

BOILER REPLACEMENT

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION BISMARCK, NORTH DAKOTA

DESIGN TEAM

PRAIRIE ENGINEERING, P.C.
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DRAWING SHEETS

T1.0 - TITLE SHEET

M1.0 - MECHANICAL SITE PLAN
M2.0 - MECHANICAL DEMOLITION PLAN
M3.0 - MECHANICAL REMODEL LAN
M4.0 - MECHANICAL DETAILS & SCHEDULES

E1.0 - SCHEDULES & DETAILS
E2.0 - EXISTING CONDITIONS



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BOILER REPLACEMENT PROJECT
608 EAST BOULEVARD AVENUE
BISMARCK, NORTH DAKOTA 58505

GENERAL NOTES

OFFSET PIPING WHERE REQUIRED TO ALLOW CLEARANCE OF DUCTS, ELECTRICAL CONDUIT, OUTLET BOXES, BEAMS, ETC. TO AVOID INTERFERENCE WITH THE WORK OF OTHER TRADES. TO INCREASE HEAD ROOM UNDER PIPING OR TO IMPROVE THE APPEARANCE OF PIPE WORK, THIS CONTRACTOR SHALL OFFSET ANY PIPING AS DIRECTED BY THE ARCHITECT/ENGINEER AND SHALL PROPERLY DRAIN OR VENT SAME WHERE NECESSARY. MAKE ALLOWANCES IN THE BID THERETO.

THIS CONTRACTOR SHALL FIELD VERIFY LOCATIONS FOR ALL DUCTWORK AND PIPING FOR THE INSTALLATION PRIOR TO FABRICATION.

THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OTHER CONTRACTORS ON THE PROJECT AND INSTALL MECHANICAL SYSTEMS IN A MANNER WHICH WILL CONFORM TO STRUCTURE, KEEP PASSAGEWAYS AND OPENINGS CLEAR, PRESERVE HEAD ROOM, CLEAR LIGHT FIXTURES AND NOT COVER UP JUNCTION BOXES. THIS CONTRACTOR SHALL MAKE OFFSETS IN PIPING OR DUCTWORK TO AVOID INTERFERENCE WITH OTHER TRADES, AT NO ADDITIONAL COST TO THE OWNER, WHEN SO DIRECTED BY THE ARCHITECT/ENGINEER.

WHERE PIPING IS CONNECTED TO EQUIPMENT OR PLUMBING FIXTURES THAT ARE BEING REMOVED, THE PIPING SHALL BE REMOVED COMPLETELY (UNLESS NOTED OTHERWISE) FROM THE REMODELED SPACE AND CAPPED AT OR NEAR THE MAINS. PLUMBING PIPING THAT IS LOCATED IN A WALL TO BE REMOVED SHALL BE REMOVED (IF NOT ACTIVE) AND CAPPED AT THE MAIN LINE OR OUT OF THE REMODELED SPACE.

PIPING VALVE & ACCESSORY LEGEND

| | |
|--|----------------------|
| | BALL VALVE |
| | BALL VALVE INDICATOR |
| | BUTTERFLY VALVE |
| | GATE VALVE |
| | VENTURE |
| | CHECK VALVE |
| | 2-WAY CONTROL VALVE |
| | 3-WAY CONTROL VALVE |
| | DRAIN VALVE |
| | STRAINER |
| | UNION |
| | FLANGE |
| | MANUAL AIR VENT |
| | AUTO AIR VENT |
| | TEMPERATURE GAUGE |
| | PRESSURE GAUGE |
| | SENSOR |

STANDARD ABBREVIATIONS

| | |
|-----|----------------------------------|
| AD | - ACCESS DOOR |
| AFF | - ABOVE FINISHED FLOOR |
| AFG | - ABOVE FINISHED GRADE |
| ATC | - AUTOMATIC TEMPERATURE CONTROLS |
| BDD | - BACKDRAFT DAMPER |
| BFF | - BELOW FINISHED FLOOR |
| CA | - COMBUSTION AIR |
| CO | - CLEAN OUT |
| EC | - ELECTRICAL CONTRACTOR |
| FA | - FRESH AIR |
| FCO | - FLOOR CLEAN OUT |
| FD | - FLOOR DRAIN |
| FDR | - FIRE DAMPER |
| FPH | - FREEZE-PROOF HYDRANT |
| GC | - GENERAL CONTRACTOR |
| GRD | - GRILLE/REGISTER/DIFFUSER |
| MC | - MECHANICAL CONTRACTOR |
| OB | - PLUMBING OUTLET BOX |
| OBD | - OPPOSED BLADE DAMPER |
| PRV | - POWER ROOF VENTILATOR |
| RA | - RETURN AIR |
| RD | - ROOF DRAIN |
| SA | - SUPPLY AIR |
| SAN | - SANITARY |
| SFD | - SMOKE/FIRE DAMPER |
| VD | - VOLUME DAMPER |
| VT | - VENT |
| VTR | - VENT THROUGH ROOF |
| W | - WASTE |
| WCO | - WALL CLEAN OUT |
| WH | - WALL HYDRANT |

PIPING LEGEND

| | |
|--|----------------------------|
| | VENT |
| | HWS - HOT WATER Htg SUPPLY |
| | HWR - HOT WATER Htg RETURN |
| | FOS - FUEL OIL SUPPLY |
| | FOR - FUEL OIL RETURN |
| | COND - CONDENSATE DRAIN |
| | CWS - CHILLED WATER SUPPLY |
| | CWR - CHILLED WATER RETURN |
| | NATURAL GAS |

HVAC LEGEND

| | |
|--|--|
| | POSITIVE PRESSURE DUCT |
| | NEGATIVE PRESSURE DUCT |
| | MANUAL DAMPER |
| | MOTORIZED DAMPER |
| | BACK DRAFT DAMPER |
| | ACCESS DOOR |
| | ELBOW WITH TURNING VANES |
| | HI-EFFICIENCY TAKEOFF (W/ VOLUME DAMPER) |

