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BURNHAM BOILER REPLACEMENT MCHENRY COUNTY COLLEGE

8900 US ROUTE 14 CRYSTAL LAKE, ILLINOIS 60014

GENERAL CONSTRUCTION NOTES

1. OSHA RULES, REGULATIONS AND REQUIREMENTS ARE A PART OF THIS CONTRACT. ALL CONTRACTORS SHALL FOLLOW THEM. ALONG WITH STATE AND LOCAL REQUIREMENTS, FOR THE SAFETY OF WORKERS ON THE JOB AND PASSERS-BY.

2. THE GENERAL CONSTRUCTION NOTES, GENERAL CONDITIONS AND SPECIFICATIONS FOR GENERAL ARE A PART OF THIS PROJECT.

3. PROVIDE ALL NECESSARY LIABILITY INSURANCE POLICIES AS REQUIRED TO KEEP THE OWNER AND ARCHITECT OF THE PROJECT HARMLESS FROM ANY CLAIM AGAINST THEM.

4. OBTAIN PERMITS TO ALL PRIVATE AND PUBLIC AUTHORITIES HAVING JURISDICTION OF THE PROJECT. OWNER TO PAY FEES.

5. ALL WORK IS TO BE DONE IN ACCORDANCE WITH VILLAGE OR CITY BUILDING CODE AND ALL OTHER CODE ENFORCEMENT IN THAT JURISDICTION. THE WORK SHALL BE ACCEPTED BY THE ARCHITECT AND LEFT IN PERFECT OPERATING CONDITION.

6. ALL CONTRATORS SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO SUBMITTING HIS FINAL BID. IF ANY DISCREPANCY, NOTIFY THE ARCHITECT AT ONCE.

7. CONSULT AND CHECK AT ALL TIMES THE LATEST DRAWING OF OTHER TRADES DRAWING FOR DEVICES AND EQUIPMENT WHICH MAY AFFECT YOUR WORK.

8. PROVIDE COMPLETE HYAC, PLUMBING, ELECTRICAL AND OTHER SYSTEMS READY FOR USE.

9. WORK SHALL BE PERFORMED IN A NEAT, WORKMAN LIKE MANNER AND TO HIGH STANDARD OF THE COMMERCIAL INDUSTRY.

10. SUBMIT AND OBTAIN APPROVAL FROM OWNER/ARCHITECT PRIOR TO ORDERING, MANUFACTURING, PURCHASING OR INSTALLING ANY EQUIPMENT.

11. CONFER WITH THE OTHER TRADES IN COORDINATION OF THIS WORK FOR CLEARANCES CHASES, RECESSES AND OPENINGS REQUIRED.

12. ALL EQUIPMENT SHALL BEAR THE "UL/AGA" LABEL FOR THE SPECIFIC USE OF THE INSTALLATION.

13. ALL SYSTEMS SHALL BE GUARANTEED FOR ONE YEAR MINIMUM FROM THE DATE THE OWNER ACCEPTS THE BUILDING. MAKE ALL NECESSARY ADJUSTMENT, AIR BALANCES AND CORRECTIONS AS NEEDED FOR PROPER FUNCTION OF ALL SYSTEMS WITHOUT COST TO THE OWNER, AFTER COMPLETION OF THE PROJECT, SUBMIT THREE SETS OF 'AS BUILT' AND SHOP DRAWINGS OF ALL INSTALLED SYSTEMS AND EQUIPMENT PROPERTY BOUND AND HANDED TO ARCHITECT FOR OWNERS FILE.

14. EACH CONTRACTOR SHALL HAVE DIRECT CONTROL AND MANAGEMENT OF ALL CONSTRUCTION OPERATIONS AND BE RESPONSIBLE FOR THE SATISFACTORY OVERALL PERFORMANCE OF ALL HIS SUPPLIERS AND SUBCONTRACTORS AS WELL AS ALL ASSIGNED CONTRACTORS IN ORDER THAT THE ENTIRE PROJECT BE COORDINATED AND SUPERVISED. GENERAL CONTRACTOR TO TURN OVER THE PROJECT IN COMPLETE OPERATING CONDITION IRRESPECTIVE OF WHETHER THE DRAWINGS AND REFERENCE SHEETS COVER EVERY INDIVIDUAL ITEM IN MINUTE DETAIL.

15. EACH CONTRACTOR SHALL VERIFY, AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS AT THE BUILDING SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH THE WORK WRITTEN DIMENSIONS ON DRAWINGS SHALL HAVE PRECENDENCE OVER SCALED DIMENSIONS.

16. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR UNLOADING, STORING, INSPECTION FOR DAMAGE WHEN RECEIVED, AND LOSS FROM SITE AND/OR DAMAGE AFTER RECEIPT FOR ALL MATERIALS FURNISHED BY OWNER FOR INSTALLATION BY GENERAL CONTRACTOR (OR HIS SUBCONTRACTORS)

17. NO PRODUCT SUBSTITUTION WILL BE ALLOWED WITHOUT THE APPROVAL OF OWNER AND ARCHITECT.

IB. EACH CONTRACTOR SHALL INSURE THAT ALL BUILDING WORK WILL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, GOVERNING AUTHORITIES, AND UNDERWRITER REGULATIONS.

19. EACH CONTRACTOR SHALL LEAVE THE PREMISES IN BROOM-CLEAN CONDITION AFTER EACH DAY OF WORK.

20. ALL OPENINGS AND OTHER PROVISIONS NECESSARY FOR INSTALLATION OF ARCHITECTURAL, PLUMBING, MECHANICAL, ELECTRICAL OR OWNER'S APPARATUS AND EQUIPMENT, MUST BE VERIFIED WITH THE SPECIFIC TRADES INVOLVED AND WITH OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION, AND MUST BE OF SIZE, LOCATION AND CONFIGURATION, ETC., REQUIRED.

21. ALL WORK SHALL GENERALLY BE PERFORMED DURING THE NORMAL WORKING DAY PROVIDE 48- HOUR NOTICE TO OWNER OF ANY WORK TO BE PERFORMED OUTSIDE OF NORMAL WORK HOURS.

22. ALL PARTITIONS WHICH ARE TO EXTEND TIGHT UP TO THE FLOOR OR ROOF CONSTRUCTION ABOVE, ARE TO BE CUT TO FIT AROUND BEAMS, JOISTS, DUCTS, CONDUITS, PIPES, HANGERS, ETC., ALL SUCH CUTS SHALL BE ACCURATE AND STRAIGHT AND BE SEALED WITH COMPRESSIBLE COMPOUND AND MADE AIRTIGHT PROVIDE DOUBLE SLIP TRACK FOR ROOF DEFLECTION.

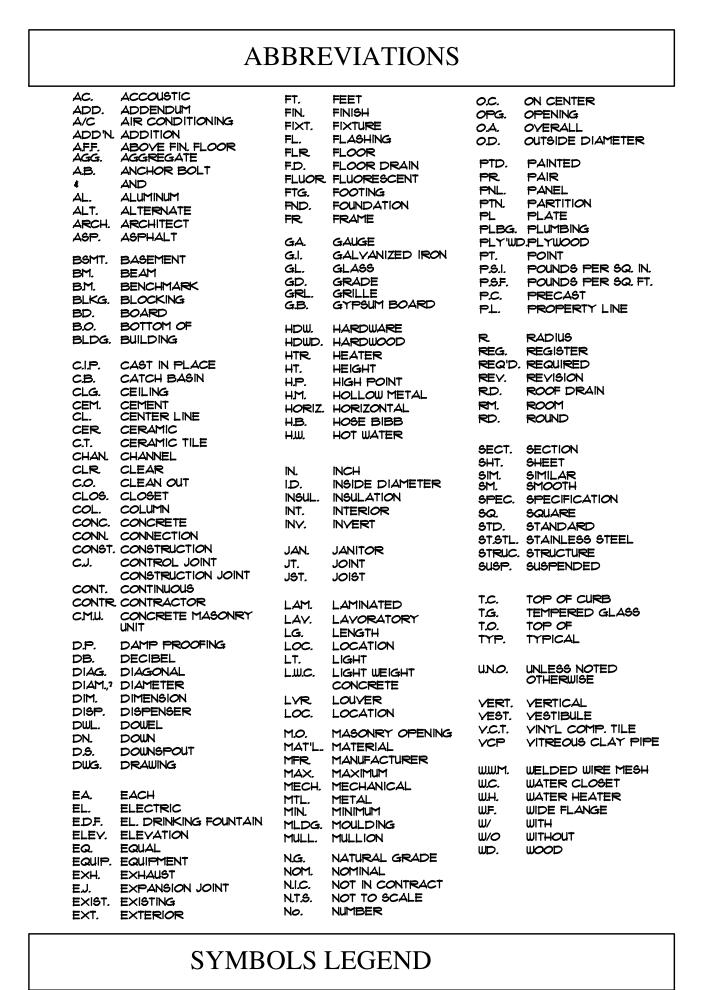
23. VERIFY ALL DIMENSIONS & CONDITIONS SHOWN ON THE PLANS WITH EXISTING CONDITIONS AT THE SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT.

24. ANY DEVIATIONS FROM THESE PLANS MUST BE APPROVED BY THE ARCHITECT OF RECORD AND THE CITY.

25. PROVIDE SUBMITTALS OF ALL PROPOSED EQUIPMENT AND MATERIALS TO OWNER AND ARCHITECT FOR REVIEW PRIOR TO ORDER OR INSTALLATION.

NOTES TO BIDDERS / CONTRACTOR

Before submitting bid proposals for the work in these specifications and drawings, each bidder shall familiarize themselves with all existing conditions. No extra compensation will be allowed because of a misunderstanding as to the amount of work involved or lack of knowledge of existing conditions, in case of any discrepancies between drawings, the most stringent note or condition shall apply and the general contractor shall notify the Architect immediately of such discrepancies.



ROOM NAME (TOP) AND ROOM NUMBER (BOTTOM)

DETAIL REFERENCE - DETAIL No. (TOP), SHEET No. (BOTTOM)

INTERIOR ELEVATION - ELEVATION No. (TOP).

BUILDING/WALL SECTION - SECTION No. (TOP),

BUILDING COLUMN GRID LINE

SHEET No. (BOTTOM)

MCHENRY COUNTY COLLEGE **BURNHAM BOILER** REPLACEMENT

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COVER

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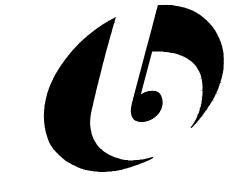
BUILDING CORNER GRID

• KEYED NOTE - SEE SCHEDULES

AD AH	ACCESS DOOR AIR HANDLING SYSTEM	MBH	THOUSANDS BRITISH THERMAL UNITS PER HOUR
AMP	AMPERE	MD	MOTORIZED DAMPER
BDD	BACK DRAFT DAMPER	MAN.	MANUAL
BHP	BRAKE HORSEPOWER	MAX.	MAXIMUM
BOD	BOTTOM OF DUCT	MIN.	MINIMUM
BTU	BRITISH THERMAL UNIT	NC	NOISE CRITERIA
BTUH	BRITISH THERMAL UNITS PER HOUR	N.C.	NORMALLY CLOSED
CA	COMBUSTION AIR	NIC	NOT IN CONTRACT
CCP	CENTRAL CONTROL PANEL	NK	NECK
CCW	COUNTER CLOCKWISE	NO	NUMBER
CFM	CUBIC FEET PER MINUTE	N.O.	NORMALLY OPEN
CI	CAST IRON	NTS	NOT TO SCALE
CL	CENTER LINE	OA	OUTSIDE AIR
CLG	CEILING	OAI	OUTSIDE AIR INTAKE
C.O. CONC	CLEAN OUT CONCRETE	OD ODED	OUTSIDE DIAMETER
CONC	COMPRESSION TANK	OPER	OPERATION
CW	CLOCKWISE	0V	OUTSIDE VELOCITY
DB	DECIBEL	P PCF	PUMP POUNDS PER CUBIC FOOT
DBT	DRY BULB TEMPERATURE	PCr P∆	PRESSURE DIFFERENCE
DIA	DIAMETER	1 PH	SINGLE PHASE
DIFF	DIFFUSER	3 PH	THREE PHASE
DWG	DRAWING	PRESS	PRESSURE
E	EXHAUST FAN	PRV	PRESSURE REDUCING VALVE
EAT	ENTERING AIR TEMPERATURE	PS	PIPE SUPPORT
EFF	EFFICIENCY	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EJ	EXPANSION JOINT	PSIG	POUNDS PER SQUARE INCH GAUGE
EL	ELEVATION	RC	RECEIVER CONTROLLER
ET	EXPANSION TANK	REG	REGISTER
ETR	EXISTING TO REMAIN	REQD	REQUIRED
EWT	ENTERING WATER TEMPERATURE	RET	RETURN
EXH	EXHAUST	RH	RELATIVE HUMIDITY
EXP	EXPANSION	RPM	REVOLUTIONS PER MINUTE
F	FLUE	RO	ROOF OPENING
° F	DEGREES FAHRENHEIT	RM	ROOM
FC	FAN COIL UNIT	RT	ROOFTOP UNIT
FD	FIRE DAMPER	RV	PRESSURE RELIEF VALVE
FL	FLOOR	S	SUPPLY FAN
FLGD FLEX	Flanged Flexible	SAV	SOLENOID AIR VALVE
FMD	FLOW MEASURING DEVICE	SCRD SD	SCREWED
FPM	FEET PER MINUTE	SOL	SMOKE DAMPER SOLENOID
FS	FLOW SWITCH	SP	STATIC PRESSURE
FT	FOOT	SPEC	SPECIFICATION
GA	GAGE OR GAUGE	SPT	
GPD	GALLONS PER DAY	STD	STANDARD
GPH	GALLONS PER HOUR	STM	STEAM
GPM	GALLONS PER MINUTE	T	TANK
HZ	HERTZ	TC	TIME CLOCK
HC	HEATING COIL	TSP	TOTAL STATIC PRESSURE
HP	HORSEPOWER	Π	TEMPERATURE TRANSMITTER
HTG	HEATING	TYP	TYPICAL
ID	INSIDE DIAMETER	UCD	UNDERCUT DOOR
IN	INCH	UG	UNDERGROUND
INSUL	INSULATION	٧	VENTILATION FAN
KW	KILOWATT	VA	VALVE
KWH	KILOWATT HOUR	VD	VOLUME DAMPER
LAT	LEAVING AIR TEMPERATURE	VEL	VELOCITY
LB/H	POUNDS PER HOUR	VIB ISOL	VIBRATION ISOLATOR
LR	LOW LIMIT RELAY	VPT 	VELOCITY PRESSURE TRANS
LN LOV	LINEAR	W	WATT
LOV LP	INTAKE OR EXHAUST LOUVER LOCAL PANEL	W/	WITH
LP LWT	LEAVING WATER TEMPERATURE	WB	WET BULB TEMPERATURE
L## 1	ELAVINO MAILIA ILIMIFERATURE	WC	WATER COLUMN

ELEVATION OR SECTION PRESSURE GAUGE ASSEMBLY SAME DRAWING PRESSURE GAUGE ASSEMBLY W/SNUBBER AUTO VENT, VALVE— PIPE DISCHANGE TO DRAIN PRESSURE REDUCING VALVE PRESSURE REDUCING VALVE ASSEMBLY ANGLE VALVE RELIEF OR SAFETY VALVE DISCHARGE TO ROOM BLIND FLANGE — BASKET TYPE STRAINER DUPLEX RELIEF OR SAFETY VALVE DISCHARGE TO OUTSIDE (THRU ROOF UNLESS OTHERWISE INDICATED) BASKET TYPE STRAINER SIMPLEX DIAPHRAGM OPERATED VALVE SOLENOID OPERATED VALVE DRAIN VALVE - PIPE TO FLOOR DRAIN (19 MM 3/4" UNLESS OTHERWISE INDICATED) — SWING CHECK VALVE EXPANSION JOINT ----- TEST FITTING FLEXIBLE CONNECTION THERMOMETER ----- FLOAT OPERATED VALVE — FLOW IN THE DIRECTION OF ARROW THERMOMETER WELL FLOW MEASURE DEVICE THREE WAY VALVE FLOW SWITCH ——— FULL PORT BALL VALVE Y-TYPE STRAINER WITH CLEANOUT PLUG --- VALVE WITH CHAIN WHEEL GLOBE VALVE — TWO-WAY VALVE HOSE END DRAIN VALVE 3/4" (UNLESS OTHERWISE INDICATED) MOTOR OPERATED DAMPER OR VALVE MANUAL BUTTERFLY VALVE OPPOSED DAMPER BLADES $\emptyset\emptyset\emptyset$ PARALLEL DAMPER BLADES MANUAL AIR VENT VALVE ROOM THERMOSTAT (S-SENSOR) PRESSURE SENSOR (S-SENSOR) ——— MOTOR OPERATED BUTTERFLY VALVE HUMIDITY SENSOR (S-SENSOR) --- NEEDLE VALVE NEW CONNECTION PIPE ANCHOR PIPE HANGER OR SUPPORT PLUG VALVE OR COCK

