CIRCUIT COURT
BOILER REPLACEMENT
THE CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

LIST OF DRAWINGS

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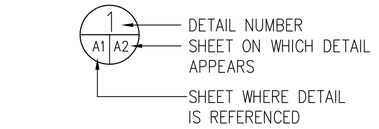
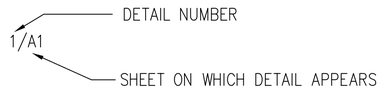
SYMBOLS

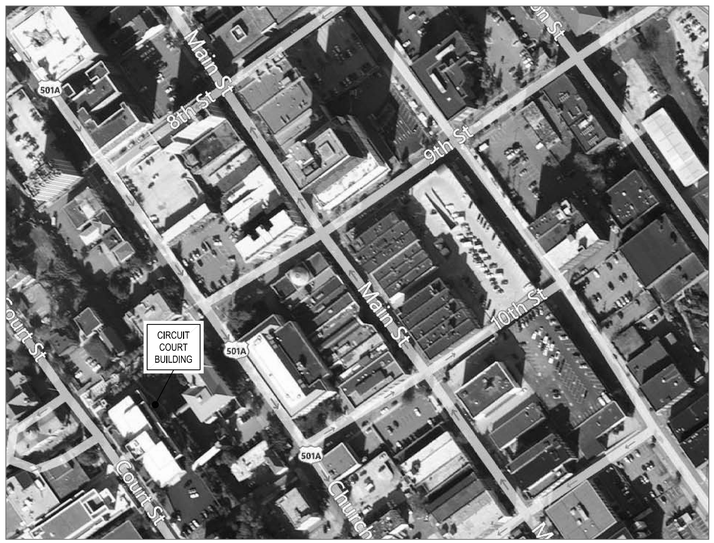
DETAIL INDICATOR SYMBOL



TEXT DETAIL REFERENCE



JUNE 13, 2014



SITE MAP - CIRCUIT COURT BUILDING

VICINITY MAP - LYNCHBURG, VA

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TITLE SHEET

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23 0719: HYDRONIC PIPING INSULATION SCHEDULE

SYSTEM	INSULATION			
	TYPE	PIPE SIZE, IN	THICKNESS, IN	NOTES
HEATING WATER PIPING	GLASS FIBER, RIGID	LESS THAN 2	1 1/2	-
HEATING WATER PIPING	GLASS FIBER, RIGID	2 OR GREATER	2	-

23 2123: PUMP SCHEDULE

MARK	MODEL	TYPE	SERVICE	EFFICIENCY %	GPM	HEAD FT	IMPELLER DIA, IN	MAX IMPELLER DIA, IN	RPM	HP	V-PH
HWP-1	1510 1-1/2AC	BASE MOUNTED	HEATING WATER	67.8	106	34	6.375	7	1750	2	208-3
HWP-2	1510 1-1/2AC	BASE MOUNTED	HEATING WATER	67.8	106	34	6.375	7	1750	2	208-3
CP-B1											
CP-B2											

NOTES:
1. DESIGN AND PERFORMANCE BASED ON BELL & GOSSETT.
2. HWP-1, HWP-2: IMPELLER SHALL BE TRIMMED TO MATCH LOAD
3. HWP-1, HWP-2 SHALL BE CONTROLLED BY VARIABLE FREQUENCY DRIVES. ELECTRICAL CONTRACTOR SHALL PROVIDE VFDS.

23 5233.13: BOILER SCHEDULE

MARK	SERVICE	MODEL	FUEL	GAS PRESSURE		CAPACITY		WATER FLOW				VENTING		ELECTRICAL		
			TYPE	MIN IWC	MAX IWC	INPUT MBH	OUTPUT MBH	MIN GPM	WPD FT	EWT	LWT	EXHAUST VENT, IN	INTAKE VENT, IN	V-PH	MAX FLA	MOP (AMPS)
B-1	HEATING WATER	KB-601	NG	4.0	14.0	600	564	55	31	170	190	4	4	120-1	8.8	15
B-2	HEATING WATER	KB-601	NG	4.0	14.0	600	564	55	31	170	190	4	4	120-1	8.8	15

NOTES:
1. DESIGN AND PERFORMANCE BASED ON LOCHINVAR.
2. BOILER SHALL HAVE MODULATING GAS BURNER (5:1 TURNDOWN).
3. INSTALL INTAKE/EXHAUST SYSTEM PER MFR'S INSTALLATION INSTRUCTIONS.
4. PROVIDE CONTROLS AS REQUIRED TO ACHIEVE SEQUENCE OF OPERATION AS INDICATED ON CONTROL DRAWINGS.
5. WATER PRESSURE DROP INCLUDES 20 FEET OF STRAIGHT PIPE, 4 - 90° ELBOWS AND 2 FULL PORT BALL VALVES.