DATE
02/04/2020

BKB
RJA
19590

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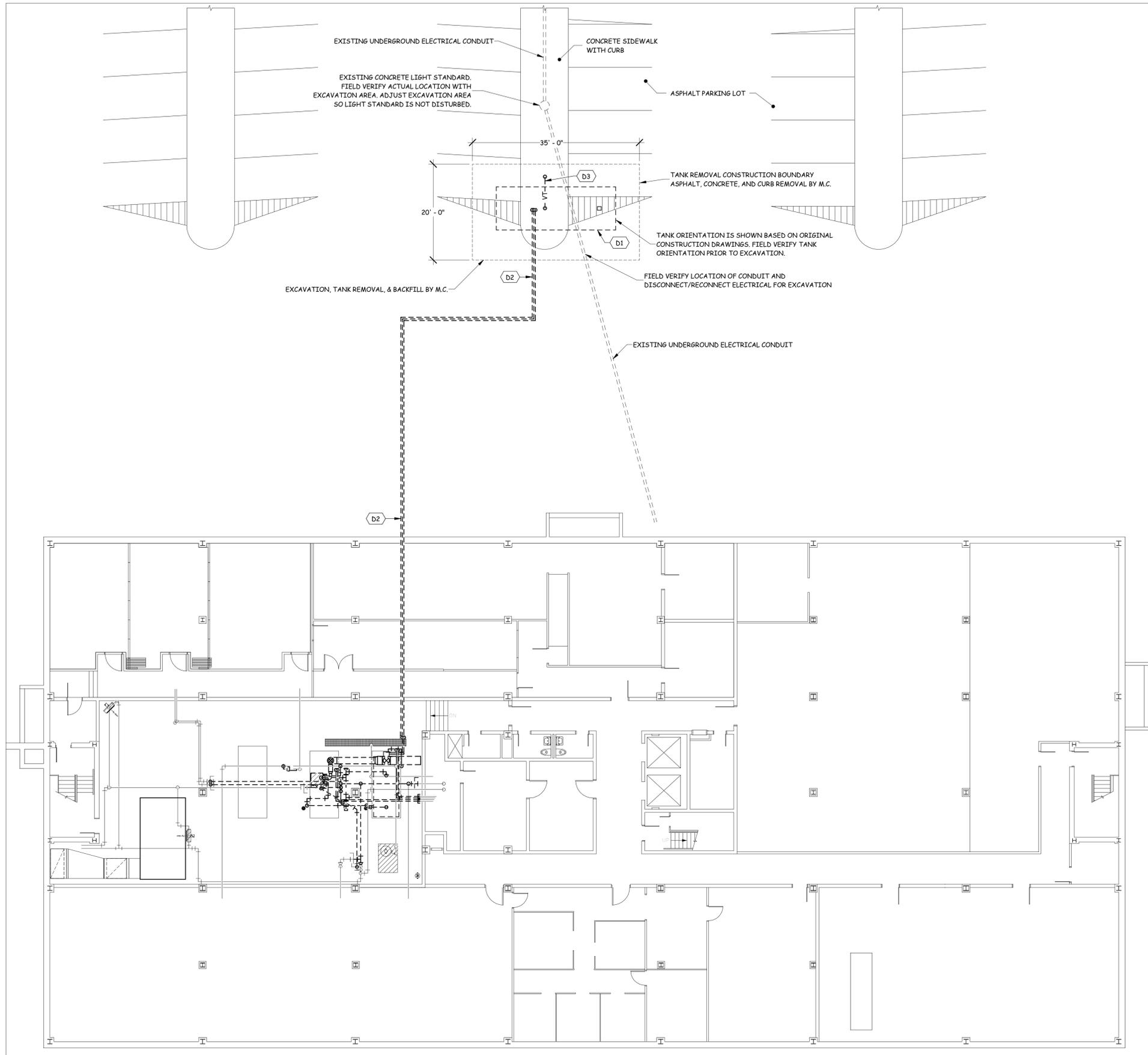
Prairie Engineering P.C.
Professional Consulting Engineers

State of North Dakota
Department of Transportation Boiler Replacement
Bismarck, North Dakota

Project Title Sheet

SHEET
T1.0

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REGISTRATION NUMBER
3606, ON FEBRUARY 4, 2020,
AND IS STORED AT THE
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| KEYNOTE LEGEND | |
|----------------|---|
| D1 | REMOVE UNDERGROUND FUEL OIL TANK COMPLETELY. FUEL OIL WILL BE EMPTIED BY OWNER. |
| D2 | FLUSH UNDERGROUND FUEL OIL SUPPLY AND RETURN PIPES AND PERMANENTLY CAP PIPES AT BOTH ENDS. ABANDON PIPES IN PLACE. |
| D3 | REMOVE UNDERGROUND FUEL OIL TANK VENT PIPE COMPLETELY. THE ABOVE GROUND PORTION OF PIPE IS INSIDE AN OLD LIGHT POLE. REMOVE VENT PIPE AND LIGHT POLE. |

1
M1.0
3/32" = 1'-0"

Mechanical Site Demolition Plan

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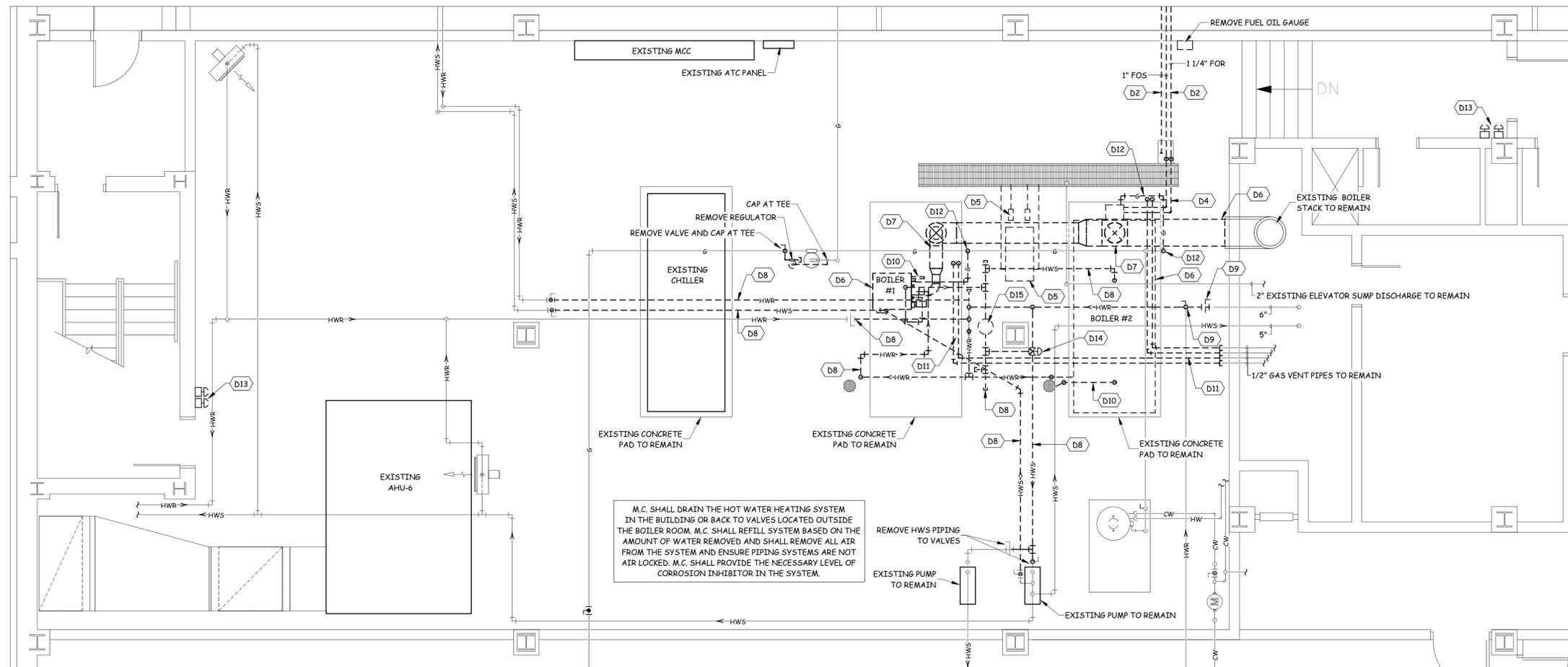
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State of North Dakota
Department of Transportation Boiler Replacement
Bismarck, North Dakota