SYMBOLS + ABBREVIATIONS



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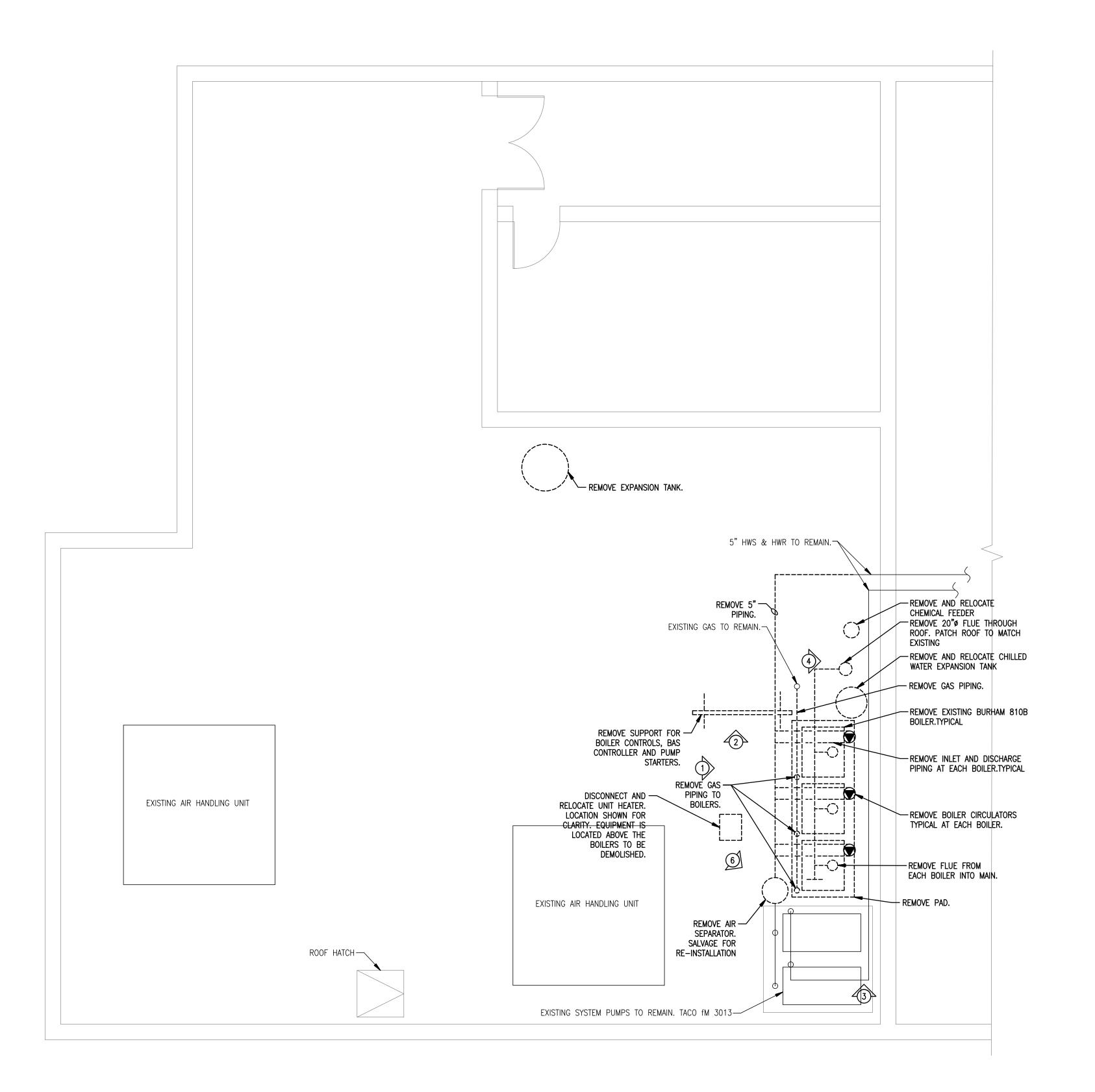
MCHENRY COUNTY COLLEGE BURNHAM BOILER REPLACEMENT

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Drawing Ti

MECHANICAL SYMBOLS AND ABBREVIATIONS

BE Project No. 17021
Drawn By: JPB/CP
Drawing No.
IVIOOO

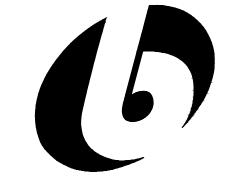




- 1. DRAWINGS INCLUDED WITHIN DOCUMENTS ARE GRAPHIC REPRESENTATIONS OF FILED CONDITIONS, PIPING AND EQUIPMENT. LOCATION ARE APPROXIMATE. THESE GRAPHIC DEMONSTRATIONS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY OFFSET, SUPPORT OR OBSTRUCTION.
- 2. PRIOR TO REMOVAL OF ANY COMPONENT PERFORM A TESTING EFFORT TO DETERMINE THE FOLLOWING:
- SYSTEM FLOW WITH P-EX1 OPERATIONAL.
- SYSTEM FLOW WITH P-EX2 OPERATIONAL.
- SYSTEM FLOW WITH P-EX1 AND P-EX2 OPERATIONAL.
- FOR EACH OF THE ABOVE DETERMINE
- TOTAL FLOW GPM 2. INLET PSI
- 3. OUTLET PSI 4. MOTOR AMPS
- MOTOR MAKE MOTOR MODEL
- 7. SHUT OFF HEAD
- INCLUDE PUMP CURVES WITH DUTY POINTS PLOTTED. INDICATE PUMP BHP.
- 3. REMOVE EXISTING BURNHAM 810B BOILERS. DISCONNECT

CONTROLS, POWER, GAS, FLUE AND HYDRONIC PIPING.

- 4. REMOVE THE EXISTING FLUE, STACK, BREACHING IN ENTIRETY. HIRE THE OWNERS PREFERRED ROOFING CONTRACTOR TO REPAIR ROOF.
- 5. DRAIN HYDRONIC SYSTEM TO LOCATION APPROVED BY
- 6. COORDINATE SHUTDOWNS, NOISY WORK, USE OF FLAME, GRINDING WITH OWNER. SCHEDULE WORK 7 DAYS PRIOR TO PERFORMING.
- 7. PROTECT EXISTING EQUIPMENT WITHIN AREA OF WORK THAT IS NOT AFFECTED BY THE SCOPE OF THIS PROJECT FROM INCIDENTAL DAMAGE. AIR HANDLERS, PUMPS, CONTROLLERS, POWER PANELS, BOILERS, CHILLERS.
- 8. ANY USE OF FLAME, TORCH OR GRINDING EFFORT SHALL EMPLOY SOURCE CAPTURE DEVICES WITH HEPA AND CARBON FILTRATION TO REMOVE PARTICULATE AND NEUTRALIZE ODORS.
- 9. COORDINATE LOCATION OF DUMPSTER WITH OWNER.
- 10. DISCONNECT CONTROL OF COMBUSTION AIR DAMPER. NEW BOILERS SHALL BE SEALED COMBUSTION.
- 11.REMOVE BACKBOARD WITH CONTROLS, STARTERS, AND CONDUITS.



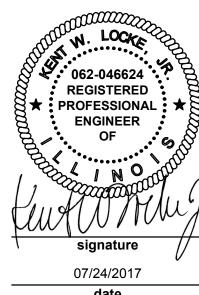
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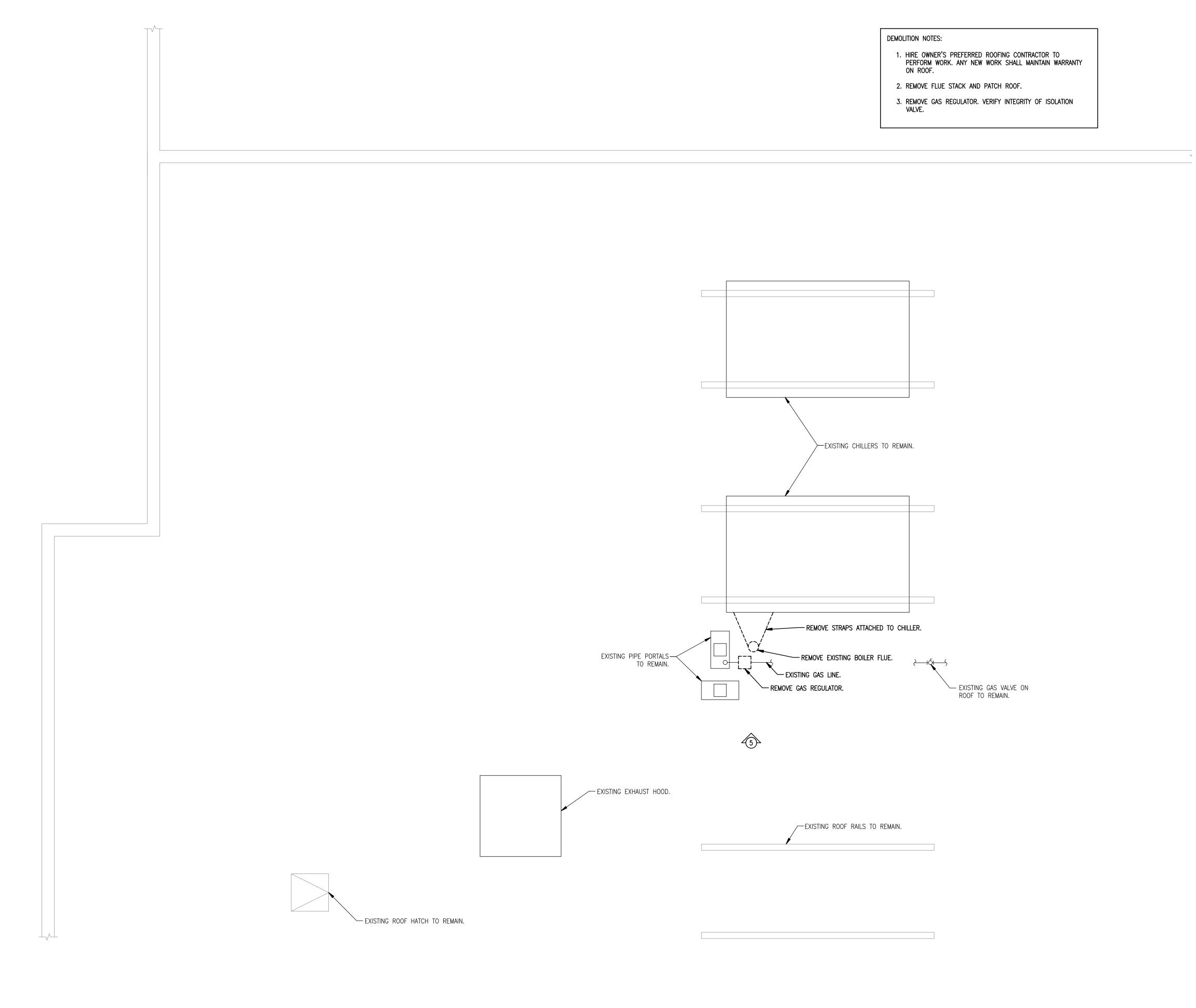
MECHANICAL DEMOLITION **BOILER ROOM PLAN**

BE Project No. 17021 JPB/CP











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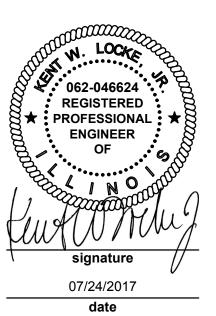
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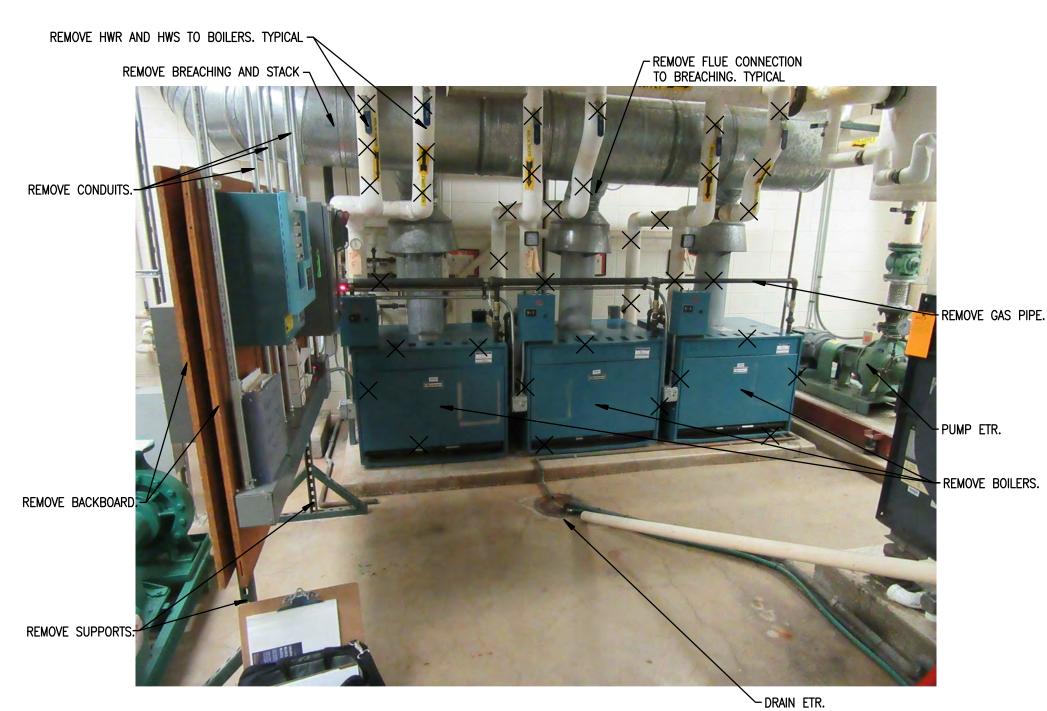
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Drawi

