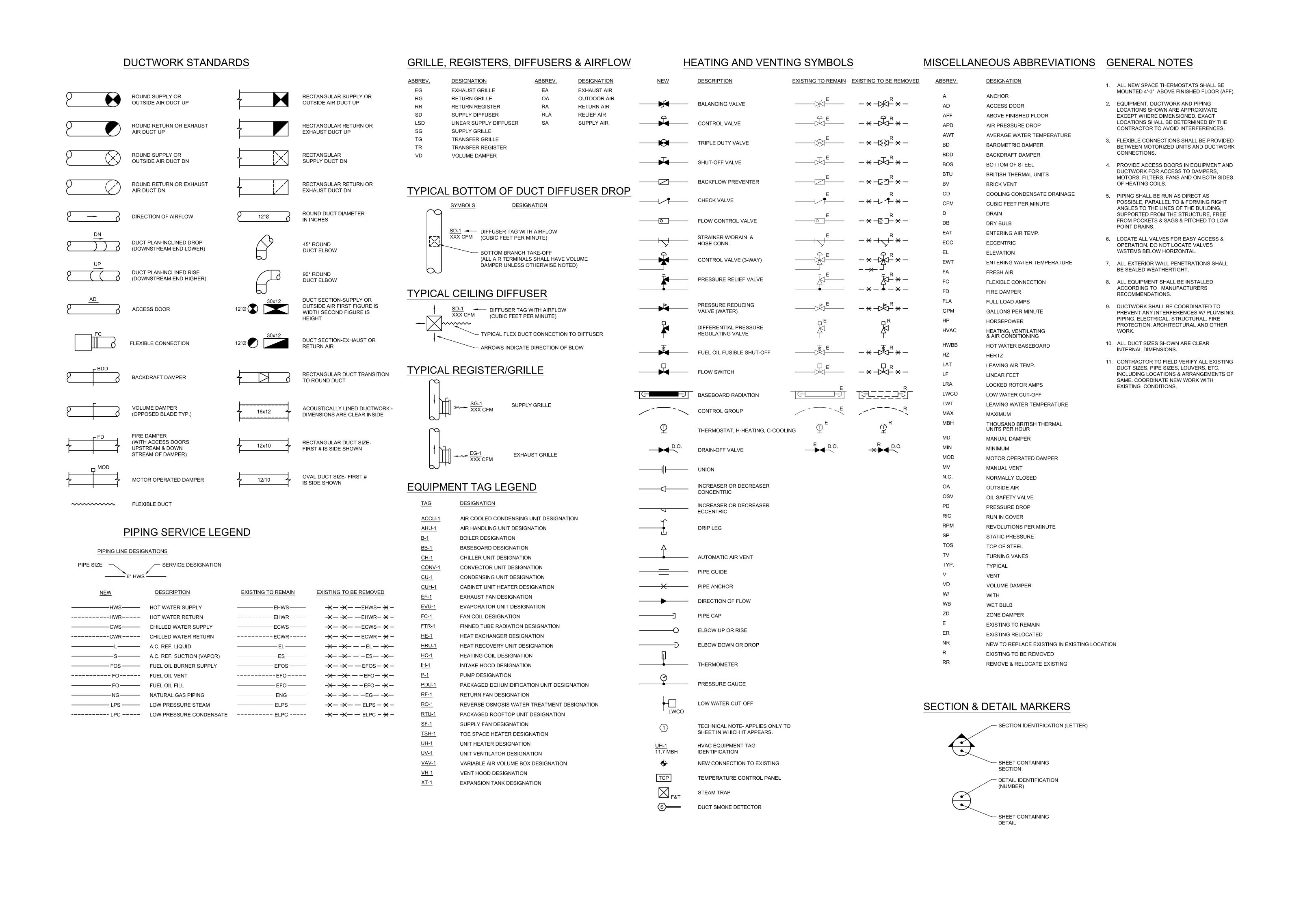






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CHIEF ENGINEER

ENVIRONMENTAL MANAGER

-

REAL PROPERTY ADMIN.

