

MINOT AFRC COMPLEX

BUILDING 3420 - BOILER REPLACEMENT

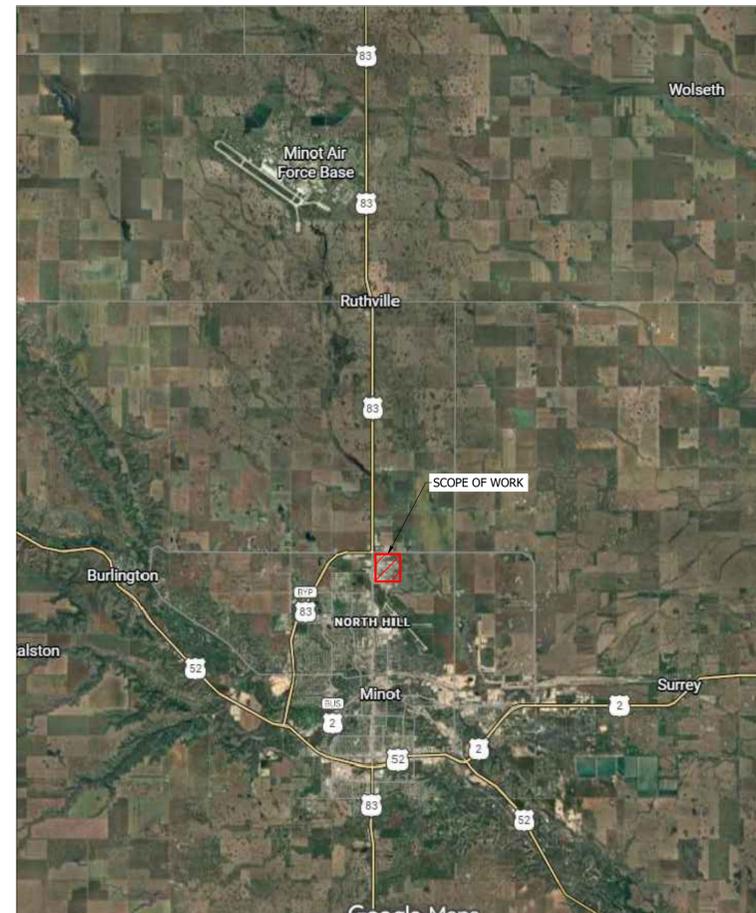
ARMED FORCES RESERVE CENTER, MINOT, NORTH DAKOTA

PROJECT NO. 2519

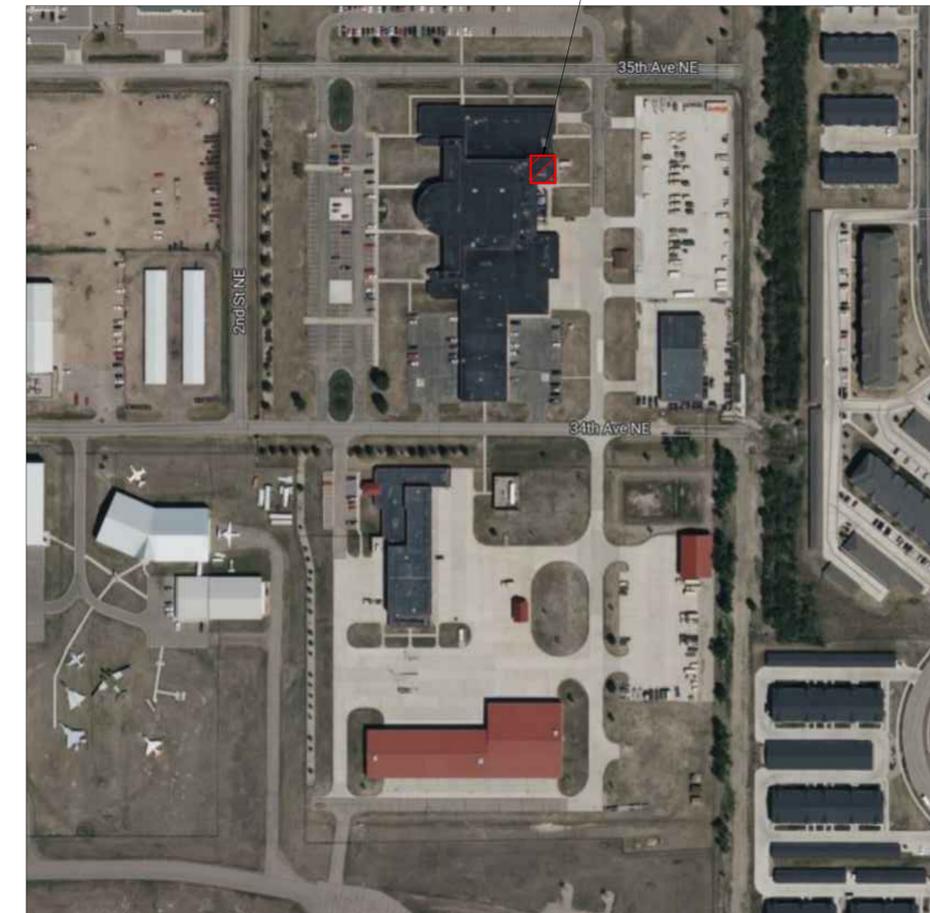
OWNER: THE ADJUTANT GENERAL, STATE OF ND



VICINITY MAP:



LOCATION MAP:



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COVER SHEET
 MINOT AFRC COMPLEX
 AFRC BUILDING 3420 - BOILER REPLACEMENT
 MINOT, NORTH DAKOTA



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 APPROVED BY: NSW
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 DATE: 02-20-2026
 DRAWING NO:

G000

MECHANICAL / HVAC

	THIS SYMBOL REFERS TO THE SIZE OF PIPE
	LIQUEFIED PETROLEUM GAS
	NATURAL GAS
	HIGH PRESSURE STEAM SUPPLY
	HIGH PRESSURE STEAM RETURN
	MEDIUM PRESSURE STEAM SUPPLY
	MEDIUM PRESSURE STEAM RETURN
	LOW PRESSURE STEAM SUPPLY
	LOW PRESSURE STEAM RETURN
	CONDENSATE PUMP DISCHARGE
	FEEDWATER PUMP DISCHARGE
	STORM SEWER
	ROOF DRAIN
	DRAIN
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	CHILLED/HOT WATER SUPPLY
	CHILLED/HOT WATER RETURN
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	HEATING HOT WATER SUPPLY
	HEATING HOT WATER RETURN
	HEAT PUMP SUPPLY
	HEAT PUMP RETURN
	REFRIGERANT LIQUID
	REFRIGERANT SUCTION
	REFRIGERANT LIQUID / SUCTION SET

	MANUAL VOLUME DAMPER
	LINEAR SLOT DIFFUSER
	INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)
	BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
	ELBOW WITH TURNING VANES
	ELBOW WITHOUT TURNING VANES
	RADIUS ELBOW
	EXHAUST AIR DUCT UP
	EXHAUST AIR DUCT DOWN
	RETURN OR FRESH AIR DUCT UP
	RETURN OR FRESH AIR DUCT DOWN
	SUPPLY AIR DUCT UP
	SUPPLY AIR DUCT DOWN
	EXHAUST AIR GRILLE
	RETURN AIR GRILLE
	SUPPLY AIR DIFFUSER

	REGISTER, TYPE, NECK SIZE & CFM
	REGISTER, TYPE, NECK SIZE & CFM
	REGISTER, TYPE, NECK SIZE & CFM

	FIRE DAMPER
	FIRE/SMOKE DAMPER
	SMOKE DAMPER
	MOTORIZED DAMPER
	CONTROL DAMPER
	BACKDRAFT DAMPER
	TEMPERATURE SENSOR
	DEWPOINT SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	PRESSURE SENSOR
	CO2 SENSOR
	AIR FLOW
	THERMOSTAT

PLUMBING / PIPE

	FLOOR MOUNTED FLUSH VALVE WATER CLOSET
	WALL MOUNTED FLUSH VALVE WATER CLOSET
	TANK TYPE WATER CLOSET
	URINAL
	WALL MOUNTED LAVATORY
	COUNTER TOP LAVATORY
	JANITORS BASIN
	DOUBLE COMPARTMENT SINK
	SINGLE COMPARTMENT SINK
	SHOWER
	BI-LEVEL DRINKING FOUNTAIN
	SINGLE DRINKING FOUNTAIN
	EMERGENCY SHOWER
	SHOWER HEADS
	SHOWER ENCLOSURE
	FLUSH FLOOR CLEANOUT
	FLUSH GRADE CLEANOUT
	"WC1" PLUMBING FIXTURE ID TAG
	#\" CW DOMESTIC COLD WATER
	#\" HW DOMESTIC HOT WATER
	#\" HC DOMESTIC HOT WATER CIRCULATING
	#\" T TEMPERED WATER
	#\" SD STORM DRAIN
	#\" OSD OVERFLOW STORM DRAIN
	#\" V VENT PIPING
	#\" W WASTE PIPING
	#\" A COMPRESSED AIR

	SHUT-OFF VALVE
	MODULATING CONTROL VALVE
	CHECK VALVE
	THREE WAY VALVE
	BALANCING VALVE W/ PRESSURE PORTS
	TRIPLE DUTY VALVE W/ PRESSURE PORTS
	STRAINER
	RELIEF VALVE
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	REDUCER
	PIPE ANCHOR
	PRESSURE GAUGE
	F & T TRAP
	BUCKET TRAP
	THERMOSTATIC TRAP
	FLOAT TRAP
	BACKFLOW PREVENTER
	THERMOMETER
	UNION
	WALL HYDRANT
	HOSE BIBB
	CLEANOUT
	CAP
	ELBOW UP W/OUT SHUT-OFF VALVE
	ELBOW DOWN W/OUT SHUT-OFF VALVE
	ELBOW
	TEE DOWN
	TEE
	TEE UP
	ELBOW UP WITH SHUT-OFF VALVE
	ELBOW DOWN WITH SHUT-OFF VALVE
	TEE UP WITH SHUT-OFF VALVE
	TEE DOWN WITH SHUT-OFF VALVE
	SANITARY TEE
	45 ELBOW
	P-TYPE TRAP