MECHANICAL DEMOLITION ROOF PLAN

BE Project No. 17021
Drawn By:
JPB/CP
Drawing No.
MD101



1 IMAGE AT BOILERS - FRONT VIEW

NTS

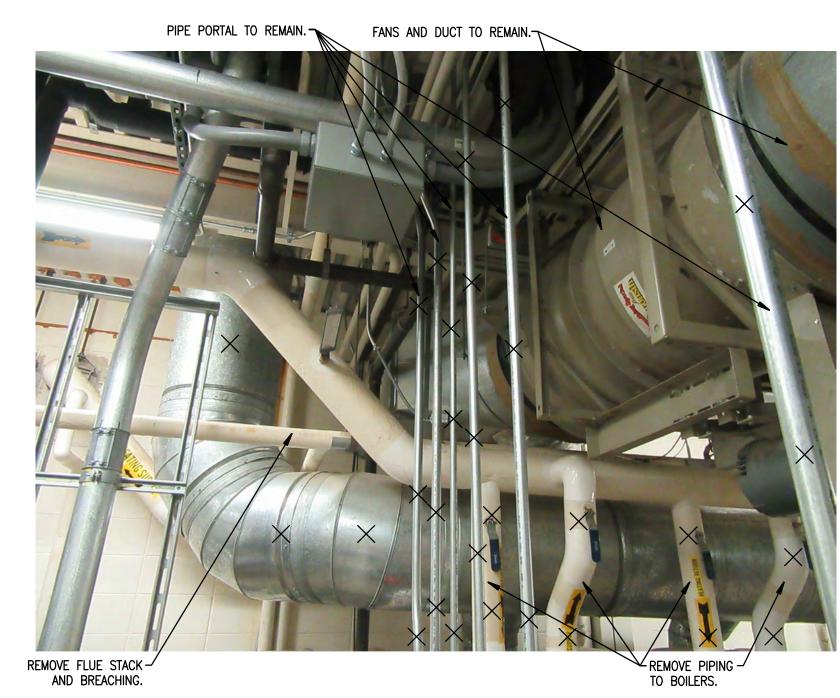


2 IMAGE AT BOILER CONTROL AND NTS



IMAGE AT BOILERS - SIDE VIEW

NTS



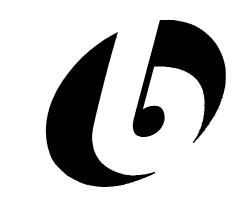
4 IMAGE AT FLUE STACK - MECHANICAL ROOM NTS



5 IMAGE AT FLUE STACK - ROOF



6 IMAGE AT FUTURE ROUTE OF FLUE



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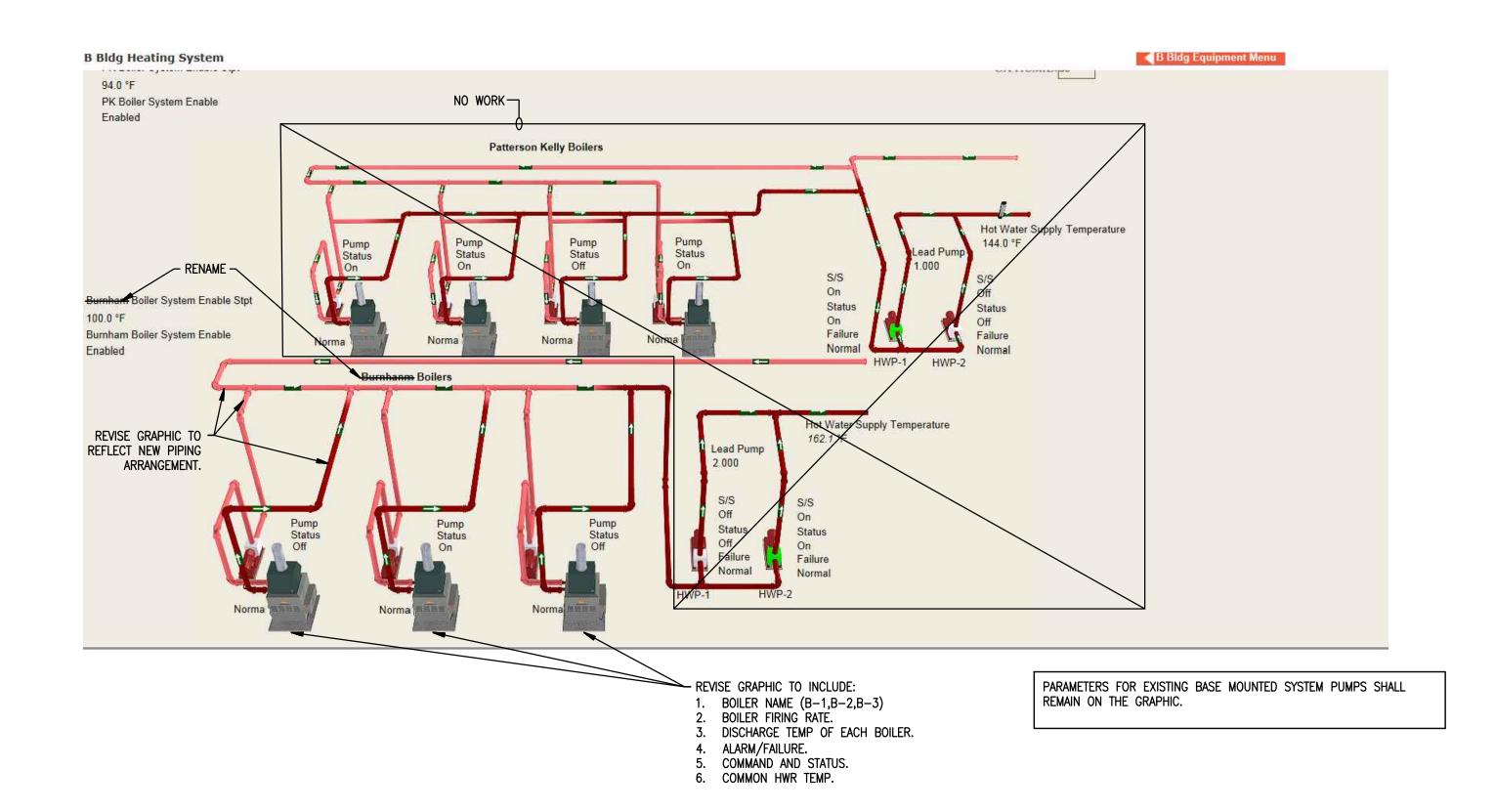
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BURNHAM BOILER
REPLACEMENT

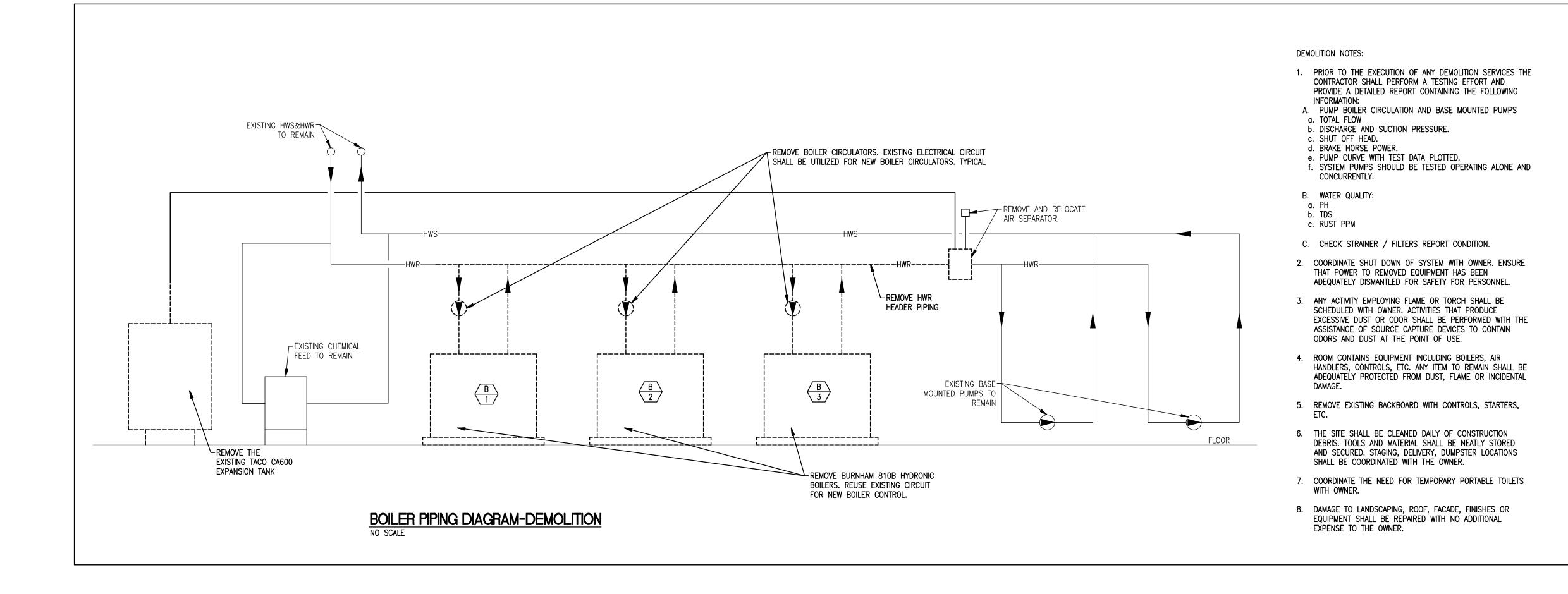
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Draw

MECHANICAL DEMOLITION IMAGES

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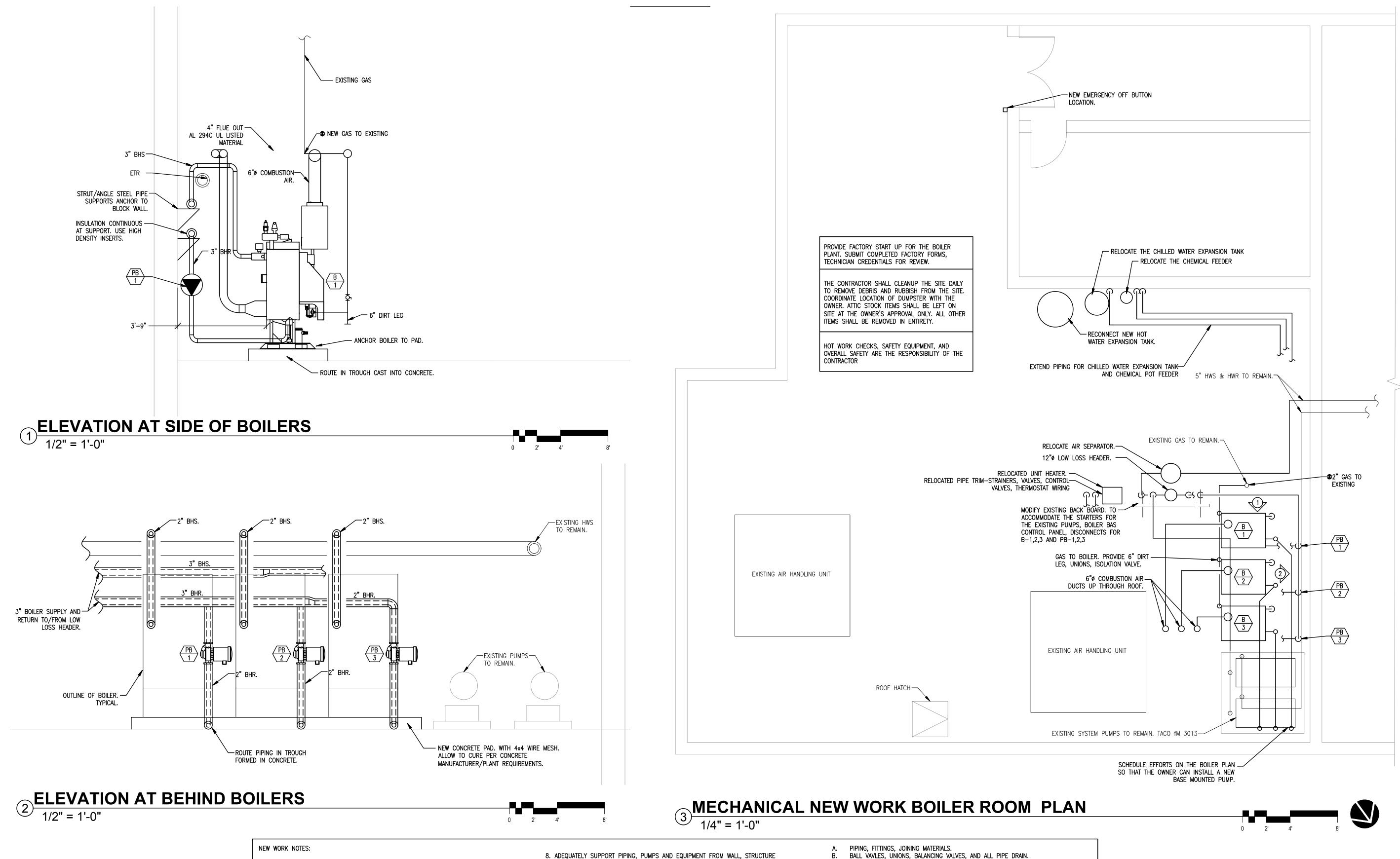
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Drawing Title

MECHANICAL PIPING DIAGRAM

BE Project No. 17021
Drawn By:
JPB/CP
Drawing No.
MD201
IVIDZOT



1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A COMPLETE AND OPERATING SYSTEM. ENSURE THAT ALL EQUIPMENT ASSOCIATED WITH THE BOILER PLANT IS FUNCTIONING APPROPRIATELY.

- 2. PERSONNEL PERFORMING WORK SHALL BE EXPERIENCED TRADESMEN TRAINED FOR THE TASK BEING PERFORMED. HIRE APPROPRIATE TRADED TO PERFORM ELECTRICAL,
- CONTROLS, CONCRETE, ROOFING, ETC.
- 3. PROVIDE FLUE CONSTRUCTED OF AL294C. SYSTEM SHALL BE UL LISTED. PERFORM A LEAKAGE TEST AND INCLUDE REPORT WITH OPERATIONS AND MAINTENANCE MANUEL.
- 4. PROVIDE START UP SERVICES. EMPLOY A FACTORY CERTIFIED TECHNICIAN TO PERFORM START UP TASKS AND COMPLETE THE MANUFACTURER'S START UP CHECKLIST.
- 5. EXTEND THE EXISTING CONTROLS TO ACCOMMODATE SEQUENCE OF OPERATIONS. PROVIDE ALL NECESSARY WIRING, INTERFACE CARDS, RELAYS, SENSORS AND
- 6. PROVIDE THREE EQUALLY SIZED BOILERS WITH DEDICATED BOILER PUMPS, INDIVIDUAL FLUES AND COMBUSTION AIR, NEW 6" PAD CONDENSATE DRAIN WITH NEUTRALIZATION KIT, FACTORY CONTROLS AND INTERFACE CARD TO COMMUNICATE WITH THE EXISTING BUILDING AUTOMATION SYSTEM.
- 7. PIPING, UNIONS, VALVES, PUMPS HOUSING AND ALL HOT SURFACE SHALL BE INSULATED WITH FIBERGLASS AND ALL SERVICE JACKETS. PROVIDE REMOVABLE COMPONENTS AT VALVES, UNIONS, ETC. PROVIDE HIGH DENSITY INSERTS AT ALL PIPING SUPPORTS.

- 8. ADEQUATELY SUPPORT PIPING, PUMPS AND EQUIPMENT FROM WALL, STRUCTURE ABOVE, OR FLOOR.
- 9. RELOCATE STARTERS FOR EXISTING SYSTEM PUMPS. EXTEND POWER AND CONTROLS
- TO ACCOMMODATE.
- 10. PIPING SHALL BE COPPER WITH SOLDER JOINTS OR STEEL PIPING WITH THREADED
- 11. ALL COMPONENTS SHALL BE RATED FOR 125 PSIG.
- 12. PROVIDE BRASS BALL VALVES WITH EXTENDED STEMS THAT PROTRUDE BEYOND THE INSULATION. VALVES SHALL BE FULL PORT, TWO PIECE WITH STAINLESS STEEL BALL.
- 13. PROVIDE VALVE TAGS FOR EACH NEW ISOLATION VALVES. TAGS SHALL BE BRASS WITH STAMPED LETTERS OR NUMBERS AND BEADED CHAIN.
- 14. PROVIDE STENCILS TO LABEL PIPING AND IDENTIFY GLOW DIRECTION.
- 15. PROVIDE PLASTIC EQUIPMENT LABELS AFFIXED TO EQUIPMENT.
- 16. PROVIDE OWNER TRAINING ON ROUTINE MAINTENANCE THAT SHOULD BE PROVIDED
- 17. PROVIDE TEST AND BALANCE EFFORT PRIOR TO SUBSTANTIAL COMPLETION. 18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PRODUCT SUBMITTALS FOE THE FOLLOWING:

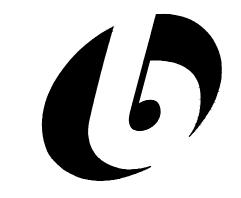
- INSULATION, REMOVABLE INSULATION COVERS, AND HIGH DENSITY INSERTS.
- PUMPS FLEX CONNECTIONS, PUMP CURVES,
- EXPANSION TANK.
- FLUE AND COMBUSTION AIR MATERIAL AND JOINING METHODS, HANGERS AND SUPPORTS.
- CONCRETE.
- CONTROLS COMPONENTS SENSORS, SWITCHES, RELAYS, CONTROLLERS.
- 19. PROVIDE OPERATION AND MAINTENANCE MANUAL THAT INCLUDES INFORMATION FOR THE BELOW ITEMS. PROVIDE A COVER SHEET THAT LISTS THE EQUIPMENT LABEL, MODEL NUMBER, SERIAL NUMBER, AND VOLTAGE. PROVIDE HARD COPIES AND PDF.
- PUMPS. CONTROLS.

A. BOILERS.

- AS-BUILD DRAWINGS.
- TESTING AND BALANCING.
- TESTING FLUE, PIPING. START UP REPORTS.
- 20. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS. MAKE ANY ADJUSTMENTS TO LAYOUT TO AVOID COLLISIONS WITH EXISTING INFRASTRUCTURE OR OTHER TRADES. PROVIDE EFFORT TO DEVELOP COORDINATION DRAWINGS WITH

21.HIRE OWNERS PREFERRED ROOFING CONTRACTOR TO COMPLETE ROOFING WORK.

SIGN OFF BY ALL CONTRACTORS OR SUB CONTRACTORS.