Mechanical Site Plan

SHEET
M1.0



M.C. SHALL DRAIN THE HOT WATER HEATING SYSTEM IN THE BUILDING OR BACK TO VALVES LOCATED OUTSIDE THE BOILER ROOM. M.C. SHALL REFILL SYSTEM BASED ON THE AMOUNT OF WATER REMOVED AND SHALL REMOVE ALL AIR FROM THE SYSTEM AND ENSURE PIPING SYSTEMS ARE NOT AIR LOCKED. M.C. SHALL PROVIDE THE NECESSARY LEVEL OF CORROSION INHIBITOR IN THE SYSTEM.

1
M2.0
1/4" = 1'-0"
Mechanical Demolition Plan

| KEYNOTE LEGEND | |
|----------------|--|
| D2 | FLUSH UNDERGROUND FUEL OIL SUPPLY AND RETURN PIPES AND PERMANENTLY CAP PIPES AT BOTH ENDS. ABANDON PIPES IN PLACE. |
| D4 | REMOVE ALL FUEL OIL PIPING ABOVE FLOOR. PERMANENTLY CAP FUEL OIL PIPING BELOW FLOOR UNDER ACCESS DOOR. |
| D5 | REMOVE FUEL OIL DAY TANK, PUMPS, AND PIPING. FUEL OIL WILL BE EMPTIED BY OWNER. COORDINATE WITH OWNER TO SCHEDULE REMOVAL OF TANK AND PUMPS. |
| D6 | REMOVE BOILER COMPLETELY. |
| D7 | REMOVE BOILER VENTING TO LOCATION SHOWN AND TEMPORARILY CAP. |
| D8 | REMOVE HWS/HWR PIPING TO LOCATION SHOWN. |
| D9 | REMOVE HWR VALVES AND TEMPORARILY CAP PIPE. |
| D10 | REMOVE BOILER RELIEF PIPE AND RELIEF VALVE. |
| D11 | REMOVE GAS VENT PIPING TO LOCATION SHOWN AND TEMPORARILY CAP. |
| D12 | REMOVE GAS PIPE TO LOCATION SHOWN. |
| D13 | REMOVE EMERGENCY BOILER SHUT DOWN SWITCHES. |
| D14 | REMOVE THREE-WAY VALVE. |
| D15 | REMOVE AIR SEPARATOR. |

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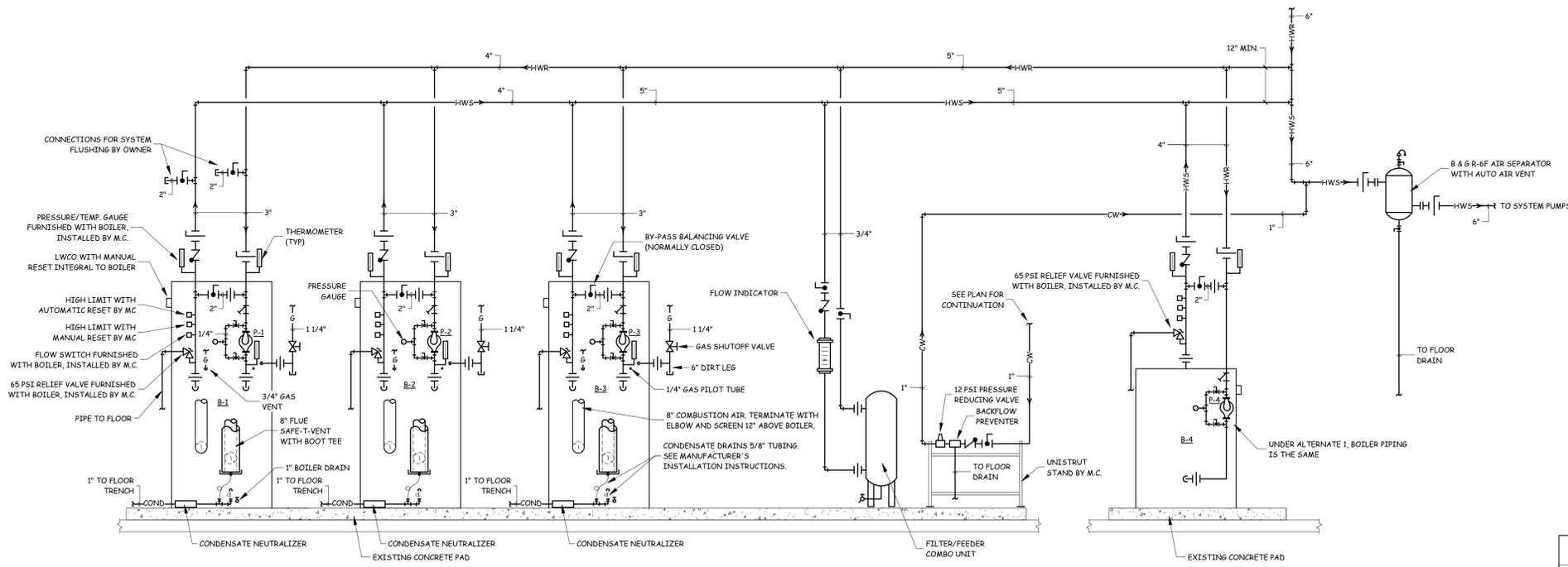
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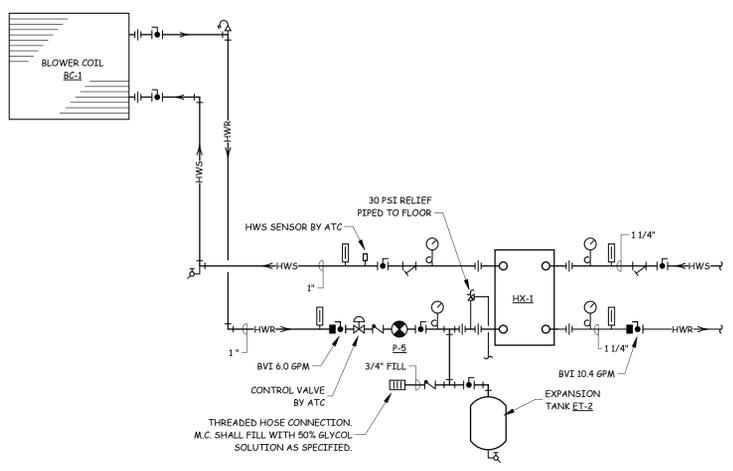
State of North Dakota
Department of Transportation Boiler Replacement
Bismarck, North Dakota