23 2114: AIR SEPARATOR SCHEDULE

MARK	SERVICE	MODEL	GPM	WPD, FT
ADS-1	HEATING WATER	4903ADR-42	106	2.4

NOTES:
1. DESIGN AND PERFORMANCE DATA BASED ON TACO.
2. PROVIDE WITH BRASS (EXTERNAL)/ NON-FERROUS (INTERNAL) AIR VENT.
3. PROVIDE WITH REMOVABLE COVER FOR ACCESS TO COALESCING MEDIUM.
4. PROVIDE WITH STAINLESS STEEL COALESCING MEDIUM.
5. PROVIDE FACTORY INSTALLED BLOW DOWN VALVE. PIPE VALVE TO FLOOR SUMP.

23 2114 BUFFER TANK SCHEDULE

MARK	SERVES	MODEL	CONFIG	MOUNTING	TANK VOLUME GAL
BT-1	HEATING WATER SYSTEM	BVU200	VERTICAL	FLOOR	200

NOTES:
1. DESIGN AND PERFORMANCE BASED ON LOCHINVAR.
2. TANK SHALL BE ASME RATED TO 125 PSIG.
3. PROVIDE 2" HCFC FREE FOAM INSULATION.
4. PROVIDE AUTOMATIC AIR VENT AND RELIEF VALVE.

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2009, IBC 2009, IMC 2009.
2. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL EXTERNAL STARTERS FOR MECHANICAL EQUIPMENT, UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL COORDINATE LOCATION OF ALL EQUIPMENT, PIPING AND DUCTWORK WITH OTHER TRADES. MAINTAIN REQUIRED SERVICE ACCESS.
4. VERIFY ROUTING OF PIPING WITH CEILING HEIGHTS, STRUCTURAL SYSTEM, AND OTHER TRADES PRIOR TO INSTALLATION. UNLESS OTHERWISE NOTED OR WHERE CONNECTING TO EXISTING INFRASTRUCTURE, ALL PIPING MAINS SHALL BE INSTALLED AS HIGH AS POSSIBLE TO UNDERSIDE OF STRUCTURE.
5. HVAC CONTRACTOR(S) SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND EXISTING COMPONENTS PRIOR TO FABRICATIONS OF SYSTEMS AND COMMENCEMENT OF INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO ELECTRICAL, STRUCTURAL, MECHANICAL, AND FIRE PROTECTION) AS IT AFFECTS THEIR WORK, AND AS THEIR WORK AFFECTS OTHER TRADES, TO INSURE THAT THE CONSTRUCTION DOCUMENTS ARE CLOSELY FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
6. PENETRATIONS THRU FIRE RATED CEILINGS, FLOORS & WALLS SHALL BE SEALED TO MAINTAIN FIRE RATING INTEGRITY.
7. DO NOT INSTALL BULL HEAD TEES IN PIPING SYSTEMS.
8. CONTRACTOR SHALL PROVIDE COORDINATED SHOP DRAWINGS OF DIVISION 23 SYSTEMS. SHOP DRAWINGS SHALL BE PREPARED IN ELECTRONIC FORMAT AND SUBMITTED IN PRINTED AND ELECTRONIC FORM.
9. THE DESIGN IS BASED ON MANUFACTURERS AND MODELS INDICATED, AND IS INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS AND/OR SUPPORT FOR EQUIPMENT OR SYSTEMS SPECIFIED WITH RELATION TO THE OTHER BUILDING/SYSTEMS. SEE SPECIFICATION SECTION FOR TECHNICAL REQUIREMENTS.
10. ALL HYDRONIC HEATING AND NG PIPING SHALL BE SCHEDULE 40 BLACK STEEL OR TYPE L COPPER.
11. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS TO ALL MOTOR-DRIVEN EQUIPMENT.
12. ALL EQUIPMENT SHALL BE RECYCLED OR DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS.

GENERAL NOTES DEMOLITION

1. PRIOR TO BIDDING, THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS, AND TO VERIFY LOCATION, SIZE AND QUANTITY OF ITEMS TO BE REMOVED. SUBMITTAL OF A BID SHALL SIGNIFY WILLINGNESS TO COMPLY WITH THE DESIGN AND ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
2. IN GENERAL, EXISTING MECHANICAL SYSTEMS SHALL BE REMOVED AND MODIFIED TO ACCOMMODATE THE RENOVATION, WHETHER OR NOT SHOWN ON THESE PLANS, UNO. DOCUMENTATION OF EXISTING SYSTEMS IS BASED ON AVAILABLE RECORD DRAWINGS AND CASUAL FIELD OBSERVATION. MAJOR DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK.
3. WHERE EXISTING MECHANICAL SYSTEMS PENETRATE EXTERIOR WALLS/ROOF, CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING SUCH PENETRATIONS TO MATCH EXISTING, UNO.
4. THE CONTRACTOR SHALL AVOID DISRUPTION OF THE ACTIVITIES OF THE OCCUPANTS TO THE BEST EXTENT POSSIBLE. SCHEDULE WORK TO AVOID PROLONGED DISRUPTION OF THE USE OF THE SPACE. COORDINATE NEW WORK REQUIREMENTS WITH OTHER TRADES TO ACCOMPLISH THE WORK WHILE THE FACILITY REMAINS IN OPERATION. SCHEDULE ANY DISRUPTIONS TO THE SPACES ADJACENT TO THE PROJECT AREA WITH THE PROJECT MANAGER.

