

# POUDRE SCHOOL DISTRICT - BOILER REPLACEMENT

**Bacon Elementary School**  
5844 S Timberline Rd, Fort Collins, CO 80528



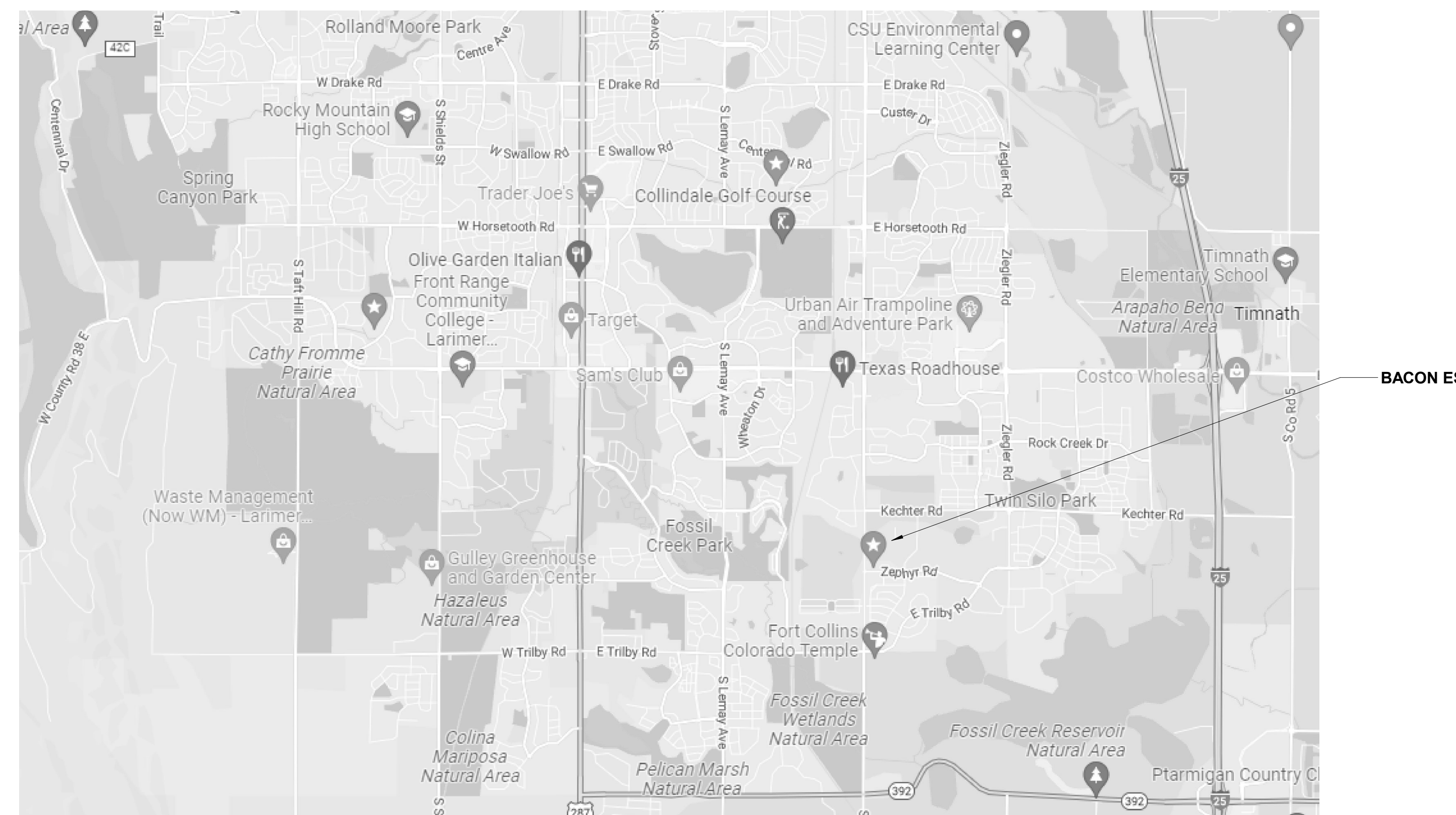
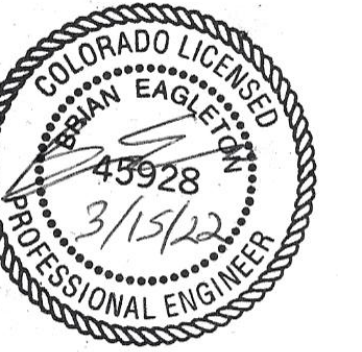
PSD - Bacon ES Boiler Replacement

Fort Collins, CO



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PROFESSIONAL SEAL



NORTH  
1 VICINITY MAP  
SCALE: NO SCALE

APPLICABLE CODES	
CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS.	
BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	IPC 2018 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
ENERGY CONSERVATION CODE:	IECC 2021

SHEET LIST	
00 GENERAL	COVERSHEET
05 MECHANICAL	M0.0 MECHANICAL/PLUMBING COVER SHEET
	M1.0 BACON ELEMENTARY SCHOOL ENLARGED BOILER DEMO AND NEW MECHANICAL PLAN
	M2.0 BACON ELEMENTARY SCHOOL MECHANICAL DETAILS, SCHEDULES, & CONTROLS
	M2.1 BACON ELEMENTARY SCHOOL MECHANICAL DETAILS, SCHEDULES, & CONTROLS
	M2.2 BACON ELEMENTARY SCHOOL MECHANICAL DETAILS, SCHEDULES, & CONTROLS
	M3.0 MECHANICAL COMCHECK
06 ELECTRICAL	E0.0 ELECTRICAL COVER SHEET
	E3.0 BACON ELEMENTARY SCHOOL ENLARGED BOILER DEMO AND NEW ELECTRICAL PLAN

AGENCY APPROVAL

DISCLAIMER

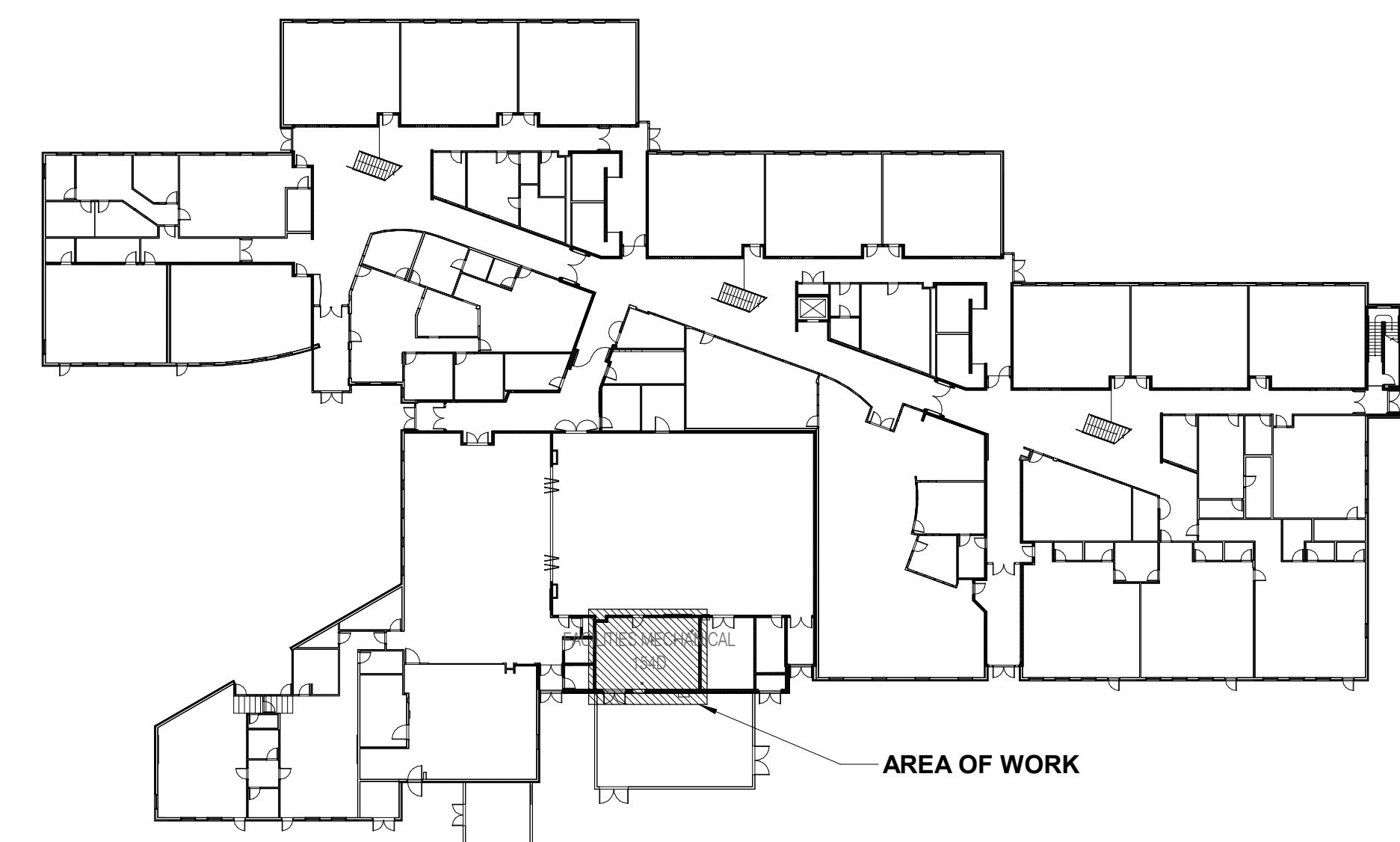
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1 REF. SCALE IN INCHES 2 3

REVISIONS

No. Date Revision / Issue

OWNER	CONSULTANTS	PROJECT INFORMATION
POUUDRE SCHOOL DISTRICT 2445 LAPORTE AVE. FORT COLLINS, CO 80521  CONTACT: JASON LEE PSD - PROJECT COORDINATOR PHONE (970) 222-9795 EMAIL jlee@psdschools.org	<u>MECHANICAL &amp; ELECTRICAL ENGINEERS</u>  IMEG CORP 7600 EAST ORCHARD ROAD, SUITE 250S GREENWOOD VILLAGE, COLORADO 80111  CONTACT: BRIAN EAGLETON PHONE (303) 796-6019 CELL (303) 720-4829	PROJECT LOCATION: FORT COLLINS, COLORADO PROJECT ALTITUDE: 5003 FEET ABOVE SEA LEVEL