Mechanical Demolition Plan

SHEET
M2.0



1
M4.0
Boiler Piping Schematic
NTS



2
M4.0
Heat Exchanger Piping Detail
NTS

235000 - ELECTRIC BOILER SCHEDULE

SCHEDULE NOTES

1. PROVIDE LWCO, FLOW SWITCH, PRESSURE/TEMP GAUGE, ELECTRICAL DISCONNECT
2. PROVIDE 65 PSIG ASME RELIEF VALVE
3. INCLUDE CONTROLS TO OPERATE BOILER PUMP AND FOR BAS CONNECTION
4. BOILER ELECTRIC PANEL SHALL BE REMOVED FOR ENTRY INTO BUILDING

| MARK | MANUFACTURER | MODEL | KW | STEPS | ELECTRICAL | | | NOTES |
|------|--------------|---------------|-----|-------|------------|----|----|-------------------------|
| | | | | | Volt | Ph | Hz | |
| B-4 | LATTNER | 270-LW-480-8 | 270 | 8 | 480 | 3 | 60 | 1, 2, 3, 4 |
| B-4A | LATTNER | 480-LW-480-10 | 480 | 10 | 480 | 3 | 60 | 1, 2, 3, 4, ALTERNATE 1 |

232100 - EXPANSION TANK SCHEDULE

| MARK | MANUFACTURER | MODEL | FILL PRES. | FINAL PRES. | ACCEPT. VOL. | TANK VOL. |
|------|--------------|---------|------------|-------------|--------------|-----------|
| ET-1 | AMTROL | AX-260V | 8.00 psi | 15.00 psi | 56 gal | 158.5 gal |
| ET-2 | AMTROL | AX-15 | 12.00 psi | 20.00 psi | 2.4 gal | 8 gal |

238000 - BLOWER COIL SCHEDULE

| MARK | MANUFACTURER | MODEL | CFM | ESP | MOTOR | ELECTRICAL | | | |
|------|--------------|----------|-------|------------|---------|------------|------|----|----|
| | | | | | | MCA | VOLT | Ph | Hz |
| BC-1 | DAIKIN | BCHD0201 | 1,800 | 0.25 in-wg | 0.75 hp | 19.80 | 120 | 1 | 60 |

232200 - PUMP SCHEDULE

| MARK | MANUFACTURER | MODEL | TYPE | GPM | FT of HD | NPSH | MOTOR INFORMATION | | | | NOTES | |
|------|--------------|-------|------------|-----|----------|------|-------------------|------|-------|----|-------|-------------|
| | | | | | | | BHP | HP | VOLTS | Ph | | Hz |
| P-1 | B & G | e-80 | INLINE | 125 | 20 | 4.63 | 0.91 | 1.50 | 480 | 3 | 60 | |
| P-2 | B & G | e-80 | INLINE | 125 | 20 | 4.63 | 0.91 | 1.50 | 480 | 3 | 60 | |
| P-3 | B & G | e-80 | INLINE | 125 | 20 | 4.63 | 0.91 | 1.50 | 480 | 3 | 60 | |
| P-4 | B & G | e-80 | INLINE | 93 | 20 | 4.62 | 0.74 | 1.00 | 480 | 3 | 60 | |
| P-4A | B & G | e-80 | INLINE | 165 | 20 | 5.70 | 1.17 | 1.50 | 480 | 3 | 60 | ALTERNATE 1 |
| P-5 | B & G | PL-36 | CIRCULATOR | 6 | 20 | | 0.10 | 0.17 | 120 | 1 | 60 | |

238000 - BLOWER COIL HW COIL SECTION SCHEDULE

| EQUIP | HEATING CAPACITY | COIL | | AIR SIDE | | | WATER SIDE | | | | |
|-------|------------------|------|-----------|----------|--------|-------|------------|-------|------------|--------|--------|
| | | ROWS | FINS/INCH | CFM | EAT | LAT | FLUID | FLOW | WPD | EWT | LWT |
| BC-1 | 177,287 Btu/h | 2 | 16 | 1,800 | -30 °F | 60 °F | 50% E.G. | 6 GPM | 4.47 ftH2O | 170 °F | 102 °F |

235700 - HYDRONIC FLUID HEAT EXCHANGER SCHEDULE

| MARK | MANUFACTURER | MODEL | TYPE | SURFACE AREA | LOAD SIDE HYDRONIC CHARACTERISTICS | | | | | SOURCE SIDE HYDRONIC CHARACTERISTICS | | | | | | |
|------|--------------|----------|--------------|--------------|------------------------------------|-------|--------|--------|------------|--------------------------------------|----------|--------|--------|------------|------|------|
| | | | | | FLUID | | EWT | | LWT | PD | FLUID | | EWT | | LWT | PD |
| | | | | | FLOW | E.G. | FLOW | E.G. | FLOW | E.G. | FLOW | E.G. | FLOW | E.G. | FLOW | E.G. |
| HX-1 | B & G | BP405-50 | BRAZED PLATE | 13.87 SF | 50% E.G. | 6 GPM | 102 °F | 170 °F | 2.33 ftH2O | WATER | 10.4 GPM | 180 °F | 145 °F | 4.66 ftH2O | | |

235000 - GAS BOILER SCHEDULE

SCHEDULE NOTES:

1. PROVIDE TESTABLE LWCO, FLOW SWITCH, COMBINATION PRESSURE/TEMP GAUGE, 65# ASME RELIEF VALVE
2. BOILER CONTROLLER SHALL HAVE CAPACITY TO OPERATE BOILER PUMP AND PROVIDE FOR CONNECTION TO BAS

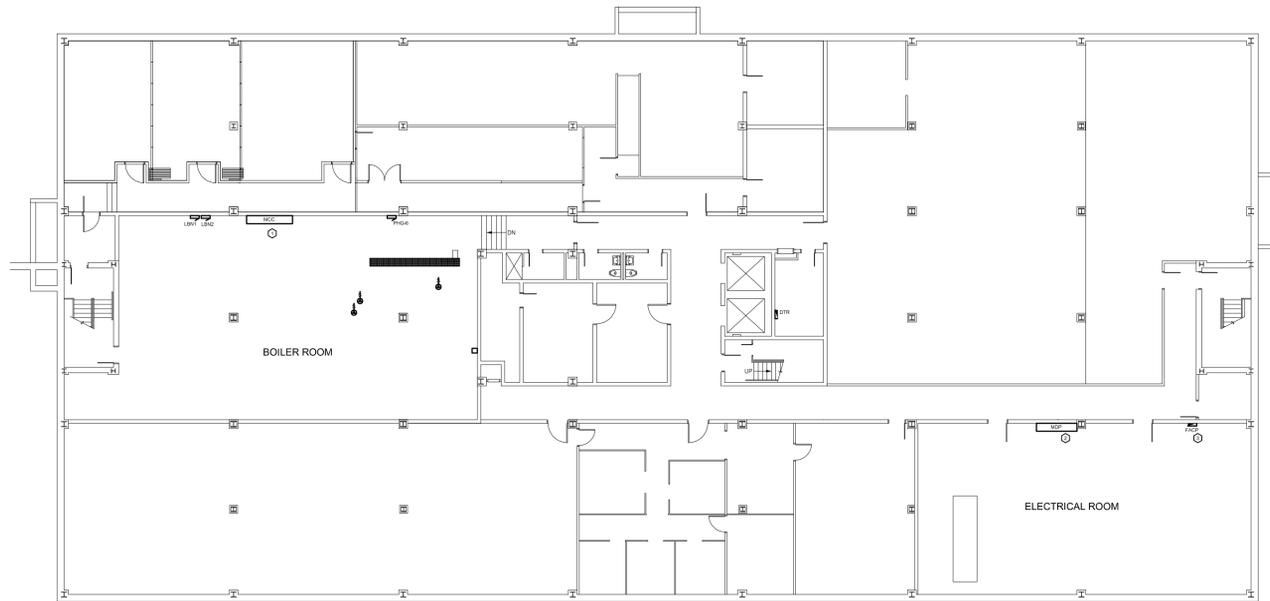
| MARK | MANUFACTURER | MODEL | TYPE | FUEL | GAS PRESSURE | INPUT | OUTPUT | DESIGN FLOW | ELECTRICAL | | |
|------|-------------------|----------|--------------------------------|-------------|--------------|-----------------|-----------------|-------------|------------|----|----|
| | | | | | | | | | VOLT | Ph | Hz |
| B-1 | THERMAL SOLUTIONS | EVS 1500 | HIGH EFFICIENCY NON-CONDENSING | NATURAL GAS | 5 PSI Max | 1,500,000 Btu/h | 1,251,000 Btu/h | 125 GPM | 120 | 1 | 60 |
| B-2 | THERMAL SOLUTIONS | EVS 1500 | HIGH EFFICIENCY NON-CONDENSING | NATURAL GAS | 5 PSI Max | 1,500,000 Btu/h | 1,251,000 Btu/h | 125 GPM | 120 | 1 | 60 |
| B-3 | THERMAL SOLUTIONS | EVS 1500 | HIGH EFFICIENCY NON-CONDENSING | NATURAL GAS | 5 PSI Max | 1,500,000 Btu/h | 1,251,000 Btu/h | 125 GPM | 120 | 1 | 60 |