LIGHTING / ELECTRICAL

	POLE MOUNTED LIGHTING FIXTURE
	CEILING MOUNTED LIGHTING FIXTURE 1x4 AND ID TAG
	CEILING MOUNTED LIGHTING FIXTURE 2x2 AND ID TAG
	CEILING MOUNTED LIGHTING FIXTURE 2x4 AND ID TAG
	EMERGENCY LIGHTING FIXTURE
	CEILING MOUNTED DAYLIGHT CONTROLLED
	CEILING MOUNTED WITH EMERGENCY BALLAST
	CEILING MOUNTED LIGHT FIXTURE WITH NIGHT LIGHT
	PADDLE CEILING FAN
	CEILING MOUNTED EXIT LIGHT
	EXIT LIGHT (WALL MOUNTED)
	CEILING MOUNT
	WALL MOUNT
	LIGHT TRACK WITH LIGHT TYPES AS INDICATED
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	FOURPLEX RECEPTACLE
	RECESSED FLOOR MOUNTED JUNCTION BOX
	SURFACE MOUNTED JUNCTION BOX
	CEILING MOUNTED JUNCTION BOX
	PHOTOCELL
	JUNCTION BOX
	TYPE 1 JUNCTION BOX
	TYPE 2 JUNCTION BOX
	PLUGMOLD - OUTLETS AT 12" O.C. UNLESS OTHERWISE NOTED
	TIME SWITCH
	LIGHTING CONTACTOR
	SPRING WOUND TIMER
	HAND-OFF-AUTO SELECTOR SWITCH
	MANUAL STARTER WITH THERMAL OVERLOADS
	LIGHTING PANEL
	DISTRIBUTION PANEL
	TELEPHONE TERMINAL PANEL
	THERMOSTAT
	HUMIDISTAT
	(1) RJ-45 COMMUNICATION/DATA OUTLET
	(2) RJ-45 COMMUNICATION/DATA OUTLET
	(4) RJ-45 COMMUNICATION/DATA OUTLET
	CEILING MOUNTED COMMUNICATION/DATA OUTLET
	FLOOR MOUNTED COMMUNICATION/DATA OUTLET
	TELEVISION OUTLET
	WALL SPEAKER
	CEILING SPEAKER
	COLUMN SPEAKER
	HORN SPEAKER
	CALL-IN STATION
	MOTION DETECTOR
	CLOSED CIRCUIT TELEVISION OUTLET
	PUSHBUTTON STATION
	RELAY CABINET
	CLOCK SPEAKER
	CARD READER
	MAGNETIC LOCK
	ALARM CONTACTS
	SECURITY CAMERA
	SINGLE POLE SWITCH
	DOUBLE POLE SWITCH
	3-WAY SWITCH
	4-WAY SWITCH
	SINGLE POLE SWITCH WITH PILOT LAMP
	MOMENTARY CONTACT
	SINGLE POLE SWITCH, KEY OPERATED
	DIMMER SWITCH
	LOW VOLTAGE SWITCH
	VACANCY SENSOR SWITCH
	OCCUPANCY SENSOR
	POWER PACK

	BRANCH CIRCUIT IN CONDUIT CONCEALED IN CEILING OR WALL
	BRANCH CIRCUIT BELOW GRADE OR SLAB
	BRANCH CIRCUIT IN EXPOSED CONDUIT
	BRANCH CIRCUIT HOMERUN TO PANEL
	DIAGONAL LINES INDICATE NUMBER OF CONDUCTORS
	GROUND WIRE - INCLUDED IN ALL BRANCH CIRCUITS UNLESS OTHERWISE NOTED
	#18 WIRE
	#16 WIRE
	#14 WIRE
	#12 WIRE
	BRANCH CIRCUIT OR FEEDER - SEE SCHEDULE FOR CONDUCTOR & CONDUIT QUANTITY & SIZE
	FLEXIBLE CONDUIT
	TWISTED PAIR
	LIGHTING CONTROL WIRING
	MOTOR CONTROLLER
	MANUAL MOTOR CONTROLLER
	COMBINATION MOTOR CONTROLLER
	DISCONNECT SWITCH
	EQUIPMENT MOTOR
	UTILITY METER

FIRE ALARM / PROTECTION

	FIRE ALARM CONTROL PANEL
	FIREMAN'S SMOKE CONTROL SYSTEM
	FIREFIGHTER'S TELEPHONE PANEL
	VOICE EVACUATION CONTROL UNIT
	AMPLIFIER PANEL
	FIRE ALARM ANNUCIATOR PANEL
	REMOTE POWER SUPPLY
	REMOTE INDICATING LIGHT
	REMOTE TEST STATION
	FAN SHUTDOWN RELAY
	DOOR HOLD-OPEN DEVICE
	ADDRESSABLE CONTROL RELAY
	KNOX BOX
	FIRE ALARM PULL STATION
	SMOKE DETECTOR
	SMOKE DETECTOR WITH SOUNDER BASE
	HEAT DETECTOR
	FLAME DETECTOR
	DUCT SMOKE DETECTOR
	WALL MOUNTED FIRE ALARM HORN
	WALL MOUNTED FIRE ALARM BELL
	WALL MOUNTED FIRE ALARM HORN/STROBE COMBINATION
	CEILING MOUNTED FIRE ALARM STROBE LIGHT
	CEILING MOUNTED FIRE ALARM SPEAKER/STROBE
	CEILING MOUNTED FIRE ALARM STROBE LIGHT
	WALL MOUNTED FIRE ALARM WALL STROBE LIGHT
	WALL MOUNTED FIRE ALARM SPEAKER
	WALL MOUNTED FIRE ALARM SPEAKER/STROBE
	BEAM DETECTOR - RECEIVER
	BEAM DETECTOR - TRANSMITTER
	COMBINATION SMOKE AND FIXED TEMPERATURE THERMAL DETECTOR
	GAS DETECTOR
	FIREMAN'S PHONE JACK, MASTER PHONE STATION
	POST INDICATING VALVE
	TAMPER SWITCH
	FLOW SWITCH
	AIR SAMPLING SMOKE DETECTOR
	SINGLE POLE SWITCH, KEY OPERATED
	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WATTAGE
	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES CANDELA RATING

GENERAL SYMBOLS

	INDICATES DIRECTION OF PLAN NORTH
	DETAIL REFERENCE - UPPER NUMBER INDICATES DETAIL NUMBER, LOWER NUMBER INDICATES SHEET NUMBER
	PLAN NOTE REFERENCE
	REVISION DELTA
	ROOM NUMBER REFERENCE
	SECTION CUT REFERENCE - UPPER NUMBER INDICATES DETAIL NUMBER, LOWER NUMBER INDICATES SHEET NUMBER
	CONTINUATION
	INDICATES CONNECTION TO EXISTING SYSTEM
	BREAK LINE
	MATCHLINE

ABBREVIATIONS

GENERAL:	AFF ABOVE FINISHED FLOOR	G/C GENERAL CONTRACTOR
	AFG ABOVE FINISHED GRADE	M/C MECHANICAL CONTRACTOR
	CL CENTERLINE ELEVATION	E/C ELECTRICAL CONTRACTOR
	DN DOWN	P/C PLUMBING CONTRACTOR
	EX EXISTING	
PLUMBING:	CA COMPRESSED AIR	VTR VENT THRU ROOF
	CW DOMESTIC COLD WATER	W WASTE
	FD FLOOR DRAIN	
	FS FIRE SERVICE	
	HW DOMESTIC HOT WATER	
	HWC HOT WATER CIRCULATING	
	KW KITCHEN WASTE	
	T TEMPERED WATER	
	V VENT	
MECHANICAL:	AHU AIR HANDLING UNIT	UH UNIT HEATER
	BOD BOTTOM OF DUCT	LUV UNIT VENTILATOR
	CJ CONDENSING UNIT	VAV VARIABLE AIR FLOW
	CUH CABINET UNIT HEATER	
	CWR CHILLED WATER RETURN	
	CWS CHILLED WATER SUPPLY	
	EA EXHAUST AIR	
	EF EXHAUST FAN	
	FCU FAN COIL UNIT	
	FTU FAN TERMINAL UNIT	
	G GAS	
	HWR HOT WATER RETURN	
	HWS HOT WATER SUPPLY	
	LV LOUVER	
	MA MIXED AIR	
	MUA MAKE UP AIR	
	OA OUTSIDE AIR	
	RA RETURN AIR	
	RPZ REDUCED PRESSURE ZONE	
	SA SUPPLY AIR	
ELECTRICAL:	AC ALTERNATING CURRENT	
	BKR BREAKER	
	CTCB CONTROL TRANSFORMER CIRCUIT BREAKER	
	DISC DISCONNECT SWITCH	
	DR DUPLEX RECEPTACLE, GFI	
	DCB DISCONNECT CIRCUIT BREAKER	
	GFCB GROUND FAULT CIRCUIT BREAKER	
	HBCB HOT BOX CIRCUIT BREAKER	
	LCB LIGHT CIRCUIT BREAKER	
	MCB MAIN CIRCUIT BREAKER	
	MD MOTORIZED DAMPER	
	MPCB MOTOR POWER CIRCUIT BREAKER	
	PCB PUMP CIRCUIT BREAKER	
	PHCB PANEL HEATER CIRCUIT BREAKER	
	RCB RECEPTACLE CIRCUIT BREAKER	
	SCB SPARE CIRCUIT BREAKER	
	TR TRANSFORMER	
	TCB TRANSFORMER CIRCUIT BREAKER	
	TR TELEMETRY RADIO	
	VCCB VALVE CONTROL CIRCUIT BREAKER	
	VFD VARIABLE FREQUENCY DRIVE	
" "	QUOTATION AROUND TEXT INDICATES A SCHEDULED ITEM	
*	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES DEVICE BOTTOM TO BE MOUNTED 4" ABOVE COUNTER TOP BACKSPASH	
GFCI	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES GROUND FAULT INTERRUPTER	
IG	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES ISOLATED GROUND SERVICE	
TL	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES LOCKING OR TWIST-LOCK TYPE DEVICE	
WP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WEATHER-PROOF ENCLOSURE	
XP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES EXPLOSION-PROOF ENCLOSURE	
#\"	THESE NUMBERS ADJACENT TO ANY SYMBOL INDICATES THE MOUNTING HEIGHT AFF TO TOP OF OF DEVICE	
TP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES TAMPER PROOF	

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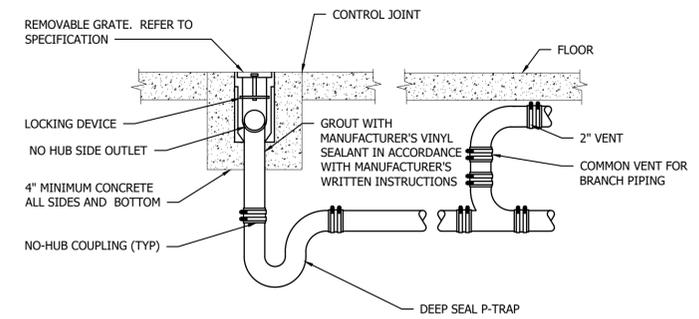
MEP SYMBOLS
 MINOT AFRC COMPLEX
 AFRC BUILDING 3420 - BOILER REPLACEMENT
 MINOT, NORTH DAKOTA

REGISTERED PROFESSIONAL ENGINEER
 NICHOLAS S. WEICH
 PE-29875
 DATE 02/20/2026

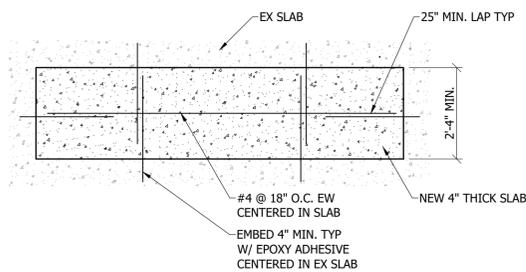
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4 FLOOR DRAIN TO BE REMOVED
NOT TO SCALE