ABBREVIATIONS

°F	DEGREES FAHRENHEIT
A/E	ARCHITECT/ENGINEER
ADS	AIR-DIRT SEPARATOR
AHJ	AUTHORITY HAVING JURISDICTION
AS	AIR SEPARATOR
B	BOILER
BFP	BACKFLOW PREVENTER
BLR	BOILER LOOP RETURN
BLS	BOILER LOOP SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
COEF	COEFFICIENT
CONC	CONCRETE
DIA, DIAM	DIAMETER
EAD	EXHAUST AIR DUCT
EQUIP	EQUIPMENT
ET	EXPANSION TANK
ETC	ETCETERA
EWT	ENTERING WATER TEMPERATURE (°F)
FLA	FULL LOAD AMPS
FLR	FLOOR
FT	FEET OR FOOT
GAL	GALLONS
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	HOT WATER
HWP	HEATING WATER PUMP
HWR/S	HEATING WATER RETURN/SUPPLY
IBC	INTERNATIONAL BUILDING CODE
IFB	ISSUE FOR BIDS
IMC	INTERNATIONAL MECHANICAL CODE
IN	INCH, INCHES
IWC	INCHES WATER COLUMN
LWT	LEAVING WATER TEMPERATURE (°F)
MAX	MAXIMUM
MBH	THOUSAND BTUH
MFR	MANUFACTURER
MIN	MINIMUM
MOP	MAXIMUM OVERCURRENT PROTECTION
NG	NATURAL GAS
OAD	OUTSIDE AIR DUCT
OAT	OUTSIDE AIR TEMPERATURE
PSIG	POUNDS PER SQUARE INCH, GAUGE
RPM	REVOLUTIONS PER MINUTE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V-PH	VOLTAGE-PHASE
VFD	VARIABLE FREQUENCY DRIVE
VUSBC	VIRGINIA UNIFORM STATEWIDE BUILDING CODE
WPD	WATER PRESSURE DROP

MECH LEGEND

- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- POINT OF CONNECTION, NEW-TO-EXISTING
- POINT OF DISCONNECTION FOR DEMOLITION

PIPING
- HWR — HEATING WATER RETURN
- HWS — HEATING WATER SUPPLY

FITTINGS
- CAP
- CONNECTION, BOTTOM
- CONNECTION, TOP
- ELBOW, 90° TURNED UP
- ELBOW, 90° TURNED DOWN
- UNION

VALVES
- BALL
- BUTTERFLY
- CHECK VALVE
- PRESSURE RELIEF

PIPING SPECIALTIES
- PRESSURE GAUGE
- THERMOMETER
- PUMP
- STRAINER
- AIRVENT, AUTOMATIC/MANUAL
- BACKFLOW PREVENTER
- FLEXIBLE CONNECTOR

DUCTWORK
- ROUND ELBOW TURNING UP (SUPPLY)
- ROUND ELBOW TURNING UP (EXHAUST)
- ROUND ELBOW TURNING DOWN (SUPPLY)
- ROUND ELBOW TURNING DOWN (EXHAUST)

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LEGENDS, SCHEDULES

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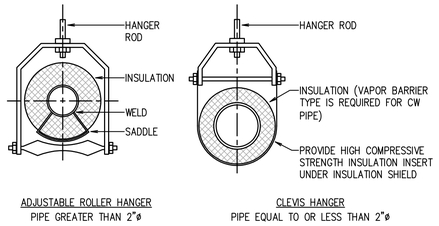
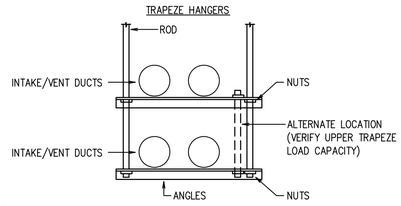


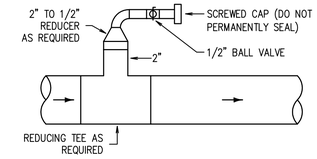
1 – M0.1 PIPE HANGER DETAILS

SCALE: NONE



2 – M0.1 COMBUSTION AIR INTAKE AND VENT HANGER

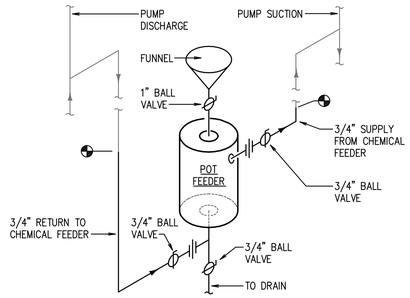
SCALE: NONE



3 – M0.1 PIPING AIR VENT/DRAIN DETAIL

SCALE: NONE

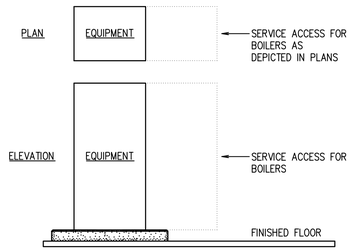
NOTES:
1. INSTALL AIR VENT AT ALL HIGH POINTS IN PIPING.