MAIN TENANCE

BASE COMMANDER

BASE CIVIL ENGINEER





50 WESTERN AVE
SOUTH PORTLAND, MAINE
Project No. - VVRK192271

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MAINE AIR NATIONAL GUARD BLDG P8 HVAC RENOVATION

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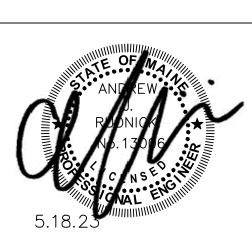
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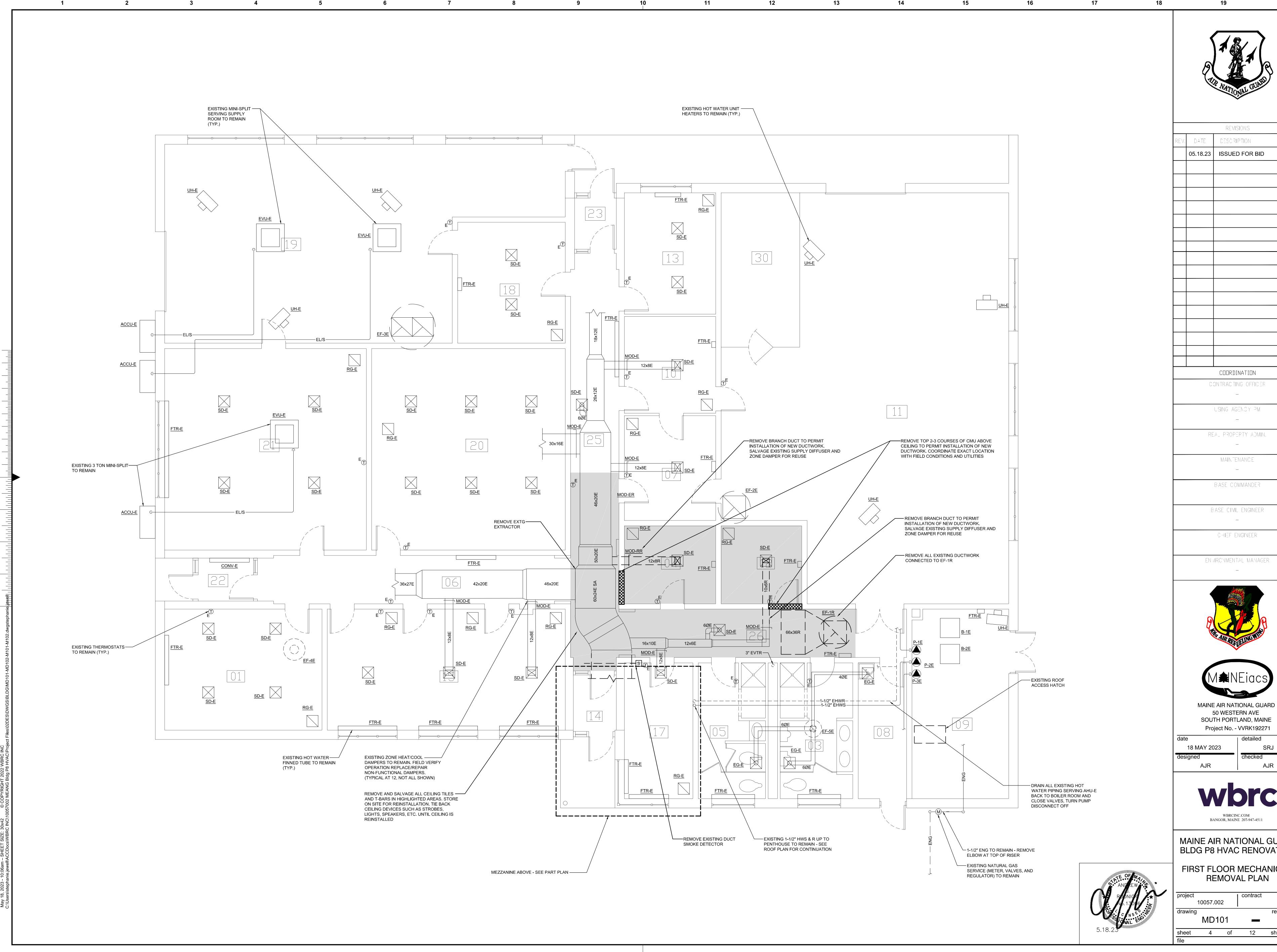
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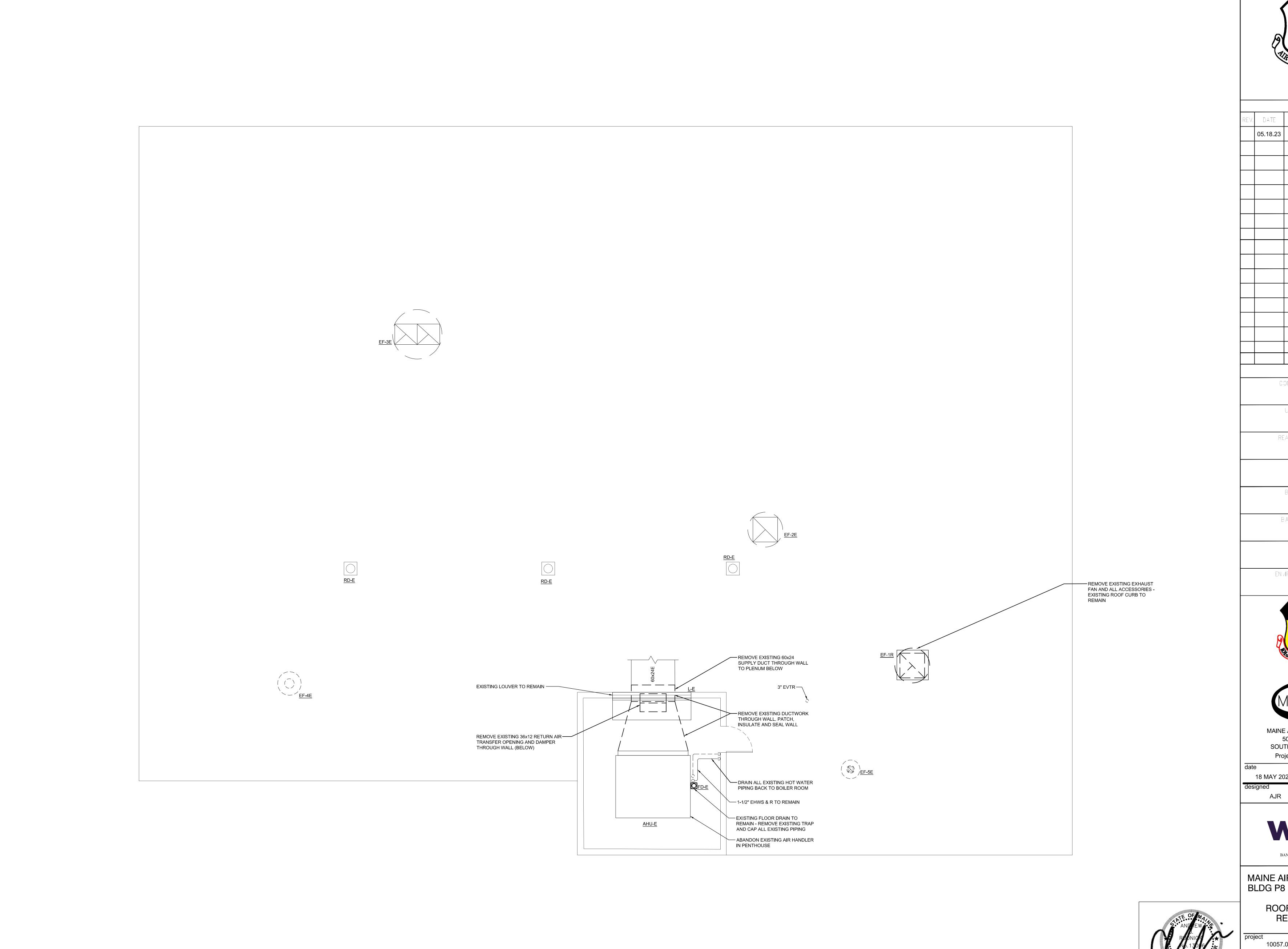
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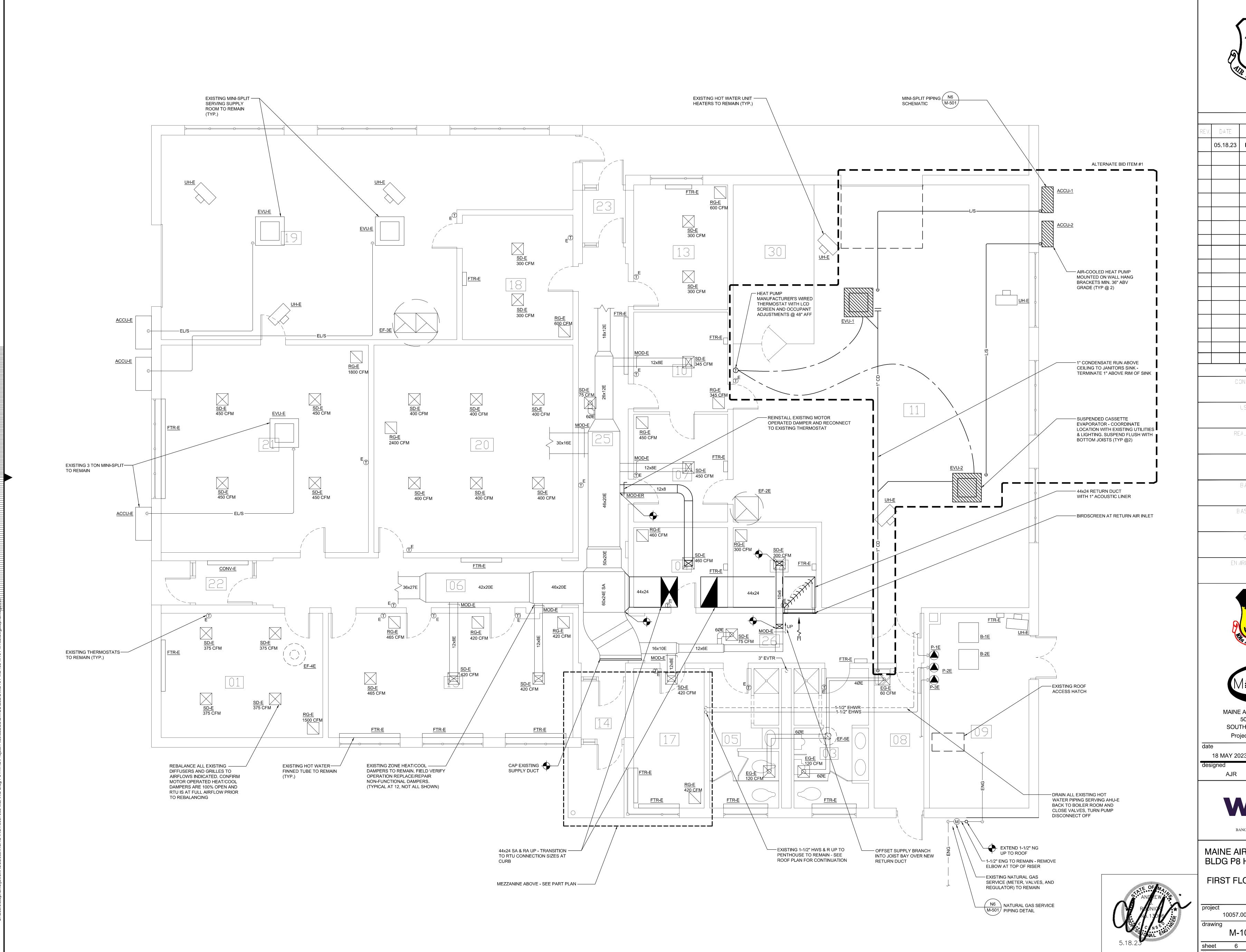
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MAINE AIR NATIONAL GUARD BLDG P8 HVAC RENOVATION