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| SYMBOL | DESCRIPTION | MTG. HT. |
|--|--|-----------|
| LIGHTING OUTLETS | | |
| | CEILING INCANDESCENT OR HD, TYPE A, CXT 1, SW/LS | SCHEDULED |
| | WALL INCANDESCENT OR HD | SCHEDULED |
| | FLUORESCENT, SLASH INDICATES HIRBOARD LAMP UNSWITCHED | SCHEDULED |
| | BARE LAMP FLUORESCENT STRIP WITH WIRE GUARD | SCHEDULED |
| | EXIT SIGNAGE | SCHEDULED |
| | EMERGENCY BATTERY UNIT | SCHEDULED |
| | REMOTE SEALED BEAM | SCHEDULED |
| | PORCELAIN LAMPHOLDER, 100A LAMP | SCHEDULED |
| | JUNCTION BOX | |
| | CEILING MOUNTED MOTION SENSOR | |
| | WALL MOUNTED MOTION SENSOR | 40" |
| RECEPTACLE OUTLETS | | |
| | SINGLE, CXT 1 | 22" |
| | DUPLEX | 22" |
| | DUPLEX - SPLIT WIRED | 22" |
| | DUPLEX - GROUND FAULT CIRCUIT INTERRUPTER | 22" |
| | SPECIAL CONFIGURATION DESIGNATION REFERS TO SCHEDULE | SCHEDULED |
| | MULTI-OUTLET ASSEMBLY, ARROWS EXTEND TO LIMIT OF INSTALLATION, SUBSCRIPT INDICATES SPACING OF OUTLETS | |
| | CLOCK RECEPTACLE | 82" |
| | DUPLEX RECEPTACLE - FLOOR BOX SD FOR QUANTITIES | |
| SWITCH OUTLETS | | |
| | SINGLE POLE | 40" |
| | DOUBLE POLE | 40" |
| | THREE-WAY | 40" |
| | FOUR-WAY | 40" |
| | KEY OPERATED | |
| | MOTOR - PROVIDE OVERLOAD UNIT AS REQ'D, TOGGLE ACCEPTABLE IF INTENTIONAL THERMAL PROTECTION INCLUDED, SWITCH NOT REQUIRED IF MOTOR ASSEMBLY HAS INTEGRAL DISCONNECTING MEANS | |
| | PILOT HANDLE | 40" |
| | TIME DELAY | 40" |
| | DIMMER - 100W UNLESS OTHERWISE INDICATED | 40" |
| | GANGED SWITCHES - ARROW INDICATES MULTI-LEVEL SWITCHING | 40" |
| COMMUNICATION/DATA SYSTEM OUTLETS | | |
| | TELEPHONE OUTLET, SEE SPECIFICATION 16740 | 22" |
| | TELEPHONE OR COMPUTER - FLOOR BOX SD FOR QUANTITIES | |
| | COMPUTER/VDI OUTLET | 22" |
| | BELL | |
| | BUZZER | |
| | INTERCOM STATION | 40" |
| | MICROPHONE OUTLET | 22" |
| | TELEVISION OUTLET | 22" |
| | VOLUME CONTROL | 40" |
| | PUSH BUTTON | |
| | SPEAKER/Baffle/BACKBOX COMBINATION | CEILING |
| | CLOCK | 84" |
| | INFRARED RECEIVER | CEILING |
| MISCELLANEOUS | | |
| | PLAN OR DETAIL NOTE | |
| | SPECIAL PURPOSE CONNECTION - AS REQUIRED BY EQUIPMENT MANUFACTURER, CO-ORDINATE ROUGH-IN WITH SHOP DWG. | |
| | BRANCH CIRCUIT PANELBOARD, SHADINGS INDICATES NEW PANEL | TOP 75" |
| | CONTROL PANEL | |
| | EXTERNALLY OPERATED DISCONNECT SWITCH | |
| | CONTROLLER OR RELAY | |
| | COMBINATION CONTROLLER AND DISCONNECT MEANS | |
| | MOTOR, DESIGNATION REFERS TO SCHEDULE | |
| | EQUIPMENT DESIGNATION, SEE SCHEDULE | |
| | ELECTRIC HEAT TO SCALE, DESIGNATION REFER TO SCHEDULE, "T" INDICATES INTEGRAL THERMOSTAT | |
| | THERMOSTAT-PROVIDED BY DIV. 16 | 40" |
| | THERMOSTAT-FURNISHED BY DIV. 15, INSTALLED BY DIV. 16 | 40" |
| | POTENTIOMETER-FURNISHED BY DIV. 15, INSTALLED BY DIV. 16 | 40" |
| | TIME SWITCH | |
| | PHOTOELECTRIC SWITCH | |
| | WALL SERVICES BOX | 22" |
| CIRCUITING | | |
| | HOME RUN, MIN 24" C, ARROWS AND SUBSCRIPTS INDICATE NUMBER AND IDENTIFICATION OF CIRCUITS | |
| | EMERGENCY, MIN 12" C#10 AWG | |
| | TELEPHONE, MIN 3/4" C, HOME RUN TO TERMINAL BOARD | |
| | TELEPHONE, MIN 3/4" C, STUB INTO CEILING SPACE | |
| | LOW VOLTAGE, MIN 12" C#14 AWG AS REQ'D | |
| | SPECIAL SYSTEMS, MIN 3/4" C, PROVIDE CONDUCTORS AS REQ'D BY MANUFACTURER, SUBSCRIPT INDICATES SYSTEM, SEE STANDARD ABBREVIATIONS | |
| FIRE ALARM SYSTEMS | | |
| | DETECTOR, SUBSCRIPT INDICATES ZONE, SUBSCRIPT DESCRIBES IRRADIATION CONDUCT, RATE OF FIRE THERMAL, F=FIXED TEMPERATURE THERMAL, IONIZATION, PHOTO-ELECTRIC | CEILING |
| | CHIME | 88" |
| | MAGNETIC DOOR HOLDER | |
| | FAN RELAY | |
| | FLOW SWITCH | |
| | MANUAL STATION | 40" |
| | AUDIBLE ALARM NOTIFICATION APPLIANCE (HORN) | 88" |
| | VISUAL ALARM NOTIFICATION APPLIANCE | 88" |
| | COMBINATION AUDIBLE-VISUAL ALARM NOTIFICATION APPLIANCE | 88" |
| | MAIN VALVE SUPERVISORY (TAMPER) SWITCH | |

STANDARD ABBREVIATIONS

| | |
|---|-------------------------------------|
| AC ABOVE COUNTER (MIN 4" ABOVE BACKSPASH) | MC MECHANICAL CONTRACTOR |
| AFB ABOVE FINISH FLOOR | MCA MINIMUM CIRCUIT AMPACITY |
| AFG ABOVE FINISH GRADE | MCB MAIN CIRCUIT BREAKER |
| ARH AIR HANDLING UNIT | MLO MAIN LUG ONLY |
| ATC AUTOMATIC TEMPERATURE CONTROL | NC NOISES CALL |
| BOF BOTTOM OF FIXTURE | NFIS NON-FUSIBLE DISCONNECT SWITCH |
| CXT CIRCUIT | NR NOT REQUIRED |
| CM CEILING MOUNTED | P PAGING/BACKGROUND MUSIC |
| CP CONTROL PANEL | PA PUBLIC ADDRESS |
| CJ CONDENSING UNIT | PRV POWER ROOF VENTILATOR |
| CJH CABINET UNIT HEATER | RF RELIEF FAN |
| DT DUST TIGHT | RSSC RIGID GALVANIZED STEEL CONDUIT |
| DTR DATA RACK | RT RAIN-TIGHT |
| EC ELECTRICAL CONTRACTOR | RTU ROOFTOP UNIT |
| EF EXHAUST FAN | S SECURITY |
| EM EMERGENCY | SCP SOUND CONTROL PANEL |
| EP EXPLOSION PROOF | SD SEE DETAIL |
| EWC ELECTRIC WATER COOLER | SS SURGE SUPPRESSION |
| EWH ELECTRIC WATER HEATER | SW SWITCH |
| F FUSED | T TELEPHONE |
| FA FIRE ALARM | TSSW TWO SPEED SEPERATE WINDING |
| FACP FIRE ALARM CONTROL PANEL | TTB TELEPHONE TERMINAL BOARD |
| FDS FUSIBLE DISCONNECT SWITCH | VT VANDER TIGHT |
| FLA FULL LOAD AMPERES | W WALL MTO, 1/4" AFF FORWARD REACH |
| FVR FULL VOLTAGE REVERSE | WV WANDER TIGHT |
| FVW FULL VOLTAGE REVERSING | WG WIRE GUARD |
| IC INTERCOM | WM WIREMOLD |
| ICP INTERCOM CONTROL PANEL | WP WEATHERPROOF |
| IG ISOLATED GROUND | WT WATER TIGHT |
| IL INTERLOCK | |
| LV LOW VOLTAGE | |



NOTES: DETAIL 1/E1.0

- SEE DETAIL 1/E2.0 FOR EQUIPMENT DESIGNATIONS.
- MDP LOCATION REFERENCE FOR WORK PERTAINING TO BOILER B-4 & ALTERNATE #1.
- FACP LOCATION SHOWN FOR REFERENCE.