1 KEYPLAN  
NO SCALE

SHEET INFORMATION

Issue: 100% CONSTRUCTION DOCUMENTS

Date: 03.15.2022

Job Number: 22000573.00

Drawn: BRE

Checked: RCW

Approved: BRE

SHEET TITLE

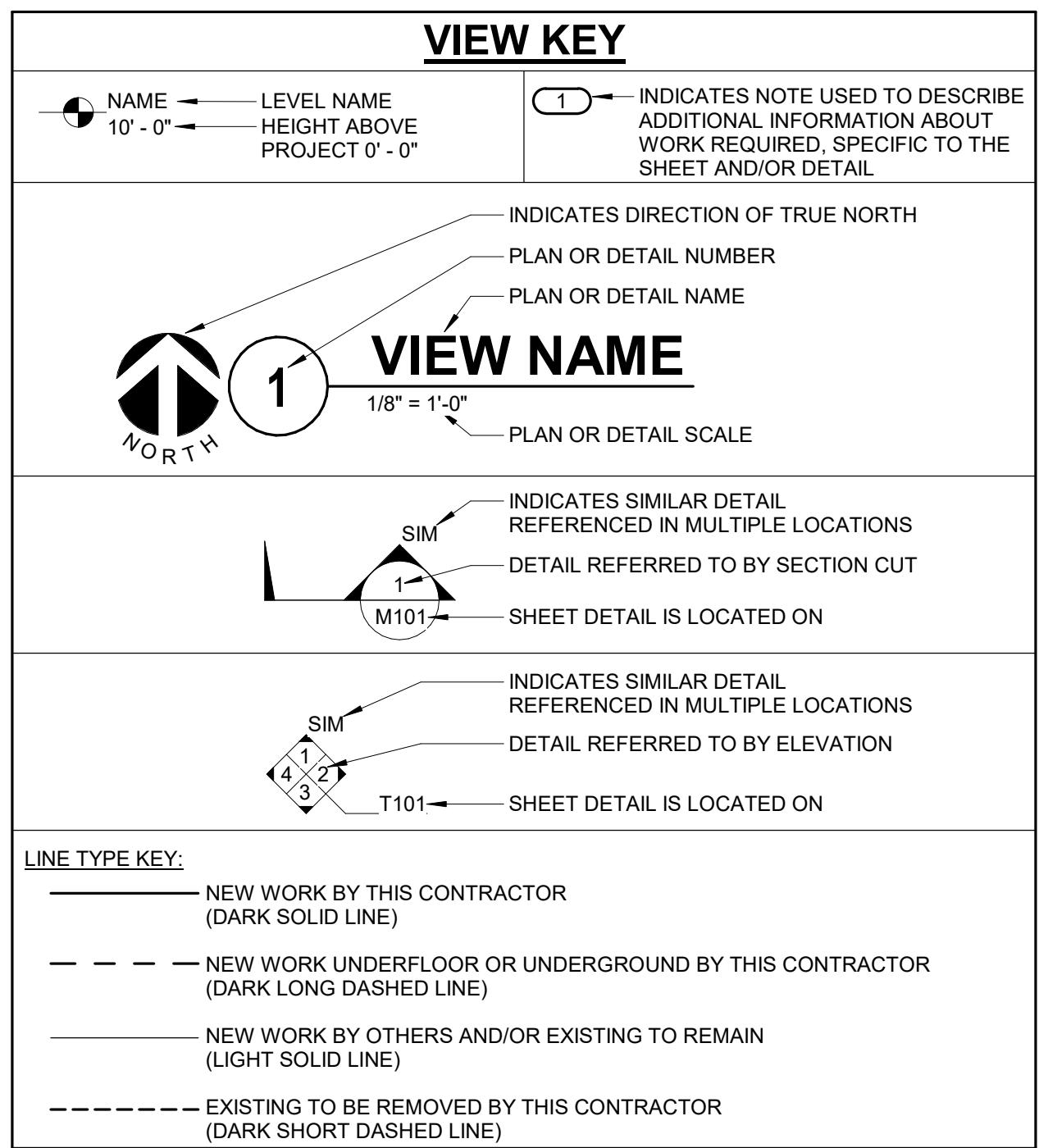
COVERSHEET

SCALE

Scale: As Indicated

SHEET NUMBER

G0.0



### MECHANICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BT	BATHTUB
C	COMMON
CB	CATCH BASIN
CD-E	CEILING DIFFUSER - EXISTING
CFSO	CONTROL/FIRE/SMOKE DAMPER
CI	CAST IRON
CO	CLEANOUT
CS	CLINICAL SINK
DB	DIALYSIS BOX
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
E	EXISTING
EA	EXHAUST/RELIEF AIR
ECFSD	EXISTING CONTROL FIRE SMOKE DAMPER
EE	EMERGENCY EYEWASH
EFD	EXISTING FIRE DAMPER
EFSD	EXISTING FIRE SMOKE DAMPER
EP	ELECTRICAL TO PNEUMATIC VALVE
ES	EMERGENCY SHOWER
ESD	EXISTING SMOKE DAMPER
ESE	EMERGENCY SHOWER/EYEWASH
EWV	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FIRE DAMPER
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FS	FLOOR SINK
FSD	FIRE/SMOKE DAMPER
GD	GARBAGE DISPOSER
GI	GREASE INTERCEPTOR
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
LA	LAVATORY
MA	MIXED AIR
MB	MOP BASIN
MH	MANHOLE
MV	MIXING VALVE
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
NC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NT	NEUTRALIZATION TANK
OA	OUTSIDE AIR
OS	OIL SEPARATOR
PS	PRESSURE SWITCH
RA	RETURN AIR
RD	ROOF DRAIN
SA	SUPPLY AIR
SD	SMOKE DAMPER
SH	SHOWER
SK	SINK
SS	SERVICE SINK
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TP	TRAP PRIMER
TY	TYPICAL
UB	UTILITY BOX
UC-1	DOOR UNDERCUT BY OTHERS (1" TYPICAL)
UNO	UNLESS NOTED OTHERWISE
UR	URNAL
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WASH FOUNTAIN
WH	WATER HEATER
WMF	WASHING MACHINE FIXTURE
WM	WATER METER
WS	WATER SOFTENER
YCO	YARD CLEANOUT

### MECHANICAL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
AV	ACID VENT
AW	ACID WASTE
CA	COMPRESSED AIR
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
CW	COLD WATER - POTABLE
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DRAIN - PLUMBING
FP	FIRE PROTECTION
G	NATURAL GAS
GRV	GAS REGULATOR VENT
GRV	GAS VENT
GSAN	SANITARY DRAINAGE (GREASE SANITARY DRAINAGE)
GV	GREASE VENT
HCR	HEATING/CHILLED WATER RETURN
HCS	HEATING/CHILLED WATER SUPPLY
HG	REFRIGERANT HOT GAS
HPC	HIGH PRESSURE CONDENSATE
HW	HOT WATER - POTABLE
HWC	HOT WATER CIRCULATING - POTABLE
HW140	HOT WATER - POTABLE NUMBER INDICATES TEMP
HWC140	HOT WATER CIRC. - POTABLE NUMBER INDICATES TEMP
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LQ	REFRIGERANT LIQUID
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LWR	LOOP WATER RETURN
LWS	LOOP WATER SUPPLY
P	PROPANE GAS
PC	PUMPED CONDENSATE
PD	PUMPED DISCHARGE
RO	REVERSE OSMOSIS WATER
SAN	SANITARY DRAINAGE
ST(1,000)	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
STS	STORM DRAINAGE (SECONDARY)
STW	SOFT TEMPERED WATER
SUC	REFRIGERANT SUCTION
SV	SAFETY RELIEF VENT
TW	TEMPERED WATER
V	VENT
W	SERVICE WATER - POTABLE
PCAP	PIPE CAP
PD	PIPE DOWN
PU	PIPE UP OR UP/DOWN
FD	PIPE SERVING FIXTURE ON FLOOR ABOVE (EXAMPLE: FD = FLOOR DRAIN)
FD	DIRECTION OF FLOW IN PIPE
RD-1 6(1000)	ROUTE TO DRAIN
RD-1 6(1000)	ROOF DRAIN PROPERTIES SYMBOL SIZE (ROOF SQ. FT.)
NEW CONNECTION	NEW CONNECTION
DI	DIELECTRIC CONNECTION
UJ	UNION/FLANGE
SV	SHUTOFF VALVE NORMALLY OPEN
SV	SHUTOFF VALVE NORMALLY CLOSED
TV	THROTTLING VALVE
BV	BALANCING VALVE (NUMBER INDICATES GPM)
AV	AUTOMATIC BALANCING VALVE
MV	MIXING VALVE
CV	CONTROL VALVE (THREE-WAY)
CV	CONTROL VALVE (TWO-WAY)
SV	SOLENOID VALVE
CV	CHECK VALVE
SV	SAFETY/RELIEF VALVE
PR	PRESSURE REDUCING VALVE (LIQUID/GAS)
PR	PRESSURE REDUCING VALVE (STEAM)
TV	TRIPLE DUTY VALVE (ANGLE TYPE)
TV	TRIPLE DUTY VALVE (IN-LINE TYPE)
P	PUMP
VB	VACUUM BREAKER
WY	"WYE" - STRAINER
WY	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
AD	AUTOMATIC DRAIN VALVE
AP	AIR PRESSURE MAINTENANCE DEVICE
AS	AIR SUPERVISORY SWITCH
AV	ANGLE VALVE
MS	BUTTERFLY VALVE WITH MONITOR SWITCH
IT	INSPECTOR TEST AND DRAIN VALVE
GV	OS&Y GATE VALVE
GV	OS&Y GATE VALVE WITH MONITOR SWITCH
CV	CHECK VALVE
SV	SAFETY/RELIEF VALVE
PR	PRESSURE REDUCING VALVE (LIQUID/GAS)
BS	BASKET STRAINER
FC	FLEXIBLE CONNECTION
PT	PRESSURE/TEMPERATURE TEST PLUG
RC	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
SD	SUCTION DIFFUSER WITH SUPPORT FOOT
AV	AUTOMATIC AIR VENT
MA	MANUAL AIR VENT
DV	DRAIN VALVE WITH HOSE CONNECTION AND CAP
ST	STEAM TRAP (REFER TO SCHEDULE)
DT	F&T STEAM TRAP (REFER TO SCHEDULE)
IB	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
AG	ALIGNMENT GUIDE
PA	PIPE ANCHOR

### MECHANICAL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
EJ	EXPANSION JOINT
M	METER
MG	MEDICAL GAS OUTLET (MGO)
AP	ALARM PANEL
A	HEADWALL
A	SINGLE GAS OUTLET (AIR)
O	SINGLE GAS OUTLET (OXYGEN)
V	SINGLE GAS OUTLET (VACUUM)
NPC	NITROGEN PRESSURE CONTROL CABINET
PT	PRESSURE TRANSDUCER WITH ALARM WIRING
NH	NO HATCH
OG1	ORDINARY GROUP 1
OG2	ORDINARY GROUP 2
DEM	DEMOLITION
EG1	EXTRA GROUP 1
EG2	EXTRA GROUP 2
SM	SPRINKLER - WALL MOUNTED
SM	SPRINKLER
SC	SPRINKLER - CONCEALED
SM	SPRINKLER
SM	SPRINKLER
SM	SPRINKLER
SM	SPRINKLER
SM	SPRINKLER
SM	SPRINKLER
SM	SPRINKLER
DA	DIRECTION OF AIR FLOW
FD	FLEXIBLE DUCT
MD	MANUAL VOLUME DAMPER
RI	RISE IN DIRECTION OF AIR FLOW
DI	DROP IN DIRECTION OF AIR FLOW
DC	DUCT CAP
DD	DUCT DOWN
DU	DUCT UP
SA	SUPPLY/OUTSIDE AIR DUCT SECTION
RA	RETURN AIR DUCT SECTION
EA	EXHAUST/RELIEF AIR DUCT SECTION
4WD	4-WAY DIFFUSER WITH BLANKOFF IN ONE DIRECTION
AT	AIR TERMINAL PROPERTIES SYMBOL SIZE/CFM
TAB	TERMINAL AIR BOX (REFER TO SCHEDULE)
TAB	TERMINAL AIR BOX W/REHEAT COIL (REFER TO SCHEDULE)
SP	SERIES FAN POWERED TERMINAL AIR BOX W/REHEAT COIL (REFER TO SCHEDULE)
PF	PARALLEL FAN POWERED TERMINAL AIR BOX W/REHEAT COIL (REFER TO SCHEDULE)
HUM	HUMIDIFIER
OD	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
PD	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
AM	AIRFLOW MEASUREMENT SYMBOL XX - AHU SYMBOL Y - SEQUENTIAL NUMBER
ACT	ACTUATOR
DS	DOOR SWITCH
DP	DIFFERENTIAL PRESSURE SWITCH
CS	CURRENT SWITCH
VS	VIBRATION SWITCH
FM	FLOW METER
FAN	FAN
MTR	MOTOR
CONT	CONTACTOR
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
MS	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD

### MECHANICAL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
FM	FLOW METER
F	FLOW SWITCH
FS	FLOW SENSOR
FS	AIR FLOW SWITCH
FM	DUCT FLOW METER
P	PRESSURE SWITCH
M	MONITOR SWITCH
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
PP	DIFFERENTIAL PRESSURE SENSOR
P	PRESSURE SENSOR (DUCT MOUNTED)
SP	STATIC SWITCH
T	THERMOSTAT
T	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
T	TEMPERATURE SENSOR (DUCT MOUNTED)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
T	THERMOMETER WITH WELL (FILLED TYPE)
T	AVERAGING TEMPERATURE SENSOR
T	LOW LIMIT TEMPERATURE SWITCH
T	PROBE TEMPERATURE SENSOR
H	HUMIDISTAT SENSOR
H	HUMIDISTAT / SENSOR
H	HUMIDITY SENSOR (DUCT MOUNTED)
C	CARBON MONOXIDE SENSOR (DUCT MOUNTED)
C	CARBON DIOXIDE SENSOR
C	CARBON MONOXIDE SENSOR (DUCT MOUNTED)
C	CARBON DIOXIDE SENSOR (DUCT MOUNTED)
F	FILTER
DSD	DUCT SMOKE DETECTOR
HC	HEATING/ COOLING COIL
AB	AIR BLENDER
MS	MANUAL MOTOR STARTER WITH THERMAL OVERLOAD

### GENERAL NOTES COLORADO:

- ALL BOILERS THAT EXCEED 200,000 BTU'S WITHIN COMMERCIAL BUILDINGS MUST ALSO BE PERMITTED, INSPECTED, AND APPROVED BY THE STATE OF COLORADO. THIS IS THE PERMIT APPLICANT'S RESPONSIBILITY TO CONTACT CDLE THE DIVISION OF OIL AND PUBLIC SAFETY AT (303-318-8484) OR VISIT THEIR WEBSITE TO OBTAIN THE PERMIT APPLICATION FORM.
- ANY ROUGH-IN AND/OR FINAL PLUMBING INSPECTIONS SHALL BE PERFORMED BY THE STATE OF COLORADO DEPARTMENT OF REGULATORY AGENCIES (DORA).
- CARBON MONOXIDE SENSORS ARE EXISTING.
- BUILDING SHALL NOT BE CONSIDERED ACCEPTABLE FOR FINAL INSPECTIONS PRIOR TO CODE OFFICIAL RECEIVING A LETTER ACKNOWLEDGING THE BUILDER OWNER HAS RECEIVED AT LEAST A PRELIMINARY COMMISSIONING REPORT.

### MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

- DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC. AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
- DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
- COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
- REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
- ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
- EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIOVISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
- EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
- IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
- SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
- CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
- WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
- EQUIPMENT SIZES AND SERVICE CLEARANCES VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
- DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
- MAINTAIN MINIMUM 3'-6" CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS, MOTOR STARTERS, SWITCHES, AND DISCONNECTS.
- PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
- DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

### PLUMBING GENERAL NOTES:

- THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
- CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
- CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.
- ALL FIXTURES SHALL CONFORM TO FEDERAL ACT 5.3874
- INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
- VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING ANY WORK.
- REFER TO THE PLUMBING ROUGH-IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO PLUMBING FIXTURES.
- FOR CLARITY, NOT ALL VALVES HAVE BEEN SHOWN. PROVIDE SHUTOFF VALVES IN DOMESTIC WATER PIPING SERVING EACH ROOM WITH FIXTURES. ANGLE STOPS SHALL NOT BE CONSIDERED SHUTOFF VALVES.
- EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL DEMOLITION INFORMATION.
- P.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.

### PIPING GENERAL NOTES:

- THE SIZE OF BRANCH PIPING TO TERMINAL HEATING DEVICES AND COILS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
- PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.
- INSTALL ALL REFRIGERANT LIQUID AND SUCTION PIPING SIZED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS.

### VENTILATION GENERAL NOTES:

- THE SIZE OF EACH BRANCH DUCT TO A TERMINAL AIR BOX (TAB) SHALL MATCH THE TAB'S INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH SHOULD BE INCREASED ONE DUCT SIZE, OR NOTED OTHERWISE.
- ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
- PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.
- EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL USE PRE-BALANCE VALUES, AND NOT EXISTING CFM SHOWN ON DRAWINGS.
- CONTRACTOR MAY REUSE PORTIONS OF EXISTING DUCT PROVIDED SIZES AND PRESSURE CLASSES ARE CORRECT. DUCT IS THOROUGHLY CLEANED AND FREE OF DEFECTS, AND ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS ARE SEALED AS SPECIFIED FOR NEW DUCTWORK.
- CLEAN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK UPSTREAM OF ALL NEW CONNECTIONS PER SPECIFICATION SECTION 23 31 00.

### TEMPERATURE CONTROL GENERAL NOTES:

- REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT. REFER TO TERMINAL AIR BOX (TAB) SCHEDULES FOR TEMP SENSOR REQUIREMENTS FOR EACH TAB.
- EACH D.I., D.O., A.I., AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.
- ALL WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.

POUDRE SCHOOL DISTRICT  
 PSD - Bacon ES Boiler Replacement  
 Fort Collins, CO

**IMEG**  
 7600 E. ORCHARD ROAD, SUITE 250-S GREENWOOD VILLAGE, CO 80111-2539  
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REVISIONS

No.	Date	Revision / Issue

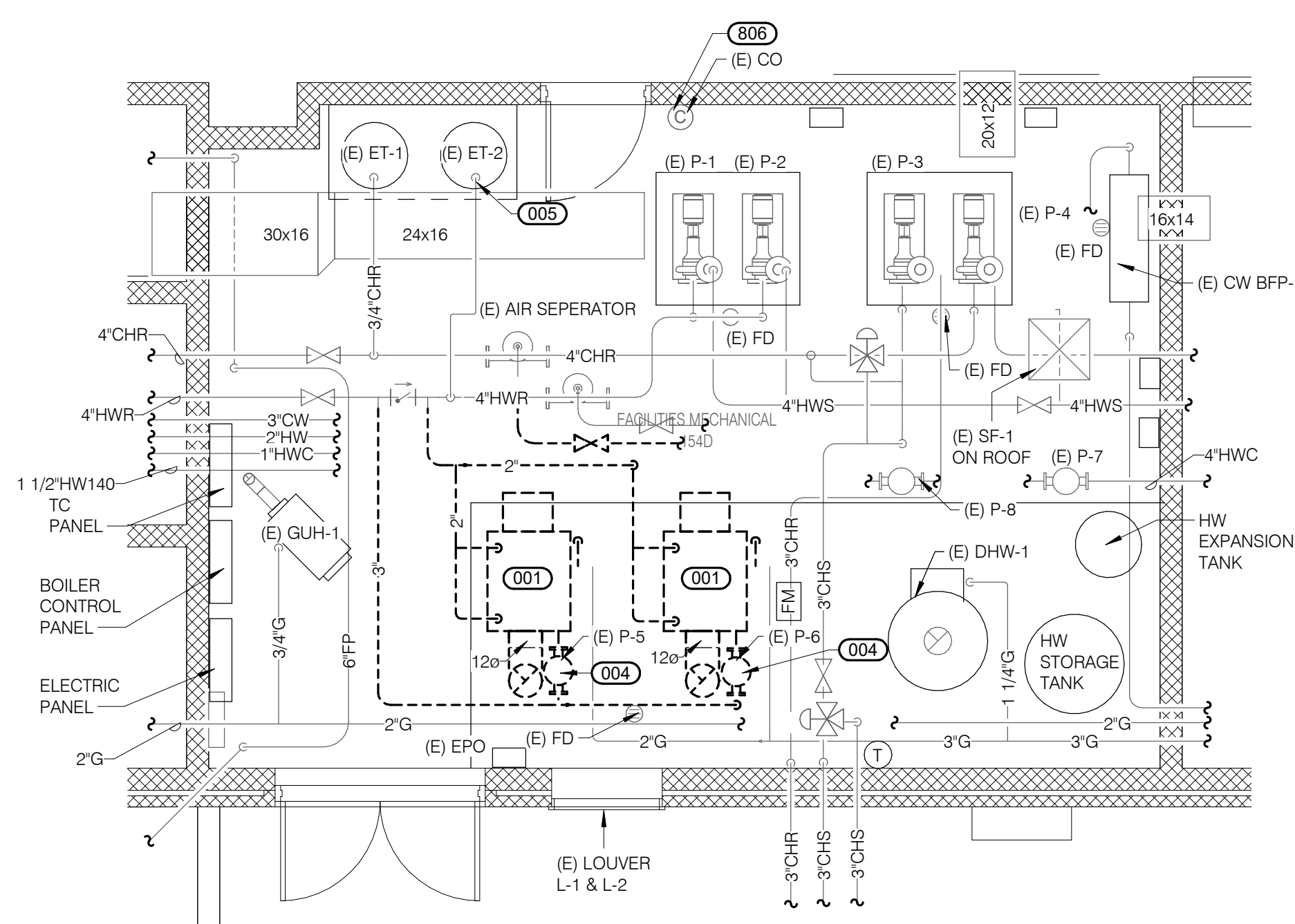
SHEET INFORMATION

Issue: **100% CONSTRUCTION DOCUMENTS**  
 Date: **03.15.2022**  
 Job Number: **22000573.00**  
 Drawn: **BRE**  
 Checked: **RCW**  
 Approved: **BRE**

SHEET TITLE  
**MECHANICAL/PLUMBING COVER SHEET**

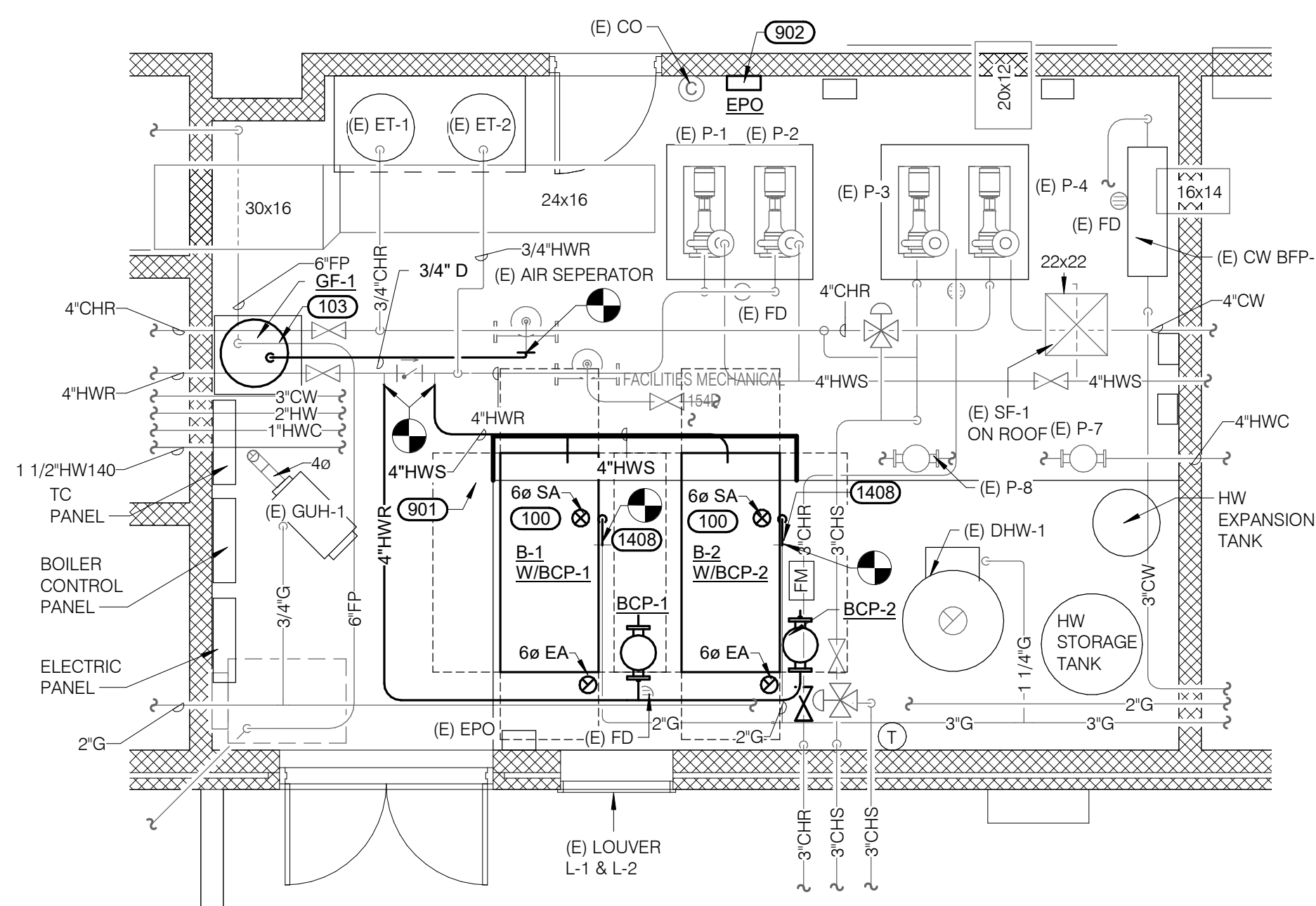
SCALE  
 Scale: **As Indicated**

SHEET NUMBER  
**M0.0**



- KEYNOTES**
- 001 REMOVE EXISTING BOILER, BURNER, FLUE PIPING, AND ALL ASSOCIATED COMPONENTS. REMOVE EXISTING BRANCH GAS PIPING, REGULATOR, AND DEMOLISH HEATING WATER SUPPLY AND RETURN PIPING TO LOCATIONS INDICATED.
  - 004 REMOVE EXISTING BOILER CIRCULATION PUMP
  - 005 DRAIN DOWN EXISTING EXPANSION TANK AND RESET TO PRESSURE PRIOR TO CONSTRUCTION.
  - 100 B-# W/BCP-# NEW BOILER WITH BOILER CIRCULATION PUMP. REFER TO SCHEDULE, DETAILS, FLOW DIAGRAMS, AND CONTROLS. ROUTE AND SIZE BOILER FLUE AND INTAKE UP THROUGH ROOF PER MANUFACTURER'S WRITTEN INSTRUCTIONS. PATCH/MODIFY ROOF TO MATCH. EXTEND EXISTING BOILER CONCRETE PAD AS NECESSARY. RECONNECT TO EXISTING EPOS.
  - 103 NEW GLYCOL FEEDER. REFER TO FLOW DIAGRAMS. PROVIDE ON NEW 4\"/>