4 – M0.1 POT FEEDER DETAIL

SCALE: NONE

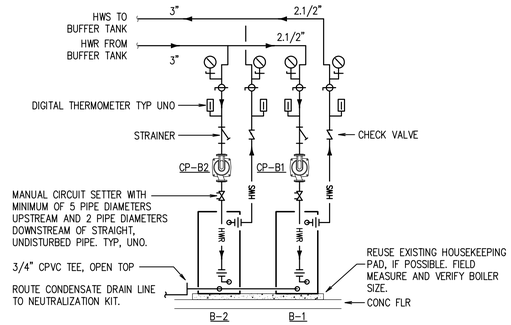
NOTES:
1. DETAIL IS FOR HW SYSTEM.



5 – M0.1 EQUIPMENT SERVICE CLEARANCE DETAIL

SCALE: NONE

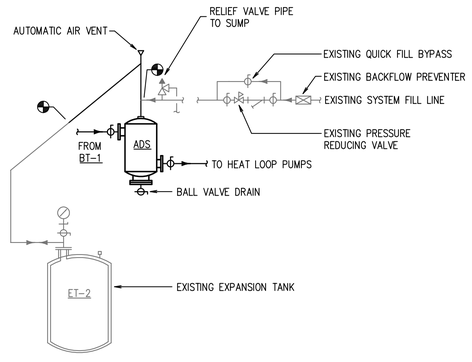
NOTES:
1. LOCATE ALL EQUIPMENT, WHICH MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. MAINTAIN A CLEAR PATH WITHOUT OBSTRUCTION TO ALLOW FOR ACCESS TO EQUIPMENT.
3. PROVIDE A MINIMUM OF TWO FEET OF CLEARANCE IN FRONT OF EQUIPMENT ACCESS DOORS AND COMPONENTS REQUIRING SERVICE.



6 – M0.1 BOILER PIPING DETAIL

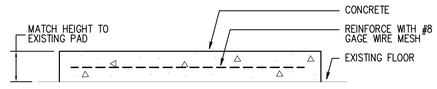
SCALE: NONE

NOTES:
1. INSULATE CP-B1, CP-B2 IMPELLERS SIMILAR TO PIPING.
2. PROVIDE CONDENSATE NEUTRALIZATION KIT FOR EACH BOILER. TERMINATE CONDENSATE LINES FROM BOILER AND EXHAUST STACK TO NEUTRALIZATION KIT. TERMINATE NEUTRALIZATION DISCHARGE AT NEAREST FLOOR DRAIN COMPLETE WITH AIR GAP.



7 – M0.1 EXPANSION TANK DETAIL

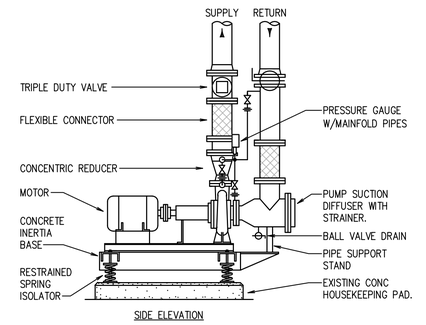
SCALE: NONE



8 – M0.1 EQUIPMENT PAD DETAIL

SCALE: NONE

NOTES:
1. EXTEND PAD MIN. 6" BEYOND EQUIPMENT ON ALL SIDES OF NEW EQUIPMENT.
2. COORDINATE SIZE WITH BOILER MANUFACTURER.