ROOF MECHANICAL REMOVAL PLAN

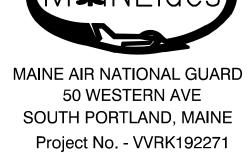
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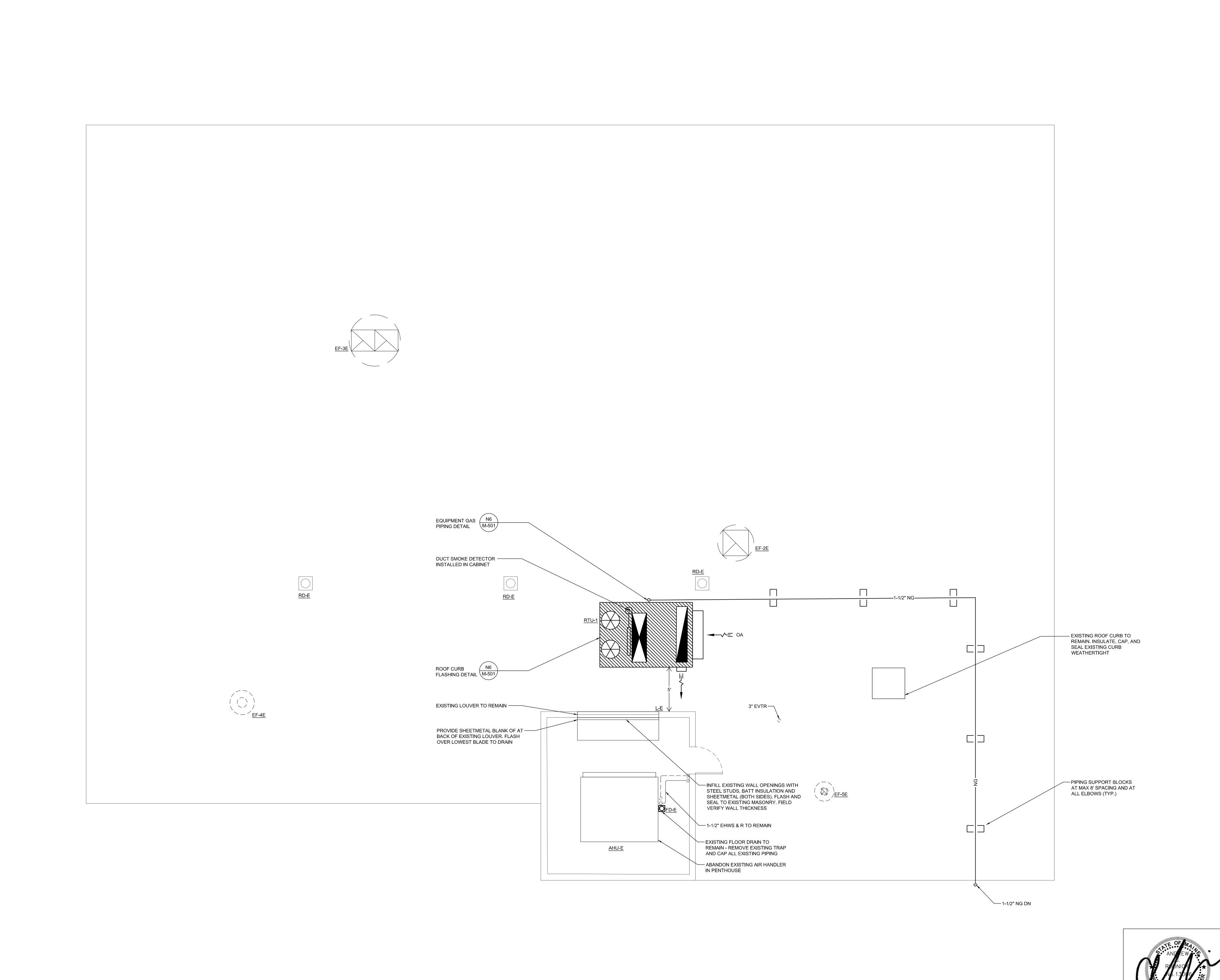