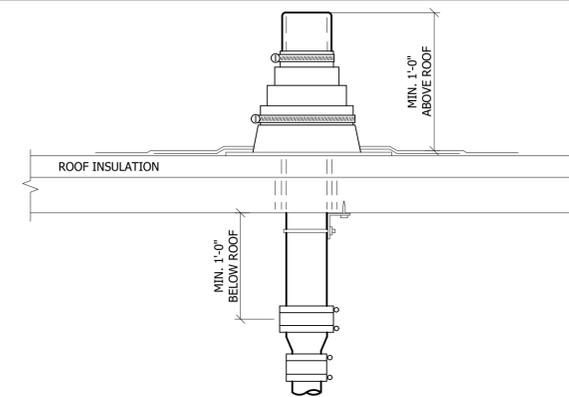


1 TRENCH DRAIN DETAIL
NOT TO SCALE



- NOTE:
1. PROVIDE WIRE TIES AS NEEDED AT CROSSINGS.
 2. REFER TO 033000 CAST IN PLACE CONCRETE

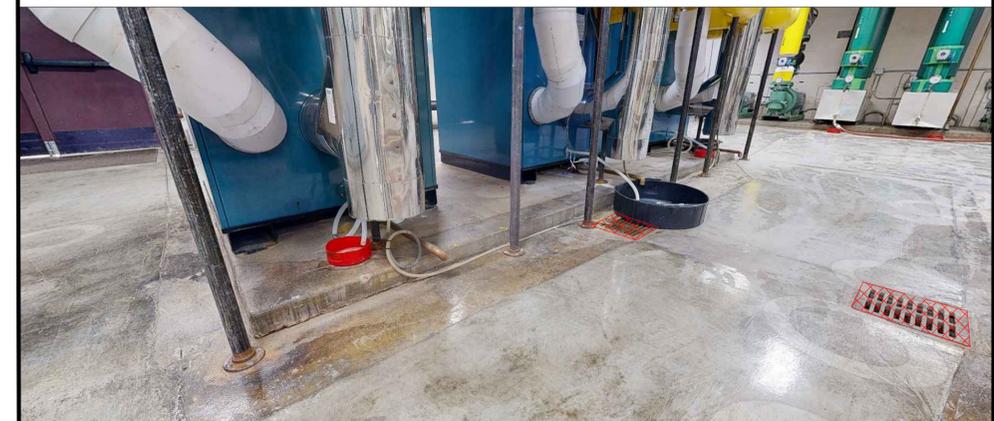
5 TYPICAL SLAB PATCH DETAIL
NOT TO SCALE



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, AND ONE FOOT FROM ANY VERTICAL SURFACE. PROVIDE 1" FIBERGLASS INSULATION WITH ALL-SERVICE JACKET ON VENT PIPE INSIDE BUILDING WITHIN SIX FEET OF VENT THRU ROOF LOCATION. VERIFY FLASHING AND CENTERFLASHING WITH ROOFING CONTRACTOR.

2 VENT THROUGH ROOF DETAIL
NOT TO SCALE

MARK	FIXTURE	MFGR	MODEL	MOUNTING	ROUGH-IN SIZES (INCHES)				DESCRIPTION	ACCESSORIES
					CW	HW	WASTE	VENT		
TD1	TRENCH DRAIN	ZURN	Z886-8613	FLOOR	-	-	4"	-	6.25" WIDE TRENCH DRAIN CHANNEL, 6'-8" LONG, 4" WIDE THROAT, HDPE MODULAR CHANNEL SECTIONS, NO OUTLET ON THIS SECTION, DEEP INVERT AT 11.3"	HEAVY DUTY DUCTILE IRON REMOVABLE GRATES, BLACK ACID RESISTANT EPOXY COATING
TD2	TRENCH DRAIN	ZURN	Z886-8614	FLOOR	-	-	4"	-	6.25" WIDE TRENCH DRAIN CHANNEL, 6'-8" LONG, 4" WIDE THROAT, HDPE MODULAR CHANNEL SECTIONS, NO HUB END OUTLET, DEEP INVERT AT 11.9"	HEAVY DUTY DUCTILE IRON REMOVABLE GRATES, BLACK ACID RESISTANT EPOXY COATING, P-TRAP



3 FLOOR DRAINS TO BE REMOVED
NOT TO SCALE

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PLUMBING DETAILS AND SCHEDULES
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA

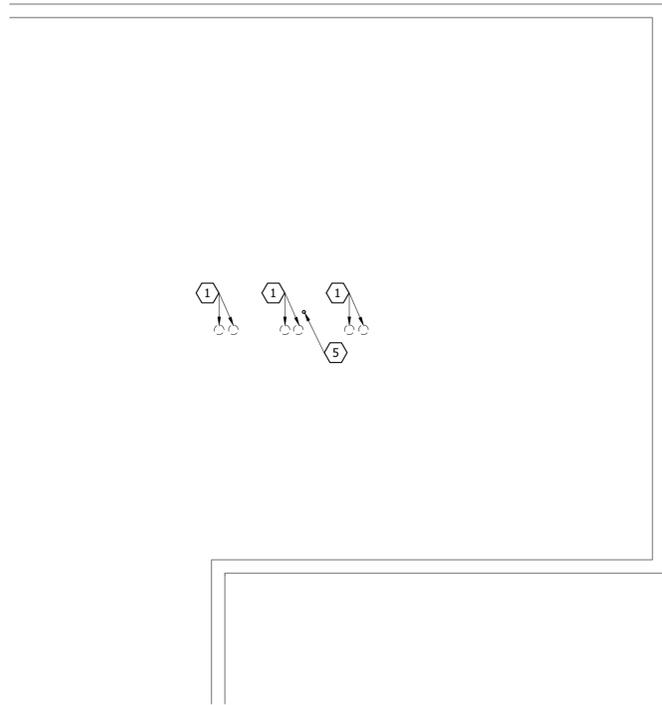


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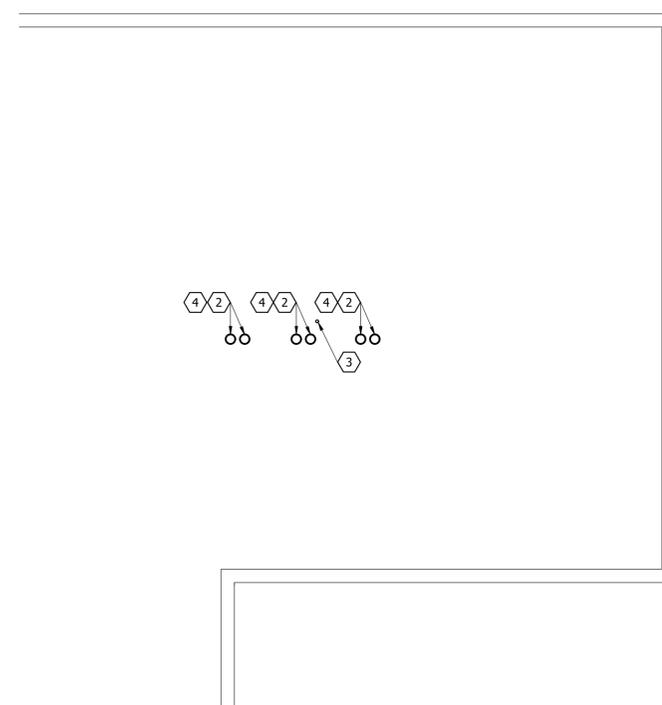
P-501

Drawing Name: F:\proj\20269\20269\20269\007\AutoCad\Plan Set\20269.007MP - MECHANICAL & PLUMBING ROOF PLAN.dwg Layout Name: MP-101 - PLUMBING & MECHANICAL ROOF PLAN Plotted By: SDK01521 Plotted on: 2/20/2026 9:31:24 AM
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MECHANICAL AND PLUMBING ROOF DEMOLITION PLAN
SCALE: 1/8"=1'-0"



MECHANICAL AND PLUMBING ROOF IMPROVEMENT PLAN
SCALE: 1/8"=1'-0"



REFERENCE NOTES:

- ① REMOVE EX BOILER INTAKE AND FLUE. FIELD VERIFY LOCATION. COORDINATE WITH ROOFING SUB-CONTRACTOR FOR TEMPORARY PATCH PRIOR TO NEW INSTALLATION.
- ② COORDINATE WITH ROOFING SUB-CONTRACTOR FOR NEW BOILER INTAKE AND FLUE PENETRATIONS THROUGH ROOF.
- ③ PROVIDE NEW 3" VTR. COORDINATE WITH ROOFING SUB-CONTRACTOR FOR NEW FLASHING ON EX VTR PENETRATION. REFER TO DETAIL 2/P-501.
- ④ PROVIDE A MINIMUM 36" SEPARATION VERTICALLY FROM INTAKE AND FLUE VENT. FLUE SHALL BE HIGHER THAN INTAKE. PROVIDE 180° GOOSENECK TO THE NORTH. REFER TO 6/M-502 FOR FLUE AND INTAKE DETAIL.
- ⑤ REMOVE EX VTR. FIELD VERIFY LOCATION. COORDINATE WITH ROOFING SUB-CONTRACTOR FOR TEMPORARY PATCH PRIOR TO NEW INSTALLATION.

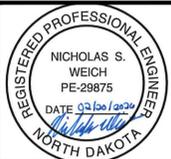
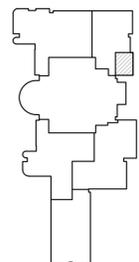
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GENERAL NOTES:

1. M/C & P/C TO FIELD WITH ALL OTHER TRADES.
2. M/C & P/C TO FIELD COORDINATE ALL ROOF PENETRATIONS WITH ROOF SUB-CONTRACTOR.
3. ROOFING WORK WILL BE PROVIDED THROUGH WARRANTED ROOF CONTRACTOR. REFER TO 075300 MODIFICATIONS TO EXISTING WARRANTED ROOF.

MECHANICAL AND PLUMBING ROOF PLANS
MINOT AFRC COMPLEX
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MINOT, NORTH DAKOTA

KEY PLAN:

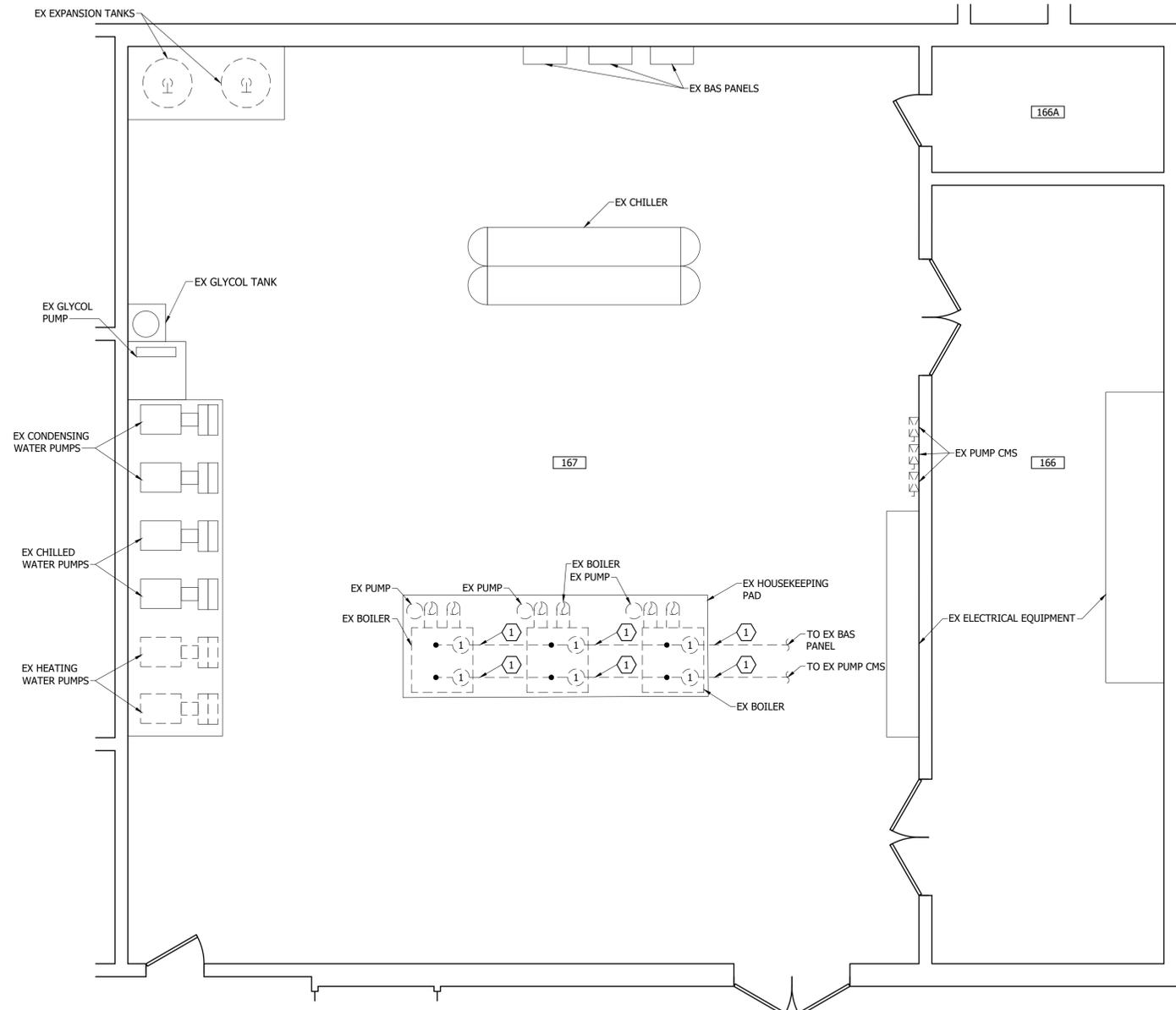


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APPROVED BY:	NSW
DESIGN PROJ:	20269.007
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SCALE:	AS NOTED
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DRAWING NO:	

MP-101

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MECHANICAL CONTROLS DEMOLITION PLAN
SCALE: 1/4"=1'-0"

REFERENCE NOTES:

- ① M/C TO REMOVE EXISTING BOILER CONTROL CONNECTION, AND ALL ASSOCIATED CONTROL WIRE AND CONDUITS. REFER TO DETAIL 8/E-501.

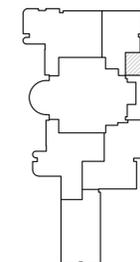
GENERAL NOTES:

- 1. EXISTING CONDITIONS TO REMAIN, UNLESS NOTED OTHERWISE.
- 2. M/C TO FIELD COORDINATE WITH ALL OTHER TRADES.

FEEDER SCHEDULE:

- ① EX WIRE AND CONDUIT TO BE REMOVED.

KEY PLAN:



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AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA

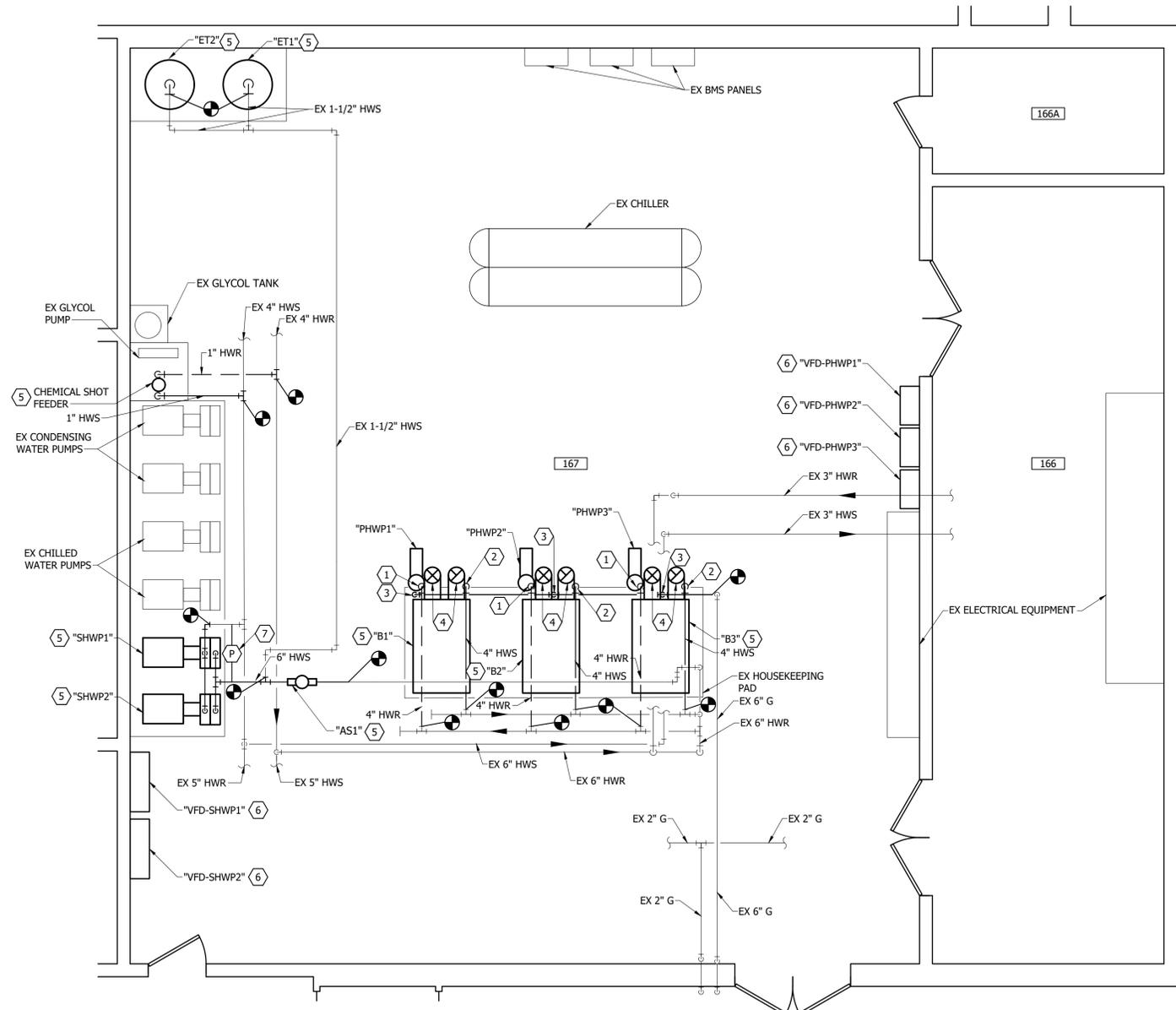


DESIGNED BY: JRS
DRAWN BY: JRS
APPROVED BY: NSW
DESIGN PROJ: 20269_007
CONST PROJ:
SCALE: AS NOTED
DATE: 02-20-2026
DRAWING NO:

M-102

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Last edit on: 2/19/2026 10:03 AM by: SMD01521 Drawing Name: F:\proj\202600\20269\20269\007\AutoCad\Plan Set\20269\007M_MECHANICAL IMPROVEMENT PLAN.dwg Layout Name: M-103 -MECH IMPROVEMENT PLAN Picked By: SMD01521 Picked on: 2/20/2026 9:31:11 AM



MECHANICAL IMPROVEMENT PLAN
SCALE: 1/4"=1'-0"

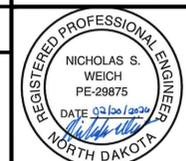
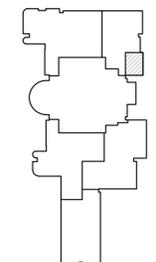
REFERENCE NOTES:

- ① CONNECT 4" HWR PIPING DOWN TO "PHWP1" BEFORE CONNECTING HWR TO "B1". REFER TO BOILER PIPING SCHEMATIC 2/M-601.
- ② 4" HWS PIPING DOWN TO BOILER. REFER TO BOILER PIPING SCHEMATIC 2/M-601.
- ③ 2" NG PIPING DOWN. PROVIDE NG VENTLESS PRESSURE REGULATOR FROM 5 PSI DOWN TO BOILER MANUFACTURER'S SPECIFIED INTAKE PRESSURE. REFER TO BOILER PIPING SCHEMATIC 2/M-601.
- ④ 10" Ø FLUE AND BOILER INTAKE UP TO ROOF. REFER TO BOILER MANUFACTURER'S SPECIFICATION FOR REQUIREMENTS ON BOILER INTAKE AND FLUE SIZING. FIELD COORDINATE WITH ROOFING SUB-CONTRACTOR FOR ROOF PENETRATIONS AND REPAIR.
- ⑤ REFER TO DETAIL 2/M-601 FOR PIPING REQUIREMENTS AND INSTALLATION/CONNECTION OF NEW HYDRONIC EQUIPMENT TO EXISTING PIPING.
- ⑥ M/C TO FURNISH VFD. E/C TO INSTALL.
- ⑦ DIFFERENTIAL PRESSURE SENSOR.

GENERAL NOTES:

1. M/C TO FIELD WITH ALL OTHER TRADES.
2. REFER TO 2/M-601 FOR BOILER PIPING SIZING AND DETAILS.
3. M/C TO FIELD COORDINATE ALL ROOF PENETRATIONS WITH ROOF SUB-CONTRACTOR.
4. ROOFING WORK WILL BE PROVIDED THROUGH WARRANTED ROOF CONTRACTOR. REFER TO 075300 MODIFICATIONS TO EXISTING WARRANTED ROOF.
5. M/C SHALL EXTEND HOUSEKEEPING PADS AS REQUIRED TO EXTEND 6" PAST EDGE OF EQUIPMENT. BASIS OF DESIGN EQUIPMENT DOES NOT REQUIRE HOUSEKEEPING PAD EXTENSION. M/C SHALL BE RESPONSIBLE TO ALL COST ASSOCIATED WITH EXTENDING HOUSEKEEPING PADS.