9 – M0.1 BASE MOUNTED PUMP DETAIL

SCALE: NONE

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DETAILS

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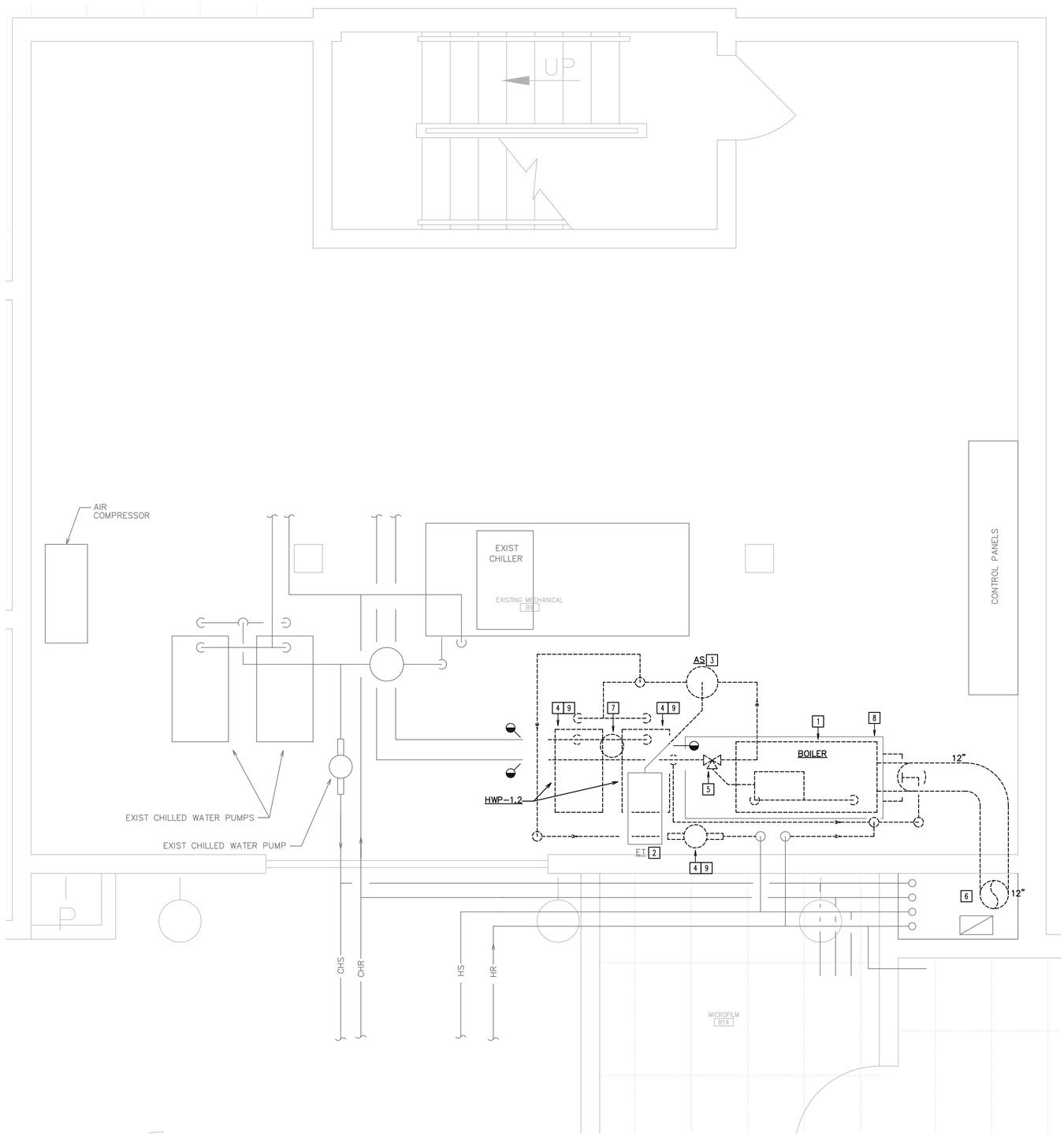

1 – MD1.0 DEMOLITION PLAN - INTERIOR

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

0 1' 2' 4'

DEMO NOTES

1. REMOVE AND RECYCLE BOILER AND PIPING AS SHOWN.
2. EXISTING EXPANSION TANK TO REMAIN.
3. REMOVE AND RECYCLE EXISTING AIR SEPARATOR.
4. REMOVE AND RECYCLE EXISTING HEATING WATER PUMPS AS SHOWN.
5. REMOVE AND RECYCLE THREE-WAY CONTROL VALVE AS SHOWN.
6. REMOVE AND RECYCLE EXISTING FLUE. PATCH AND SEAL CHIMNEY PENETRATION WATER & AIR TIGHT TO MATCH SURROUNDING MATERIALS. COORDINATE REQUIRED PATCHING/SEALING WITH NEW CONCENTRIC VENT KITS TO BE INSTALLED IN THE SAME LOCATION.
7. REMOVE AND STORE EXISTING WATER TREATMENT POT FEEDER FOR REUSE WITH NEW PUMPS.
8. FIELD VERIFY AND MEASURE EXISTING EQUIPMENT PAD. ENSURE THAT PAD WILL EXTEND 6" PAST NEW BOILERS ON ALL SIDES. IF NOT, MODIFY PAD TO MEET REQUIREMENTS, INCLUDING ANY NECESSARY DEMOLITION WORK.
9. PRIOR TO DECOMMISSIONING AND DEMONLISHING THE EXISTING HEATING WATER SYSTEM, CONTRACTOR SHALL TAKE MEASUREMENTS OF HEATING WATER FLOW RATES THROUGH THE EXISTING HEATING WATER PUMPS. UPON COMPLETION OF THE INSTALLATION OF THE NEW HEATING WATER PUMPS, EACH BRANCH OF THE BUILDING HEATING WATER LOOP SHALL BE BALANCED TO MATCH THE EXISTING CONDITIONS.