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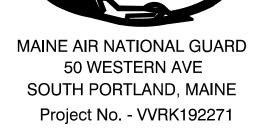
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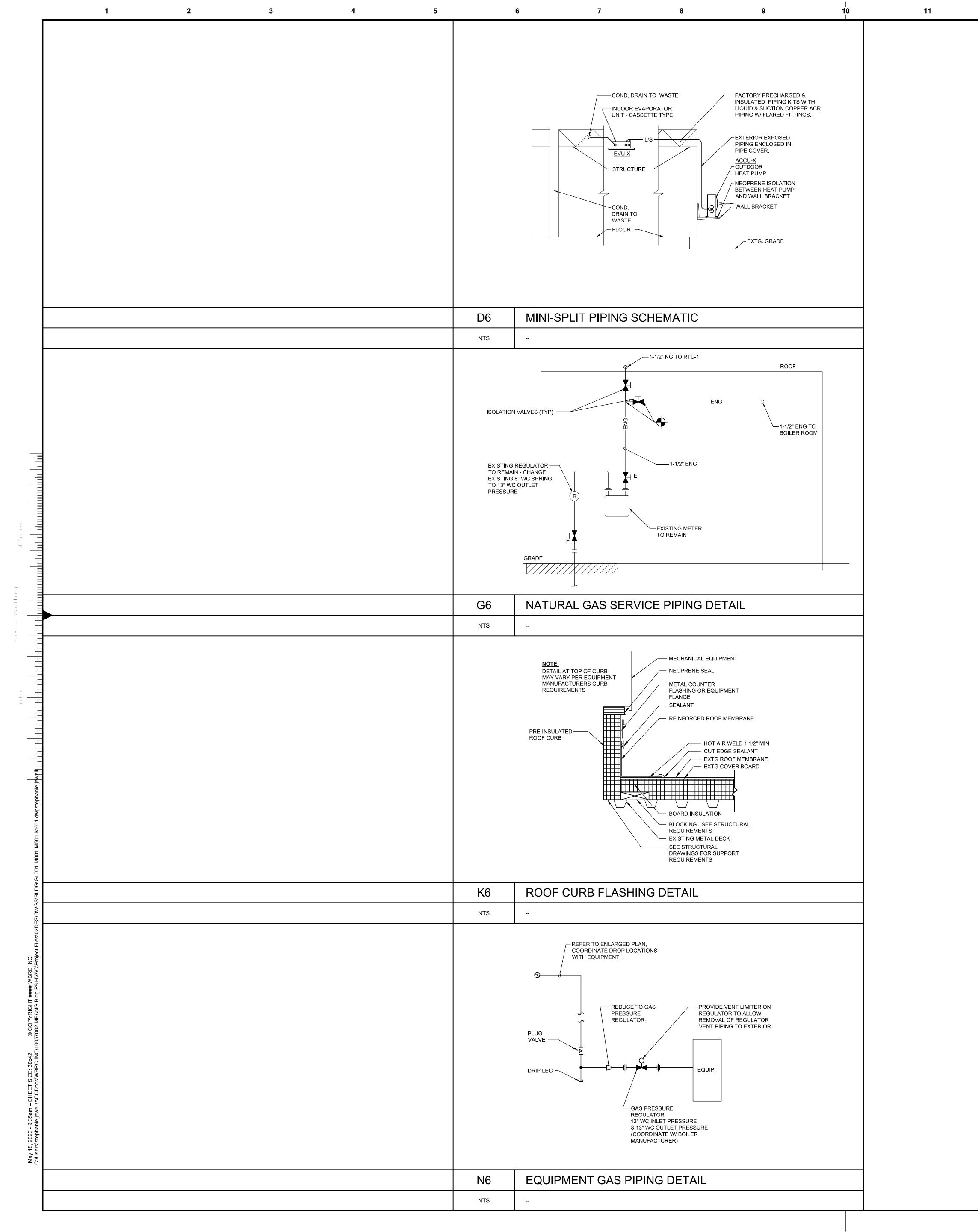
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MAINE AIR NATIONAL GUARD BLDG P8 HVAC RENOVATION

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PLUMBING SYSTEM PERFORMANCE SPECIFICATIONS:

- 1. CODES AND GENERAL REQUIREMENTS: DESIGN AND CONSTRUCT ALL PLUMBING SYSTEMS IN ACCORDANCE WITH THE 2015 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. CONDENSATE PIPING: ALL CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELDED FITTINGS AND JOINTS.
- 3. <u>NATURAL GAS PIPING</u>: 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.
- AT ROOF MOUNTED GAS PIPING PROVIDE RECYCLED RUBBER BLOCKS WITH INTEGRATED UNISTRUT CHANNEL FOR CLAMPING OF PIPING AT MAXIMUM 8' INTERVALS AND CHANGES OF DIRECTION.
- 4. LABELING: PROVIDE PIPE LABELS AND FLOW ARROWS ON ALL NEW NATURAL GAS PIPING AT 20' INTERVALS.

MECHANICAL SYSTEM PERFORMANCE SPECIFICATIONS:

- 1. CODES & GENERAL REQUIREMENTS: DESIGN AND CONSTRUCT ALL HVAC SYSTEMS IN ACCORDANCE WITH NFPA 54, ASHRAE 62.1 & 90.1, STATE OF MAINE REGULATORY REQUIREMENTS. DUCTWORK AND PIPING SHOWN ON DRAWINGS IS GENERALLY SCHEMATIC AND ACTUAL LOCATIONS OF DUCTWORK AND 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. SHUT DOWN OF EXISTING AIR HANDLER SHALL ONLY OCCUR ONCE NEW ROOFTOP UNIT HAS BEEN TESTED AND IS OPERATIONAL. SCHEDULE ANY INTERRUPTIONS TO EXISTING AIR HANDLER OPERATION WITH THE OWNER. DURING INTERRUPTIONS OF SERVICE EXISTING PERIMETER HOT WATER FINNED-TUBE AND UNIT HEATERS SHALL REMAIN OPERATIONS.
- 3. <u>LABELING</u>: PROVIDE PIPE LABELS AND FLOW ARROWS ON ALL NEW REFRIGERANT 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. <u>DUCTWORK SYSTEMS</u>: INTERIOR DUCTWORK SHALL BE CONSTRUCTED OF G90 GALVANIZED SHEET. SHEETMETAL GAUGE, REINFORCING AND SEALING SHALL BE DETERMINED BASED ON DUCT DIMENSIONS PER SMACNA STANDARDS. ALL SUPPLY DUCTWORK SHALL BE SEALED TO CLASS A FOR A MINIMUM OF 2" OF STATIC. INSULATE ALL SUPPLY DUCTWORK WITH 1-1/2" THICKNESS MINERAL FIBER BLANKET WITH ALL SERVICE JACKET. RETURN DUCT WITHIN 10' OF BUILDING PENETRATION SHALL BE INSULATED WITH 1-1/2" THICKNESS MINERAL FIBER BLANKET WITH ALL SERVICE JACKET.
- 5. REFRIGERANT PIPING SYSTEMS: ALL REFRIGERANT PIPING SHALL BE TYPE ACR COPPER TUBING WITH BRAZED JOINTS. PRE-INSULATED PIPE KITS ARE ACCEPTABLE FOR CONNECTIONS ON MINI-SPLIT SYSTEM. PIPE KITS SHALL HAVE 3/4" THICK INSULATION. INSULATE ALL REFRIGERANT PIPING INCLUDING VALVES AND FITTINGS WITH 3/4" THICK PREFORMED CLOSED CELL FOAM EQUAL TO ARMACELL ARMAFLEX. SUPPORT REFRIGERANT PIPING WITH INSULATION SADDLES AND CLEVIS HANGERS OR UNISTRUT AND PIPE CLAMPS SIZED FOR OD OF INSULATION. SUPPORT PIPING AT 48" ON CENTER.
- 6. ROOFTOP UNIT: FACTORY ASSEMBLED PACKAGED ROOFTOP UNIT SHALL CONFORM TO ASHRAE 90.1-2019. UNIT CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL WITH FACTORY APPLIED POWDER COAT EXTERIOR PANELS WITH ALL COMPONENTS AND DEVICES, CONTROLS, AND ACCESSORIES FACTORY INSTALLED WITHIN CABINET.