**1 FIRST FLOOR DEMOLITION - MECHANICAL - BACON ELEMENTARY SCHOOL**  
1/4" = 1'-0"



**2 FIRST FLOOR - MECHANICAL - BACON ELEMENTARY SCHOOL**  
1/4" = 1'-0"



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1 REF. SCALE IN INCHES 2 3

REVISIONS		
No.	Date	Revision / Issue

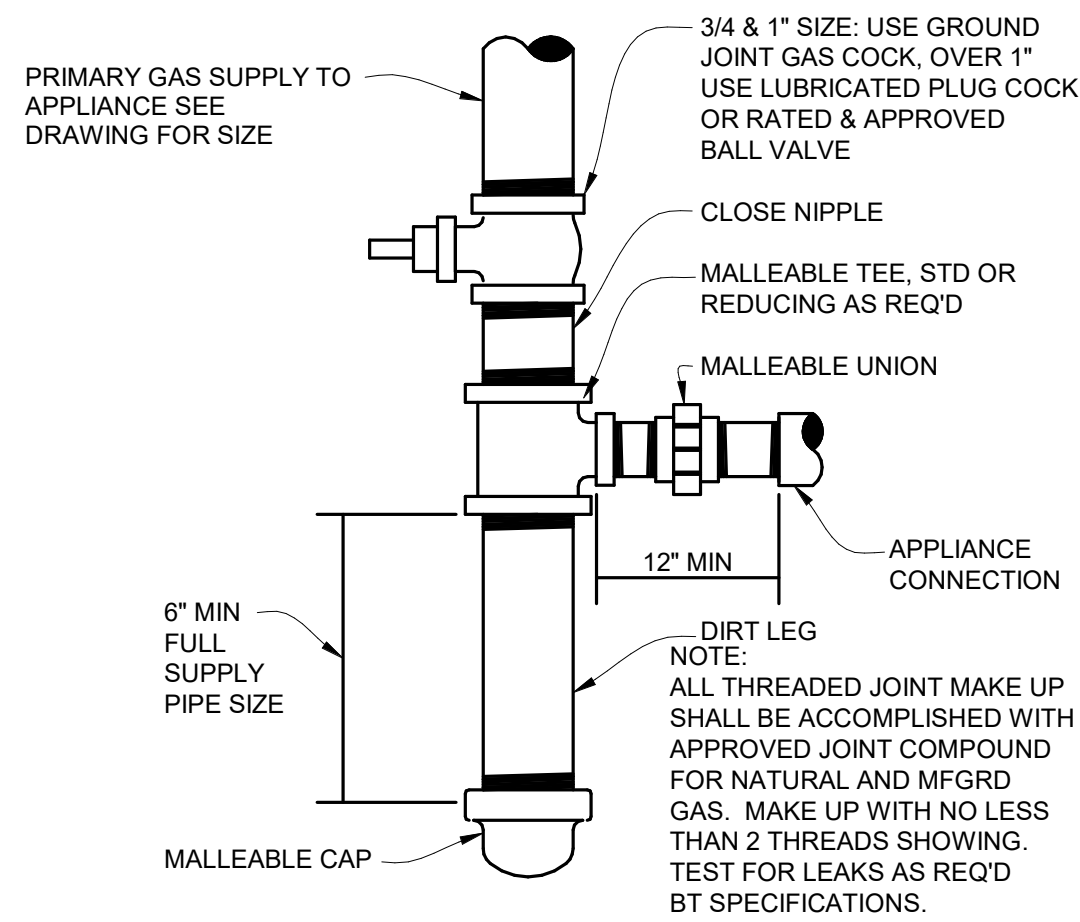
SHEET INFORMATION	
Issue	100% CONSTRUCTION DOCUMENTS
Date	03.15.2022
Job Number	22000573.00
Drawn	BRE
Checked	RCW
Approved	BRE

**SHEET TITLE**  
BACON ELEMENTARY SCHOOL  
ENLARGED BOILER DEMO AND NEW  
MECHANICAL PLAN

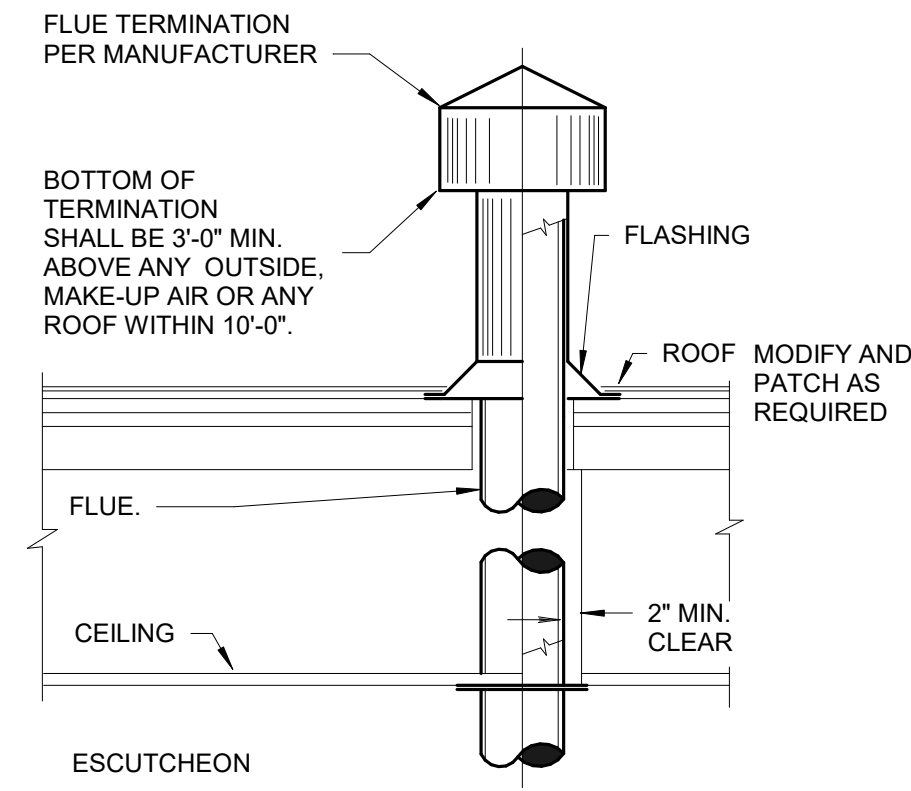
**SCALE**  
Scale: 1/4" = 1'-0"

**SHEET NUMBER**

**M1.0**



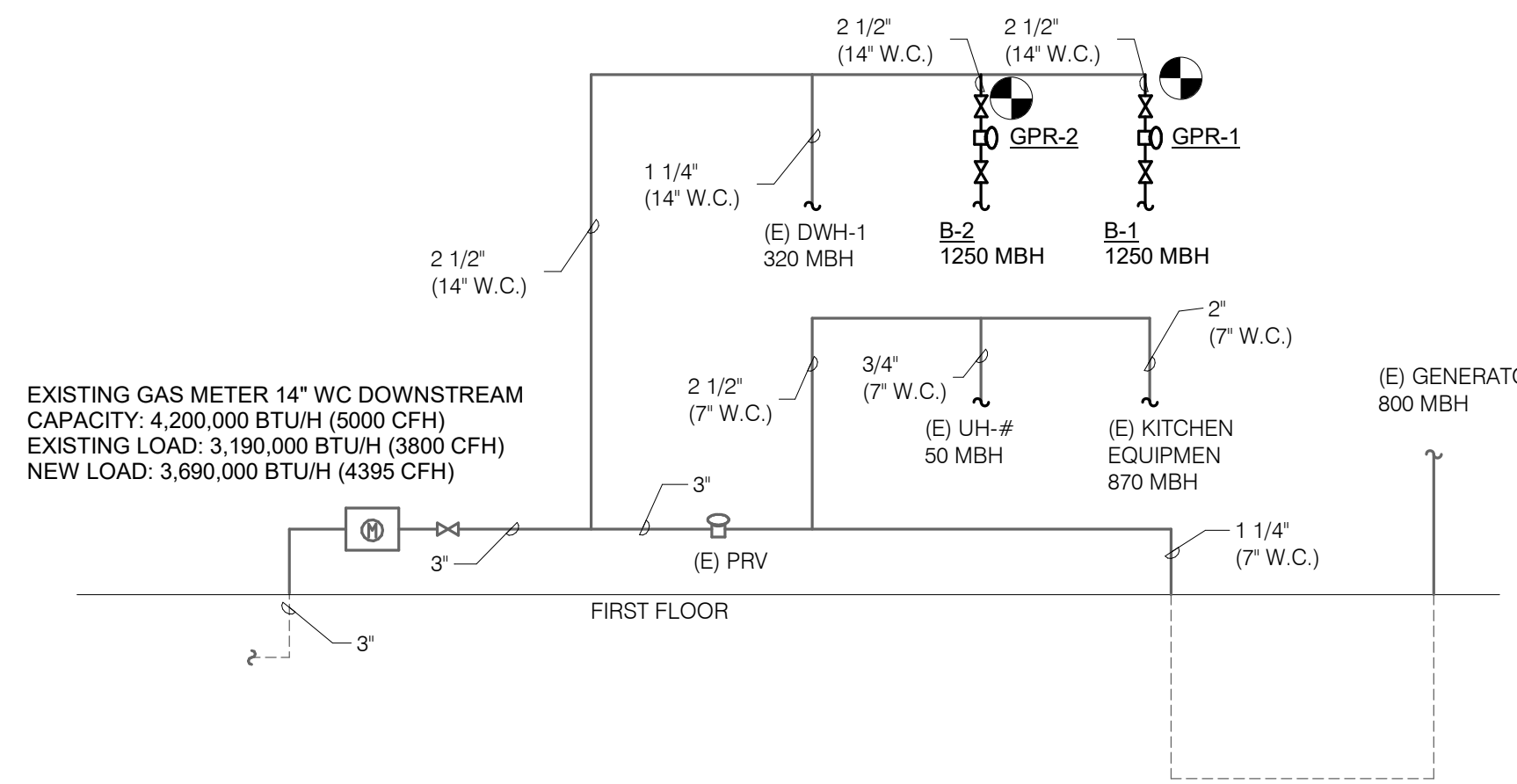
**1 GAS CONNECTION DETAIL**  
NO SCALE



**DESIGNER NOTES:**

1. MODIFY/PATCH ROOF TO MATCH EXISTING AND MAINTAIN CURRENT WARRANTY. COORDINATE WITH SCHOOL DISTRICT ON ROOF WARRANTY. MECHANICAL CONTRACTOR TO BID AND MANAGE THE ROOF SCOPE OF WORK.
2. CONFIRM ALL SIZING AND ROUTING WITH BOILER AND FLUE MANUFACTURERS WRITTEN INSTRUCTIONS. PROVIDE GUY WIRES IF REQUIRED BY MANUFACTURER.