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FLOOR PLANS - DEMOLITION

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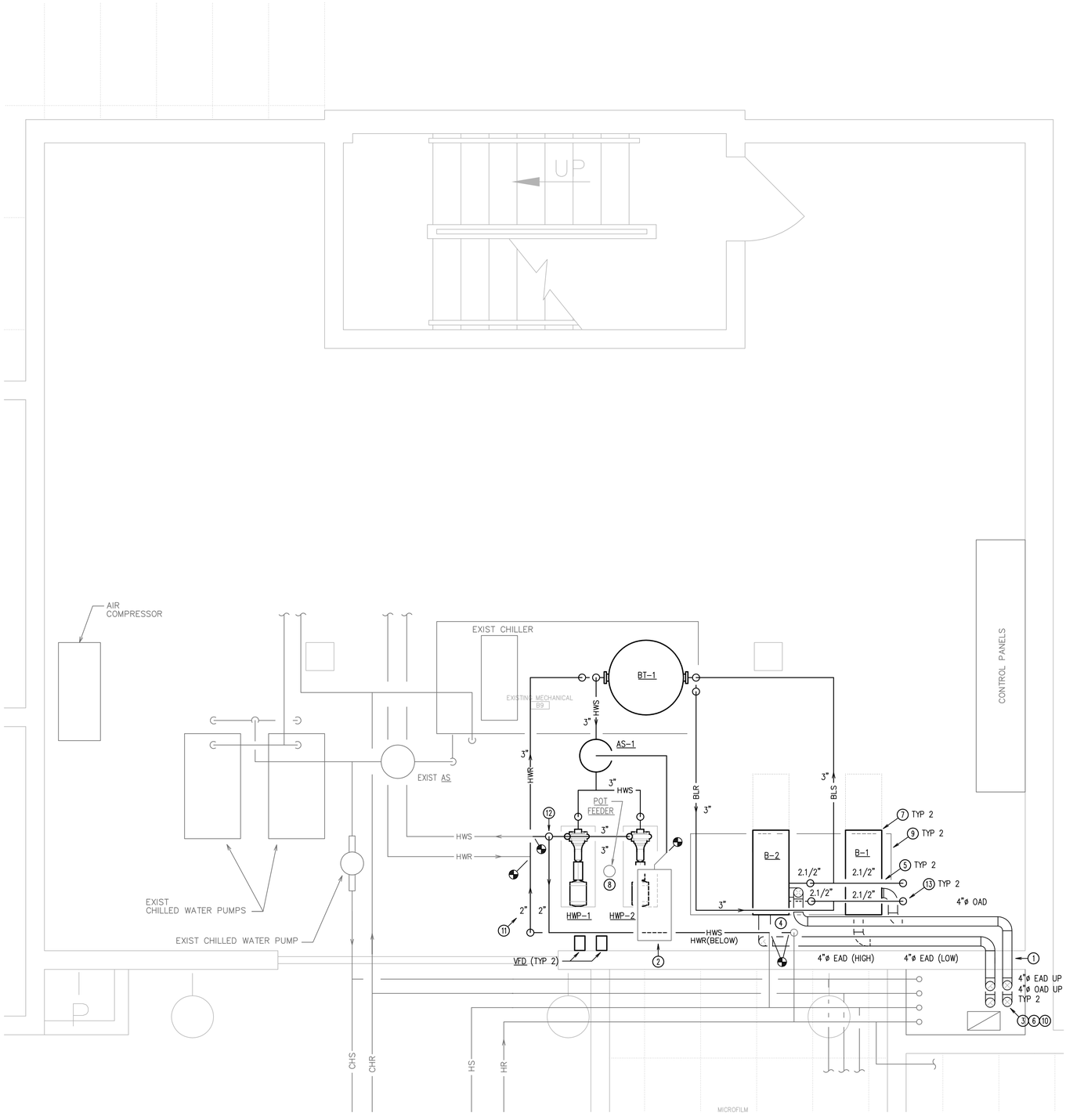


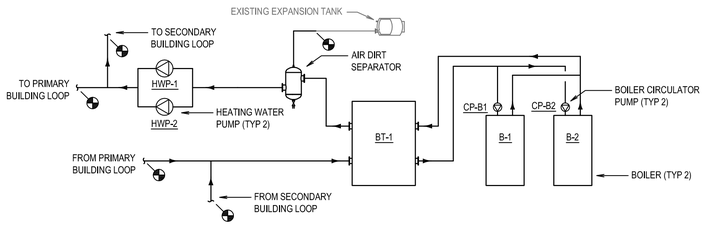
1 – M1.0 NEW WORK PLAN - INTERIOR

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

0 1' 2' 4'

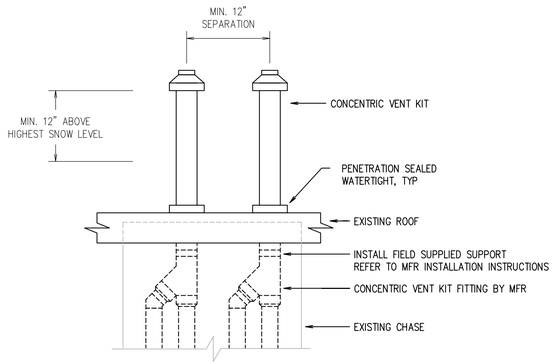
NEW WORK NOTES (W)