| MOTOR & EQUIPMENT SCHEDULE | | | | | | | | | | |
|----------------------------|------------------|-----------------|------|-------|------------------------------|--------------------|---------------------------|------|-----|------|
| DESIG. | EQUIPMENT SERVED | CHARACTERISTICS | | | DISCONNECT (BY EC) | CONTROLLER (BY EC) | CONTROL INITIATING DEVICE | | | NOTE |
| | | HP | VOLT | PHASE | | | DEVICE | FURN | MTD | |
| B-1 | GAS BOILER | 7.5 MCA | 120 | 1 | TOGGLE OR MANUAL AS REQUIRED | INTEGRAL | ATC | ATC | ATC | - |
| B-2 | GAS BOILER | 7.5 MCA | 120 | 1 | TOGGLE OR MANUAL AS REQUIRED | INTEGRAL | ATC | ATC | ATC | - |
| B-3 | GAS BOILER | 7.5 MCA | 120 | 1 | TOGGLE OR MANUAL AS REQUIRED | INTEGRAL | ATC | ATC | ATC | - |
| B-4 | ELECTRIC BOILER | 270 kW | 480 | 3 | 400/3 FDS | INTEGRAL | ATC | ATC | ATC | 1.2 |
| B-5 | ELECTRIC BOILER | 480 kW | 480 | 3 | 600/3 FDS | INTEGRAL | ATC | ATC | ATC | 1.3 |
| BC-1 | BLOWER COIL | 19.8 MCA | 120 | 1 | TOGGLE OR MANUAL AS REQUIRED | INTEGRAL | ATC | ATC | ATC | - |
| P-1 | BOILER PUMP | 1.5 | 480 | 3 | INCLUDED WITH STARTER | COMBINATION FVNR 0 | ATC | ATC | ATC | 1 |
| P-2 | BOILER PUMP | 1.5 | 480 | 3 | INCLUDED WITH STARTER | COMBINATION FVNR 0 | ATC | ATC | ATC | 1 |
| P-3 | BOILER PUMP | 1.5 | 480 | 3 | INCLUDED WITH STARTER | COMBINATION FVNR 0 | ATC | ATC | ATC | 1 |
| P-4 | BOILER PUMP | 1.5 | 480 | 3 | INCLUDED WITH STARTER | COMBINATION FVNR 0 | ATC | ATC | ATC | 1.2 |
| P-5 | PUMP | FRAC | 120 | 1 | TOGGLE OR MANUAL AS REQUIRED | INTEGRAL | ATC | ATC | ATC | - |

NOTES:

- PROVIDE 3-PHASE POWER MONITOR AS PER SPECIFICATION SECTION 262913.
- PROVIDED UNDER BASE BID. SEE SPECIFICATION SECTION 260500.
- UNDER ALTERNATE #1, PROVIDE BOILER B-5 IN LIEU OF BOILER B-4.

DATE 02/04/2020

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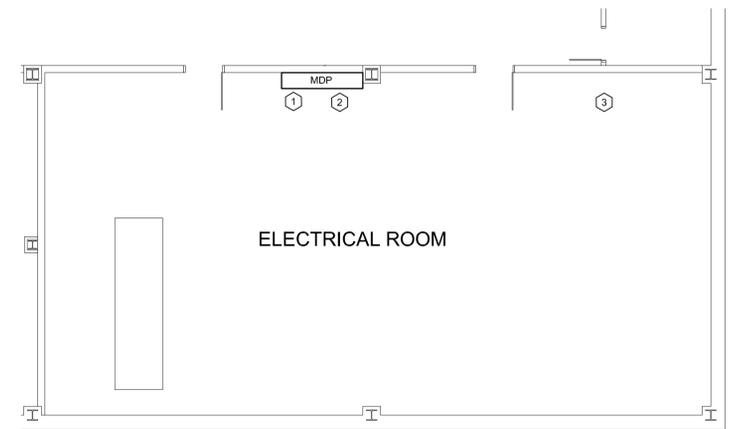
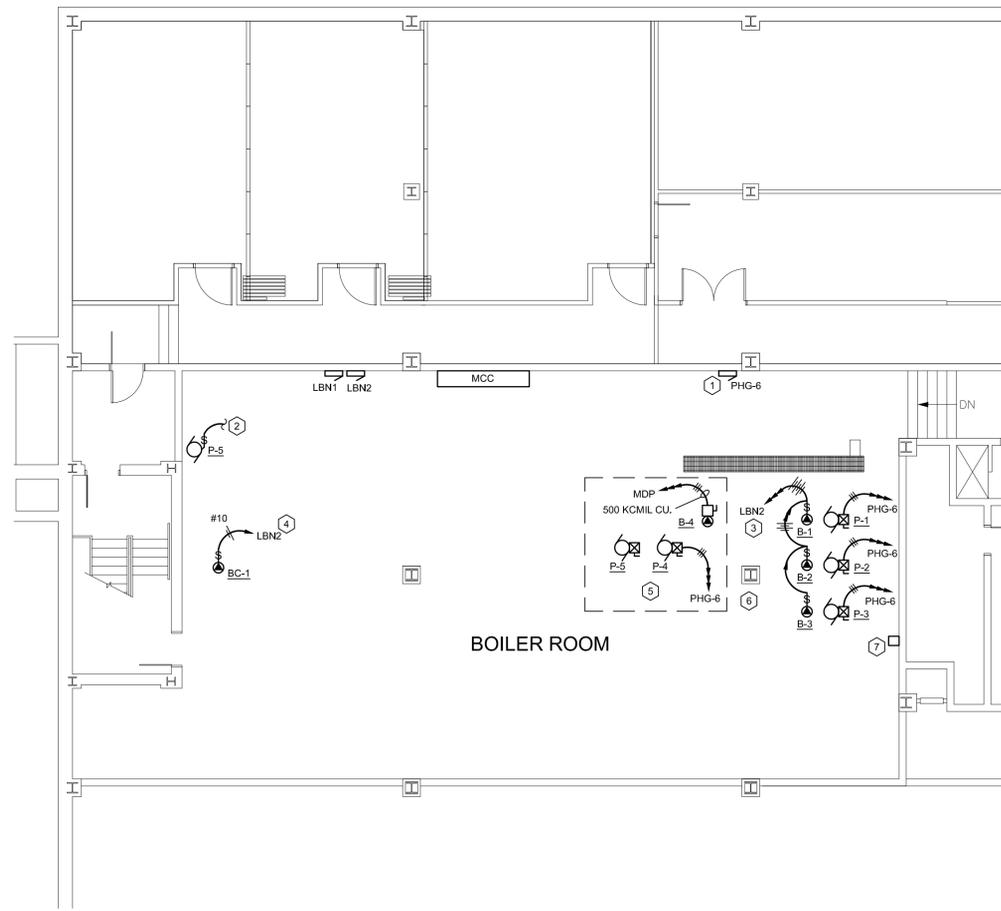
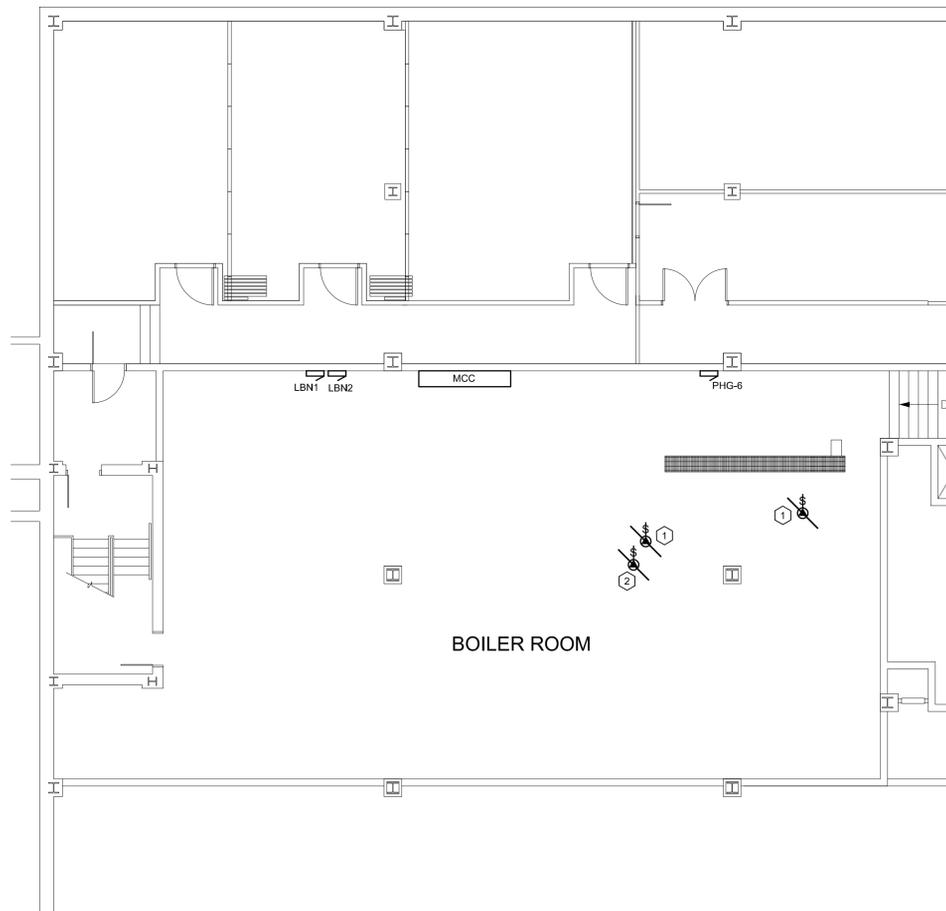
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Prairie Engineering P.C.
Professional Consulting Engineers