**2 FLUE THROUGH ROOF**  
NO SCALE

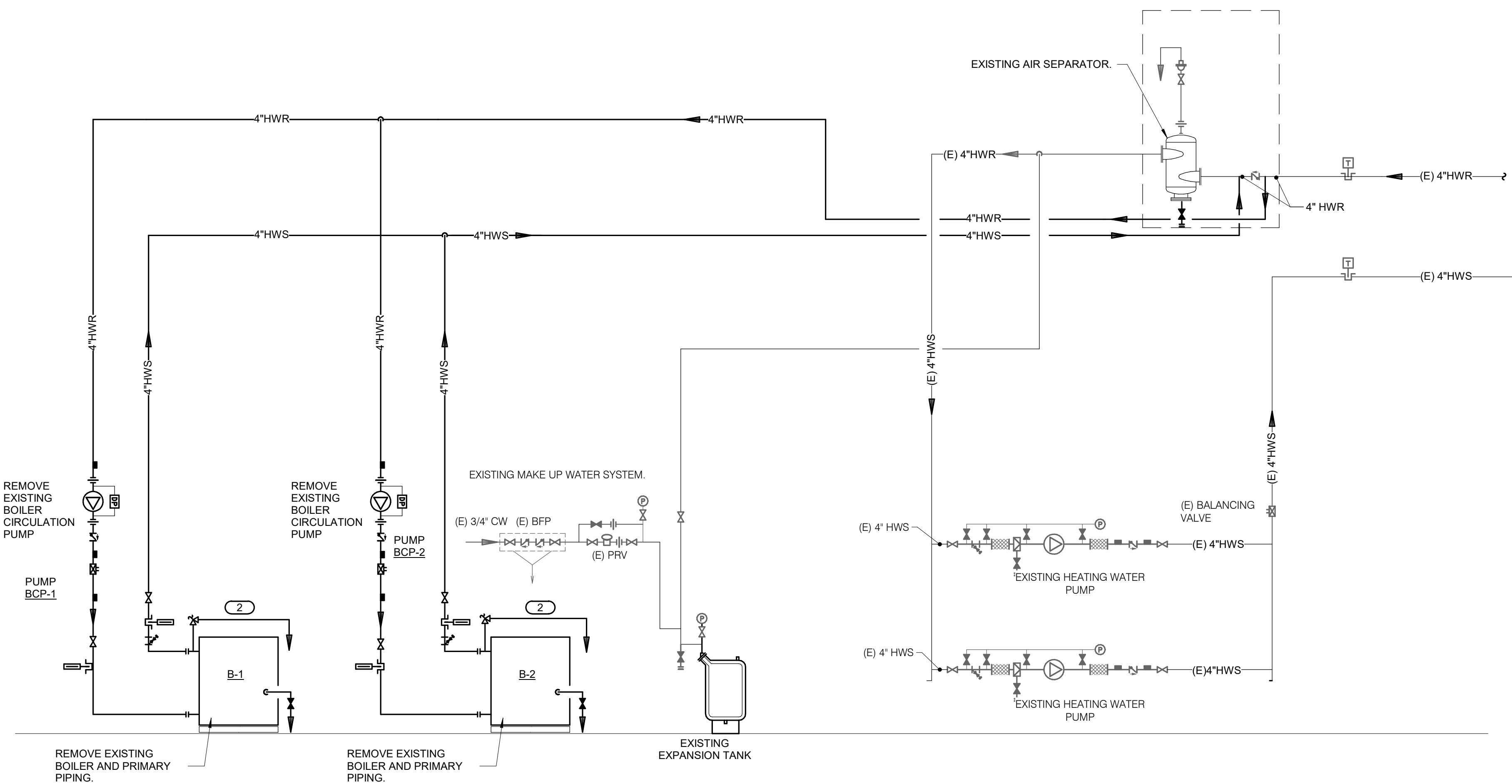


**3 NATURAL GAS SCHEMATIC - BES**  
NO SCALE

PLUMBING MATERIAL LIST		
TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
GPR-1	GAS PRESSURE REGULATOR - CAST IRON BODY, INTERNAL PRESSURE RELIEF, THREADED CONNECTIONS, ADJUSTABLE PRESSURE SETTING, TIGHT SHUTOFF.  SINGLE STAGE, STEEL JACKETED, CORROSION-RESISTANT GAS PRESSURE REGULATORS; WITH ATMOSPHERIC VENT, ELEVATION COMPENSATOR; WITH THREADED ENDS FOR 2 INCH AND SMALLER, FLANGED ENDS FOR 2-1/2 INCH AND LARGER; FOR INLET AND OUTLET GAS PRESSURES, SPECIFIC GRAVITY, AND VOLUME FLOW. PROVIDE GAS COCKS AND UNIONS ON BOTH SIDES OF REGULATORS.  2 PSI INLET PRESSURE, 14\"/>	FISHER, ITRON, SENSUS, MAXITROL
GPR-2	GAS PRESSURE REGULATOR - CAST IRON BODY, INTERNAL PRESSURE RELIEF, THREADED CONNECTIONS, ADJUSTABLE PRESSURE SETTING, TIGHT SHUTOFF.  SINGLE STAGE, STEEL JACKETED, CORROSION-RESISTANT GAS PRESSURE REGULATORS; WITH ATMOSPHERIC VENT, ELEVATION COMPENSATOR; WITH THREADED ENDS FOR 2 INCH AND SMALLER, FLANGED ENDS FOR 2-1/2 INCH AND LARGER; FOR INLET AND OUTLET GAS PRESSURES, SPECIFIC GRAVITY, AND VOLUME FLOW. PROVIDE GAS COCKS AND UNIONS ON BOTH SIDES OF REGULATORS.  2 PSI INLET PRESSURE, 14\"/>	FISHER, ITRON, SENSUS, MAXITROL

BACON BOILER SCHEDULE - HOT WATER																					
NOTES:																					
1. PROVIDE CSD-1 COMPLIANT GAS TRAIN.																					
2. INSTALL VENT CAP AND BAROMETRIC DAMPER ON FLUE PER MANUFACTURER'S RECOMMENDATIONS.																					
3. PROVIDE BOILER WITH AL29-4C FLUE.																					
4. 30% PROPYLENE GLYCOL.																					
5. HIGH ALTITUDE MODEL.																					
ELECTRICAL										MAX. DIMENSIONS					WEIGHT						
TAG NAME	FUEL	INLET FUEL PRESSURE	TURNDOWN RATIO	INPUT BTU/HR (S.L.)	OUTPUT BTU/HR (ALT.)	EWI 'F	LWT 'F	FULL LOAD AMPS	VOLTAGE	PHASES	BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/STARTER BY (NOTE A)	LENGTH	WIDTH	HEIGHT	DRY	OPERATING	MANUFACTURER	MODEL	NOTES
B-1	NG	14	20:1	1250000	1130000	160	180	7 A	120	1	EC	F	MFR	58	30	78	1648	1975	LOCHINVAR	FB-1250	NOTES 1, 2, 3, & 4
B-2	NG	14	20:1	1250000	1130000	160	180	7 A	120	1	EC	F	MFR	58	30	78	1648	1975	LOCHINVAR	FB-1250	NOTES 1, 2, 3, & 4

BACON PUMP SCHEDULE																			
NOTES:																			
1. PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.																			
2. SIZE WITH 30% PROPYLENE GLYCOL.																			
3. NOTE TO HAVE ECM THAT CAN BE CONTROLLED BY BOILER (0-10V).																			
ELECTRICAL (NOTE 1)										MAX. DIMENSIONS									
TAG NAME	AREA SERVED	GPM	PUMP FT. HEAD AT DESIGN	MINIMUM PUMP EFFICIENCY	INLET SIZE	HP (NOTE E)	RPM	VOLTAGE	PHASES	BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/STARTER BY (NOTE A)	TYPE (NOTE C)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	MANUFACTURER	MODEL	NOTES
BCP-1	BOILER CIRCULATION	125.0	30.00	68.5	2 1/2"	2	3650	208	1	EC	F	MC	ECM	14	8	16	GRUNDFOS	MAGNA 65-150	NOTES 1, 2, & 3
BCP-2	BOILER CIRCULATION	125.0	30.00	68.5	2 1/2"	2	3650	208	1	EC	F	MC	ECM	14	8	16	GRUNDFOS	MAGNA 65-150	NOTES 1, 2, & 3



**4 DEMO HEATING WATER FLOW DIAGRAM - BES**  
NO SCALE

- KEYNOTES**
1. PRESSURE GAUGE WITH SNUBBER PER SECTION 23 09 13. INSTALL WITH MOUNTING ON WALL, STAND, OR VIBRATION-FREE PIPE ABOVE PUMP. FLEXIBLE CONNECTOR. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER AND PUMP INLET (c) GAUGE TAPPING ON PUMP INLET FLANGE, (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
  2. INSTALL SAFETY RELIEF VALVE PROVIDED BY BOILER MANUFACTURER. PIPE TO DRAIN. SUPPORT SOLIDLY.

HEATING WATER FLOW DIAGRAM SYMBOL LIST	
SYMBOL:	DESCRIPTION:
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	COLD WATER - POTABLE
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOOT/BOILER
	METER
	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	MANUAL AIR VENT W/ BALL VALVE
	DRAIN WITH HOSE CONNECTION, CAP & BALL VALVE
	FLOW SWITCH
	FLOW METER
	TEMPERATURE SENSOR WITH WELL
	THERMOMETER WITH WELL (FILLED TYPE)
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	THROTTLING VALVE
	BALANCING VALVE
	CONTROL VALVE (TWO-WAY)
	CONTROL VALVE (THREE-WAY)
	CHECK VALVE
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS) & BALL VALVE
	"WYE" - STRAINER
	"WYE" - STRAINER W/ SHUTOFF VALVE AND HOSE CONNECTION WITH CAP

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SHEET INFORMATION  
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 Job Number: **22000573.00**  
 Drawn: **BRE**  
 Checked: **RCW**  
 Approved: **BRE**

SHEET TITLE  
**BACON ELEMENTARY SCHOOL MECHANICAL DETAILS, SCHEDULES, & CONTROLS**

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

SHEET NUMBER

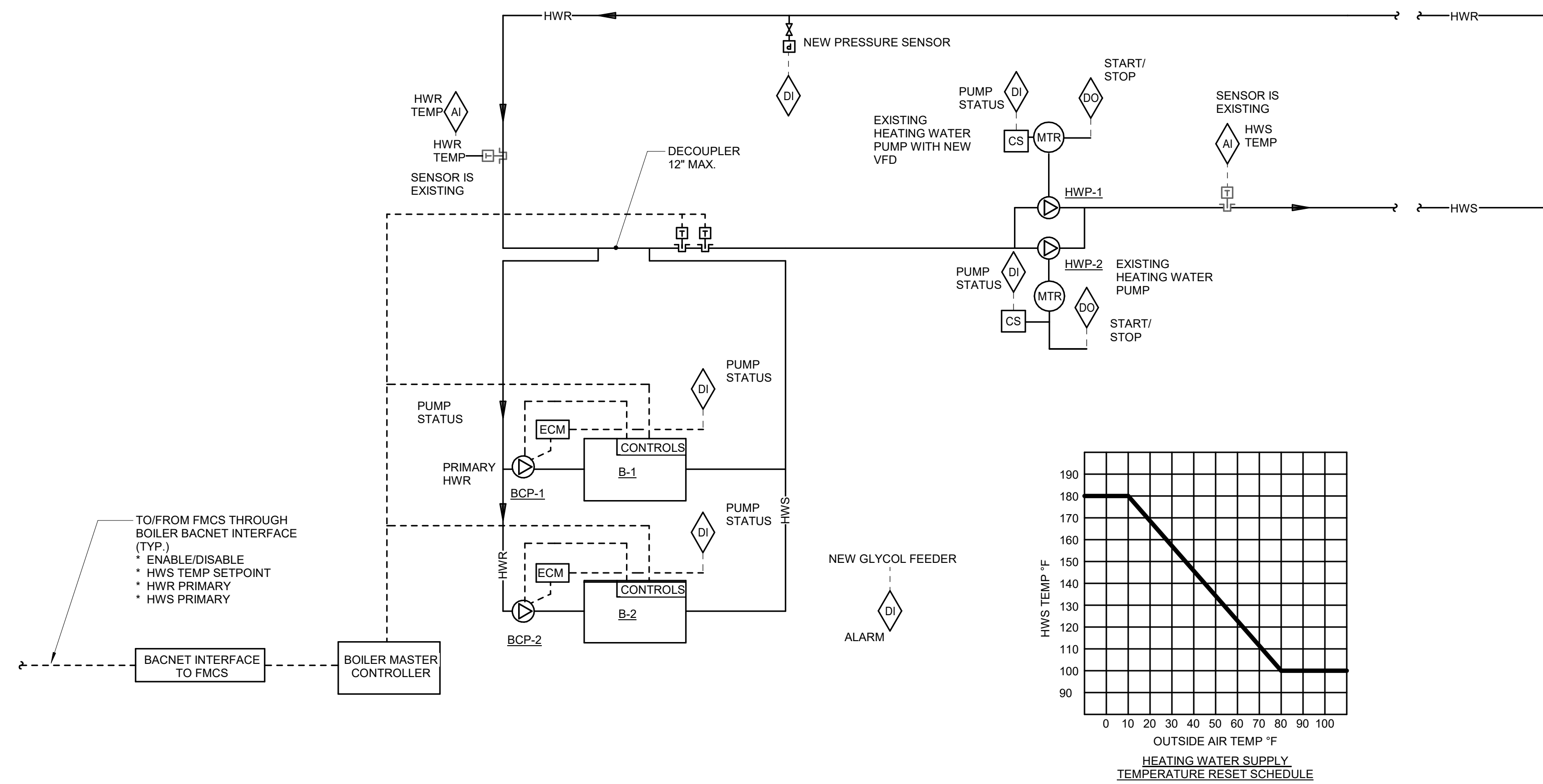
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**SEQUENCE OF OPERATION:**  
 HEATING WATER BOILERS SHALL HAVE UNIT MOUNTED CONTROLS AND A BOILER MANAGEMENT CONTROL PANEL PROVIDED BY THE BOILER MANUFACTURER. TCC SHALL INTERFACE WITH BOILER MANUFACTURER CONTROLS AS DESCRIBED IN THIS SEQUENCE OF OPERATION. BOILER MANUFACTURER SHALL PROVIDE A GATEWAY INTERFACE CARD THAT IS COMPATIBLE WITH THE COMMUNICATION PROTOCOL OF THE FMCS NETWORK. SEQUENCES OF OPERATION FOR BOTH BOILER CONTROL SYSTEM AND FMCS SHALL BE AS FOLLOWS:

THERE ARE 3 EXISTING EPO'S FOR THE BOILERS. FMCS TO RECONNECT NEW BOILERS TO EXISTING EPO'S

**BOILER CONTROL PANEL SEQUENCE OF OPERATION:**  
 WHEN THE FMCS ENABLES THE BOILER MASTER CONTROLLER TO RUN, THE BOILER MASTER CONTROLLER SHALL ENABLE THE LEAD BOILER. WHEN BOILER IS ENABLED THE ASSOCIATED CIRCULATING PUMP SHALL RUN CONTINUOUSLY.