KEY PLAN:



DESIGNED BY:	JRS
DRAWN BY:	NPB
APPROVED BY:	NSW
DESIGN PROJ:	20269.007
CONST PROJ:	
SCALE:	AS NOTED
DATE:	02-20-2026
DRAWING NO:	

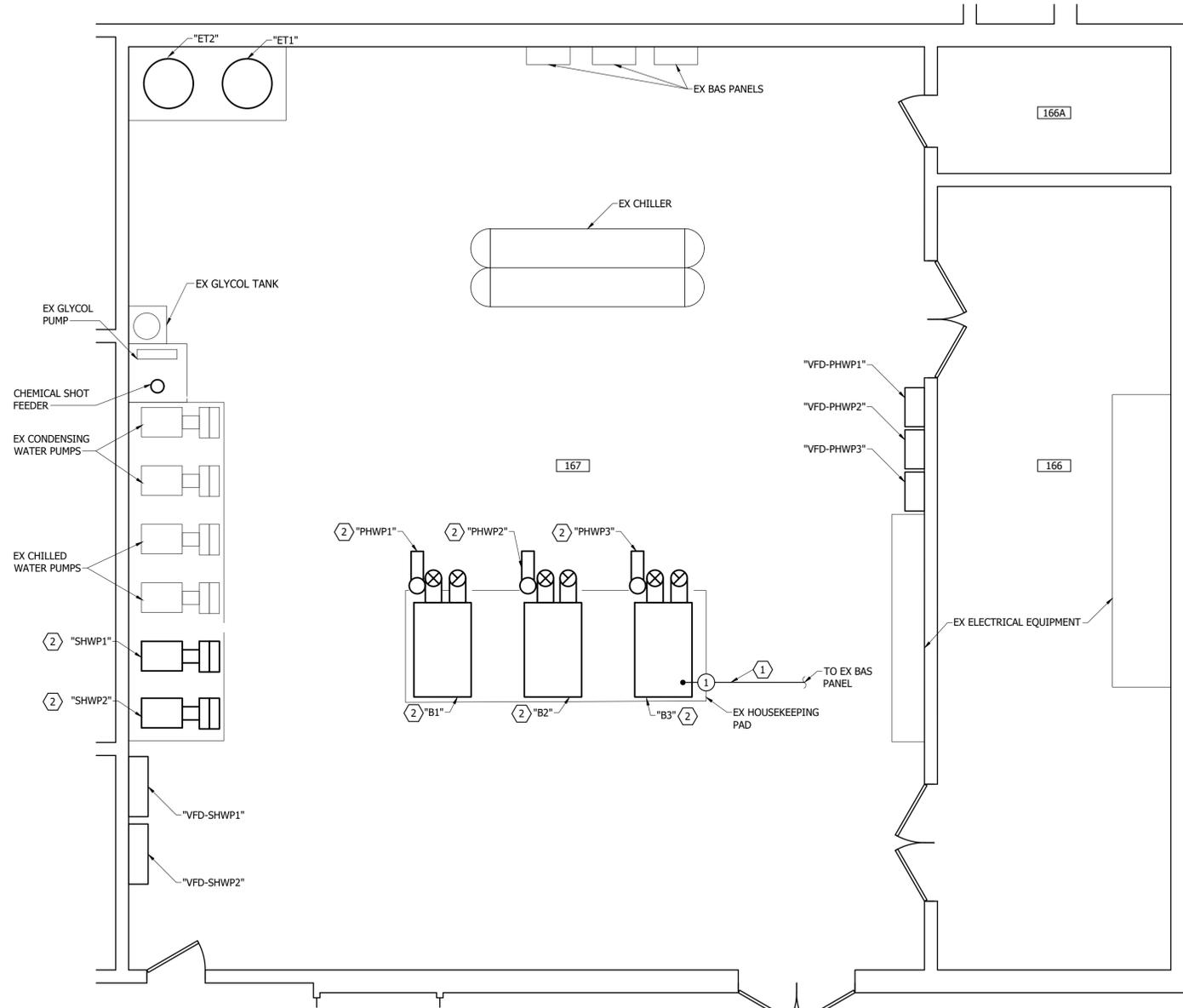
M-103

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3456 E CENTURY AVENUE - BISMARCK, ND 58503
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MECHANICAL IMPROVEMENT PLAN
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA

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Last edit on: 2/19/2026 11:26 AM by: SDM01521 Drawing Name: F:\proj\2026\02269\02269.007_Mechanical Controls Improvement Plan.dwg Layout Name: M-104 - MECH CONTROLS IMPROV PLAN Plotted By: SDM01521 Plotted on: 2/20/2026 9:31:37 AM



MECHANICAL CONTROLS IMPROVEMENT PLAN
SCALE: 1/4"=1'-0"

REFERENCE NOTES:

- ① M/C TO FIELD COORDINATE EXACT WIRE TYPE WITH TCC AND BOILER MANUFACTURER.
- ② REFER TO 1/M-701 FOR CONTROL REQUIREMENTS.

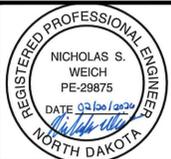
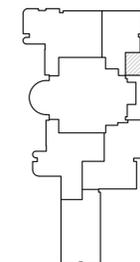
GENERAL NOTES:

- 1. M/C TO FIELD WITH ALL OTHER TRADES.
- 2. REFER TO BOILER CONTROL IMPROVEMENT DETAIL 9/E-501.
- 3. REFER TO M-701 FOR ADDITIONAL CONTROL REQUIREMENTS FOR TCC AND LOW VOLTAGE REQUIREMENTS.

FEEDER SCHEDULE:

- ① CONTROL WIRE AND 3/4" C.

KEY PLAN:



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 DRAWN BY: SDM/JRS
 APPROVED BY: NSW
 DESIGN PROJ: 20269.007
 CONST PROJ:
 SCALE: AS NOTED
 DATE: 02-20-2026
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MECHANICAL CONTROLS IMPROVEMENT PLAN

MINOT AFRC COMPLEX
 AFRC BUILDING 3420 - BOILER REPLACEMENT
 MINOT, NORTH DAKOTA

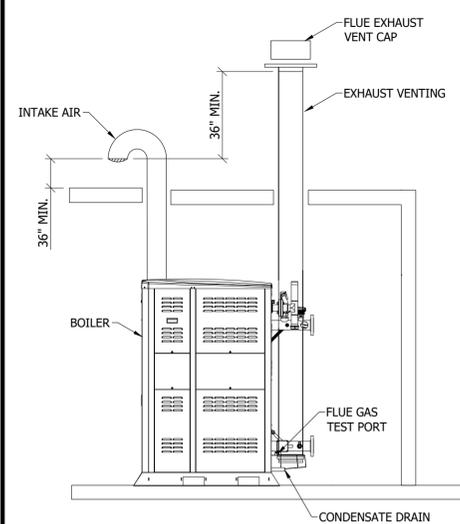
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VARIABLE FREQUENCY DRIVE SCHEDULE

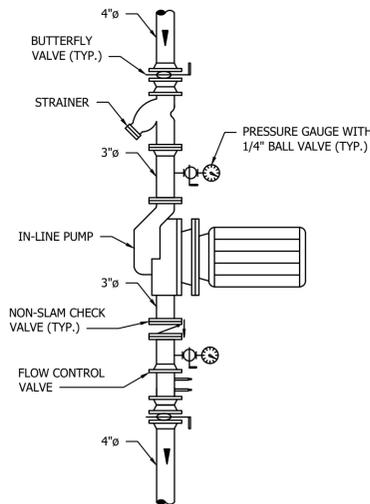
MARK	EQUIPMENT SERVED	HP	LOAD			DRIVE TYPE	MOUNTING TYPE			NOTES
			VOLT	PHASE	FLA*		FLOOR	WALL	MCC	
"VFD-SHWP1"	SECONDARY PUMP 1	40	480	3	52	PWM	X			1-4
"VFD-SHWP2"	SECONDARY PUMP 2	40	480	3	52	PWM	X			1-4
"VFD-PHWP1"	PRIMARY PUMP 1	1	480	3	2.1	PWM	X			1-4
"VFD-PHWP2"	PRIMARY PUMP 2	1	480	3	2.1	PWM	X			1-4
"VFD-PHWP3"	PRIMARY PUMP 3	1	480	3	2.1	PWM	X			1-4

- NOTES:
- NEMA 12 ENCLOSURE
 - DELUXE KEYPAD (NO CODE NUMBERING)
 - FURNISHED BY M/C. INSTALLED BY E/C.
 - REFER TO 262923 VARIABLE FREQUENCY MOTOR CONTROLLERS.

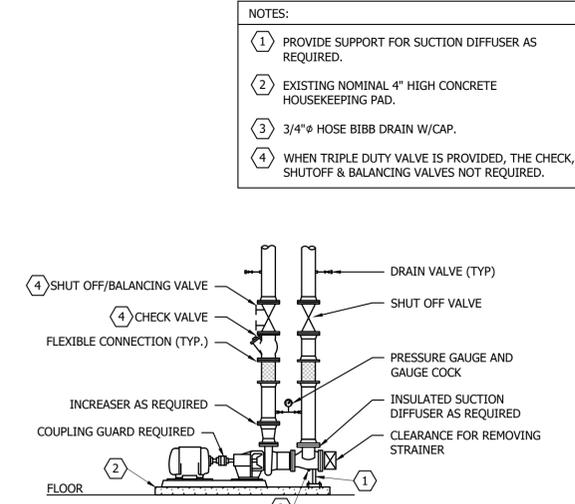
*VERIFY FLA WITH PUMP MANUFACTURER (MOTORS MAY BE SUBMERSIBLE OR HAVE VARYING FLA)



6 BOILER DIRECT VENTING DETAIL
NOT TO SCALE



5 INLINE PUMP DETAIL
NOT TO SCALE



1 BMES PUMP DETAIL
NOT TO SCALE

HYDRONIC SPECIALTIES SCHEDULE

SYSTEM	TEMP. RANGE	MAX. OPERATING PRESSURE (PSIG)	EXPANSION/ COMPRESSION TANK			EXPANSION/ COMPRESSION TANK			AIR SEPARATOR			WATER FLOW (GPM)	WATER PRESSURE DROP (FT)				
			MARK	MFR	MODEL	MIN. ACCEPTANCE VOLUME (GAL)	MIN. TOTAL VOLUME (GAL)	MARK	MFR	MODEL	MIN. ACCEPTANCE VOLUME (GAL)			MIN. TOTAL VOLUME (GAL)	MARK	MFR	MODEL
HEATING WATER	100-200	125	ET1	ARMSTRONG	A-1400-L	370	370	ET2	ARMSTRONG	A-1400-L	370	370	AS1	ARMSTRONG	VAS-6	628	1.8

PUMP SCHEDULE

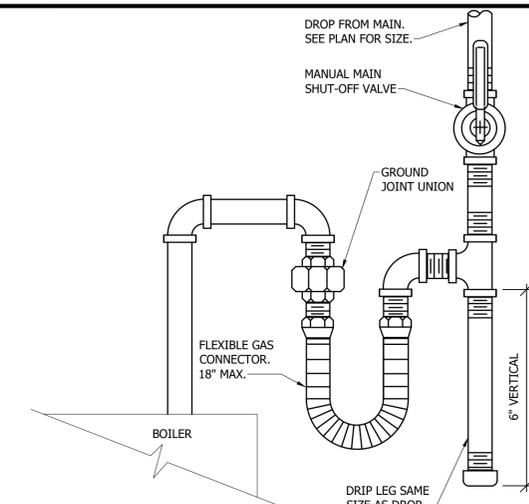
MARK	TYPE	SERVICE	MFR	MODEL	INLET (IN.)	OUTLET (IN.)	GPM	HEAD (FT.)	NPSH (FT.)	FLUID TEMP (°F)	FLUID PUMPED	TRIPLE DUTY VALVE			MOTOR HP	RPM	VOLTS/ PHASE	NOTES	
												MFR	MODEL	SIZE (IN)					MAX WPD (FT)
PHWP1	INLINE	PRIMARY HW	ARMSTRONG	4380	3	3	150	15	9.78	140	50% EG	ARMSTRONG	FTV-4FS	4	8.28	1	1730	480/3	1
PHWP2	INLINE	PRIMARY HW	ARMSTRONG	4380	3	3	150	15	9.78	140	50% EG	ARMSTRONG	FTV-4FS	4	8.28	1	1730	480/3	1
PHWP3	INLINE	PRIMARY HW	ARMSTRONG	4380	3	3	150	15	9.78	140	50% EG	ARMSTRONG	FTV-4FS	4	8.28	1	1730	480/3	1
SHWP1	BASE MOUNTED	SECONDARY HW	ARMSTRONG	4030	6	4	815	130	5.43	180	50% EG	ARMSTRONG	FTV-6FS	6	8.28	40	1775	480/3	1-3
SHWP2	BASE MOUNTED	SECONDARY HW	ARMSTRONG	4030	6	4	815	130	5.43	180	50% EG	ARMSTRONG	FTV-6FS	6	8.28	40	1775	480/3	1-3