 SUPPLY FAN SHALL BE DIRECT DRIVE PLENUM FAN WITH FACTORY WIRED VARIABLE SPEED DRIVE. FAN SHALL BE ISOLATED FROM UNIT CABINET WITH SPRING OR NEOPRENE ISOLATORS.

 INDIRECT FIRED GAS HEATING SECTION SHALL CONSIST OF ALUMINIZED HEAT EXCHANGER AND BURNER AND BE SHIPPED FOR USE WITH NATURAL GAS.

 PACKAGED COOLING SECTION SHALL CONSIST OF MULTIPLE SCROLL COMPRESSORS IN SERIES INSTALLED ON NEOPRENE ISOLATORS WITH CRANKCASE HEATERS. UNIT SHALL BE FACTORY CHARGED WITH R-410A REFRIGERANT. CIRCUIT SHALL HAVE ISOLATION VALVES FOR SERVICE.

 ECONOMIZER SECTION WITH 2" PLEATED FILTER RACK, ENTHALPY CONTROL, SHALL ALLOW UP TO 100% OUTSIDE AIR FOR ECONOMIZER COOLING.

 FACTORY CONTROLS SHALL BE PROGRAMMED FOR OPERATION OF ROOFTOP UNIT WITHOUT THIRD-PARTY CONTROLS.

 AN INSULATED BASE ROOF CURB SHALL BE FLASHED AND SEALED TO EXISTING ROOF MEMBRANE. AN ISOLATION RAIL SHALL BE INSTALLED BETWEEN THE ROOF CURB AND ROOFTOP UNIT. ISOLATION CURB SHALL HAVE MINIMUM OF 6 SPRINGS SIZED FOR
- 6. MINI-SPLIT HEAT PUMP SYSTEM: INDOOR EVAPORATORS SHALL BE 4-WAY CEILING CASSETTE TYPE, RECESSED IN TILE CEILING GRID WITHOUT OVERLAPPING ADJACENT DEVICES. COVER PANEL SHALL BE WHITE. EVAPORATORS SHALL HAVE INTEGRAL CONDENSATE PUMPS. EVAPORATORS SHALL BE SUSPENDED FROM STRUCTURE WITH 1" DEFLECTION NEOPRENE ISOLATORS. AIR-COOLED HEAT PUMP SHALL HAVE A GALVANIZED STEEL CHASSIS WITH INVERTER SCROLL COMPRESSOR MOUNTED ON NEOPRENE ISOLATORS FASTENED TO CHASSIS. DIRECT DRIVE MULTI-BLADE CONDENSER FAN FOR HORIZONTAL DISCHARGE. SPACE THERMOSTATS SHALL BE SUPPLIED BY THE MULTI-SPLIT MANUFACTURER. THERMOSTAT SHALL HAVE LCD DISPLAY WITH OCCUPANT ADJUSTABLE TEMPERATURE SETPOINT AND FAN SPEED.

THE WEIGHT OF THE UNIT. AN EPDM MEMBRANE SHALL PROVIDE A FLEXIBLE WEATHERPROOF COVER OF THE ISOLATION RAIL.

- 7. CONTROLS: ALL NEW CONTROL WIRING SHALL BE INSTALLED IN RIGID CONDUIT PER NATIONAL GUARD REQUIREMENTS.
- 8. <u>ALTERNATE BID ITEM #1</u>: PROVIDE AND INSTALL MINI-SPLITS IN SUPPLY ROOM AS SHOWN ON DRAWINGS AND SCHEDULES. MINI-SPLITS SHALL OPERATE WITH FACTORY CONTROLS.
- 9. <u>TESTING, ADJUSTING & BALANCING</u>: 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:

EXISTING HOT WATER FINNED-TUBE RADIATION SHALL CONTINUE TO OPERATE BASED ON WALL MOUNTED THERMOSTATS IN EACH ZONE.

EXISTING HEATING/COOLING DAMPERS IN EACH ZONE BRANCH DUCT SHALL CONTINUE TO OPERATE BASED ON EXISTING WALL MOUNTED THERMOSTATS. VERIFY OPERATION OF ALL ZONE DAMPERS AND REPLACE AS NECESSARY.

SINGLE ZONE AIR HANDLING UNIT CONTROL SEQUENCE

AIR TEMPERATURE TO BE BELOW THIS SETPOINT.

- A. AIR HANDLING SYSTEM SHALL START IN THE OCCUPIED MODE THROUGH SCHEDULE PROGRAMMED IN FACTORY CONTROLLER. SCHEDULE SHALL BE COORDINATED WITH THE OWNER.
- B. OCCUPIED: SYSTEM COMMANDS SUPPLY AND EXHAUST FANS TO RUN CONTINUOUSLY WHEN BUILDING IS OCCUPIED.
- C. OPTIMUM START: UNITS SHALL START PRIOR TO THE PROGRAMMED OCCUPIED PERIOD IN A WARM-UP/COOL-DOWN SEQUENCE (WITH
- OUTSIDE AIR DAMPERS CLOSED) IN ORDER TO ACHIEVE OCCUPIED SPACE TEMPERATURE FOR THE START OF THE OCCUPIED PERIOD.