THE ON BOARD BOILER SEQUENCING CONTROLLER SHALL STAGE AND MODULATE THE BOILER PLANT TO MAINTAIN THE HIGHEST PLANT EFFICIENCY THAT WILL PROVIDE THE REQUIRED SUPPLY WATER TEMPERATURE. THE ON BOARD BOILER SEQUENCING CONTROLLER SHALL START BOILER PUMP TO PROVIDE PRE AND POST FLOW. THE ON BOARD BOILER SEQUENCING CONTROLLER SHALL VERIFY PROOF OF WATER FLOW BEFORE FIRING BOILERS. BOILER SEQUENCING CONTROLLER PANEL SHALL START/STOP BOILERS ON A FIRST ON/FIRST OFF BASIS TO EQUALIZE RUN TIME BETWEEN BOILERS.

THE FOLLOWING BACNET MS/TP VIRTUAL OBJECTS WILL BE MAPPED FOR EACH BOILER TO THE FMCS:

1. BOILER STATUS CODE
2. BOILER LOCKOUT CODE
3. BOILER FIRING RATE
4. BOILER HEATING WATER SUPPLY TEMPERATURE
5. BOILER HEATING WATER RETURN TEMPERATURE
6. BOILER FLUE TEMPERATURE
7. BOILER PUMP COMMAND

THE FOLLOWING POINTS WILL BE HARDWIRED BETWEEN EACH BOILER AND THE FMCS:

1. BOILER ENABLE
2. BOILER FAULT

**ALARMS, INTERLOCKS & SAFETIES:**  
 BOILER CONTROLS SHALL BE PROGRAMMED TO MAINTAIN CONSTANT SETPOINT (LAST KNOWN VALUE) IN THE EVENT THE FMCS NETWORK COMMUNICATION SIGNAL IS LOST.

BUILDING FREEZE ALARM TO BE GENERATED WHEN THE HWST DROPS BELOW 100(ADJ.) DEGREES F AND THE OAT IS BELOW 30(ADJ.) DEGREES F. RELAY NEEDS WIRED TO ZONE 2 ON THE BURGLAR ALARM PANEL FOR MONITORING BY SAFE SYSTEMS.

**FMCS SEQUENCE OF OPERATION:**  
 FMCS SHALL ENABLE THE BOILERS ON A CALL FOR HEATING AND THE OUTSIDE AIR TEMPERATURE IS BELOW 55 DEG. F. THE BOILERS SHALL ENABLE THE BOILER CIRCULATION PUMPS. FMCS TO MONITOR STATUS.

THE EXISTING HEATING WATER PUMPS SHALL BE ENABLED WHENEVER THE BOILER PLANT IS EABLED. THE EXISTING PUMPS ARE CONSTANT VOLUMN AND ARE TO OPERATE VIA PRIMARY/STANDBY. FMCS TO ROTATE THE PRIMARY PUMP WEEKLY. FMCS TO ENABLE STANDBY PUMP IF PRIMARY PUMP FAILS AND GENERATE ALARM.

ALL CONTROLLED AND MONITORED POINTS LISTED IN THE BOILER CONTROL PANEL SEQUENCE ABOVE SHALL BE DISPLAYED ON THE OPERATOR WORKSTATION GRAPHICAL SCREEN.

**ALARMS, INTERLOCKS & SAFETIES:**  
 TCC SHALL COORDINATE ALL SAFETY AND INTERLOCK REQUIREMENTS WITH BOILER MANUFACTURER. TCC SHALL COORDINATE AND PROVIDE THE INSTALLATION AND WIRING OF BOILER WATER DIFFERENTIAL PRESSURE/FLOW SWITCHES AND OTHER COMPONENTS PROVIDED WITH THE BOILER AS REQUIRED FOR PROPER OPERATION. TCC SHALL PROVIDE AND TERMINATE ALL SAFETY AND INTERLOCK WIRING WITH BOILER CONTROL PANELS AS REQUIRED.

FMCS SHALL AUTOMATICALLY ENABLE THE LAG SECONDARY HEATING WATER PUMP TO RUN IN THE EVENT THE LEAD SECONDARY HEATING WATER PUMP FAILS TO OPERATE.

TCC SHALL VERIFY THE ACCEPTABLE TEMPERATURE RANGES THE BOILERS ARE APPROVED TO OPERATE AT AS PUBLISHED IN THE BOILER MANUFACTURER'S LITERATURE. IF THE TEMPERATURE RANGES LISTED IN THE MANUFACTURER'S LITERATURE DIFFER FROM THOSE IN THIS SEQUENCE OF OPERATION, CONTACT PROJECT ARCHITECT/ENGINEER FOR DIRECTION.

AN ALARM SHALL BE INDICATED TO THE FMCS OPERATOR WORKSTATION IN THE EVENT ANY OF THE FOLLOWING OCCUR:

- PRIMARY HWR TEMPERATURE DROPS BELOW 180F (ADJ.) FOR 5 MINUTES (ADJ.) (AUTO RESET).
- PRIMARY HWS TEMPERATURE RISES MORE THAN 10F (ADJ.) ABOVE SETPOINT (AUTO RESET).
- PRIMARY HWS TEMPERATURE DROPS MORE THAN 10F (ADJ.) BELOW SETPOINT (AUTO RESET).
- AN ALARM IS INDICATED AT ANY BOILER ALARM PANEL.
- AN ALARM IS INDICATED AT ANY PUMP.
- SHOULD THE FMCS COMMAND THE LEAD HEATING WATER PUMP TO OPERATE AND THE PUMP FAILS. AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG HW PUMP SHALL AUTOMATICALLY START.
- WHEN THE GLYCOL FEEDER IS LOW.

**BOILER PLANT REPORT GENERATION:**  
 FMCS SHALL MONITOR THE FOLLOWING POINTS ON 5 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR A 14-DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- OUTSIDE AIR TEMP [°F]
- HWS TEMP [°F]
- HWR TEMP [°F]

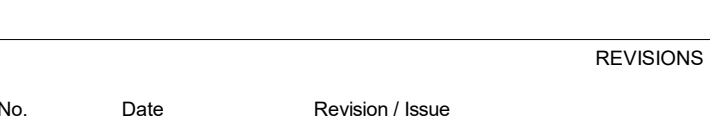
THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.

**BOILER PLANT REPORT GENERATION**

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SHEET INFORMATION

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Job Number:	22000573.00
Drawn:	BRE
Checked:	RCW
Approved:	BRE

SHEET TITLE

**BACON ELEMENTARY SCHOOL MECHANICAL DETAILS, SCHEDULES, & CONTROLS**

SCALE

Scale: 12" = 1'-0"

SHEET NUMBER

**M2.2**

**1 HEATING CONTROL - CONDENSING BOILER PRIMARY/SECONDARY - BES**  
 NO SCALE

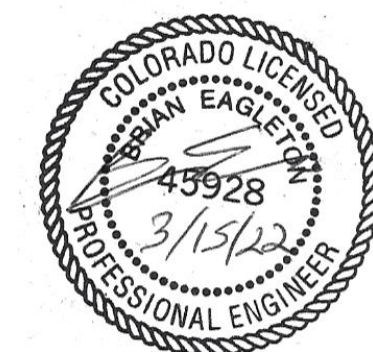
PSD - Bacon ES Boiler Replacement

Fort Collins, CO



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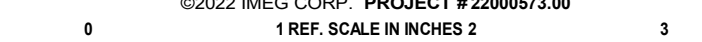
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SHEET TITLE

MECHANICAL COMCHECK

SCALE

Scale: 12" = 1'-0"

SHEET NUMBER

M3.0



COMcheck Software Version COMcheckWeb  
**Mechanical Compliance Certificate**

**Project Information**

Energy Code:	90.1 (2019) Standard
Project Title:	PSD BACON ELEMENTARY SCHOOL BOILER REPLACEMENT
Location:	Fort Collins, Colorado
Climate Zone:	5b
Project Type:	Addition
Permit Date:	03.15.2022
Permit No.:	100% CONSTRUCTION

<b>Construction Site:</b> 5844 S Timberline Rd Fort Collins, Colorado 80528	<b>Owner/Agent:</b> Jason Lee Poudre School District 2445 Laporte Ave. Fort Collins, Colorado 80521 (970) 222-9795 jlee@psdschools.org	<b>Designer/Contractor:</b> Brian Eagleton IMEG Corp. 7600 East Orchard Road, Suite 250S, Greenwood Village Denver, Colorado 80111 (303) 796-6019 brian.r.eagleton@imegcorp.com
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**Mechanical Systems List**

**Quantity System Type & Description**

- 1 BOILER B-1:  
Heating: Hot Water Boiler, Capacity 1250 kBtu/h, Gas  
Proposed Efficiency: 96.00 % Et, Required Efficiency: 80.00 % Et
- 1 BOILER B-2:  
Heating: Hot Water Boiler, Capacity 1250 kBtu/h, Gas  
Proposed Efficiency: 96.00 % Et, Required Efficiency: 80.00 % Et

**Mechanical Compliance Statement**

*Compliance Statement:* The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2019) Standard requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Brian Eagleton- Mechanical Engineer		03/15/2022
Name - Title	Signature	Date

**1** COMCHECK REPORT- BES  
 NO SCALE



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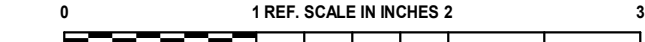
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Checked	CW
Approved	MHM

SHEET TITLE

ELECTRICAL COVERSHEET

SCALE

Scale: As Indicated

SHEET NUMBER

E0.0

**ELECTRICAL GENERAL NOTES:**

DEVICE KEY:

A = MOUNTING (IF APPLICABLE)  
 1 = CIRCUIT NUMBER

\*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

ELECTRICAL MOUNTING SUBSCRIPT KEY:

- A MOUNT AT 4" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
- C MOUNT AT CEILING
- H MOUNT ORIENTED HORIZONTALLY
- L MOUNT IN CASEWORK
- M MOUNT IN MODULAR FURNITURE
- R MOUNT IN SURFACE RACEWAY
- EWV ELECTRIC WATER COOLER

**ELECTRICAL INSTALLATION NOTES:**

- THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADA STANDARDS FOR ACCESSIBLE DESIGN. REFER TO THE ADA GUIDELINES FOR ALL CONFIGURATION DETAILS ON THIS PAGE FOR ADDITIONAL INFORMATION.
- CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
- FLUSH MOUNT ALL DUPLEX RECEPTACLES AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.
- ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPPS. REFER TO 28.05.03 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
- ELECTRICAL EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
- ALL WELDING SHALL BE ACCORDING TO AMERICAN WELDING SOCIETY STANDARDS. CONTRACTOR SHALL FURNISH TO THE ARCHITECT/ENGINEER CERTIFICATES QUALIFYING EACH WELDER, PRIOR TO START OF WORK. THE ARCHITECT/ENGINEER RESERVES THE RIGHT TO REQUIRE QUALIFYING DEMONSTRATION, AT THE CONTRACTOR'S EXPENSE, OF ANY WELDERS ASSIGNED TO THE JOB.
- EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
- ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 28.05.53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

**ELECTRICAL RENOVATION NOTES:**

- THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, AND SYSTEMS.
- EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
  - NOT ALL EXISTING EQUIPMENT ARE NOT SHOWN. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS WITH NEW WORK BEFORE STARTING WORK.
  - EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GENERAL CONTRACTOR PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
  - THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
  - THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
  - WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

**ELECTRICAL PHASING NOTES:**

- REFER CONSTRUCTION MANAGER'S/GENERAL CONTRACTOR'S INSTRUCTIONS FOR MORE DETAILS AND PHASING SCHEDULES AND FOR CONCURRENT WORK. MECHANICAL AND ELECTRICAL DRAWINGS DEPICT THE INTENT OF THE FINAL DESIGN. THE MECHANICAL AND ELECTRICAL DRAWINGS DO NOT DEPICT THE MEANS AND METHODS TO MEET THE REQUIREMENTS OF THE PHASING CRITERIA.
- REVIEW PROJECT PHASING PLANS TO COORDINATE DEMOLITION WORK, OUTAGES, ETC. WITH AFFECTED ADJACENT AREAS.
- PROVIDE TEMPORARY LIGHTING, POWER, SYSTEMS, ETC. AS NEEDED TO MAINTAIN SERVICE TO ALL AREAS DURING ALL PHASES OF PROJECT.
- PHASE DEMOLITION WORK TO MINIMIZE DOWNTIME.