1. PROVIDE CPVC BOILER COMBUSTION AIR INTAKES AND BOILER VENTS. INSTALL IN ACCORDANCE WITH MFR INSTALLATION INSTRUCTIONS. A MEANS TO DRAIN CONDENSATE FROM TRANSITIONS SHALL BE PROVIDED AND PIPED TO ACID NEUTRALIZER.
2. RECONNECT EXISTING EXPANSION TANK. REFER TO MECHANICAL DETAILS 7/M0.1 AND 2/M1.0 FOR FURTHER CLARIFICATION.
3. TERMINATE COMBUSTION AIR INTAKE AND EXHAUST AIR WITH CONCENTRIC VENT KIT AS DETAILED IN M1.0. PROVIDE 1/4" STAINLESS STEEL BIRD SCREEN AT TERMINATIONS.
4. PROVIDE GAS STOP AND PRESSURE REGULATOR FOR GAS LINE TO EACH NEW BOILERS. PROVIDE 4 INCH DRIP LEG AT BOTTOM OF ALL GAS RISERS. PROVIDE A GAS STOP AT EACH BOILER. TYP 2.
5. PROVIDE CONDENSATE DRAIN LINE USING 3/4 INCH CPVC. ROUTE CONDENSATE TO NEUTRALIZER KIT AND ALONG FLOOR TO NEAREST FLOOR DRAIN.
6. PATCH AND SEAL EXISTING ROOF PENETRATION WATER TIGHT.
7. PROVIDE AND INSTALL NEW BOILER, ASSOCIATED PIPING, AND APPURTENCES. REFER TO BOILER DETAILS 6/M1.0 AND 2/M1.0 FOR CLARIFICATION.
8. CONNECT NEW PIPING TO EXISTING POT FEEDER. REFER TO DETAIL 4/M0.1 FOR FURTHER CLARIFICATION.
9. EXTEND EXISTING EQUIPMENT PAD 6" BEYOND EQUIPMENT ON ALL SIDES OF NEW EQUIPMENT AS REQUIRED. MATCH HEIGHT TO EXISTING PAD. SEE EQPT PAD DETAIL FOR CLARIFICATION.
10. SECURE VERTICAL RISE OF INTAKE AND VENT PIPES TO INTERIOR OF CHASE BY INSTALLING STRAPPING AS REQUIRED BY CODE PROJECT SPECIFICATIONS, OR LOCAL AHJ. PROVIDE SUPPORT FOR ELBOW WITH PIPE STAND OR ANGLE IRON BRACKET SIZED FOR TOTAL WEIGHT OF VERTICAL PIPES. REFER TO DETAIL 3/M1.0 FOR VENT TERMINATION. SUPPORT BOTTOM OF INTAKE AND VENT PIPES TO STRUCTURE WITHIN CHASE.
11. USE 2" PIPE SIZE OR MATCH EXISTING PIPE SIZE TO PIPE STUB AT WALL PENETRATION, WHICHEVER IS LARGER. PROVIDE PIPE TRANSITIONS AS REQUIRED.
12. BALANCE EACH BRANCH OF THE BUILDING HEATING WATER SUPPLY TO MATCH MEASUREMENTS OBTAINED PRIOR TO THE DEMOLITION OF THE EXISTING HEATING WATER PUMPS. MECHANICAL CONTRACTOR SHALL PROVIDE CIRCUIT SETTERS AS NEEDED TO FACILITATE BALANCING.
13. INSTALL CP-B1 TO SERVE B-1 AND CP-B2 TO SERVE B-2. REFER TO BOILER DETAILS FOR CLARIFICATION.



2 – M1.0 HEATING WATER PIPING SCHEMATIC

SCALE: NONE



3 – M1.0 BOILER VENT & INTAKE TERMINATION DETAIL

SCALE: NONE

NOTES:
1. BASED ON LOCHINVAR INSTALLATION MANUAL.
2. SEAL ROOF WHERE PREVIOUS FLUE PENETRATED ENVELOPE.
3. SUPPORT PIPES IN ACCORDANCE WITH LOCAL CODE AND MFR INSTALLATION INSCTRUCTIONS.

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N

CIRCUIT COURT BUILDING
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title

FLOOR PLANS - NEW WORK, SYSTEM SCHEMATIC, DETAIL

e-file: 12221A-M

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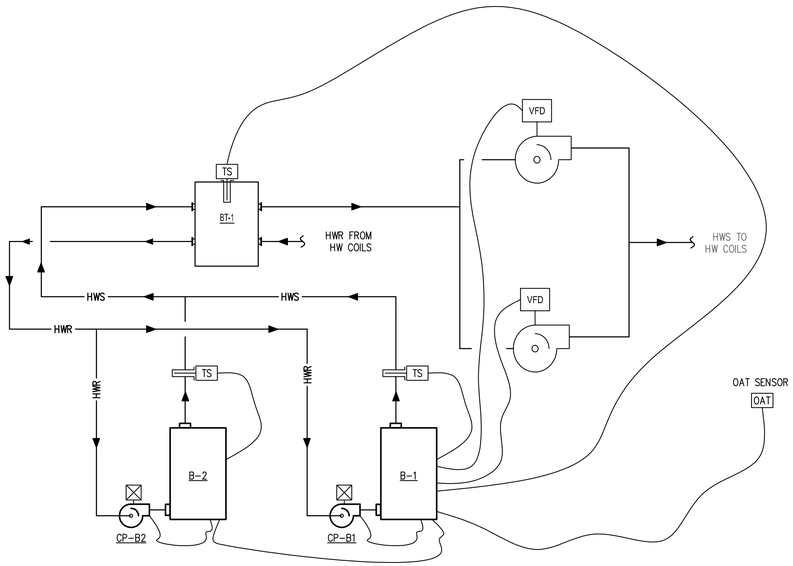