 D. FAN CONTROL: WHEN THE FANS START DURING THE OCCUPIED MODE THE OUTSIDE AIR AND RETURN AIR DAMPERS SHALL OPEN TO THEIR MINIMUM POSITION. THE SUPPLY AND EXHAUST FANS SHALL START AT MINIMUM SPEED. SUPPLY FAN SHALL INCREASE SPEED TO SECOND STAGE IF ROOM SETPOINT IS NOT ACHIEVED WITH FANS AT MINIMUM SPEED.
- E. DEMAND CONTROLLED VENTILATION: A RETURN DUCT MOUNTED CO2 SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPER BEYOND MINIMUM POSITION TO MAINTAIN MAXIMUM SPACE CO2 SETPOINT OF 900 PPM (ADJUSTABLE). IF DAMPER IS NEAR 100% AND CO2 SETPOINT IS NOT SATISFIED THE SUPPLY FAN SHALL GO TO SECOND STAGE. WHEN SPACE CO2 LEVELS ARE BELOW 850 PPM (ADJUSTABLE) THE OUTSIDE AIR DAMPERS SHALL RETURN TO MINIMUM POSITION AND FAN SPEED DOWN TO MINIMUM.
- F. STOP MODE: THE SUPPLY FAN AND RETURN FANS WILL BE OFF, THE OUTSIDE AIR DAMPER WILL BE CLOSED, AND THE HEATING VALVE WILL BE FULL OPEN.
- G. SMOKE DETECTION: STOP FANS, AND RETURN SYSTEM TO STOP MODE UPON A SIGNAL FROM THE FIRE ALARM SYSTEM. WIRING FROM THE FIRE ALARM DEVICE TO THE MOTOR STARTERS PROVIDED UNDER DIVISION 26.
- H. SPACE TEMPERATURE CONTROL: DURING OCCUPIED PERIODS SYSTEM MODULATES ECONOMIZER DAMPERS, STAGES COOLING SYSTEM, AND STAGES HEATING MODULES TO MAINTAIN SPACE TEMPERATURE OCCUPIED SET-POINT (70 DEG F, HEATING AND 76 DEG F, COOLING, ADJUSTABLE) AS DETERMINED BY RETURN AIR SENSOR.
 K. ECONOMIZER: ON A CALL FOR COOLING, IF THE ENTHALPY OF THE OUTSIDE AIR IS LESS THAN THE ENTHALPY OF THE RETURN AIR THE
- OUTSIDE AIR DAMPERS SHALL MODULATE OPEN PAST MINIMUM POSITION UP TO 100% OPEN. THE RETURN AIR DAMPER SHALL OPERATE INVERSELY OF THE OUTSIDE AIR DAMPER TO PERMIT "FREE COOLING" WITH OUTSIDE AIR. MECHANICAL COOLING SHALL OPERATE ONLY TO SUPPLEMENT ECONOMIZER OPERATION TO MEET DISCHARGE AIR SETPOINT WHEN THE RTU IS IN ECONOMIZER COOLING.
- DURING ECONOMIZER OPERATION, MIXED AIR TEMPERATURE SENSOR SHALL PROVIDE A LOW TEMPERATURE LIMIT SET AT 54 DEG F
 (ADJUSTABLE) TO PREVENT OVER COOLING/REHEATING. IF TEMPERATURE DROPS BELOW SETPOINT, OUTSIDE AIR DAMPERS SHALL
 CLOSE UNTIL SETPOINT IS MAINTAINED.
 DURING NORMAL OPERATION AT MINIMUM FAN SPEEDS, AND WHEN DEMAND CONTROL IS ACTIVE, IT IS ACCEPTABLE FOR THE MIXED
- L. DEHUMIDIFICATION: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70%RH (ADJUSTABLE) THE COOLING COIL SHALL BE ENERGIZED AND THE HOT GAS REHEAT COIL SHALL REHEAT THE SUPPLY AIR AS NECESSARY TO PROVIDE 50 DEG F DEW POINT (ADJUSTABLE) AIR TO THE BUILDING TO REDUCE THE HUMIDITY BELOW SETPOINT.
- M. UNOCCUPIED: THE SUPPLY FAN SHALL REMAIN OFF AND OUTSIDE AND EXHAUST DAMPERS CLOSED. FANS SHALL CYCLE (WITH DAMPERS IN RECIRCULATION MODE), MODULATE ECONOMIZER DAMPERS, STAGE COOLING SYSTEM, AND STAGE HEATING MODULES TO MAINTAIN UNOCCUPIED SETPOINT (64 DEG F, HEATING; 80 DEG F, COOLING, ADJUSTABLE).



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MAIN ENANCE

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REA PROPERTY ADMIN.

BASE COMMANDER

BASE CIVIL ENGINEER

CHIEF ENGINEER

ENVIRONMENTAL MANAGER





MAINE AIR NATIONAL GUARD 50 WESTERN AVE SOUTH PORTLAND, MAINE Project No. - VVRK192271

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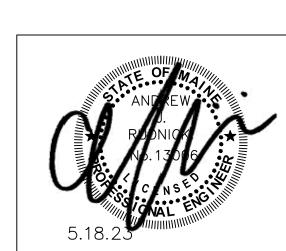
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ROOFTOP AIR HANDLING UNIT SCHEDULE SUPPLY FAN CAPACITY MIN OUTSIDE TAG CFM SERVES TSP POWER CONTROL AIR CFM RTU-1 FACILITY 208/3/60 DIRECT / ECM 2-SPEED 6,500 0.98 1000 DIRECT EXPANSION COOLING COIL # OF COMP PER CIRCUIT # OF STAGES STAGE % CAPACITY REFG CHARGE TAG TOTAL MBH SENS MBH # CIRCUITS R-410A 15.8 GAS HEATING SECTION CONTROL 4.5 - 14 ALUM/STEEL INDIRECT 2-STAGE 250 / 175 203 / 142 NAT GAS ELECTRICAL WEIGHT NOTES MODEL MOCP 1, 2, 3, 4, 5, 6, 7, 8, 9 YSJ180A3S0 2,468 83.0 ROOFTOP AIR HANDLING UNIT SCHEDULE NOTES: . BASED ON TRANE 2. 18" HIGH INSULATED CURB WITH VIBRATION ISOLATION RAIL. TOTAL CURB HEIGHT 24". DELIVER CURB TO SITE 14 WEEKS AHEAD OF ROOFTOP UNIT DELIVERY. 3. 0-100% ECONOMIZER WITH OUTSIDE AIR HOOD & POWERED EXHAUST FAN. 4. 2" MERV 13 FILTERS

	MINI SPLIT SYSTEM AC SCHEDULE								
COOLING AIRFLOW ELECTRICAL REFG. PIPE CONN.									
UNIT	CAPACITY (BTU/H)	CFM	VOLTS	MCA	LIQUID	SUCTION	WEIGHT	MODEL NO.	SERVES
EVU-1	36,000	1,200	208/1	2.0	3/8	5/8	56	PLA-A36EA7	SUPPLY ROOM
EVU-2	36,000	1,200	208/1	2.0	3/8	5/8	56	PLA-A36EA7	SUPPLY ROOM
UNIT	COOLING CAPACITY	SEER	REFG		ELECTRICAL		WEIGHT	MODEL NO.	NOTES
	(BTU/H)			VOLTS	MCA	MAX FUSE			
ACCU-1	36,000	21.8	R-410A	208/1	25.0	30	215	PUZ-A36NKA7	1, 2, 3, 4, 5
ACCU-2	36,000	21.8	R-410A	208/1	25.0	30	215	PUZ-A36NKA7	1, 2, 3, 4, 5

MINI SPLIT SYSTEM SCHEDULE NOTES:

1. BASED ON TRANE/MITSUBISHI

5. FIELD POWERED SERVICE RECEPTACLE - REQUIRES 120V 20A CIRCUIT.

9. FACTORY INSTALLED DUCT SMOKE DETECTOR IN SUPPLY AIR STREAM.

7. HOT GAS REHEAT COIL AND DEHUMIDIFICATION CONTROL8. PERFORMANCE SHOWN IS AT DESIGN PEAK AIRFLOW

6. POWERED EXHAUST FAN

2. PROVIDE WITH WALL HANGING BRACKETS

FACTORY INSTALLED CONDENSATE LIFT PUMP
 PROVIDE WITH WIRED THERMOSTAT WITH LCD DISPLAY

5. ALTERNATE BID ITEM #1



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MAIN ENANCE

BASE COMMANDER

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CHIEF ENGINEER

ENVIRCNMENTAL MANAGER



detailed
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SOUTH PORTLAND, MAINE
50 WESTERN AVE

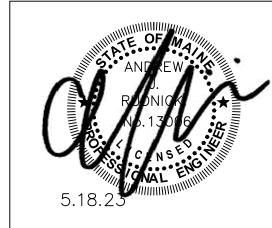
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MAINE AIR NATIONAL GUARD BLDG P8 HVAC RENOVATION

MECHANICAL SCHEDULES

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FLUORESCENT FIXTURE - UPPERCASE LETTER IS TYPE, LOWERCASE LETTER IS SWITCH CONTROL GROUP RECTANGLES INDICATE NUMBER FIXTURES IN A ROW. CEILING MOUNTED FIXTURE - NOTES SAME AS ABOVE WALL MOUNTED FIXTURE - NOTES SAME AS ABOVE CEILING MOUNTED EXIT SIGN - ARROW INDICATES DIRECTIVE ARROW ON SIGN WALL MOUNTED EXIT SIGN - ARROW INDICATES DIRECTIVE ARROW ON SIGN EMERGENCY LIGHTING BATTERY PACK WITH EMERGENCY LAMPS AS SHOWN REMOTE EMERGENCY LAMP LIGHT FIXTURES SPST FLUSH WALL TOGGLE SWITCH - MOUNT AT 48" A.F.F TO CENTER - LETTER INDICATES SWITCH GROUP THREE-WAY TOGGLE SWITCH - NOTES SAME AS SPST SWITCH ABOVE DIMMER SWITCH - NOTES SAME AS SPST SWITCH ABOVE FOUR-WAY TOGGLE SWITCH - NOTES SAME AS SPST SWITCH ABOVE WALL KEY SWITCH - NOTES SAME AS ABOVE PILOT LIGHT SWITCH - NOTES SAME AS ABOVE CEILING MOUNTED OCCUPANCY SENSOR 20 AMP DUPLEX CONVENIENCE RECEPTACLE - MOUNT AT 18" A.F.F. TO CENTER UNLESS INDICATED OTHERWISE - "GFI" INDICATES GROUND FAULT DEVICE,
"*" INDICATES GFI PROTECTED BY UPSTREAM DEVICE, "WP" INDICATES WEATHERPROOF, "IG" INDICATES INSULATED/ISOLATED GROUND, "C" INDICATES CEILING MOUNTED, "F" INDICATES FLOOR MOUNTED 20 AMP QUADRAPLEX (DOUBLE DUPLEX) - NOTES SAME AS ABOVE SPECIAL PURPOSE OUTLET OR EQUIPMENT CONNECTION - COORDINATE LOCATION AND TYPE OF CONNECTION JUNCTION BOX WITH COVER MOTOR - SIZE AS INDICATED - COORDINATE W/ ACTUAL EQUIPMENT BEING SERVED MANUAL STARTER - COORDINATE WITH EQUIPMENT BEING SERVED SINGLE THROW FUSED DISCONNECT SWITCH - NEMA ENCLOSURE AS REQUIRED REMOTE CONTROL MAGNETIC STARTER - COORDINATE W/ EQUIPMENT BEING SERVED ADA ELECTRICALLY-ASSISTED DOOR OPENER PUSHBUTTON BRANCH CIRCUIT RUN IN CEILING OR IN WALLS LOW VOLTAGE OR CONTROL WIRING - #12 MINIMUM OR AS NOTED MULTI-CONDUCTOR BRANCH CIRCUIT - NUMBER OF HASHMARKS IS NUMBER OF WIRES (NOT INCLUDING GROUND WIRE) WITHOUT HASHMARKS IS TWO WIRE HOMERUN TO CIRCUIT AND PANEL INDICATED - NUMBER OF ARROWS IS NUMBER OF PHASE WIRES -NUMBER OF WIRES AS INDICATED ABOVE CONTINUATION OF CIRCUIT DIRECTIVE ARROW PANELBOARD - SEE PANELBOARD SCHEDULE(S) COMBINATION VOICE/DATA JACK - "V" INDICATES NUMBER OF VOICE LINES, "D" INDICATES NUMBER OF DATA LINES, PROVIDE (1) EACH UNLESS NOTED OTHERWISE - "U" INDICATES 48" TO CENTER A.F.F. VOICE JACK - NOTES SAME AS VOICE/DATA JACK ABOVE - "W" INDICATES WALL PHONE, (1) VOICE LINE ONLY DATA JACK - NOTES SAME AS VOICE/DATA JACK ABOVE WIRELESS ACCESS PORT TELEVISION JACK - NOTES SAME AS RECEPTACLES RECESSED FLOOR OR CEILING MOUNTED BOX - POWER & COMMUNICATIONS AS SHOWN-"F" INDICATES FLOOR MOUNTED, "C" INDICATES CEILING MOUNTED - NOTES SAME AS VOICE/DATA JACK ABOVE WALL MOUNTED CLOCK CEILING SPEAKER (SOUND OR INTERCOM SYSTEM AS SHOWN) WALL SPEAKER (SOUND OR INTERCOM SYSTEM AS SHOWN) LOUD SPEAKER MICROPHONE INTERCOM SYSTEM CALL STATION INTERCOM SYSTEM CONTROL PANEL TELEPHONE/INTERCOM SYSTEM HAND SET FIRE ALARM SYSTEM CONTROL PANEL FIRE ALARM ANNUNCIATOR FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION

FIRE ALARM SYSTEM WALL MOUNTED AUDIO/VISUAL DEVICE WITH VISUAL DEVICE CANDELA RATING AS NOTED

FIRE ALARM SYSTEM WALL MOUNTED VISUAL DEVICE ONLY - CANDELA RATING AS NOTED FIRE ALARM SYSTEM

DOOR HOLD-OPEN DEVICE CONNECTION

SECURITY ALARM SYSTEM CONTROL PANEL

ACCESS CONTROL SYSTEM CARD READER

SECURITY ALARM SYSTEM SIREN/STROBE

VIDEO SURVEILLANCE CAMERA

SECURITY ALARM SYSTEM MOTION DETECTOR

FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH

FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH

FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH

ALL DEVICES, FIXTURES, ETC. SHALL BE NEW UNLESS DESIGNATED WITH THE FOLLOWING TAGS:

NR NEW TO REPLACE EXISTING IN EXISTING LOCATION

R EXISTING TO BE REMOVED RR REMOVE & RELOCATE EXISTING

ELECTRICAL SPECIFICATIONS:

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.