**VIEW KEY**

NAME: \_\_\_\_\_ LEVEL NAME: \_\_\_\_\_  
 HEIGHT ABOVE PROJECT 0'-0": \_\_\_\_\_

INDICATES DIRECTION OF TRUE NORTH

INDICATES PLAN OR DETAIL NUMBER

INDICATES PLAN OR DETAIL NAME

INDICATES PLAN OR DETAIL SCALE

INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS

DETAIL REFERRED TO BY SECTION CUT

SHEET DETAIL IS LOCATED ON \_\_\_\_\_

**LINE TYPE AND TAG KEY:**

NEW WORK BY THIS CONTRACTOR (WIDE LINE)

NEW

EXISTING TO BE REMOVED (SHORT DASHED PATTERN)

NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)

EXISTING

EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

**ELECTRICAL SYMBOL LIST**

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	GB	26 05 26	GROUND BUS
	ECONN	26 05 33	ELECTRICAL CONNECTION
	JB	26 05 33	JUNCTION BOX
	PANEL ###	26 24 16	PANELBOARD - RECESS MOUNT
	PANEL ###	26 24 16	PANELBOARD - SURFACE MOUNT
	DS#FDS#DSS#	26 28 16	DISCONNECT SWITCH
	REC-DUP	26 27 26	DUPLEX RECEPTACLE, 125V
	REC-DUP-GFI	26 27 26	DUPLEX GFI RECEPTACLE, 125V
	REC-DUP-GFLR	26 27 26	GROUND FAULT DEVICE
	REC-DUP-WP	26 27 26	DUPLEX GFI WEATHERPROOF RECEPTACLE 125V
	REC-USB	26 27 26	DUPLEX RECEPTACLE, USB CHARGING
	REC-QUAD	26 27 26	QUAD RECEPTACLE, 125V
	REC-QUAD-GFI	26 27 26	QUAD GFI RECEPTACLE, 125V

**ELECTRICAL ABBREVIATION KEY**

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
GFI	GROUND FAULT INTERRUPTER
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
SV	SOLENOID VALVE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

**CONTRACTOR ABBREVIATION KEY**

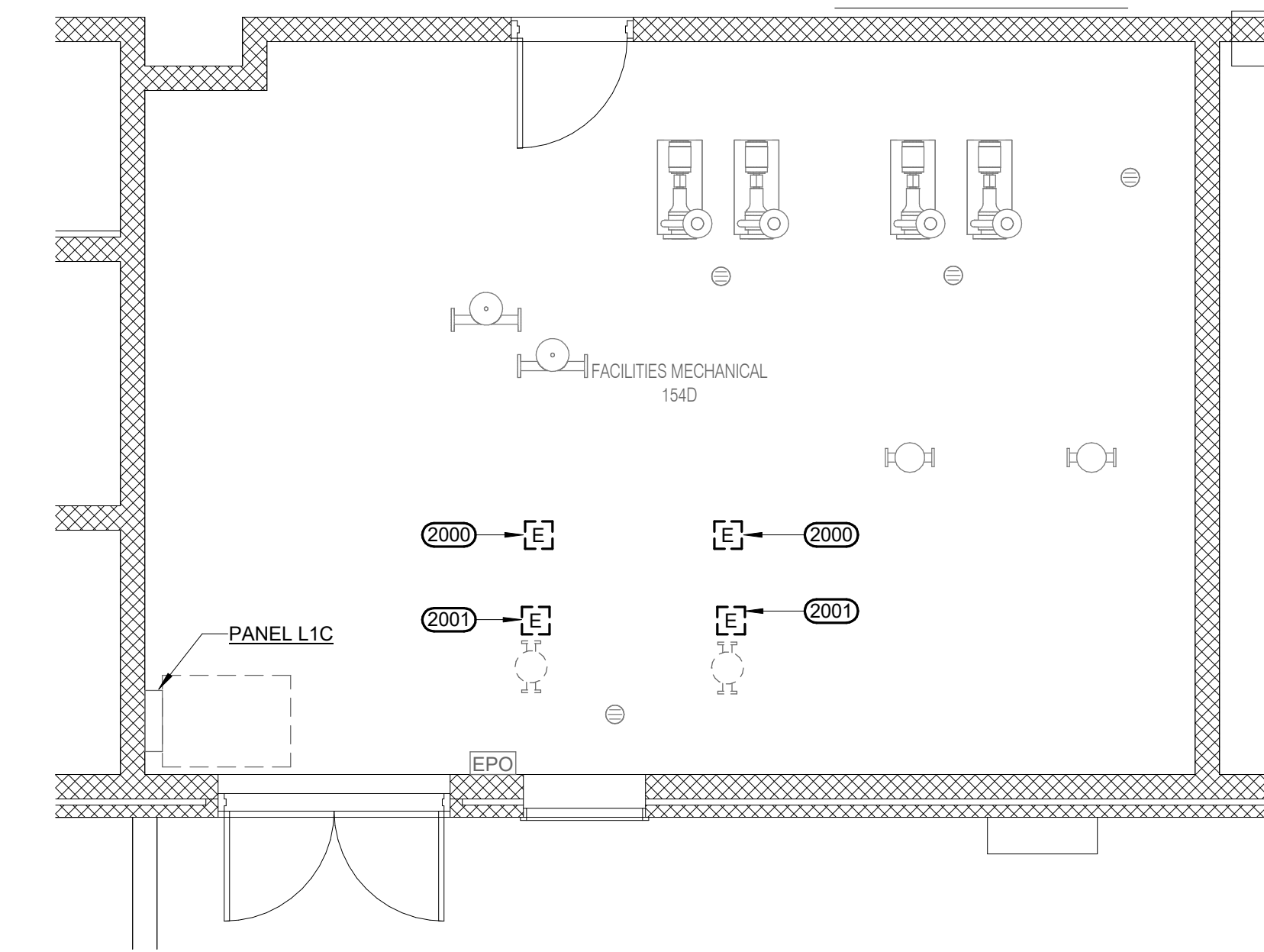
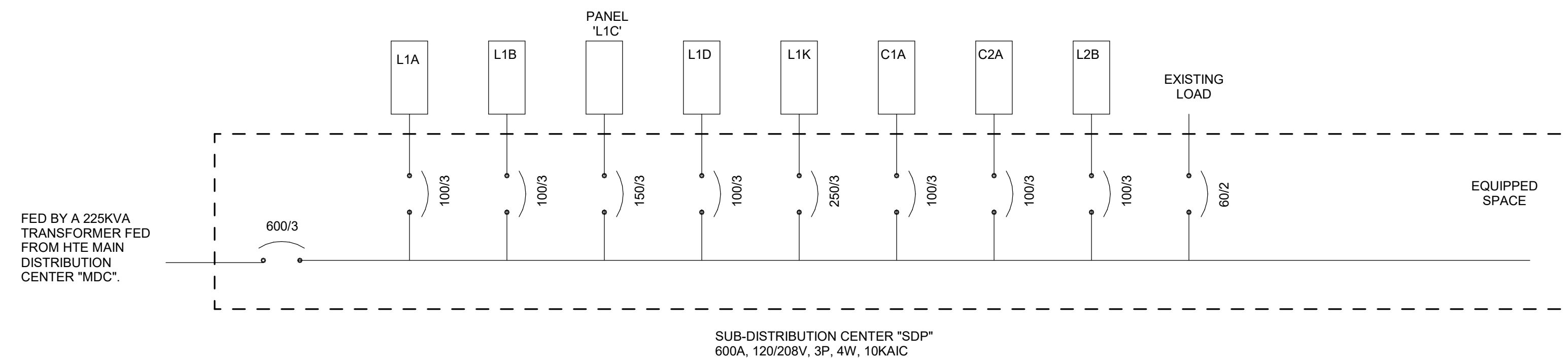
ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR



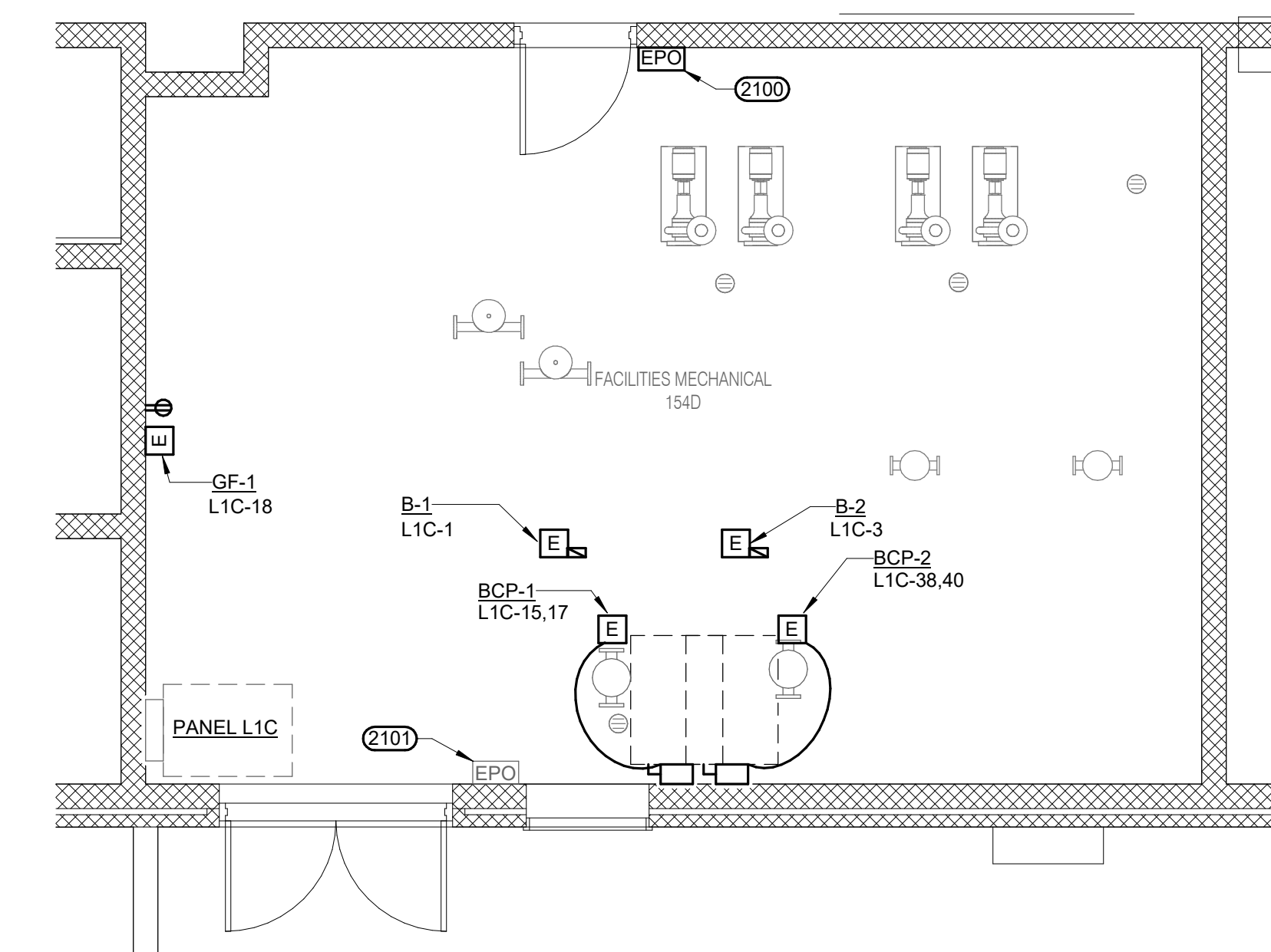


**KEYNOTES**

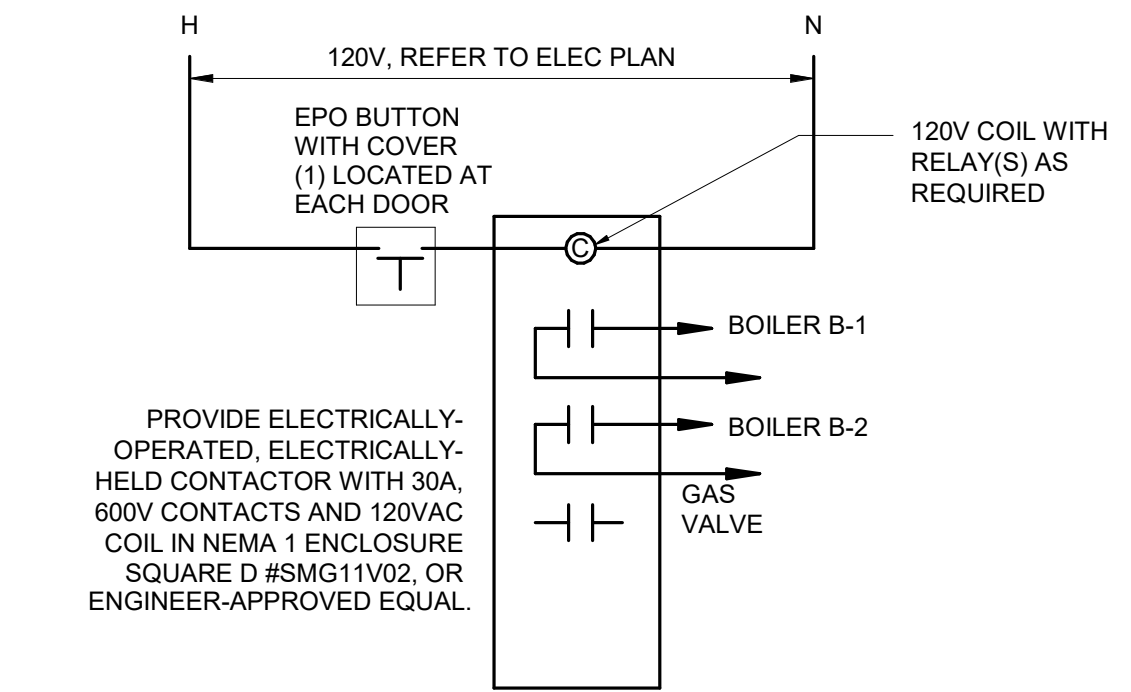
- 2000 DISCONNECT EXISTING 120V 14HP BOILER BURNER TO BE REPLACED WITH NEW 120V UNIT. SAVE AND PROTECT WIRES FOR REUSE.
- 2001 DISCONNECT EXISTING 120V 3/4HP BOILER CIRCULATION PUMP IN ITS ENTIRETY TO BE REPLACED WITH NEW 208V-1PHASE UNIT. REMOVE WIRES BACK TO SOURCE. CONDUIT TO REMAIN FOR REUSE.
- 2100 EMERGENCY POWER OFF "EPO" BUTTON PROVIDED BY TEMPERATURE CONTROL CONTRACTOR AND WIRED BY EC. ROUTE CIRCUITS FEEDING ALL GAS FIRED EQUIPMENT INCLUDING BOILERS, WATER HEATERS AND GAS VALVE(S) THRU CONTACTOR FOR SHUT DOWN BY EPO. REFER TO DETAIL ON DRAWING 4/E3.0.
- 2101 EXISTING EPO TO REMAIN. DISCONNECT FROM DEMOED BOILERS AND RECONNECT TO NEW BOILERS. PROVIDE ALL NECESSARY COMPONENTS FOR A COMPLETE AND FUNCTIONING SYSTEM.



**1 FIRST FLOOR DEMOLITION - ELECTRICAL - BACON ELEMENTARY SCHOOL**  
1/4" = 1'-0"



**2 FIRST FLOOR - ELECTRICAL - BACON ELEMENTARY SCHOOL**  
1/4" = 1'-0"



**4 MECHANICAL RM EPO - GAS SERVICE SHUT-DOWN**  
1/2" = 1'-0"

**3 EXISTING PARTIAL ELECTRICAL ONE LINE**  
1/2" = 1'-0"

**EXISTING SPD, 600A 120/208V LOAD SUMMARY**

EXISTING LOAD BASED ON RECORD DRAWINGS DATED '2005'

EXISTING = + 182.80 KVA

**PANELBOARD L1C**

NEW LOAD = + 1.97 KVA

TOTAL = 184.77 KVA AT 208V-3PHASE = 512.87A

EXISTING FEEDER/DISTRIBUTION BOARD IS ADEQUATE FOR NEW LOADS.

**EXISTING PANEL L1C 150A 120/208V LOAD SUMMARY**

EXISTING LOAD (BASED ON RECORD DRAWINGS DATED '2005')

EXISTING = + 40.43 KVA

EXISTING LOAD REMOVED

B-1 & P5 = - 3.18 KVA

B-2 & P6 = - 3.18 KVA

- 6.36 KVA

NEW LOAD ADDED

B1 & BCP-1 = + 3.60 KVA

B2 & BCP-2 = + 3.60 KVA

GF-1 = + 1.13 KVA

= + 8.33 KVA

TOTAL = 42.4 KVA AT 208V-3PHASE = 117.7A

EXISTING 150A PANEL IS ADEQUATE FOR NEW LOADS.

**PANEL L1C**

MOUNTING: SURFACE  
ENCLOSURE: NEMA PB 1  
FED FROM: 0 A/O/P @  
LOCATION:

SOLID NEUTRAL GROUND BUS

MAIN: 150 A MLO  
VOLTS: 120/208 Wye  
PHASE: 3  
WIRE: 4  
SCCR: 10 kA  
ISC UNKNOWN 0.00 kA

NOTES:

KEY	CT NO.	LOAD DESCRIPTION	OCBP AMPS	P	WIRE SIZE	H	N	G	VD %	A	B	C	VD %	WIRE SIZE	H	N	G	OCBP AMPS	LOAD DESCRIPTION	CT NO.	KEY	
[3]	1	NEW BOILER B-1	20 A	1	12	12	12	0.63	0.84	0								1	20 A	EXISTING GEN. JACKET HTR	2	--
[3]	3	NEW BOILER B-2	20 A	1	12	12	12	0.74		0.84	0							1	20 A	EXISTING GEN. BATTERY CHG	4	--
--	5	EXISTING UH-1	20 A	1	--	--	--	--	--	--	--	0	0	--	--	--	--	1	20 A	EXISTING HEAT TAPE	6	--
--	7	EXISTING BOILER CONTROL...	20 A	1	--	--	--	--	--	0	0			--	--	--	--	1	20 A	EXISTING TEMP CONTROLS	8	--
--	9	EXISTING TCC PANEL	20 A	1	--	--	--	--	--	0	0			--	--	--	--	1	20 A	EXISTING TEMP CONTROLS	10	--
--	11	EXISTING RECEPTACLES	20 A	1	--	--	--	--	--	0	0			--	--	--	--	1	20 A	EXISTING P-8	12	--
--	13	EXISTING IRRIGATION...	20 A	1	--	--	--	--	--	0	0			--	--	--	--	1	20 A	EXISTING P-7	14	--
[2]	15	NEW BCP-1	30 A	2	10	10	10	0.41		1.38	--							1	20 A	EXISTING P-7	14	--
--	17	SPACE	--	--	--	--	--	--	--	--	--	1						1		SPACE	16	--
--	19	SPACE	--	--	--	--	--	--	--	0								1	20 A	NEW GLYCOL FEEDER GF-1	18	[3]
--	21	SPACE	--	--	--	--	--	--	--	0								1	20 A	EXISTING RECEPTACLES	20	--
--	23	SPACE	--	--	--	--	--	--	--	0								1	20 A	EXISTING P-15	22	--
--	25	EXISTING SF-1	20 A	1	--	--	--	--	--	0	0			--	--	--	--	1	20 A	EXISTING DWH-1	24	--
--	27	EXISTING EXHAUST FAN #3	20 A	1	--	--	--	--	--	0	0			--	--	--	--	3	30 A	EXISTING P-4	26	--
--	29	EXISTING EXHAUST FAN #4	20 A	1	--	--	--	--	--	0	0			--	--	--	--	--	--	--	28	--
--	31	EXISTING P-1	30 A	3	--	--	--	--	--	0	0			--	--	--	--	3	30 A	EXISTING P-3	32	--
--	33	SPACE	--	--	--	--	--	--	--	0	0			--	--	--	--	--	--	--	34	--
--	35	SPACE	--	--	--	--	--	--	--	0	0			--	--	--	--	--	--	--	36	--
--	37	EXISTING P-2	30 A	3	--	--	--	--	--	0	1.38			0.48	10	10	10	2	30 A	NEW BCP-2	38	[2]
--	39	SPACE	--	--	--	--	--	--	--	0	1.38			--	--	--	--	--	--	--	40	--
--	41	SPACE	--	--	--	--	--	--	--	0	1.38			--	--	--	--	1	--	SPACE	42	--
			<b>Total Load:</b>			2.22 kVA	3.60 kVA	2.21 kVA														
			<b>Total Amps:</b>			18.51	30.01	18.42														

**LOAD SUMMARY**

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*
Motor	5.52 kVA	100.00%	5.52 kVA	
Power	2.51 kVA	100.00%	2.51 kVA	
				<b>TOTAL CONNECTED LOAD:</b> 8.03 kVA
				<b>TOTAL ESTIMATED DEMAND LOAD:</b> 8.03 kVA
				<b>TOTAL CONNECTED AMPS:</b> 22.29 A
				<b>TOTAL ESTIMATED DEMAND AMPS:</b> 22.3 A

\*TOTAL DEMAND CALCULATIONS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

**CIRCUIT KEY NOTES:** [1] EXISTING BREAKER MADE SPARE DURING DEMO OF EXISTING BOILERS. [2] PROVIDE NEW CIRCUIT BREAKER TO MATCH EXISTING MANUFACTURER AND AIC RATING OF PANELBOARD. [3] EXISTING CIRCUIT BREAKER REVISED LOAD.

**ELECTRICAL CONNECTION SCHEDULE**

TAG NAME	Description	VOLTAGE	LOAD CLASS.	QTY @ HP	MOTORS	APPARENT LOAD	FLA	MCA	MOCF	OCBP	CIRCUIT NUMBER	WIRE AND RACEWAY	DISCONNECT	CONTROLLER / STARTER	COMMENTS	
L1C																
B-1	BOILER	120 V, 1Ø	Power	0 - 0		0.84 kVA	7 A	0 A	0 A	0 A	20 A	1	2#12 & 1#12 EGC IN 3/4" C.	EC	MOTOR RATED SWITCH	BACON. PROVIDE A MANUAL MOTOR RATED SWITCH AS A MEANS OF DISCONNECT.
B-2	BOILER	120 V, 1Ø	Power	0 - 0		0.84 kVA	7 A	0 A	0 A	0 A	20 A	3	2#12 & 1#12 EGC IN 3/4" C.	EC	MOTOR RATED SWITCH	BACON. PROVIDE A MANUAL MOTOR RATED SWITCH AS A MEANS OF DISCONNECT.
BCP-1	BOILER CIRC PUMP	208 V, 1Ø	Motor	1 @ 2		2.76 kVA	0 A	0 A	0 A	0 A	30 A	15,17	2#10 & 1#10 EGC IN 3/4" C.	EC	30A3P 20A LPN-RK	MFG ECM BACON. PROVIDE A HEAVY DUTY 30A FUSED DISCONNECT.
BCP-2	BOILER CIRC PUMP	208 V, 1Ø	Motor	1 @ 2		2.76 kVA	0 A	0 A	0 A	0 A	30 A	38,40	2#10 & 1#10 EGC IN 3/4" C.	EC	30A3P 20A LPN-RK	MFG ECM BACON. PROVIDE A HEAVY DUTY 30A FUSED DISCONNECT.
GF-1	GLYCOL FEEDER	120 V, 1Ø	Power	1 @ 0.33		0.83 kVA	7 A	0 A	0 A	0 A	20 A	18	2#12 & 1#12 EGC IN 3/4" C.	EC	20A GFCCI RECEPTACLE	BACON. PROVIDE 20A GFCCI RECEPTACLE AS MEANS OF DISCONNECT.

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REVISIONS

No.	Date	Revision / Issue

SHEET INFORMATION

Issue: **100% CONSTRUCTION DOCUMENTS**

Date: **03.15.2022**

Job Number: **22000573.00**

Drawn: **CW**

Checked: **CW**

Approved: **MHM**

**BACON ELEMENTARY SCHOOL ENLARGED BOILER DEMO AND NEW ELECTRICAL PLAN**

SCALE  
Scale: **As Indicated**

SHEET NUMBER