- NOTES:
- VFD FURNISHED BY M/C INSTALLED BY E/C
 - PROVIDE WITH ARMSTRONG SUCTION DIFFUSER SG-66
 - PUMP SHALL BE BALANCED AT 628 GPM AND 80 FT OF HEAD

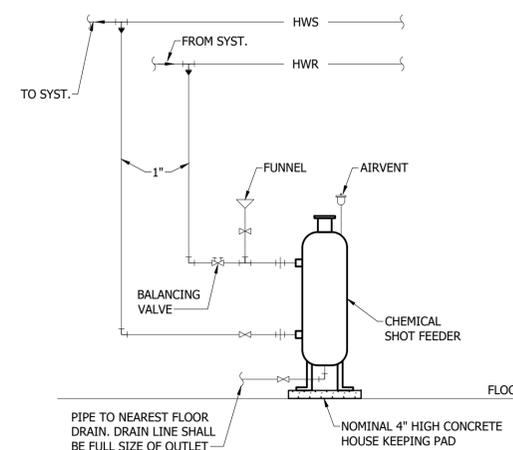
BOILER SCHEDULE

MARK	MFR	TYPE	MODEL	DESIGN PRESS (PSI)	PIPE CONN. SIZE (IN.)	TYPE	FUEL			FLUID (50% EG)				ELECTRICAL		EXH. VENT (IN.)	COMB. AIR INLET (IN.)	NOTES	
							INPUT (MBH)	MIN. OUTPUT @ MAX. FIRE (MBH)	MIN. EFF.	OPERATING TEMP (EWTL/LWT · F)	WATER PRESS DROP (FT)	DESIGN FLOW GPM	MAX FLOW GPM	MIN FLOW GPM	VOLT / PHASE				FLA
B1	RAYPACK	CONDENSING	H7-2507	160	3"	NG	2,500	2374	95.0%	150° / 180°	3.2	115	161	26	480/3ø	8	10	10	1-17
B2	RAYPACK	CONDENSING	H7-2507	160	3"	NG	2,500	2374	95.0%	150° / 180°	3.2	115	161	26	480/3ø	8	10	10	1-17
B3	RAYPACK	CONDENSING	H7-2507	160	3"	NG	2,500	2374	95.0%	150° / 180°	3.2	115	161	26	480/3ø	8	10	10	1-17

- NOTES:
- BOILERS SHALL HAVE A MINIMUM 8 TO 1 TURNDOWN.
 - BOILERS SHALL BE DESIGNED, CONSTRUCTED, AND TESTED IN ACCORDANCE WITH ASME BOILER & PRESSURE VESSEL CODE AND SHALL BEAR THE UL LABEL. PROVIDE SAFETY RELIEF VALVES (SET AT 60 PSIG) AND MANUAL RESET LOWER WATER CUT OFF.
 - PROVIDE GAS TRAIN CONFORMING TO CSD-1. THE GAS TRAIN SHALL INCLUDE A REGULATOR SIZED FOR 5 PSI INLET PRESSURE AND MINIMUM 4 IN W.C. AND MAXIMUM 10.5 IN W.C. GAS PRESSURE OUT.
 - THE BOILER SHALL BE PROVIDED WITH A SINGLE POINT ELECTRICAL CONNECTION FOR ALL MOTORS, FACTORY MOUNTED CONTROLS AND OTHER ELECTRICAL DEVICES.
 - TEMPERATURES INDICATED ARE DESIGN CONDITIONS. REFER TO SEQUENCE OF OPERATION FOR RESET SCHEDULE. BOILER INCLUDING BURNER SHALL HAVE NO LOW LIMIT FOR RETURN WATER TEMPERATURE.
 - PROVIDE MANUAL RESET HIGH LIMIT THERMOSTAT (200° F ADJUSTABLE), DIFFERENTIAL PRESSURE TYPE AIR PROVING SWITCH, WATER FLOW SWITCH, AND POINT OF CONNECTION FOR AN EMERGENCY SHUTDOWN BUTTON.
 - VENTING SHALL BE SEALED COMBUSTION WITH A MAXIMUM AIR INTAKE 0.16 IN WC AND VENT PRESSURE DROP OF 0.19 IN WC.
 - EACH BOILER SHALL HAVE A MICROPROCESSOR BASED FACTORY MOUNTED CONTROLLER WITH DIGITAL TOUCH PAD USER INTERFACE AND COMBINED PID TEMPERATURE CONTROL AND FLAME MANAGEMENT.
 - THE MASTER BOILER CONTROLLER SHALL BE PRE-PROGRAMMED WITH PID LOOPS TO CONTROL THE SEQUENCING OF BOILERS BASED ON FIRING RATE, THE LEAD/LAG POSITION OF THE BOILERS AND TO START AND STOP THE PRIMARY PUMPS. THE CONTROLLER SHALL BE PROVIDED WITH A BACNET INTERFACE TO ALLOW THE BMS TO MONITOR ALL POINTS AND ALARMS.
 - THE BOILER CONTROLLER SHALL BE PROVIDED WITH TERMINALS TO ALLOW THE BAS TO CONTROL THE HOT WATER SUPPLY TEMPERATURE SETPOINT.
 - PROVIDE A CONDENSATE NEUTRALIZATION KIT TO CONNECT DIRECTLY TO THE BOILER CONDENSATE DRAIN.
 - HEATING CAPACITY SHALL BE BASED ON BOILER AT FULL FIRE WITH 150° F RETURN WATER.
 - BOILER EFFICIENCY INDICATED SHALL BE BASED ON BOILER AT LOW FIRE WITH 80° F RETURN WATER.
 - REFER TO BOILER PIPING DETAIL 2/M-801.
 - PROVIDE BOILERS WITH 10 YEAR WARRANTY. REFER TO SPECIFICATIONS.
 - MC & TC/C TO FIELD COORDINATE WITH E/C ON EMERGENCY SHUTDOWN CONNECTION.
 - PROVIDE BOILER WITH O2 TRIM.



2 GAS CONNECTION DETAIL
NOT TO SCALE



3 CHEMICAL SHOT FEEDER DETAIL
NOT TO SCALE

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MECHANICAL DETAILS & SCHEDULE

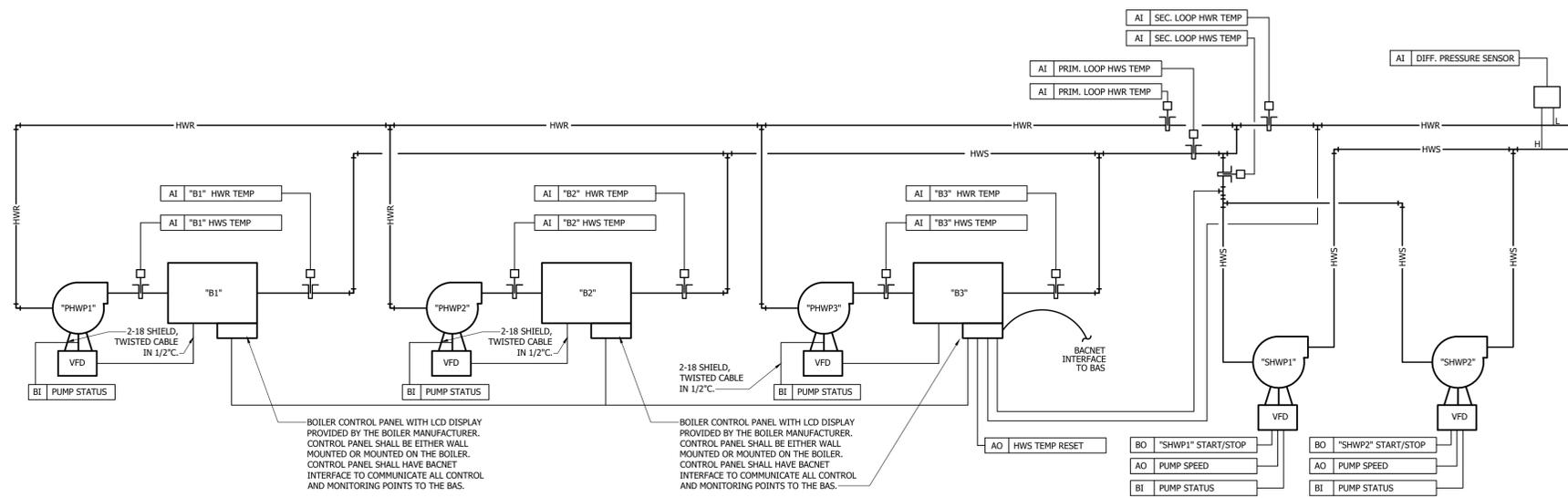
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA



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BOILER CONTROL PANEL WITH LCD DISPLAY PROVIDED BY THE BOILER MANUFACTURER. CONTROL PANEL SHALL BE EITHER WALL MOUNTED OR MOUNTED ON THE BOILER. CONTROL PANEL SHALL HAVE BACNET INTERFACE TO COMMUNICATE ALL CONTROL AND MONITORING POINTS TO THE BAS.

BOILER CONTROL PANEL WITH LCD DISPLAY PROVIDED BY THE BOILER MANUFACTURER. CONTROL PANEL SHALL BE EITHER WALL MOUNTED OR MOUNTED ON THE BOILER. CONTROL PANEL SHALL HAVE BACNET INTERFACE TO COMMUNICATE ALL CONTROL AND MONITORING POINTS TO THE BAS.

THE EQUIPMENT MANUFACTURER AND TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE A LIST OF MONITORING AND CONTROL POINTS AVAILABLE THRU THE BACNET INTERFACE TO THE OWNER. THE OWNER SHALL DETERMINE THE POINTS TO BE MAPPED THRU THE BAS AND DISPLAYED ON THE BAS GRAPHICS, THAT EXCEED REQUIRED ITEMS WITH SEQUENCE OF OPERATION.

NOTE: THE TEMPERATURE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING, (REGARDLESS OF VOLTAGE) AND ASSOCIATED RACEWAY, INCLUDING BUT NOT LIMITED TO FLOW SWITCH, INTERLOCKS, BOILER CONTROL, ETC.

NOTE: THE TEMPERATURE CONTROLS CONTRACTOR TO COORDINATE ALL TEMPERATURE WELL LOCATIONS WITH MECHANICAL CONTRACTOR.