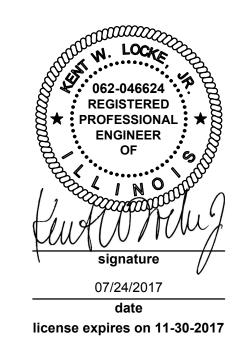
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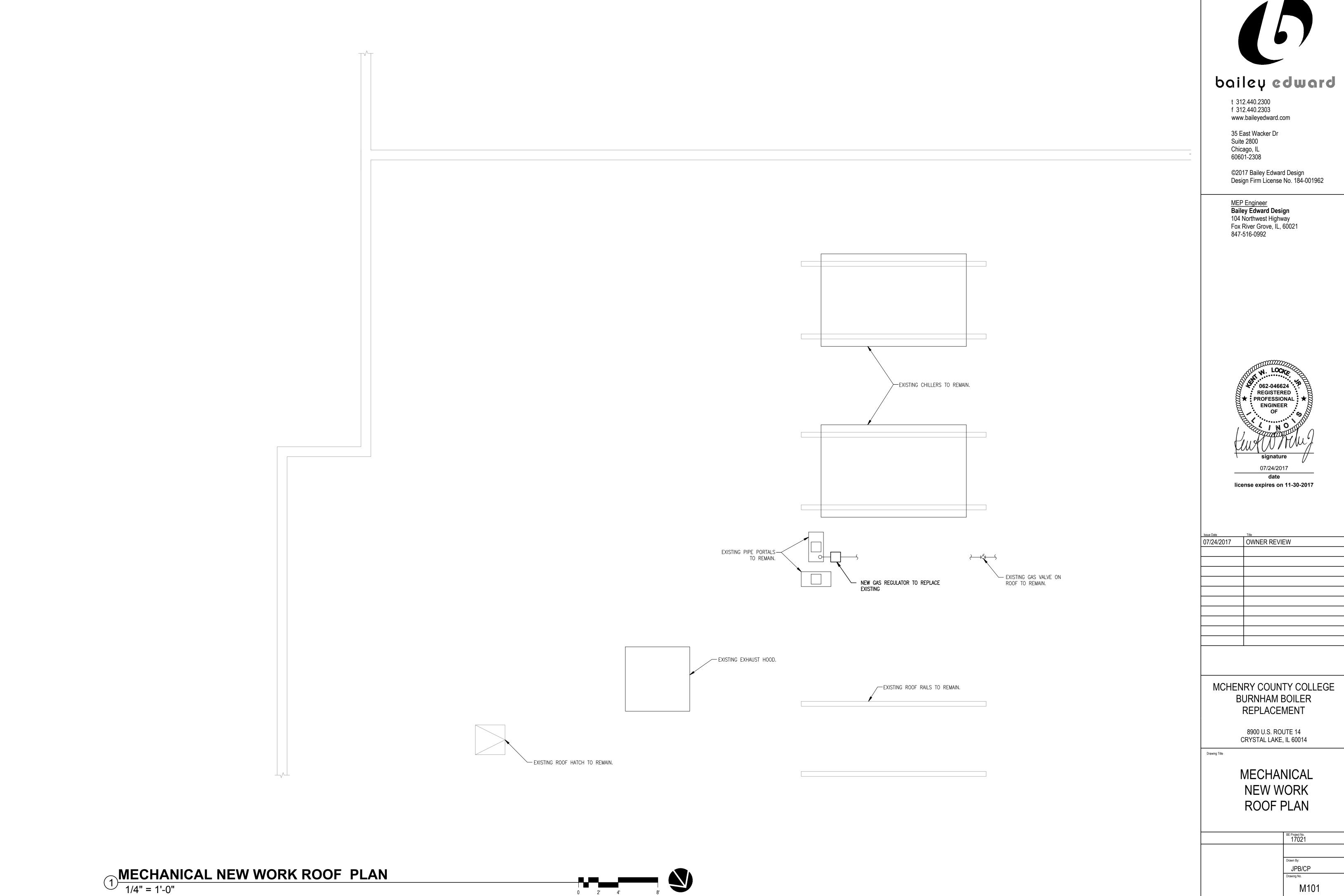
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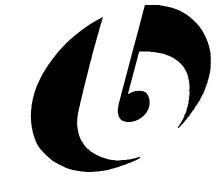
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MECHANICAL NEW WORK BOILER ROOM PLAN

BE Project No. 17021 JPB/CP





Issue Date	Title
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MECHANICAL STANDARDS

GENERAL:

THE CONTRACTOR SHALL THOROUGHLY REVIEW ALL THE RELEVANT CONSTRUCTION DOCUMENTS FOR INTERFACE COORDINATIONS, AND DETAILS. THESE DOCUMENTS SHALL INCLUDE ARCHITECTURAL, STRUCTURAL, AND CIVIL DRAWINGS AND SPECIFICATIONS.

THE CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS AND CERTIFICATES OF INSPECTION FOR ALL EQUIPMENT INCLUDED IN HIS WORK. ALL FEES AND ASSESSMENTS IN CONNECTION THEREWITH SHALL BE PAID FOR BY THIS CONTRACTOR AND INCLUDED IN HIS BID.

THE CONTRACTOR SHALL PROVIDE GUARANTEES FOR HIS WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

APPLICABLE CODES AND STANDARDS:

CODES:

CITY OF _____, IL, BUILDING CODE
CITY, COUNTY AND/OR STATE FIRE CODES
NATIONAL ELECTRICAL CODE (NEC)
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
APPLICABLE LOCAL CODES AND ORDINANCES
BOCA BASIC NATIONAL BUILDING CODE
BOCA ENERGY CODE

STANDARDS:

AIR—CONDITIONING AND REFRIGERATION INSTITUTE (ARI)
AIR DIFFUSION COUNCIL (ADC)
AIR MOVEMENT AND CONTROL ASSOCIATION, INC. (AMCA)
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR—CONDITIONING ENGINEERS (ASHRAE)
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
AMERICAN WATER WORKS ASSOCIATION (AWWA)
INSTITUTE OF BOILER AND RADIATOR MANUFACTURERS (IBR)
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

UNDERWRITERS' LABORATORIES (UL)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

VISITING THE SITE:

BEFORE SUBMITTING THE PROPOSAL FOR HIS WORK, THE CONTRACTOR SHALL VISIT THE SITE. HE SHALL SATISFY HIMSELF AS TO THE NATURE AND LOCATION OF THE WORK AND THE GENERAL AND LOCAL CONDITIONS. HE SHALL HAVE FULL KNOWLEDGE AS TO TRANSPORTATION, DISPOSAL, HANDLING AND STORAGE OF MATERIALS, AVAILABILITY OF WATER, ELECTRIC POWER AND ALL FACILITIES IN THE AREA WHICH WILL HAVE A BEARING ON THE PERFORMANCE OF HIS WORK AND THE CONTRACT FOR WHICH HE SUBMITS HIS PROPOSAL.

SHEET METAL AND AIR-CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC.

ANY FAILURE BY THIS CONTRACTOR TO ACQUAINT HIMSELF WITH ALL OF THE AVAILABLE INFORMATION SHALL NOT RELIEVE HIM FROM ANY RESPONSIBILITY FOR PERFORMING HIS WORK PROPERLY.

NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR CONDITIONS INCREASING THIS CONTRACTOR'S COST WHICH WERE NOT KNOWN TO OR APPRECIATED BY HIM WHEN SUBMITTING HIS PROPOSAL IF THE CONDITION WAS OBVIOUS AND COULD HAVE BEEN DISCOVERED BY HIM IF HE HAD VISITED THE PROJECT AND HAD THOROUGHLY INFORMED HIMSELF OF ALL EXISTING CONDITIONS WHICH WOULD AFFECT HIS WORK.

PROTECTION

PROTECT ALL MATERIALS OR EQUIPMENT INSTALLED UNDER THIS CONTRACT FROM ALL DAMAGE DUE TO BUILDING OPERATIONS, WEATHER, ETC. CONTRACTOR WILL BE HELD STRICTLY RESPONSIBLE FOR ANY DAMAGE INCURRED TO MATERIALS, EQUIPMENT, ETC., DUE TO HIS FAILURE TO TAKE NECESSARY PRECAUTIONS OR TO PROVIDE PROPER PROTECTION. TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE WORK OF OTHERS. IN THE EVENT OF DAMAGE TO OTHER WORK CAUSED BY THIS CONTRACTOR, HIS EMPLOYEES, OR HIS APPARATUS, HE SHALL HAVE SAME REPAIRED AT HIS OWN EXPENSE.

CLEANING UP:

UPON COMPLETION OF WORK AND TESTING, REMOVE ALL LABELS, TAGS, ETC., FROM ANY SPECIALTIES, EQUIPMENT, ETC., AND REMOVE ALL GREASE OR OTHER PROTECTIVE COATING FROM ANY MACHINERY, EQUIPMENT, ETC., AND LEAVE WORK IN A MANNER ACCEPTABLE TO THE ENGINEER.

RUBBISH:

THIS CONTRACTOR SHALL NOT ALLOW WASTE MATERIAL OR RUBBISH CAUSED BY HIS EMPLOYEES TO ACCUMULATE IN OR ABOUT THE PREMISES BUT SHALL REMOVE SAME, AND AT THE COMPLETION OF THE WORK HE SHALL REMOVE ALL RUBBISH, TOOLS, SCAFFOLDING AND SURPLUS MATERIALS FROM ABOUT THE BUILDING AND SHALL LEAVE HIS WORK THOROUGHLY CLEANED AND READY FOR USE. IN CASE OF A DISPUTE AS TO RESPONSIBILITY, THE OWNER WILL REMOVE THE RUBBISH AND CHARGE THE COST OF SUCH WORK TO THE CONTRACTOR.

ASBESTOS:

ASBESTOS IN NON-REMOVAL SITUATIONS:IT IS UNDERSTOOD AND AGREED THAT THIS CONTRACT DOES NOT CONTEMPLATE HANDLING OF, OR DESIGN INCLUDING USE OF, ASBESTOS OR ANY HAZARDOUS WASTE MATERIAL. THEREFORE, OWNER AGREES TO HOLD HARMLESS, DEFEND, AND INDEMNIFY ARCHITECT/ ENGINEER FOR ALL CLAIMS, LAWSUITS, EXPENSES, OR DAMAGES ARISING FROM OR RELATED TO THE HANDLING, USE, TREATMENT, PURCHASE, SALE, STORAGE, OR DISPOSAL OF ASBESTOS, ASBESTOS PRODUCTS, OR ANY HAZARDOUS WASTE MATERIALS (OR HAZARDOUS MATERIALS IN GENERAL).

ASBESTOS/HAZARDOUS WASTE DISCLAIMER:

NOTHING IN THIS AGREEMENT SHALL IMPOSE LIABILITY ON THE ARCHITECT/ENGINEER FOR CLAIMS, LAWSUITS, EXPENSES, OR DAMAGES ARISING FROM OR IN ANY MANNER RELATED TO THE EXPOSURE TO, OR THE HANDLING, MANUFACTURE, OR DISPOSAL OF ASBESTOS, ASBESTOS PRODUCTS, OR HAZARDOUS WASTE IN ANY OF ITS VARIOUS FORMS, AS DEFINED BY THE ENVIRONMENTAL PROTECTION AGENCY.

MECHANICAL IDENTIFICATION:

GENERAL: PROVIDE MECHANICAL IDENTIFICATION FOR MECHANICAL EQUIPMENT, PIPING AND DUCT SYSTEMS. COMPLY WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND VIEWING ANGLES OF IDENTIFICATION DEVICES.

EQUIPMENT: PROVIDE EQUIPMENT SYSTEM NUMBER, CAPACITY, FLOW RATE, STATIC PRESSURE, PUMP HEAD, HORSEPOWER, VOLTAGE. PROVIDE "SETON MODEL VENTMARK MARKERS."

PIPING SYSTEMS: PROVIDE SYSTEM DESIGNATION NAME AND DIRECTION OF FLOW. PROVIDE "SETON MODEL SETMARK" PIPE MARKERS.

DUCT SYSTEMS: PROVIDE SYSTEM DESIGNATION NAME AND DIRECTION OF FLOW. PROVIDE "SETON MODEL VENTMARK MARKERS."

TESTING, ADJUSTING, AND BALANCING:

GENERAL: TESTING, ADJUSTING, AND BALANCING SHALL BE PROVIDED BY AN INDEPENDENT CERTIFIED TEST AND BALANCE AGENCY. TESTING SHALL BE PERFORMED IN COMPLETE ACCORDANCE WITH AABC OR SMACNA NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION.

REQUIREMENTS: COMPONENT TYPES OF TESTING, ADJUSTING AND BALANCING SPECIFIED IN THIS SECTION INCLUDES THE FOLLOWING AS APPLIED TO THE FOLLOWING EQUIPMENT: FANS, AIR—CONDITIONING UNITS, DUCTWORK SYSTEMS, VAV BOXES, UNIT HEATERS. AIR SYSTEMS TO BE BALANCED TO WITHIN ±10% OF DESIGN DRAWING AIR QUANTITIES. IF THESE LIMITS CANNOT BE REACHED, BALANCER IS TO SUBMIT A LIST OF RECOMMENDATIONS TO REMEDY THE SITUATION.

EXTENT OF TESTING, ADJUSTING, AND BALANCING WORK IS INDICATED BY REQUIREMENTS OF THIS SECTION AND ALSO BY DRAWINGS AND SCHEDULES, AND IS DEFINED TO INCLUDE, BUT IS NOT NECESSARILY LIMITED TO, AIR DISTRIBUTION SYSTEMS, HYDRONIC DISTRIBUTION SYSTEMS AND ASSOCIATED EQUIPMENT AND APPARATUS OF MECHANICAL WORK. THE WORK CONSISTS OF SETTING SPEED AND VOLUME (FLOW) ADJUSTING FACILITIES PROVIDED FOR SYSTEMS, RECORDING DATA, CONDUCTING TESTS, PREPARING AND SUBMITTING REPORTS, AND RECOMMENDING MODIFICATIONS TO WORK AS REQUIRED BY CONTRACT DOCUMENTS.

TESTER: A FIRM CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) IN THOSE TESTING AND BALANCING DISCIPLINES SIMILAR TO THOSE REQUIRED FOR THIS PROJECT. A FIRM UTILIZING PROCEDURES SET FORTH BY THE SHEET METAL AND AIR—CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). TESTING AND BALANCING SHALL BE ACCOMPLISHED BY EXPERIENCED PERSONNEL TRAINED IN SMACNA PROCEDURES.

AABC COMPLIANCE: COMPLY WITH AABC'S MANUAL MN-1 "AABC NATIONAL STANDARDS" AS APPLICABLE TO MECHANICAL AIR AND HYDRONIC DISTRIBUTION SYSTEMS AND ASSOCIATED EQUIPMENT AND APPARATUS AND SOUND/NOISE CONTROL

INDUSTRY STANDARDS: COMPLY WITH AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR—CONDITIONING ENGINEERS, INC. (ASHRAE) AND SMACNA RECOMMENDATIONS PERTAINING TO MEASUREMENTS, INSTRUMENTS AND TESTING, ADJUSTING AND BALANCING, EXCEPT AS OTHERWISE INDICATED.

START-UP OF EQUIPMENT:

GENERAL: START-UP OF MINOR PIECES OF EQUIPMENT AND SYSTEMS MAY BE ACCOMPLISHED BY THE CONTRACTOR CONFORMING TO MANUFACTURER'S START-UP INSTRUCTIONS. START-UP OF MAJOR PIECES OF EQUIPMENT AND SYSTEMS ARE TO BE ACCOMPLISHED BY MANUFACTURER'S REPRESENTATIVES, WITH OWNER'S REPRESENTATIVES, CONTRACTOR'S REPRESENTATIVES, IN ATTENDANCE.

MAJOR PIECES OF EQUIPMENT AND SYSTEMS: MAJOR EQUIPMENT AND SYSTEMS ARE TO BE DESIGNATED AS FOLLOWS: ROOFTOP HVAC UNITS, VVT SYSTEMS.

DESIGN CRITERIA:

THE FOLLOWING IS CRITERIA USED FOR THE INTERIOR LOADS FOR THE ZONES LISTED

FIRST FLOOR INTERIOR ZONE GENERAL OFFICE: LIGHTING - 2.0 W/SQ.FT.; PEOPLE - 100 SQ.FT./PERSON; MISC. EQUIPMENT - 2.0 W/SQ.FT.

FIRST FLOOR NORTHEAST ZONE

GENERAL OFFICE - LIGHTING - 2.0 W/SQ.FT.; PEOPLE - 100 SQ.FT./PERSON; MISC. EQUIPMENT - 2.0 W/SQ.FT. CLASSROOM - LIGHTING - 2.0 W/SQ.FT.; PEOPLE - 30 SQ.FT./PERSON; MISC. EQUIPMENT - 2.0 W/SQ.FT.

FIRST FLOOR WEST ZONE

GENERAL OFFICE - LIGHTING - 2.0 W/SQ.FT.; PEOPLE - 100 SQ.FT./PERSON; MISC. EQUIPMENT - 2.0 W/SQ.FT. CLASSROOM - LIGHTING - 2.0 W/SQ.FT.; PEOPLE - 30 SQ.FT./PERSON; MISC. EQUIPMENT - 2.0 W/SQ.FT.

DUCT DISTRIBUTION SYSTEMS:

ALL DUCTWORK CONSTRUCTION SHALL BE GALVANIZED STEEL UNLESS OTHERWISE NOTED, AND BE BASED ON SMACNA LOW AND HIGH PRESSURE TYPE. MAXIMUM DUCT AIR LEAKAGE WILL BE 10% OF TOTAL AIR QUANTITY.

ALL LOW PRESSURE AIR-CONDITIONING SUPPLY DUCTWORK WILL BE SEALED.

SOUND LINING FOR DUCTWORK SHALL BE AS FOLLOWS: 1 1/2" FLEXIBLE GLASS FIBER TYPE DUCT LINING WILL BE PROVIDED IN ALL INDOOR SUPPLY, RETURN, AND RELIEF AIR DUCTS. THE INSTALLED INSULATION VALUE SHALL BE A MINIMUM OF R-5. ADJUST INSULATION THICKNESS AS REQUIRED.

ALL DUCT SIZES NOTED ON DRAWINGS ARE AIRWAY SIZES WITHOUT THE SOUND LINING INCLUDED. ADJUST SHEET METAL SIZES ACCORDINGLY.