State of North Dakota
Department of Transportation Boiler Replacement
Bismarck, North Dakota

SCHEDULES AND DETAILS

SHEET E1.0



ELECTRICAL PLANS - ELECTRICAL ROOM
 1/8" = 1'-0"
 NOTES: DETAIL 3/E2.0
 1. UNDER BASE BID, USE SPARE 400/3 BREAKER TO SERVE BOILER B-4. UNDER ALTERNATE #1, PROVIDE NEW 800/3 LSI+ BREAKER IN EXISTING SWITCHGEAR. GEAR IS EATON POW-R-LINE SERIES SWITCHBOARD. PROVIDE STRAP KIT IF REQUIRED.

EXISTING CONDITIONS
 1/8" = 1'-0"
 NOTES: DETAIL 1/E2.0
 1. REMOVE ALL EXISTING CIRCUITRY FOR EXISTING BOILER. CAP ANY UNDERGROUND CONDUITS AND ABANDON IN PLACE.
 2. REMOVE ALL EXISTING CIRCUITRY FOR EXISTING BOILER PUMP. CAP ANY UNDERGROUND CONDUITS AND ABANDON IN PLACE.

ELECTRICAL PLANS - BOILER ROOM
 1/8" = 1'-0"
 NOTES: DETAIL 2/E2.0
 1. REMOVE 6 EXISTING SINGLE POLE BREAKERS, ONE 20/3 BREAKER, AND ONE 70/3 BREAKER. REPLACE WITH FOUR NEW 15/3 CIRCUIT BREAKERS AS REQUIRED FOR NEW BOILER PUMPS AS SHOWN.
 2. EXTEND CIRCUITRY TO NEAREST RECEPTACLE CIRCUIT.
 3. TERMINATE TO SPARE 20/1 BREAKERS IN PANEL LBN2.
 4. REMOVE ONE SPARE 20/1 CIRCUIT BREAKER FROM PANEL LBN2. PROVIDE ONE 25/1 CIRCUIT BREAKER IN NEW SPACE. TERMINATE BC-1 TO NEW 25/1 CIRCUIT BREAKER.
 5. BOILER B-4 PART OF BASE BID. UNDER ALTERNATE #1, REMOVE BOILER B-4 AND USE BOILER B-5. SEE SPECIFICATION SECTION 260500.
 6. PROVIDE CAT6 DATA CABLING AS REQUIRED FOR TEMPERATURE CONTROL PANELS, BY ATC CONTRACTOR, GENERAL CABLE #7131900 OR APPROVED EQUAL. DATA RACK LOCATION SHOWN ON DETAIL 1/E1.0. COORDINATE REQUIREMENTS WITH ATC CONTRACTOR.
 7. PROVIDE CONNECTION TO CARBON MONOXIDE DETECTOR PROVIDED BY OTHERS. PROVIDE FIRE ALARM RELAY IAM TO PROVIDE FIRE ALARM TROUBLE WHEN DETECTOR ALARMS. RACEWAY TO BE RED IN COLOR. FIRE ALARM CONTROL PANEL (FACP) SHOWN ON DETAIL 1/E1.0.

DATE 02/04/2020

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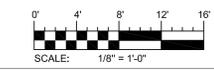
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 Department of Transportation Boiler Replacement
 Bismarck, North Dakota

ELECTRICAL PLANS

SHEET E2.0



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