HEATING WATER SYSTEM CONTROL SEQUENCE:

- THE HEATING HOT WATER SYSTEM SHALL CONSIST OF THREE CONDENSING NATURAL GAS HOT WATER BOILERS, A PRIMARY HEATING WATER SUPPLY PUMP FOR EACH BOILER AND REDUNDANT SECONDARY HEATING WATER SUPPLY PUMPS SUPPLYING HOT WATER TO THE BUILDING.
- EACH BOILER SHALL BE PROVIDED WITH A BOILER CONTROLLER. THE BOILER CONTROLLER SHALL HAVE PRE-PROGRAMMED PID (PROPORTIONAL, INTEGRAL, AND DERIVATIVE) LOOPS TO LOAD/UN-LOAD THE BOILERS, ROTATE THE LEAD/LAG POSITION OF THE BOILERS, START AND STOP THE RESPECTIVE PRIMARY HEATING WATER PUMP, AND MONITOR ALL ALARMS, SENSORS, AND CONTROL POINTS FOR ALL OF THE BOILERS CONNECTED TO THE SYSTEM. THE CONTROLLER SHALL BE PROVIDED WITH A BACNET INTERFACE CARD TO ALLOW FOR CONTROL AND MONITORING OF THE ENTIRE SYSTEM BY THE BAS.
- THE BOILER CONTROLLER SHALL BE CAPABLE OF CONTROLLING THAT RESPECTIVE BOILER IN THE CASE OF FAILURE OF THE MASTER BOILER CONTROLLER OR ANOTHER BOILER.
- BOILER CONTROLLER:** THE BOILER CONTROLLER SHALL ENABLE AND DISABLE EACH BOILER AND THE ASSOCIATED PRIMARY PUMP. THE BOILER CONTROLLER SHALL SEQUENCE BOILERS ON AND OFF UTILIZING PRE-PROGRAMMED PID LOOPS BASED ON THE BUILDING LOAD AND BOILER FIRING RATES. THE BOILERS SHALL MODULATE TO MAINTAIN THE HWS TEMPERATURE SETPOINT LOCATED IN SECONDARY SUPPLY LOOP PIPING.
- HWS SETPOINT CONTROL:** THE BAS SHALL CONTROL THE HOT WATER SETPOINT VIA A RESET SIGNAL TO THE BOILER CONTROLLER. THE HWS TEMPERATURE SETPOINT SHALL BE AS FOLLOWS:

OUTDOOR AIR TEMP.	HWS TEMP. SETPOINT
60°F	140°F
0°F	180°F
- PRIMARY PUMP CONTROL:** THE BOILER CONTROLLER SHALL START AND STOP THE RESPECTIVE PRIMARY PUMPS AND PROVIDE THE SPEED CONTROL SIGNAL TO VARY THE PUMP FLOW. THE BOILER CONTROLLER SHALL HAVE BUILT IN DELAYS TO ALLOW THE PRIMARY PUMP TO RUN FOR A PERIOD OF TIME (5 MIN. ADJUSTABLE) AFTER THE BOILER HAS BEEN SEQUENCED OFF. THE BAS SHALL MONITOR THE RUN STATUS OF THE PUMP VIA CURRENT TRANSFORMERS.
- SECONDARY PUMP CONTROL:** THERE ARE TWO SECONDARY HOT WATER PUMPS (1 IS REDUNDANT). THE PUMPS SHALL BE CONTROLLED THRU THE BAS. THE END SUCTION BASE-MOUNTED PUMP SHALL RUN CONTINUOUSLY TO CIRCULATE HOT WATER THROUGHOUT THE BUILDING. THE PUMP SPEED SHALL BE CONTROLLED BY THE BAS VIA THE VFD. (SETPOINT TO BE DETERMINED AND ADJUSTED DURING TEST AND BALANCE OF THE SYSTEM TO MAINTAIN REQUIRED WATER FLOW). THE PUMPS SHALL BE CONTROLLED INDEPENDENTLY AND SHALL BE ALTERNATED WEEKLY BY THE BAS TO EQUALIZE RUN TIME. THE BAS SHALL MONITOR THE STATUS AND LOG THE RUN-TIME OF EACH PUMP.
- BOILER ALARM:** ALL BOILER ALARMS SHALL BE ANNUNCIATED AT THE BOILER CONTROL PANEL UTILIZING LANGUAGE TO DIRECTLY EXPLAIN THE ALARM. ALPHANUMERIC CODES ARE NOT ACCEPTABLE. THE SPECIFIC BOILER ALARMS SHALL BE ANNUNCIATED THRU BACNET INTERFACE TO THE BAS.
- AUTO DIALER:** AN AUTO-DIALER WILL BE PROVIDED AS ALTERNATE 1. AUTO-DIALER TO PROVIDE A VOICE NOTIFICATION TO BUILDING MAINTENANCE STAFF FOR THE FOLLOWING CONDITIONS:
 - HEATING WATER DIFFERENTIAL PRESSURE (DAILY)
 - SECONDARY HEATING WATER TEMPERATURE (DAILY)
- EMERGENCY SHUTDOWN:** TERMINALS SHALL BE PROVIDED AT EACH BOILER TO INTERLOCK THE EXISTING EPO SWITCHES TO THE BOILERS.
- BOILER MONITORING AND CONTROL POINTS:** AT A MINIMUM THE BOILER CONTROL PANEL SHALL PROVIDE THE FOLLOWING MONITORING AND CONTROL POINTS TO THE BAS THRU THE BACNET INTERFACE:
 - BOILER FIRING RATE FOR EACH BOILER
 - BOILER ENTERING WATER AND LEAVING WATER TEMPERATURES FOR EACH BOILER
 - SECONDARY (COMMON) LOOP HWS AND HWR TEMPERATURES
 - BOILER ENABLE/DISABLE CONTROL (OVERRIDE AUTOMATIC CONTROL)
 - SPECIFIC BOILER ALARMS AND FAULTS FOR EACH BOILER
- SYSTEM ALARMS:** THE FOLLOWING SOFTWARE LIMITS SHALL BE APPLIED TO THE RESPECTIVE SENSORS AND GENERATE AN ALARM IF EXCEEDED:
 - SECONDARY HWS TEMP > HWS SETPOINT + 3°F (FOR 5 MINUTES)
 - SECONDARY HWS TEMP < HWS SETPOINT - 3°F (FOR 5 MINUTES)
 - "B1" HWS TEMP < HWS SETPOINT - 2°F (FOR 5 MINUTES)
 - "B2" HWS TEMP < HWS SETPOINT - 2°F (FOR 5 MINUTES)
 - "B3" HWS TEMP < HWS SETPOINT - 2°F (FOR 5 MINUTES)

1 HEATING WATER CONTROL DIAGRAM
NOT TO SCALE



CONTROL DIAGRAM - WATER HEATING SYSTEM
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA

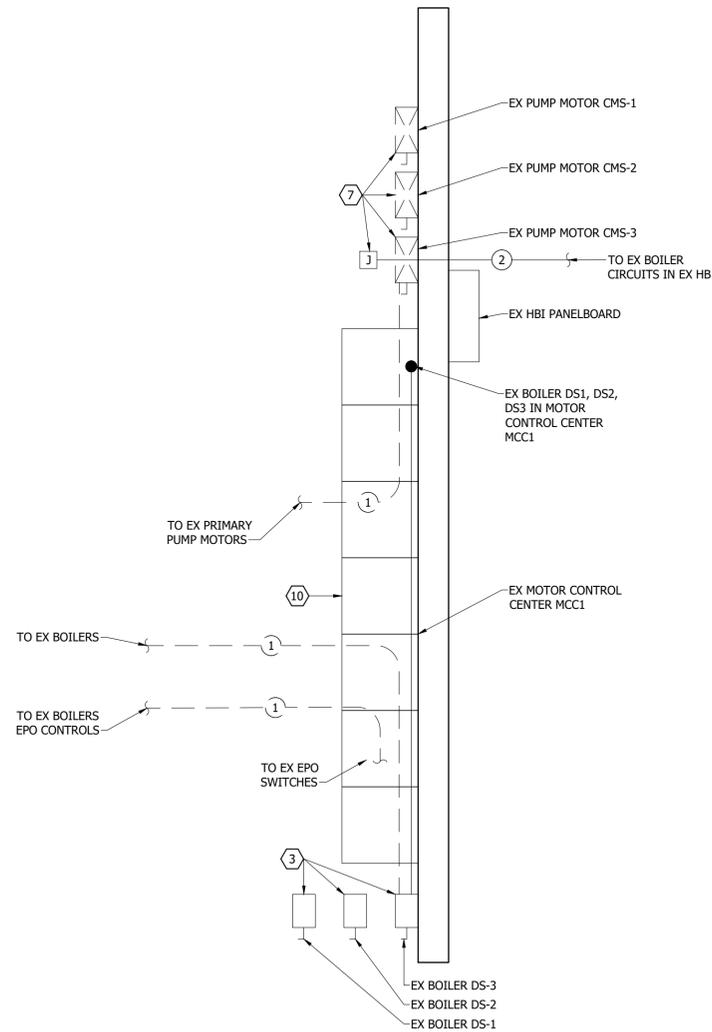


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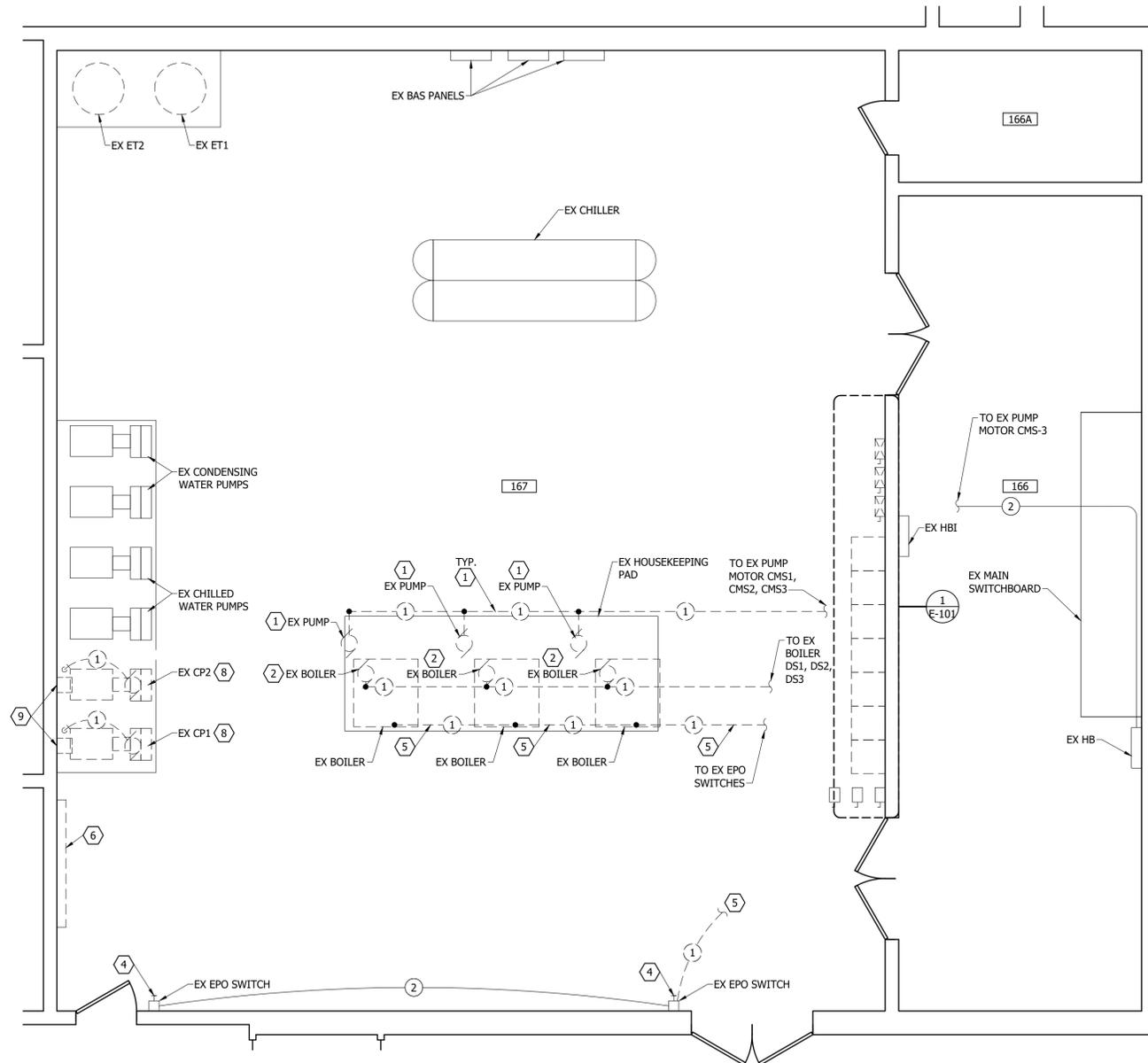
M-701