DUCT INSULATION FOR DUCTWORK SHALL BE AS FOLLOWS: 2" FLEXIBLE GLASS FIBER WITH ALL SERVICE VAPOR BARRIER JACKET FOR ALL NEW SUPPLY AIR DUCTWORK THAT IS NOT SOUND LINED AND FOR ALL OUTDOOR AIR INTAKE DUCTWORK BETWEEN AIR ENTRANCE OF BUILDING TO DISCHARGE SUPPLY AIR REGISTER. INSULATION SHALL HAVE A MINIMUM INSULATION VALUE OF R-5. ADJUST INSULATION THICKNESS AS REQUIRED.

SUPPLY, RETURN AND EXHAUST DIFFUSERS, REGISTERS AND GRILLES WILL BE PROVIDED AS SCHEDULED ON DRAWINGS. ALL AIR OUTLETS AND INLETS SHALL BE COMPATIBLE WITH THE ARCHITECTURAL CEILING AND WALL SYSTEMS. ALL AIR OUTLETS AND INLETS SHALL BE PROVIDED WITH FINISHES AS SELECTED BY ARCHITECT. FOR EXACT LOCATIONS OF ALL AIR OUTLETS AND INLETS, SEE ARCHITECTURAL DRAWINGS.

A 5'-0" MAXIMUM, INSULATED FLEXIBLE DUCT WILL BE PROVIDED TO EACH AIR SUPPLY OUTLET AND RETURN INLET AS REQUIRED; (ONE FOOT LONG FOR SCAC COMPUTER ROOM UNITS).

TAPERED SPIN-IN FITTING, WITH LOCK-IN QUADRANT AND VOLUME DAMPER, WILL BE PROVIDED FROM BRANCHES TO DIFFUSERS FOR LOW PRESSURE DUCTWORK.

ALL BRANCH DUCT TAKE-OFFS WILL BE EQUIPPED WITH TAPERED FITTINGS.

FIRE DAMPERS WILL BE PROVIDED PER PLANS. PROVIDE TYPE "B" FIRE DAMPERS FOR LOW PRESSURE DUCTWORK. PROVIDE A DUCT ACCESS DOOR FOR EACH FIRE DAMPER

VOLUME DAMPERS WILL BE PROVIDED FOR AIR BALANCE PURPOSES.

A CEILING PLENUM RETURN AIR SYSTEM WILL BE UTILIZED.

DUCTWORK CLEANING: ALL DUCTWORK WILL BE CLEANED AND CLEARED OF DEBRIS, DIRT, ETC.

TEST: ALL DUCT SYSTEMS WILL BE TESTED FOR PRESSURE AND LEAKAGE.

AIR BALANCE: ALL AIR HANDLING SYSTEMS WILL BE BALANCED FOR SPECIFIED DESIGN FLOW RATE AND SYSTEM STATIC PRESSURE, INCLUDING SUBMITTING AIR BALANCE REPORTS FOR SHOP DRAWINGS.

PIPING DISTRIBUTION SYSTEM:

GAS PIPING SYSTEM:

GAS PIPING FOR ROOFTOP UNITS WILL BE PROVIDED, INCLUDING SHUTOFF COCKS, METERS, VENTS, SLEEVES, DRAINS, DIRT LEGS, PRV, ETC., AS REQUIRED. PROVIDE SCHEDULE 40, ASTM A120 OR A53 PIPING.

UNDERGROUND GAS PIPING: PROVIDE SCHEDULE 40, ASTM A120 OR A53 PIPING WRAPPED WITH DOUBLE WRAPPED 20 MIL PVC TAPE WITH 50% OVERLAP AND PRIMER OR EQUIVALENT COAL TAR TAPE FOR ADEQUATE CORROSION PROTECTION.

GAS PIPING EXPOSED TO OUTSIDE AIR: PROVIDE SCHEDULE 40, ASTM A120 OR A53 PIPING. PIPING SHALL BE CLEANED AND GIVEN ONE COAT OF RUST—INHIBITING PRIMER AND ONE COAT OF BLACK FINISH PAINT. PROVIDE "PATE CO." TYPE ROOF SUPPORTS AT PROPER INTERVALS. PROVIDE PIPING LAYOUT WITH AMPLE 90 DEGREE ELBOW LEGS FOR PIPING FLEXIBILITY TO TAKE CARE OF PIPE EXPANSION.

GAS PIPING 2" AND SMALLER SHALL BE BUTT-WELDED ABOVE OFFICE BUILDING CEILING. ALL OTHER PIPING 2" AND SMALLER SHALL HAVE SCREWED FITTINGS, UNLESS REQUIRED TO BE BUTT-WELDED BY APPLICABLE BUILDING CODES.

GAS COCKS: 125-LB. WOG, SCREWED, BRONZE, FLAT-HEAD COCK, CRANE NO. 252, FOR SIZES 2" AND SMALLER.

UNIONS SHALL BE MALLEABLE IRON, GROUND BALL JOINT, BRASS FITTED FOR PIPING 2" AND SMALLER.

CONTROL VALVES: VALVES ARE PROVIDED WITH GAS-FIRED EQUIPMENT.

PRESSURE REGULATING VALVES:

DOWNSTREAM OF GAS METER: PROVIDED BY AND INSTALLED BY MECHANICAL CONTRACTOR. PRESSURE REGULATING VALVES SHALL BE SELF-OPERATED, SPRING LOADED WITH VENTS PIPED TO THE OUTSIDE.

MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRESSURE REGULATING VALVES OF ONE OF THE FOLLOWING: FISCHER CONTROLS.

USE SEALANTS ON METAL GAS PIPING THREADS WHICH ARE CHEMICALLY RESISTANT TO NATURAL GAS. USE SEALANTS SPARINGLY, AND APPLY TO ONLY MALE THREADS OF METAL JOINTS.

REMOVE CUTTING AND THREADING BURRS BEFORE ASSEMBLING PIPING.

DO NOT INSTALL DEFECTIVE PIPING OR FITTINGS. DO NOT USE PIPE WITH THREADS WHICH ARE CHIPPED, STRIPPED, OR DAMAGED.

PLUG EACH GAS OUTLET, INCLUDING VALVES, WITH THREADED PLUG OR CAP IMMEDIATELY AFTER INSTALLATION AND RETAIN UNTIL CONTINUING PIPING OR EQUIPMENT CONNECTIONS ARE COMPLETED.

GROUND GAS PIPING ELECTRICALLY AND CONTINUOUSLY WITHIN PROJECT AND BOND TIGHTLY TO GROUNDING CONNECTION.

INSTALL DRIP LEGS IN GAS PIPING BEFORE EACH CONNECTION TO EQUIPMENT, WHERE INDICATED AND WHERE REQUIRED BY CODE OR REGULATION.

INSTALL "TEE" FITTING WITH BOTTOM OUTLET PLUGGED OR CAPPED AT BOTTOM OF PIPE RISERS.

USE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED TOGETHER.

INSTALL PIPING WITH 1/8" PER FOOT DOWNWARD SLOPE IN DIRECTION OF FLOW.

INSTALL VENT PIPING FROM GAS PRV VALVES, IF REQUIRED, TO THE OUTDOORS WITH WEATHERPROOF AND INSECT—PROOF OUTDOOR TERMINATION DEVICES.

DRAIN PIPING SYSTEM:

DRAIN PIPING FROM HEATING AND AIR—CONDITIONING SYSTEMS AND CONDENSATE DRAIN PUMPS TO DRAINS WILL BE PROVIDED.

PROVIDE SCHEDULE 40 PVC PLASTIC PIPING OR PROVIDE SCHEDULE 40, ASTM A120 OR A53 PIPING.

INSTALL A TRAP IN THE DRAIN PIPE.

PROVIDE AND INSTALL A CONCRETE SPLASH BLOCK FOR DRAIN TERMINATION FOR ROOFTOP HVAC UNITS.

PIPING EXPOSED TO OUTSIDE AIR: BLACK STEEL PIPING EXPOSED TO OUTSIDE AIR SHALL BE CLEANED AND GIVEN ONE COAT OF RUST—INHIBITING PRIMER AND ONE COAT OF BLACK FINISH PAINT.

PIPE CLEANING: ALL PIPING SYSTEMS WILL BE THOROUGHLY CLEANED AND FLUSHED, AS REQUIRED

HANGERS AND SUPPORTS SHALL BE PROVIDED AND INSTALLED FOR ALL PIPING AND TUBING. WHEREVER NECESSARY ADDITIONAL HANGERS AND SUPPORTS SHALL BE PROVIDED TO PREVENT VIBRATION OR EXCESSIVE DEFLECTION TO PIPING AND TUBING. ALL HANGERS SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE PIPING MATERIAL

PROVIDE STANDARD DIELECTRIC UNIONS RECOMMENDED BY MANUFACTURER FOR USE IN SERVICE INDICATED, WHICH EFFECTIVELY ISOLATE FERROUS FROM NON-FERROUS PIPING (ELECTRICAL CONDUCTANCE), PREVENT GALVANIC ACTION, AND STOP

TEST: ALL PIPING SYSTEMS WILL BE TESTED FOR PRESSURE AND LEAKAGE.

TEMPERATURE CONTROL:

PROVIDE ALL INTERFACE CONNECTIONS AND CONTROL DEVICES REQUIRED BETWEEN FACTORY SUPPLIED CONTROLS OF EQUIPMENT AND THE TEMPERATURE CONTROL CONTRACTORS CONTROLS AS REQUIRED IN THE CONTRACT DOCUMENTS SO AS TO FURNISH THE OWNER A COMPLETE AND WORKING TEMPERATURE CONTROL SYSTEM.

PROVIDE A RETURN AIR DUCT SMOKE DETECTOR FOR EACH ROOFTOP UNIT OVER 2000 CFM. ON THE DETECTION OF SMOKE THE SMOKE DETECTOR WILL SHUT OFF THE ROOFTOP AIR—HANDLING SYSTEMS.

TYPICAL FAN INTERLOCKING: FURNISH AND INSTALL ELECTRICAL INTERLOCKING OF FANS, ETC.

ROOFTOP UNITS: EACH ROOFTOP UNIT SHALL BE CONTROLLED BY A VARIABLE AIR VOLUME, VARIABLE AIR TEMPERATURE SYSTEM (SEE CONTROL DIAGRAM). SEE MANUFACTURERS INSTALLATION INSTRUCTIONS (CARRIER VVT). SET MINIMUM AND MAXIMUM SET POINTS EQUAL. PROVIDE INDIVIDUAL HEATING AND COOLING THERMOSTATS WHICH ARE NOT TIED INTO THE CENTRAL CONTROL SYSTEM AND ARE STAND—ALONE TYPE. SEE SCHEDULE.

MATERIALS:

PIPING:

ALL GAS PIPING AND FITTINGS WILL BE BLACK STEEL STANDARD WEIGHT. PROVIDE SCREWED FITTINGS FOR PIPE SIZES 2" AND SMALLER AND PROVIDE WELDED AND FLANGED FITTINGS FOR PIPE SIZES 2-1/2" AND LARGER UNLESS NOTED OTHERWISE.

DRAIN PIPING SHALL BE TYPE "L" HARD-DRAWN TEMPER, WROUGHT COPPER, SOLDER JOINT FITTINGS, SILVER-LEAD SOLDER OR SCHEDULE 40 PVC PLASTIC PIPING OR SCHEDULE 40 BLACK STEEL PIPING.

DUCTWORK: ALL AIR DISTRIBUTION DUCTWORK WILL BE GALVANIZED, UNLESS OTHERWISE NOTED, AND OF CONSTRUCTION TO COMPLY WITH SMACNA STANDARDS.

SOUND LINING: UL LABEL WITH A FLAME SPREAD RATING NOT OVER 25, A FUEL—CONTRIBUTED RATING OF NOT OVER 50, AND A SMOKE DEVELOPMENT RATING NOT OVER 50. 1 1/2" FLEXIBLE GLASS FIBER WILL BE PROVIDED. FIGERGLAS DUCT LINER BOARD AND FIBERGLAS AEROFLEX 150.

DUCT INSULATION: UL LABEL WITH A FLAME SPREAD RATING NOT OVER 25, A FUEL—CONTRIBUTED RATING OF NOT OVER 50, AND A SMOKE DEVELOPMENT RATING NOT OVER 50. 2" THICK FLEXIBLE GLASS FIBER WILL BE PROVIDED. OWENS/CORNING FIBERGLAS "ALL SERVICE FACED DUCT WRAP TYPE 100".

VARIABLE AIR VOLUME, VARIABLE AIR TEMPERATURE BOXES (ZONE DAMPERS — ZD):

GENERAL: SYSTEMS ARE TO INTERFACE AND BE COMPATIBLE WITH EXISTING CONSTAN

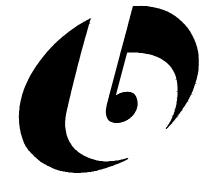
GENERAL: SYSTEMS ARE TO INTERFACE AND BE COMPATIBLE WITH EXISTING CONSTANT VOLUME SINGLE ZONE, ELECTRIC COOLING, GAS HEATING ROOFTOP PACKAGE UNITS. VAV CONTROL SYSTEM SHALL INCLUDE VAV DAMPER BOXES, ROOM THERMOSTATS, ELECTRIC DUCT HEATING COILS, ROOM SENSOR THERMOSTATS, ELECTRONIC (TWO—STAGE COOLING, TWO—STAGE HEATING THERMOSTAT FAN CONTROL, SYSTEM CONTROL) DISCRIMINATOR CONTROLLER.

ELECTRONIC DISCRIMINATOR CONTROLLER: ROOM LOCATED AIR-CONDITIONING SYSTEM CONTROL UNITS WITH ELECTRONIC COOLING/HEATING THERMOSTAT, REMOTE ROOM LOCATED SENSORS, FAN CONTROL SWITCH, SYSTEM CONTROL SWITCH, ECONOMIZER CONTROL, ETC.

VAV MOTORIZED HEATING/COOLING DAMPER BOX: FURNISH AND INSTALL ROUND SPIRAL PIPE, LOW PRESSURE DROP, MODULATING DAMPER UNIT. THE UNIT SHALL HAVE A LINEAR FLOW ELLIPTICAL DAMPER. THE UNIT SHALL BE OPERATED BY A 24-VOLT AC MODULATING MOTOR. UNITS SHALL MODULATE FOR HEATING AND COOLING. UNITS SHALL BE EQUIPPED FOR AUTOMATIC SUMMER/WINTER CHANGEOVER.

SUPPLEMENTAL ELECTRIC DUCT HEATER: FURNISH AND INSTALL ELECTRIC HEATING COILS U.L. LISTED FOR ZERO CLEARANCE AND BEAR THE U.L. LABEL, SINGLE POINT ELECTRICAL POWER AND ELECTRICAL CONTROL CONNECTIONS, MAIN POWER DISCONNECT, PRIMARY THERMAL CUTOFF, DIFFERENTIAL AIR PRESSURE SWITCH, SCR CONTROLS FOR STAGING, HINGED ACCESS DOOR. WARREN MANUFACTURING CO., REDD-I HEAT INC., BRASCH CO. (DH-1 FOR RT-12)

CONTROL: AN ELECTRONIC ROOM THERMOSTAT WILL BE FURNISHED BY THE DAMPER MANUFACTURER WITH EACH UNIT. THE THERMOSTAT WILL BE DESIGNED TO OPERATE AN INTEGRAL SOLID—STATE CONTROL SYSTEM. THE SOLID—STATE CONTROL SYSTEM WILL RECEIVE DAMPER POSITION INFORMATION FROM A POTENTIOMETER MOUNTED ON THE DAMPER SHAFT. THE THERMOSTAT WILL OPERATE THE CONTROL SYSTEM TO VARY AIR DELIVERY TO MATCH ROOM LOAD.