RACEWAYS & BOXES: ALL CABLING SHALL BE IN CONDUIT. 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 ORTHAGONALLY TO THE ROOM IN WHICH THEY ARE INSTALLED, KEEPING EXPOSED CONDUIT TO A MINIMUM. ALL EXPOSED CONDUIT AT THE ROOF TO BE IMC WITH THREADED CONNECTIONS. ALL PENETRATIONS OF ROOFS, 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.

IDENTIFICATION: PROVIDE SELF-ADHESIVE VINYL LABELS ON INDOOR AND OUTDOOR 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.

WIRING DEVICES: ALL RECEPTACLES SHALL BE STRAIGHT BLADE DUPLEX TYPE AND RATED FOR 20 AMPS. EXTERIOR DEVICES SHALL BE WEATHER-PROOF GFCI TYPE AND SHALL BE PROVIDED WITH IN-USE COVERS. FINISH COLORS SHALL BE DETERMINED BY ARCHITECT.

ENCLOSED DISCONNECTS: EQUIPMENT DISCONNECTS SHALL BE UNFUSED TYPE, UNLESS NOTED OTHERWISE. INTERIOR DISCONNECTS SHALL BE IN NEMA 1 ENCLOSURES, EXCEPT

PANELBOARDS: NEW CIRCUIT BREAKERS IN THE EXISTING PANEL SHALL MATCH EXISTING ADJACENT CIRCUIT BREAKERS FOR TYPE AND AIC RATING.

FIRE ALARM: SYSTEM IS EXISTING TO REMAIN.

GENERAL ELECTRICAL DEMO NOTES

- 1. 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.
- 2. 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.

IN DAMP LOCATIONS AND THEN NEMA 3R. EXTERIOR DISCONNECTS SHALL BE IN NEMA 4 ENCLOSURES.

- 3. ALL RACEWAYS & CABLES, NO LONGER IN USE, SHALL BE REMOVED.
- 4. 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)
- 5. ALL EXISTING CONDUITS STUBBED THROUGH FLOORS, WALLS, CEILINGS OR ROOF 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.
- 6. 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.
- 7. ENSURE REMOVAL OF ELECTRICAL DEVICES IN CONSTRUCTION AREA DOES NOT AFFECT ADJACENT AREAS.
- 8. 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.

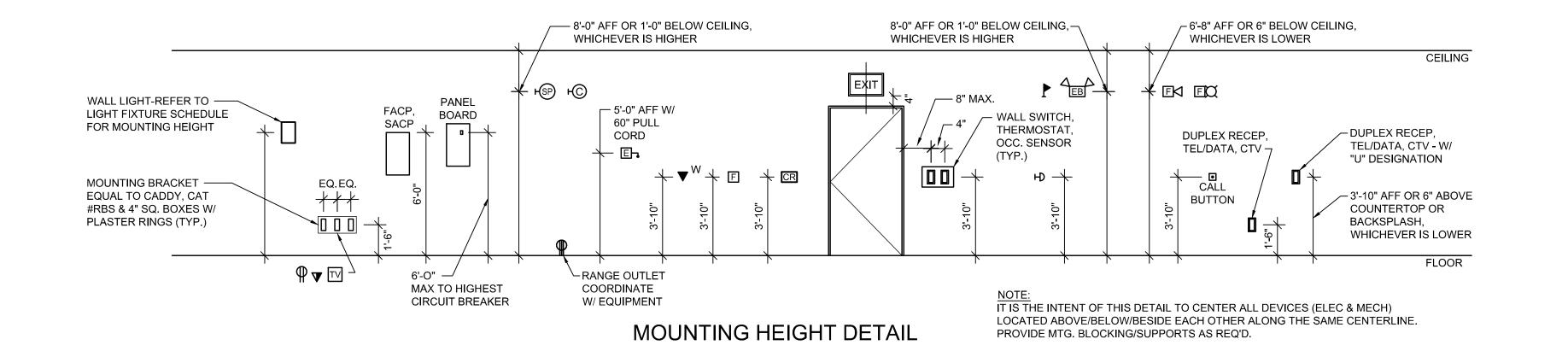
GENERAL NOTES

- 1. 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.
- 2. EXACT LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRES ELECTRICAL CONNECTION IS SHOWN ON THE MECHANICAL PLANS.
- 3. CONTRACTOR SHALL REVIEW ALL TRADES CONTRACT DOCUMENTS, AND FIELD VERIFY TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT AND CONDUITS.
- 4. 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.

5. RUN SEPARATE NEUTRAL WIRE FOR EACH DEDICATED BRANCH CIRCUIT SHOWN ON THE PLANS.

ABBREVIATIONS

Α	AMPERES	GND	GROUND
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER, HEAT PUMP
AFG	ABOVE FINISHED GRADE	JB	JUNCTION BOX
ATS	AUTOMATIC TRANSFER SWITCH	KVA	KILO VOLT AMPS
BATT	BATTERY	KW	KILOWATT(S)
BHEC	BANGOR HYDRO ELECTRIC CO.	LTG	LIGHTING
BKR	BREAKER	MAX	MAXIMUM
BLDG	BUILDING	MIN	MINIMUM
СВ	CIRCUIT BREAKER	N	NEW
CKT	CIRCUIT	OC	ON CENTER
CLG	CEILING	OS/OI	OWNER SUPPLIED, OWNER INSTALLED ITEM
CMP	CENTRAL MAINE POWER CO.	PAR	PARTIAL CIRCUIT
CT	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE
DN	DOWN	RECEP	RECEPTACLE
DWG	DRAWING	TEL	TELEPHONE
EMERG	EMERGENCY	TYP	TYPICAL
EMT	ELECTRICAL METALLIC TUBING	UG	UNDERGROUND
EQUIP	EQUIPMENT	V	VOLTS
FA	FIRE ALARM	W	WATTS
FAA	FIRE ALARM ANNUNCIATOR	WG	WIRE GUARD
FACP	FIRE ALARM CONTROL PANEL	WM	WIREMOLD
FA-PE	FIRE ALARM SYSTEM POWER EXTENDER	WP	WEATHERPROOF
FIN	FINISH, FINISHED		
FLR	FLOOR		





		REVISIONS	
REV.	DATE	DESCRIPTION	
	05.18.23	ISSUED FOR BID	
		COORDINATION	
	С	ONTRACTING OFFICER	
		_	
		USING AGENCY PM	
		_	
	RE	AL PROPERTY ADMIN.	

MAINTENANCE —

BASE CIVIL ENGINEER

BASE COMMANDER

CHIEF ENGINEER

ENVIRONMENTAL MANAGER





50 WESTERN AVE SOUTH PORTLAND, MAINE Project No. - VVRK192271

Project No.	Project No VVRK192271				
date	detailed				
18 MAY 2023	BSC				
designed	checked				





MAINE AIR NATIONAL GUARD BLDG P8 HVAC RENOVATION

ELECTRICAL LEGEND

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