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



N ELECTRICAL DEMOLITION PLAN
SCALE: 1/4"=1'-0"

REFERENCE NOTES:

- ① E/C TO REMOVE EX BOILER PUMP POWER CONNECTION, ALL ASSOCIATED WIRE AND CONDUIT BACK TO EX COMBINATION MOTOR STARTER.
- ② E/C TO REMOVE EX BOILER POWER CONNECTION, ALL ASSOCIATED WIRE AND CONDUIT BACK TO EX DISCONNECT SWITCH.
- ③ EX 480V/3P/30A DISCONNECT SWITCH TO REMAIN AND LINE SIDE WIRE AND CONDUIT TO REMAIN.
- ④ EX EMERGENCY STOP BUTTON SWITCH TO REMAIN AND BE REUSED.
- ⑤ EX EMERGENCY STOP WIRE AND CONDUITS TO BOILER TO BE REMOVED.
- ⑥ E/C TO COORDINATE WITH OWNER FOR REMOVAL OF WOOD STRUCTURE AND CLEANING SUPPLIES. REFER TO IMPROVEMENT SHEET E-102.
- ⑦ EX 480V/3P COMBINATION MOTOR STARTER TO BE REMOVED. EX POWER CONNECTION, ALL ASSOCIATED WIRE AND CONDUIT BACK TO EX J-BOX. EX J-BOX TO BE REMAIN. EX WIRE AND CONDUIT BACK TO "EX HB" PANEL TO REMAIN AND BE RECONNECTED. REFER TO IMPROVEMENT PLAN E-102.
- ⑧ E/C TO REMOVE EXISTING SECONDARY PUMP POWER CONNECTION, ALL WIRE, AND ALL ABOVE GROUND CONDUIT BACK TO "EX MCC1". ALL BELOW GRADE CONDUIT TO BE ABANDONED IN PLACE, FLUSH WITH FINISHED FLOOR AND FILLED WITH GROUT WATERTIGHT. E/C TO REMOVE ALL BELOW GRADE WIRE.
- ⑨ EX DIFFERENTIAL PRESSURE SENSOR POWER CONNECTION, ALL FLEX WIRE AND CONDUIT TO BE REMOVED AND TERMINATED BACK TO NEAREST J-BOX.
- ⑩ EX SECONDARY VFD'S IN "EX MCC1" TO BE REMOVED. REFER TO DETAIL/E-501.

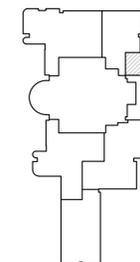
GENERAL NOTES:

1. ALL EX ELECTRICAL EQUIPMENT, WIRE AND CONDUIT TO REMAIN UNLESS NOTED OTHERWISE.
2. E/C TO FIELD COORDINATE ALL WORK WITH OTHER TRADES.
3. REFER TO EX MCC1 DEMOLITION RISER DIAGRAM 1/E-502.

FEEDER SCHEDULE:

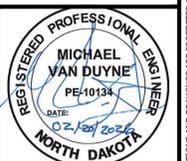
- ① EX WIRE AND CONDUIT TO BE REMOVED.
- ② EX WIRE AND CONDUIT TO REMAIN.

KEY PLAN:



Bartlett & West
3456 E CENTURY AVENUE - BISMARCK, ND 58503
PHONE 701.258-1111 www.bartlettwest.com

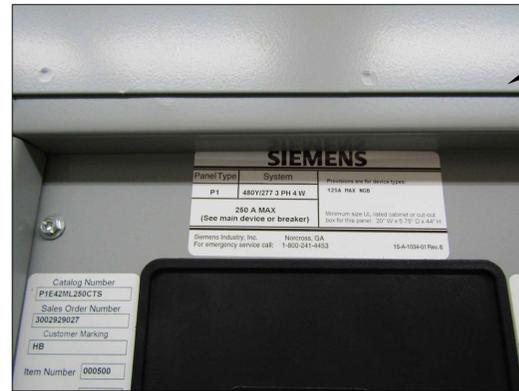
ELECTRICAL DEMOLITION PLAN
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA



DESIGNED BY: ARM
DRAWN BY: SDM
APPROVED BY: MSV
DESIGN PROJ: 20269_007
CONST PROJ:
SCALE: AS NOTED
DATE: 02-20-2026
DRAWING NO:

E-101

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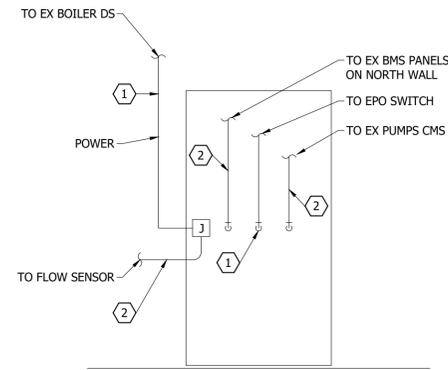
7 ENLARGED EX HB PANEL PHOTO DETAIL
NOT TO SCALE



4 EX HB PANEL PHOTO DETAIL
NOT TO SCALE



1 EX COMBINATION MOTOR STARTERS PHOTO DETAIL
(EX CMS-1, CMS-2, & CMS-3)
NOT TO SCALE



8 BOILER CONTROL DEMOLITION DETAIL
NOT TO SCALE

REFERENCE NOTES:

- 1 ALL POWER WIRE AND ASSOCIATED CONDUIT TO BE REMOVED BY E/C.
- 2 ALL CONTROL WIRE AND ASSOCIATED CONDUIT TO BE REMOVED BY M/C.

GENERAL NOTES:

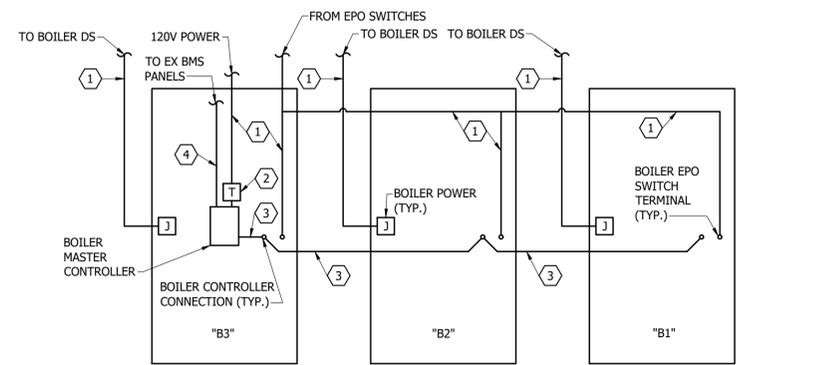
- 1. E/C AND M/C TO FIELD COORDINATE EXACT DEMOLITION REQUIREMENTS.



5 EX BOILERS PHOTO DETAIL
NOT TO SCALE



2 EX MCC1 PHOTO DETAIL
NOT TO SCALE



9 BOILER CONTROL IMPROVEMENT DETAIL
NOT TO SCALE

REFERENCE NOTES:

- 1 ALL POWER WIRE AND ASSOCIATED CONDUIT TO BE PROVIDED BY E/C.
- 2 M/C TO FURNISH 120V/240V TRANSFORMER, INSTALL BY E/C. COORDINATE POWER REQUIREMENTS FOR TRANSFORMER WITH TCC AND BOILER MANUFACTURER.
- 3 M/C TO PROVIDE RS-485 3-PIN CONNECTION BETWEEN GATEWAY AND BOILERS. COORDINATE WIRE REQUIREMENTS WITH BOILER MANUFACTURER.
- 4 M/C TO PROVIDE RS-485 3-PIN CONTROL CONNECTION FROM BUILDING AUTOMATION SYSTEM TO BOILER GATEWAY CONTROLLER. COORDINATE WITH TCC AND BOILER MANUFACTURER ON WIRE REQUIREMENTS.

GENERAL NOTES:

- 1. E/C AND M/C TO FIELD COORDINATE EXACT DEMOLITION REQUIREMENTS.
- 2. M/C TO FIELD COORDINATE ALL CONTROL WIRING REQUIREMENTS WITH TCC.
- 3. REFER TO M-701 FOR ADDITIONAL CONTROLS CONDUIT AND WIRE REQUIREMENTS.
- 4. ALL CONTROL WIRE TO BE IN CONDUITS
- 5. BOILER POWER AND CONTROL CONNECTIONS BASED ON BASIS OF DESIGN BOILER MANUFACTURER. M/C AND E/C TO BE RESPONSIBLE FOR ALL ADJUSTMENTS/MODIFICATIONS REQUIRED FOR APPROVED MANUFACTURES.



6 EX SECONDARY PUMPS PHOTO DETAIL
(EX CP-1 & CP-2)
NOT TO SCALE



3 EX BOILER DISCONNECT PHOTO DETAIL
(EX DS-1, DS-2, & DS-3)
NOT TO SCALE

Bartlett & West
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ELECTRICAL DETAILS
MINOT AFRC COMPLEX
AFRC BUILDING 3420 - BOILER REPLACEMENT
MINOT, NORTH DAKOTA

REGISTERED PROFESSIONAL ENGINEER
MICHAEL VAN DUYN
PE-10134
DATE: 02/20/2026
NORTH DAKOTA

DESIGNED BY: ARM
DRAWN BY: SDM/ARM
APPROVED BY: MSV
DESIGN PROJ: 20269.007
CONST PROJ:
SCALE: AS NOTED
DATE: 02-20-2026
DRAWING NO:

E-501

Last edit on: 2/19/2026 11:43 AM by: SDM01521 Drawing Name: F:\proj\20269\020269\020269.007E-ELECTRICAL DETAILS.dwg Layout Name: ELEC DETAILS Plotted on: 2/20/2026 9:30:47 AM

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