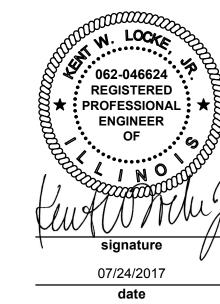
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07/24/2017 OWNER REVIEW

MCHENRY COUNTY COLLEGE
BURNHAM BOILER
REPLACEMENT

8900 U.S. ROUTE 14 CRYSTAL LAKE, IL 60014

Drawing Title

MECHANICAL SPECIFICATIONS

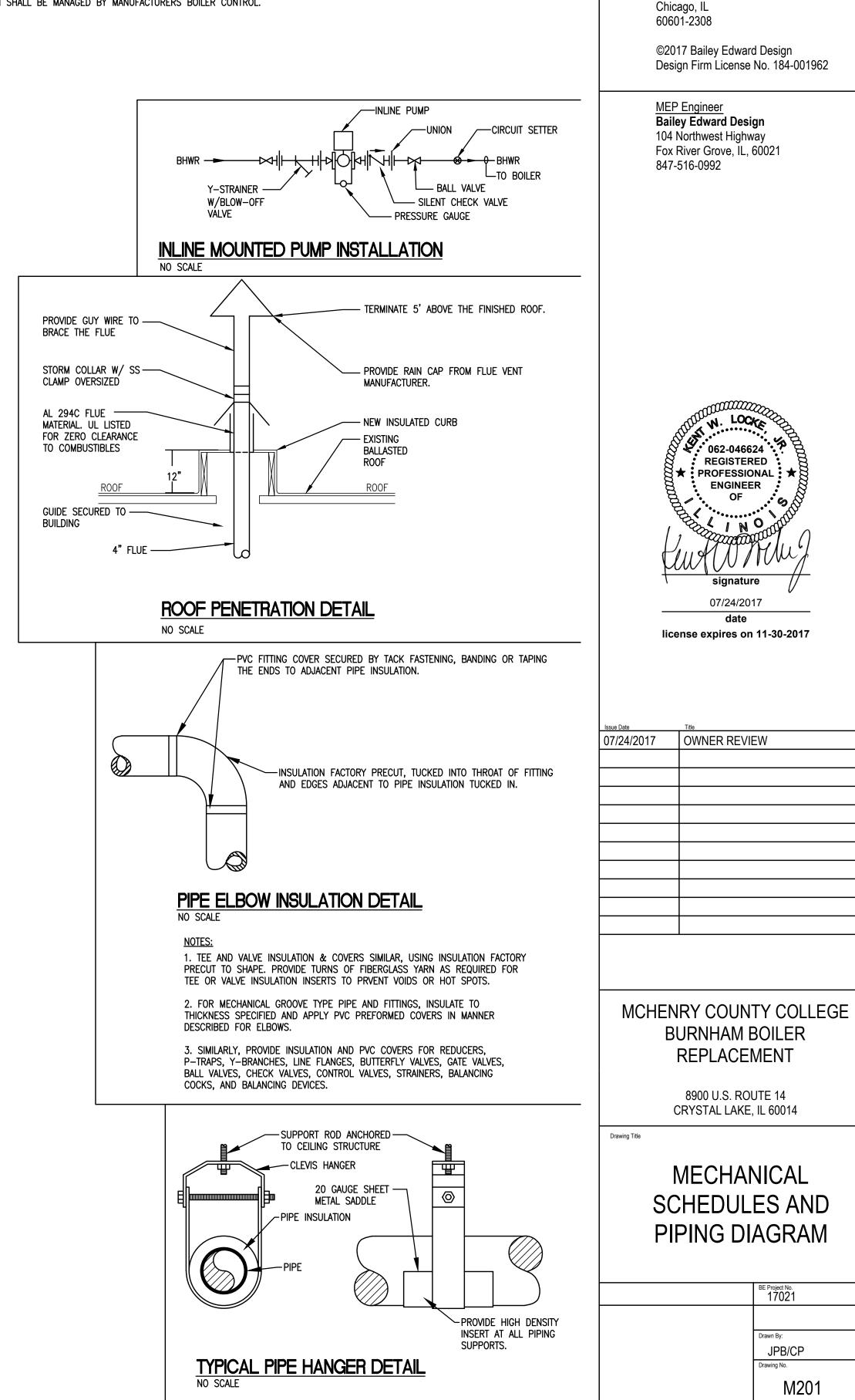
BE Project No. 17021
Drawn By:
JPB/CP
Drawing No.
M200

	GAS FIRED HOT WATER BOILER SCHEDULE (B)																			
TAG NO.	LOCATION/ SERVICE	BOILER TYPE		INCOMING GAS	PIPE SIZE	GAS	NATURAL GAS	IBR OUTPUT		FLOW RATE	E.W.T.	L.W.T.	TEMP RISE	MAX. WATER	MAX.	MAX. WORKING	ELEC. F	POWER	REMARKS: LOCHINVAR CAMUS	
No.	SERVICE	11112		PRESS. INCH. W.G.	GAS CONN. IN.	VALVE TRAIN	INPUT (MBH)	(CFH)		(GPM)	'	'	∆⊺ *F	PRESS. DROP FEET	PRESS.	MAIN POWER FEED	FLA	KNERIES – BASES OF DESIGN		
1	MECH ROOM/ REHEAT	WATER		6"	1"	DUNGS	600	480		40	155.5	180	24.5	1.25	14	120V	5.2	KNG		
2	MECH ROOM/ REHEAT	WATER		6"	1"	DUNGS	600	480		40	155.5	180	24.5	1.25	14	120V	5.2	KNG		
3	MECH ROOM/ REHEAT	WATER		6"	1"	DUNGS	600	480		40	155.5	180	24.5	1.25	14	120V	5.2	KNG		

NEW SEALED COMBUSTION CAST IRON BOILERS SUITABLE FOR OPERATION WITH RETURN WATER TEMPERATURE BELOW 120°F. BOILER CONTROL -	START.STOP, FIRING RATE, ETC
SHALL BE FACTORY PROVIDED. FRONT END CONTROL SHALL ENABLE/DISABLE HEATING, OVERRIDE, DISCHARGE SETPOINT.	

	PUMP SCHEDULE												
TAG	SERVICE/	CAP	PUMP	TOTAL WORKING LIQUID PUMP MOTOR				MOTOR			MOTOR VIBRATION ISOLATION		
NO.	LOCATION		TYPE	HEAD W.C.	PRESS	TEMP.			V/PH/C	HP	RPM	TYPE	
		GPM		FT	MAX. PSIG.	° F	ВНР	RPM					
EX1	_	480	BASE MOUNT	155	175	250	24	1750	480/3	25	1750	INERTIA	TACO 3013 1
EX2	_	480	BASE MOUNT	155	175	250	24	1750	480/3	25	1750	INERTIA	TACO 3013 1
B1		40	INLINE	15	125	250	0.24	1750	120/1	0.5	1750	INERTIA	B&G E90 1.25AAB 2
B2	_	40	INLINE	15	125	250	0.24	1750	120/1	0.5	1750	INERTIA	B&G E90 1.25AAB 2
В3	_	40	INLINE	15	125	250	0.24	1750	120/1	0.5	1750	INERTIA	B&G E90 1.25AAB 2

- 1) EXISTING BASE MOUNTED PUMP ON INERTIA BASE.
- 2 NEW BOILER PUMPS. OPERATION SHALL BE MANAGED BY MANUFACTURERS BOILER CONTROL.

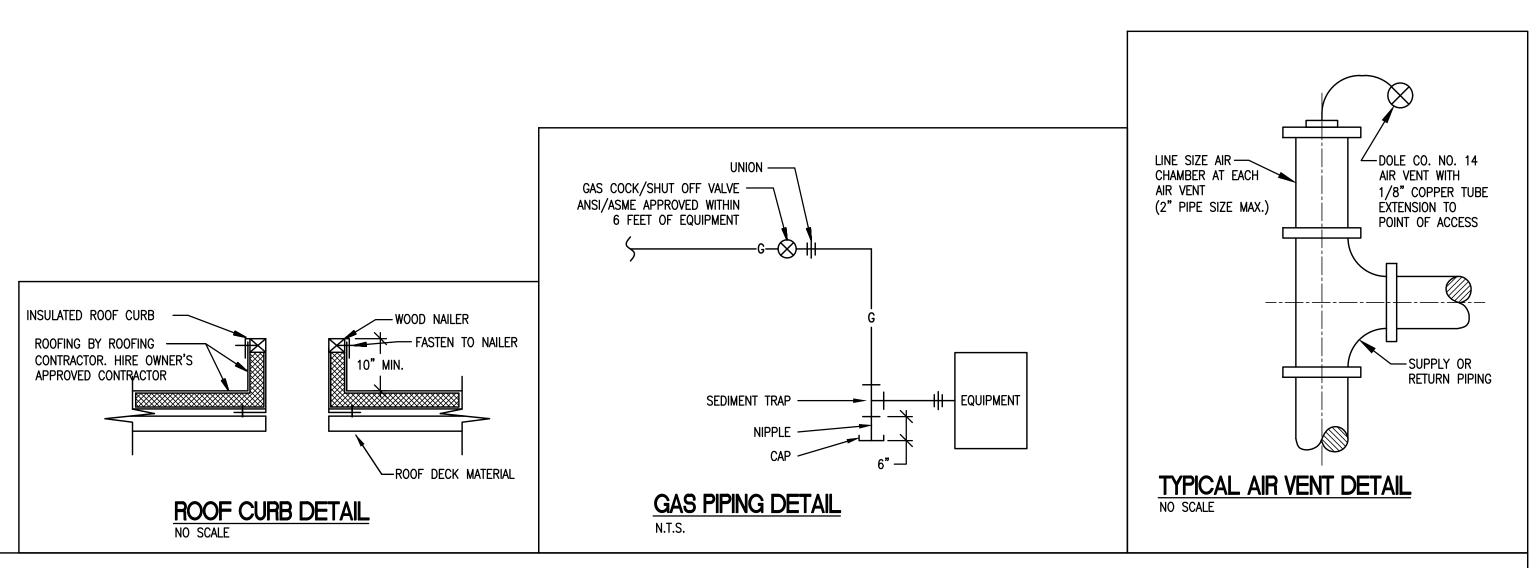


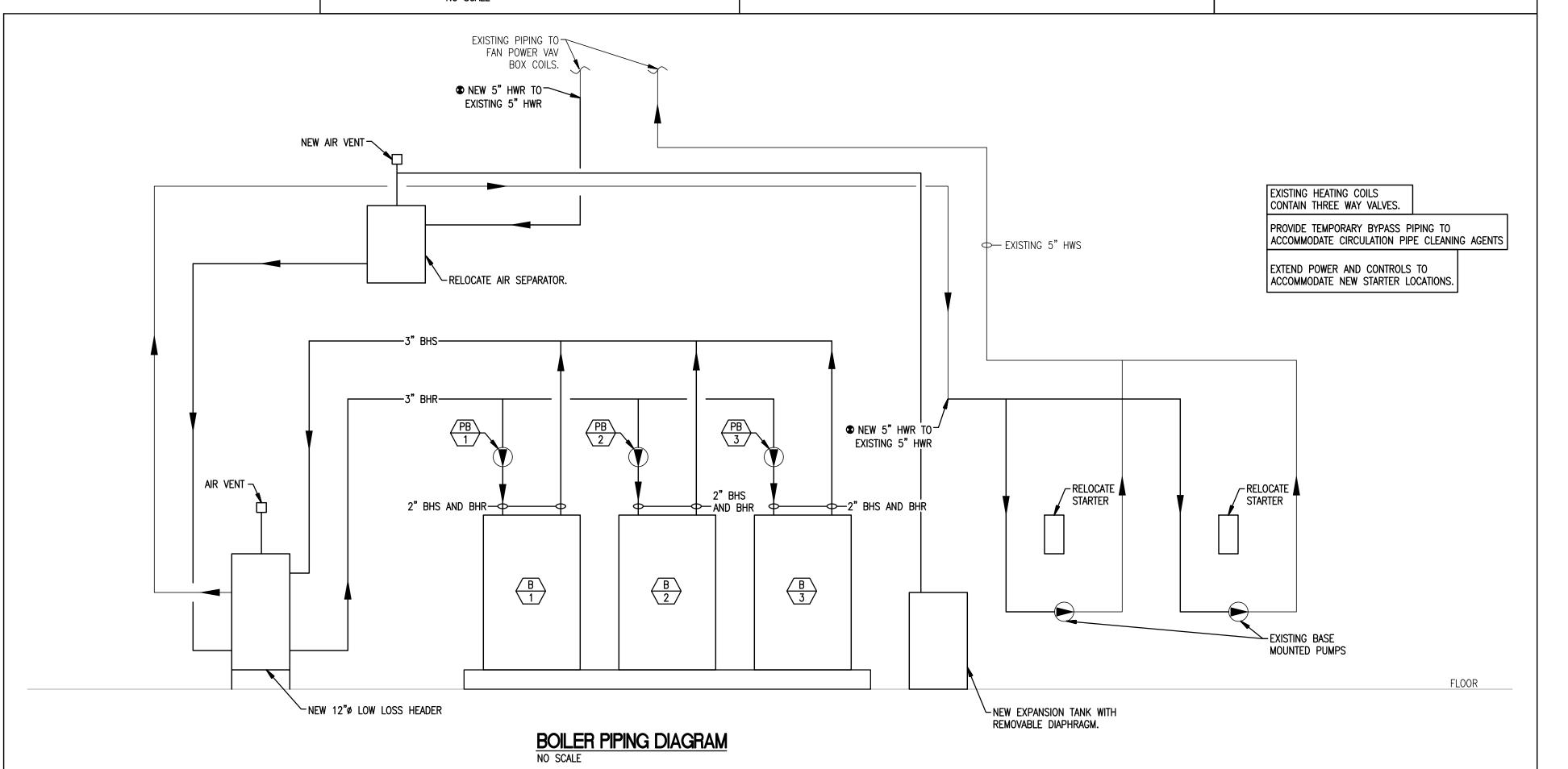
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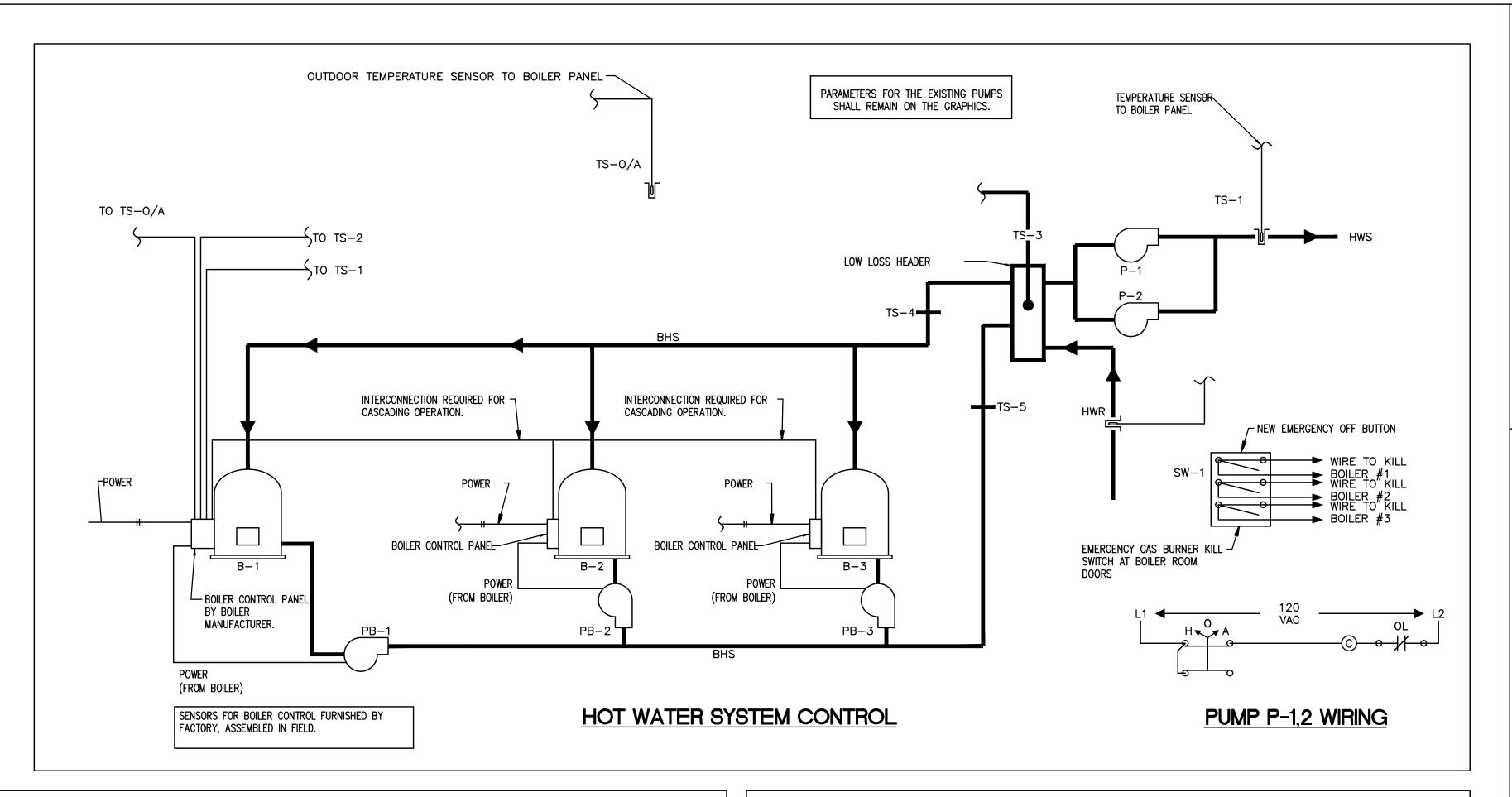
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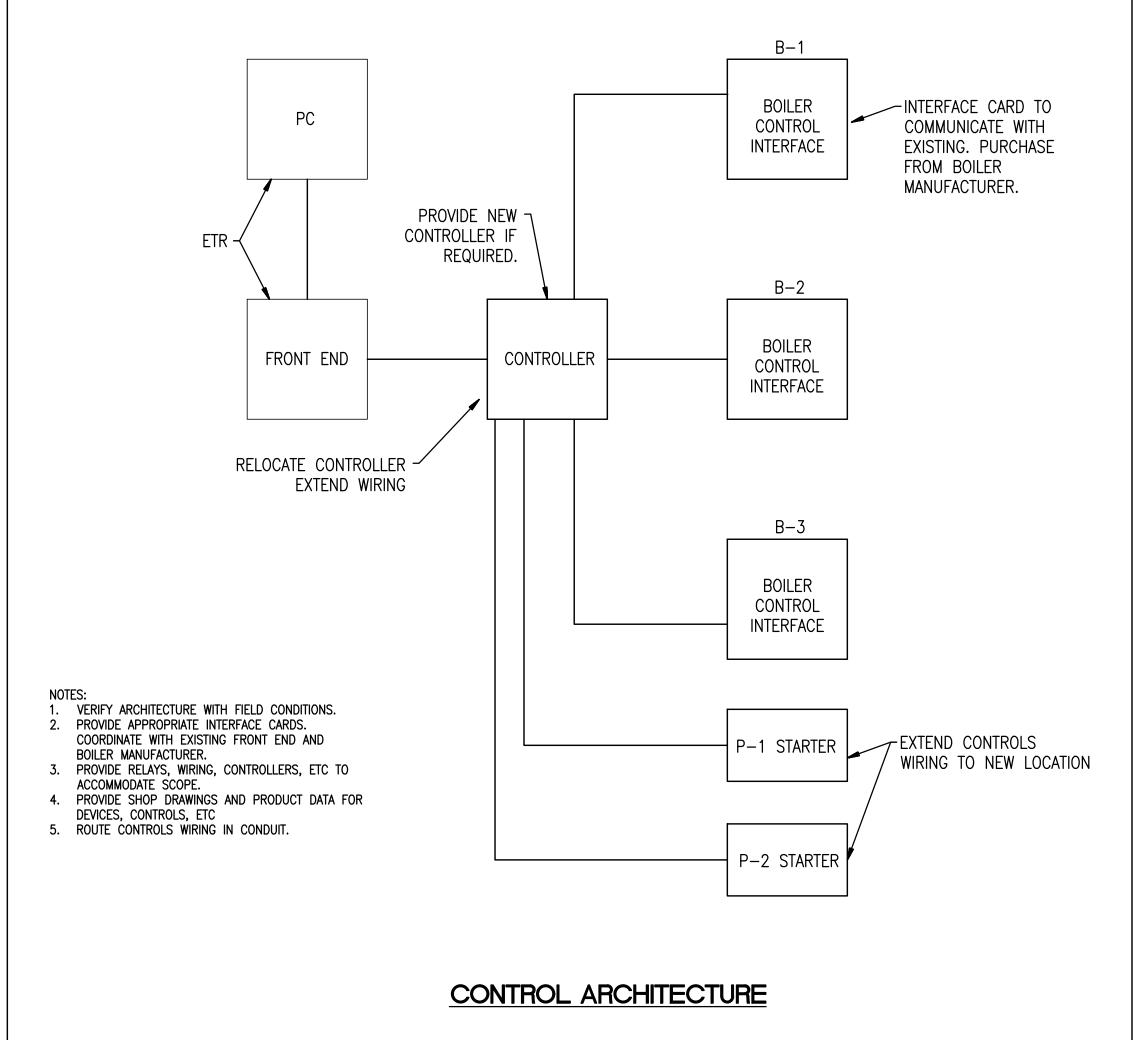
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Suite 2800









SEQUENCE OF OPERATIONS

THE SEQUENCE OF OPERATION FOR THESE PUMPS SHALL REMAIN AS-IS. VERIFY SEQUENCE OF THESE PUMPS WITH FIELD CONDITIONS. PROVIDE ANY REQUIRED PROGRAMMING TO MIMIC.

THE NEW PUMPS SHALL BE ENABLED/DISABLED BY THE FACTORY PROVIDED BOILER CONTROLS. THE FRONT END SHALL DISPLAY STATUS OF THE PUMPS.

THE NEW BOILERS SHALL OPERATE UNDER FACTORY CONTROLS TO MAINTAIN TEMPERATURE IN THE LOW LOSS HEADER. FIRING RATE, SEQUENCING/CASCADING, BOILER PUMPS, OUTDOOR TEMPERATURE RESET, ETC SHALL BE MANAGED BY THE MANUFACTURER PROVIDED CONTROL. ADJUST DEFAULT SETTINGS TO ACCOMMODATE THE FOLLOWING:

1.BOILER ON TANK TEMP 5°F BELOW SET-POINT BOILER OFF TANK TEMP 5°F ABOVE SET POINT.

2.OUTDOOR RESET:

© OF OUTDOOR, 180 F TANK TEMP

@ 70°F OUTDOOR, 100° F TANK TEMP

3.MINIMUM BOILER RUN TIME SHALL BE TEN MINUTES.

4.LIMIT THE ADJUSTMENT OF THE FIRING RATE TO BE NO FASTER THAN 5° F PER MINUTE.

5.SET THE MINIMUM FIRING RATE TO 1/3 OF THE TOTAL FIRING RATE OF THE BOILER.

PROVIDE AN INTERFACE CARD(S) FROM THE BOILER MANUFACTURER TO COMMUNICATE WITH THE BAS. COORDINATE TO ENSURE APPROPRIATE CARD IS PURCHASED.

THE BAS SHALL DISPLAY THE FOLLOWING:

BOILER STATUS (ON/OFF) EACH BOILER

BOILER FIRING RATE (%) EACH BOILER

LOW LOSS HEADER SET POINT (F) *THIS SHALL BE ADJUSTABLE AT THE GRAPHIC INTERFACE LOW LOSS HEADER TEMP (°F)

BHR (TS-4) TEMP (°F)

BHS (TS-5) TEMP (F)

HWS (TS-1) TEMP (°F)

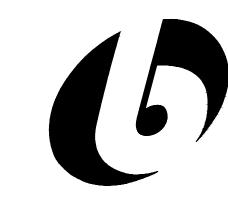
HWR (TS-2) TEMP (°F) AVERAGE SPACE TEMP (°F)

AVERAGE SPACE TEMP DEVIATION FROM SET POINT (F)

ALARMS - SPECIFY THE BOILER IN ALARM

INTENT OF CONTROLS: - DOCUMENTS IDENTIFY SCOPE OF WORK, CONTRACTOR TO COMPLETE DESIGN WITH COMPONENTS, DEVICES, SENSORS, WIRES, RELAYS AND ALL PROGRAMMING TO PROVIDE OPERABLE SYSTEM AND GRAPHIC INTERFACE.

- PROVIDE IDENTIFICATION FOR WIRING, RELAYS, ENCLOSURES, CONTROLLERS, SENSORS, AND SWITCHES.
- EXTEND EXISTING CONTROLS TO ACCOMMODATE THE NEW BOILERS.
- FACTORY CONTROLS SHALL MANAGE BOILER PLANT OPERATION BAS TO DISPLAY IDENTIFIED INFORMATION. ALLOW USER TO OVERRIDE THE SETPOINT OF THE LOW LOSS HEADER.
- THE PARAMETERS FOR THE EXISTING BASE MOUNTED SYSTEM PUMPS SHALL REMAIN ON THE FRONT END GRAPHIC.



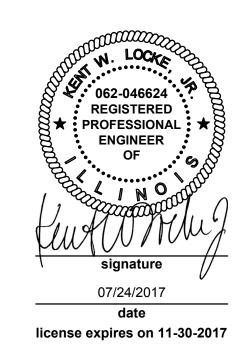
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MCHENRY COUNTY COLLEGE **BURNHAM BOILER** REPLACEMENT

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Drawing Title

MECHANICAL CONTROLS AND SEQUENCE

BE Project No. 17021 JPB/CP

SYMBOL LIST

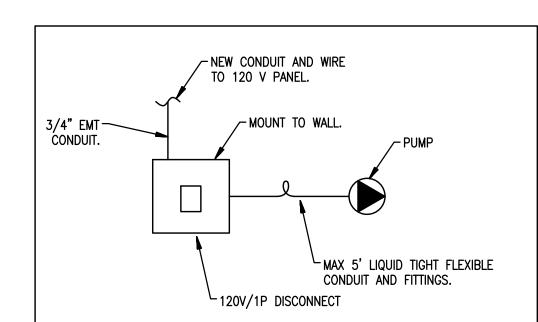
- DUPLEX 20A RECEPTACLE, MOUNTED AT 15" AFF U.N.O.
- DUPLEX 20A RECEPTACLE, MOUNTED 6" ABOVE COUNTER
- DUPLEX 20A GFI RECEPTACLE, MOUNTED 15" AFF U.N.O.
- DUPLEX 20A GFI RECEPTACLE, MOUNTED 6" ABOVE COUNTER
- SPECIAL USE RECEPTACLE, SIZED AS INDICATED OR AS REQUIRED
- WALL MOUNTED JUNCTION BOX, SIZED AS REQUIRED (4"x4" MIN.)
- JUNCTION BOX, SIZED AS REQUIRED
- 4 FLEXIBLE METAL CONDUIT CONNECTION (WHIP)
- MOTOR CONNECTION, 10 OR 30 AS INDICATED
- TRANSFORMER, SIZE AND RATING AS INDICATED
- PANEL BOARD, SIZED AS INDICATED
- MOTOR STARTER, SIZED AS REQUIRED
- M MFT
- DOW VOLTAGE THERMOSTAT (BY OTHERS), 4x4 BOX JUNCTION BOX WITH 3/4" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE.
- LINE VOLTAGE THERMOSTAT, FURNISHED BY MECH, INSTALLED BY ELEC. MOUNTED AT 44" AFF. PROVIDE SINGLE GANG JUNCTION BOX WITH 3/4"C STUBBED INTO ACCESSIBLE CEILING SPACE AND WIRING PER MANUFACTURER REQUIREMENTS. COORDINATE LOCATIONS AND BOX SIZE WITH MECHANICAL CONTRACTOR.
- 3-POLE NON-FUSED DISCONNECT SWITCH, SIZED AS INDICATED OR AS REQUIRED
- FY 3-POLE FUSED DISCONNECT SWITCH, SIZED AS INDICATED OR AS REQUIRED
- FINAL CONNECTION TO MOTOR
- ----- INDICATES EXISTING TO REMAIN
- ----- INDICATES NEW
- XRR DENOTES EXISTING TO BE REMOVED AND RELOCATED
- XN DENOTES EXISTING COMPONENT IN ITS NEW LOCATION

ELECTRICAL SCOPE OF WORK SUMMARY

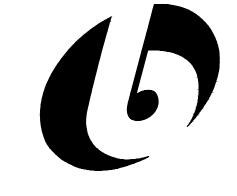
- THE SCOPE OF WORK FOR THE PROJECT IS TO PROVIDE SUPPORT FOR THE NEW HEATING SYSTEM. PROVIDE POWER TO BOILER PACKAGE, CONTROLS, AND PUMPS. RELOCATE STARTERS.
- PROVIDE 2 CHAIN MOUNTED 4' LONG FLUORESCENT LIGHTS. 1 IN FRONT OF BOILER PACKAGE. 1 IN FRONT OF OR ABOVE THE PUMPS. MOUNT BELOW PIPING AND EQUIPMENT.

GENERAL NOTES:

- 1. PAY FOR & OBTAIN ALL REQUIRED LICENSES, INSURANCES, PERMITS & SATISFY NECESSARY ORDINANCES TO UNDERTAKE & EXECUTE THE WORK UNDER THIS CONTRACT.
- 2. FAMILIARIZE YOURSELF WITH THE EXISTING SITE CONDITIONS, CONDITIONS OF CONTRACT, THE SCOPE OF WORK & THE INTENT OF DESIGN BEFORE SUBMITTING YOUR BID. REQUESTS FOR EXTRA PAYMENTS WILL NOT BE APPROVED AFTER CONTRACT AWARD.
- 3. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH REQUIREMENTS OF THE LOCAL CODE AUTHORITY & OTHER CODES, STANDARDS & REGULATIONS REFERENCED BY SUCH AUTHORITY. IN CASE OF CONFLICT BETWEEN TWO CODES, THE REQUIREMENT OF THE LOCAL AUTHORITY SHALL BE FINAL.
- 4. COORDINATE ELECTRICAL INSTALLATION WITH WORK BY OTHER TRADES BEFORE STARTING WORK. PERFORM ALL WORK IN COOPERATION WITH LANDLORD, G.C. & OTHER TRADES.
- 5. ALL MATERIAL/EQUIPMENT SHALL BE NEW, U.L. LISTED, WITHOUT DEFECT OR DAMAGE AND SHALL BE A STANDARD PRODUCT OF A MANUFACTURER WITH A WELL KNOWN BRAND NAME. WIRING DEVICES SHALL BE SPECIFICATION GRADE. FINISH OF ALL ITEMS INSTALLED IN FINISHED AREAS SHALL BE PER ARCHITECT.
- 6. ELECTRICAL DWGS. ARE SCHEMATIC IN NATURE. THEY DO NOT INTEND TO SHOW EVERY DETAIL, LOCATION, SIZE, ROUTE ETC. FURNISH ALL MATERIAL, EQUIPMENT, INCIDENTALS & SERVICES TO PROVIDE A SATISFACTORY, COMPLETE & OPERATIONAL INSTALLATION IN CONFORMANCE WITH THE INTENT OF THE DESIGN. REFER TO ARCHITECTURAL DWGS. FOR DIMENSIONAL ACCURACY.
- 7. PROVIDE TEMPORARY ELECTRICAL LIGHTING & POWER FOR USE BY ALL TRADES DURING CONSTRUCTION.
- 8. ALL ENCLOSURES SHALL BE NEMA-1, IN GENERAL. GFI RECEPTACLES SHALL BE USED IF SPECIFIED OR CODE REQUIRED. WIRING DEVICES SHALL BE SPECIFICATION GRADE. NAME PLATES SHALL BE PHENOLIC, WHITE LETTERS ON BLACK BACKGROUND, SECURED WITH SCREWS ON THE ENCLOSURES.
- 9. USE MINIMUM 1/2" EMT. USE COMPRESSION OR SET-SCREW FITTINGS. USE TYPE THWN, COPPER WIRE IN MINIMUM #12 AWG FOR BRANCH CCTS & #14 FOR CONTROLS. FLEXIBLE CONDUIT SHALL BE LIQUID-TIGHT. USE MINIMUM SIZE '0' STARTERS. FUSES SHALL BE TIME DELAY DUAL ELEMENT REJECTION TYPE.
- 10. SEAL PENETRATIONS THROUGH VAPOR & FIRE BARRIERS CAUSED BY THE ELECTRICAL WORK WITH U.L. LISTED SEALS TO RETAIN THE INTEGRITY OF THE RESPECTIVE BARRIERS.
- 11. INSTALLATION IN CEILING SPACE SHALL BE SUPPORTED FROM THE STRUCTURAL STEEL & NOT BY THE DROPPED CEILING MEMBERS. CONDUITS SHALL RUN SNUG UNDER STRUCTURAL CEILING EITHER PARALLEL OR PERPENDICULAR TO THE CEILING, COLUMNS & STRAIGHT WALLS. INSTALL PULL BOXES PER CODE. INSTALL PULL—LINES IN EMPTY RACEWAYS & CAP THEM.
- 12. INSTALLATION SHALL BE PERFORMED IN A MANNER CONSISTENT WITH INDUSTRY STANDARD FOR GOOD WORKMANSHIP. PROVIDE NECESSARY CUTTING, PATCHING, & CLEANING FOR ELECTRICAL WORK TO LEAVE THE AREA READY FOR FINAL FINISH BY OTHERS.
- 13. PROGRESS YOUR WORK IN TIMELY MANNER TO ENABLE THE OWNER TO FINISH THE WORK PER SCHEDULE. SAFEGUARD YOUR WORK & SUPPLIES. MAINTAIN ORDERLY & NEAT OPERATION. REMOVE DEBRIS GENERATED FROM YOUR WORK AS REQUIRED. LEAVE THE SITE IN CLEAN, MOVE—IN CONDITION AT ACCEPTANCE.
- 14. ORGANIZE ALL WARRANTIES, GUARANTEES & PRODUCT LITERATURE IN A FILE AND HAND OVER THESE TO THE OWNER AT THE TIME OF ACCEPTANCE. PROVIDE FULL & UNCONDITIONAL GUARANTEE OF YOUR WORK (MATERIAL PLUS LABOR) FOR A PERIOD OF 12 MONTHS FROM ACCEPTANCE. REFER TO ARCHITECT'S REQUIREMENTS FOR 'WARRANTIES & GUARANTEES' AND 'PROJECT CLOSE-OUT'.



PUMP CONNECTION DETAIL



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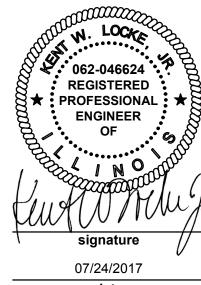
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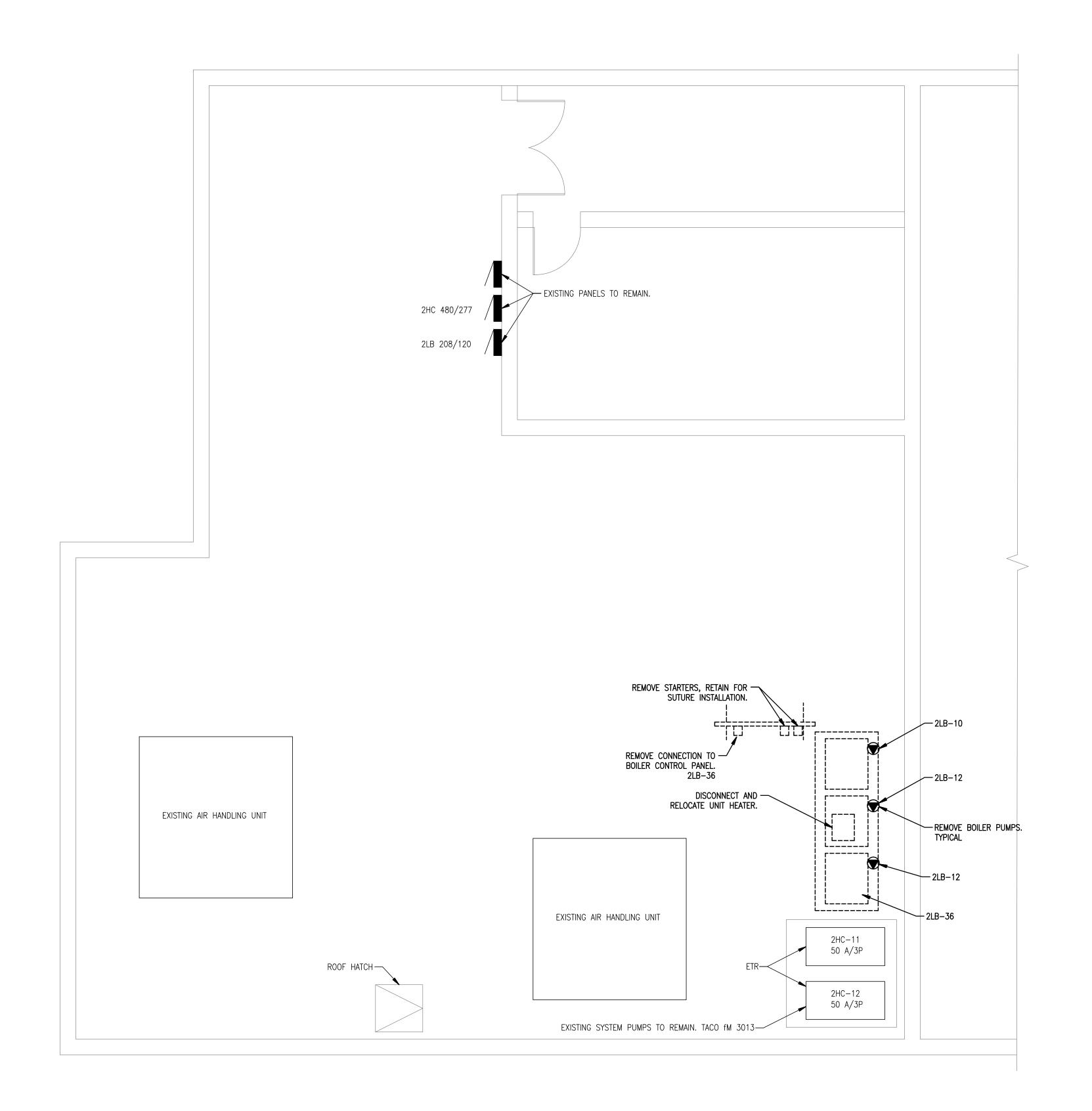
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ELECTRICAL STANDARDS AND DETAILS

Drawn By:
JPB/CP
Drawing No.

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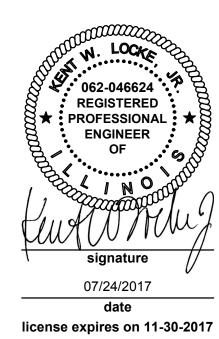


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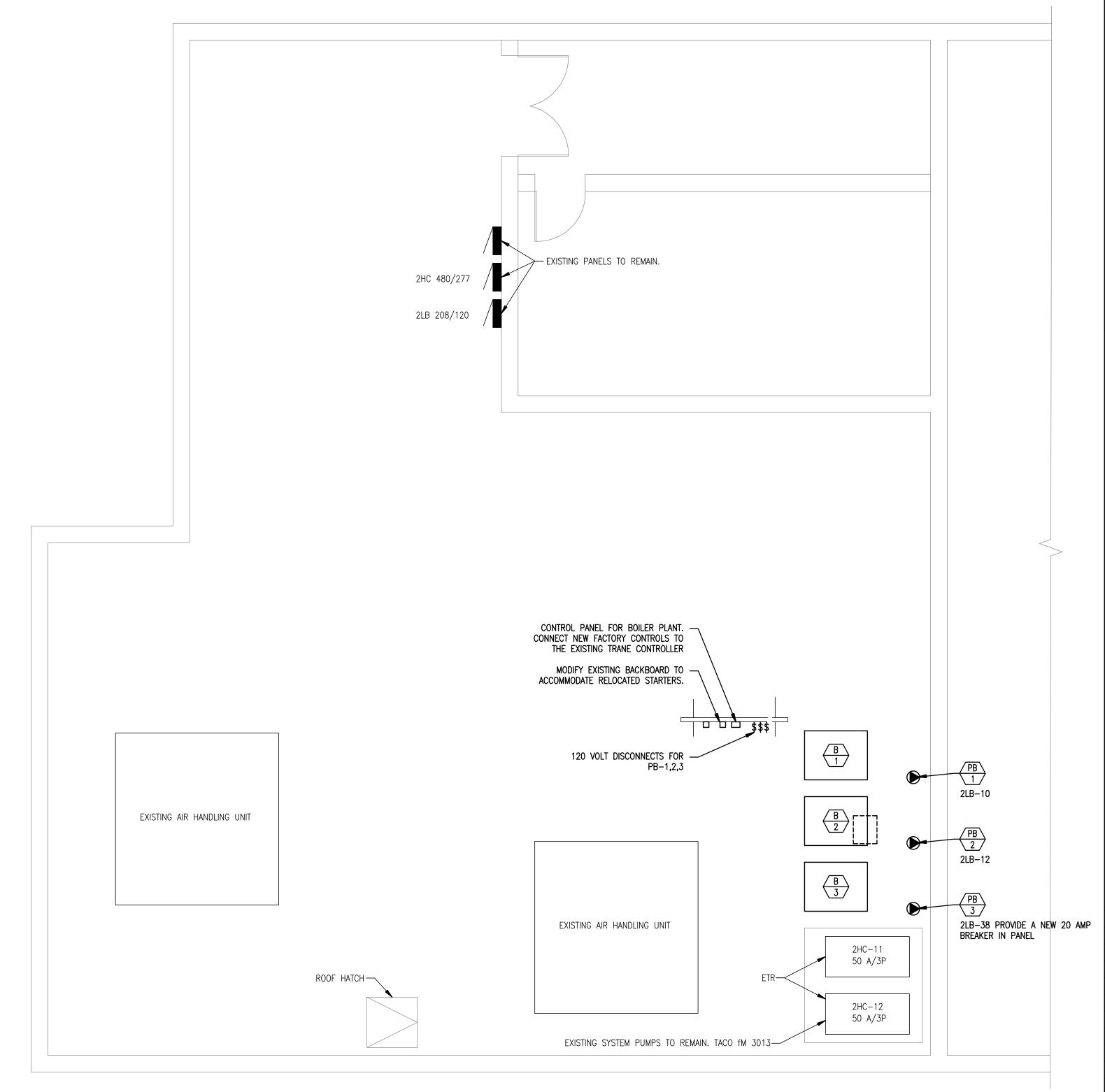
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ELECTRICAL **DEMOLITION BOILER ROOM PLAN**

BE Project No. 17021 JPB/CP ED100

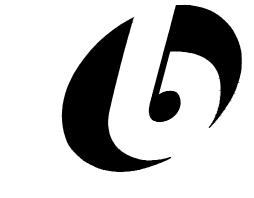






ELECTRICAL NEW WORK BOILER ROOM PLAN
1/4" = 1'-0"





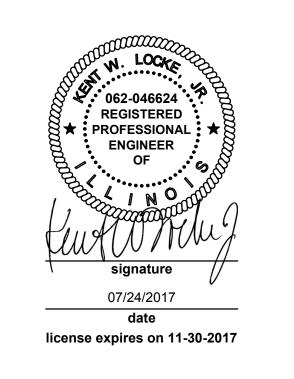
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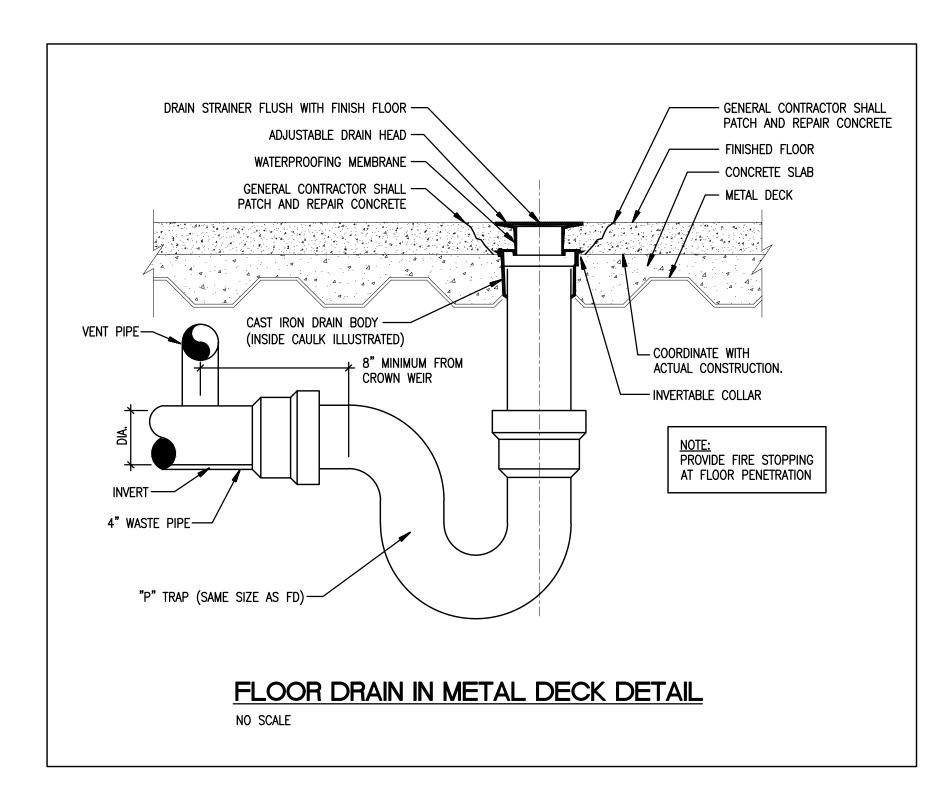
ELECTRICAL NEW WORK BOILER ROOM PLAN

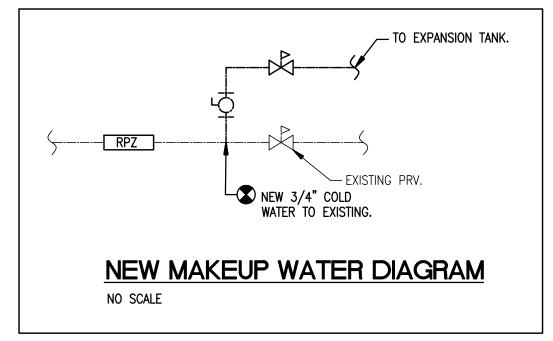
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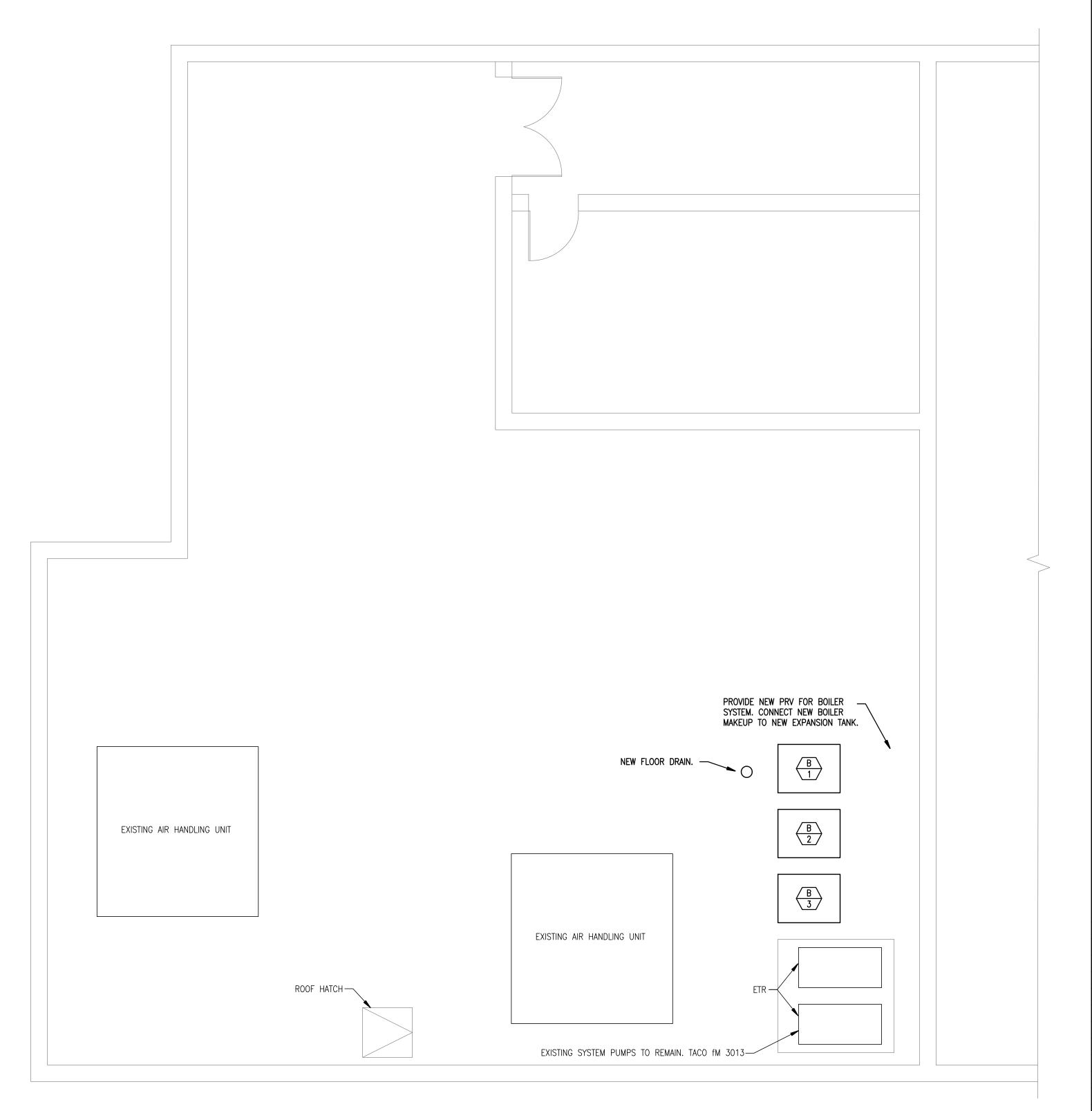
SCOPE OF WORK:

 RELOCATE FLOOR DRAIN. EXTEND SANITARY AND VENT TO ACCOMODATE. CORE THROUGH FLOOR. ACCESS SPACE IN FLOOR BELOW DURING OFF HOURS. COORDINATE WITH OWNER.

2. PROVIDE NEW PRV AND CONNECTION FOR BOILER MAKEUP.

PROVIDE COPPER PIPING TYPE L WITH WROUGHT SOLDER FITTINGS. PROVIDE DIE;ECTIC UNIONS AT DISSIMILAR METAL CONNECTIONS. INSULATE WITH FLEXIBLE ELASTOMERIC.

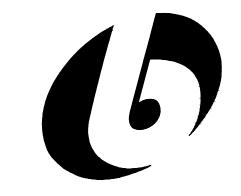
PROVIDE PVC OR CAST IRON DRAIN WASTE AND VENT PIPE.



PLUMBING NEW WORK BOILER ROOM PLAN

1/4" = 1'-0"





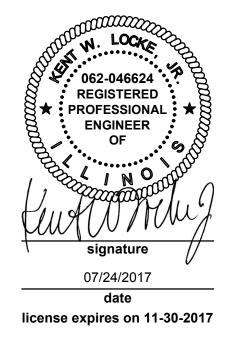
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PLUMBING NEW WORK BOILER ROOM PLAN

Drawn By:

JPB/CP

Drawing No.

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DEMOLITION NOTES:

- 1. COORDINATE ACCESS TO FLOOR BELOW WITH OWNER.
- DISCONNECT THE EXISTING MAKEUP WATER FROM THE BOILER PLANT.

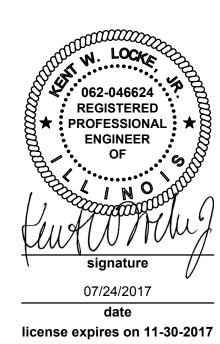


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PLUMBING DEMOLITION **BOILER ROOM PLAN**

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