1 / M2.0 BOILER SYSTEM CONTROL SCHEMATIC

SCALE: NONE

NOTES:
1. BOILER CIRCULATOR PUMPS CP-B1 AND CP-B2 HARD-WIRED TO CORRESPONDING BOILER. COORDINATE ELECTRICAL CONNECTIONS FOR BOILERS WITH ELECTRICAL CONTRACTOR. SEE SHEET E1.0.

SEQUENCE OF OPERATIONS

GENERAL

1. IF A SENSED CHANGE RESULTS IN A PRESCRIBED ACTION, THE OPPOSITE OF THE SENSED CHANGE SHALL RESULT IN THE OPPOSITE ACTION.
2. IMMERSION TEMPERATURE SENSORS SHALL BE RESISTANCE TEMPERATURE DEVICE (RTD) OR THERMISTOR TYPE. IMMERSION SENSORS SHALL BE PROVIDED WITH A SEPARABLE STAINLESS STEEL WELL. WELL PRESSURE RATING SHALL BE CONSISTENT WITH SYSTEM PRESSURE IN WHICH IT WILL BE IMMERSED. WELL SHALL WITHSTAND PIPE DESIGN FLOW VELOCITIES.
3. FLOW SWITCH SHALL BE PADDLE OR DIFFERENTIAL PRESSURE TYPE. SWITCH SHALL BE UL LISTED, SINGLE POLE, DOUBLE THROW, SNAP-ACTING, AND PILOT DUTY RATED. PADDLE SWITCHES SHALL HAVE ADJUSTABLE SENSITIVITY AND NEMA 1 ENCLOSURE. DIFFERENTIAL PRESSURE SENSOR SHALL HAVE SCALE RANGE AND DIFFERENTIAL SUITABLE FOR INTENDED APPLICATION AND NEMA 1 ENCLOSURE.

BOILER SYSTEM - 1/M2.0

1. THE BOILER MFR SHALL PROVIDE BOILERS COMPLETE WITH AN INTEGRATED CONTROLLER WHICH SHALL MONITOR AND CONTROL THE BOILER SYSTEM (2 BOILERS AND ASSOCIATED CIRCULATION PUMPS AND BUILDING HEATING WATER PUMPS) IN A STAND-ALONE MODE. INTERNAL CONTROLS SHALL INCLUDE BUT ARE NOT LIMITED TO OA RESET, TEMPERATURE SENSORS, FLOW SWITCHES, AND LOW WATER CUT-OFF.
2. BOILER B-1 SHALL BE THE LEAD BOILER. STANDBY BOILER B-2 SHALL BE ALTERNATED WEEKLY TO MAINTAIN SIMILAR RUNTIME.
3. THE BOILER SYSTEM SHALL BE ENABLED BY THE INTEGRATED CONTROLLER WHEN THE OUTDOOR TEMPERATURE IS 55° F (ADJUSTABLE) OR BELOW.
4. THE CONTROLLER SHALL RESET THE BUFFER TANK WATER TEMPERATURE SETPOINT INVERSELY WITH THE OUTSIDE AIR TEMPERATURE. THE LINEAR RELATIONSHIP SHALL BE AS DEFINED BELOW:
   a. 100° F AT 55° F OUTDOOR AIR TEMPERATURE OR ABOVE (ALL VALUES ADJUSTABLE).
   b. 180° F AT 10° F OUTDOOR AIR TEMPERATURE OR LOWER (ALL VALUES ADJUSTABLE).
5. UPON PROVEN FLOW AND INTERNAL SAFETY CONTROL CHECK, BOILERS SHALL MODULATE TO MAINTAIN THE BUFFER TANK TEMPERATURE SET POINT.
6. THE CONTROLLER WILL OPERATE THE BOILERS USING CASCADING CONTROL EFFICIENCY OPTIMIZATION MODE SUCH THAT BOTH BOILERS WILL OPERATE TOGETHER AT A LOW INPUT RATE TO MEET SYSTEM DEMAND.
7. THE CONTROLLER SHALL DISABLE THE BOILERS IN REVERSE ORDER TO MAINTAIN SET POINT.
8. SHOULD A BOILER FAIL, THE STANDBY BOILER SHALL AUTOMATICALLY BE STARTED AND AN ALARM SHALL BE GENERATED AT THE BOILER CONTROL PANEL TO INDICATE THAT THE BOILER HAS FAILED.
9. ALL SETPOINTS SHALL BE ADJUSTABLE.

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CIRCUIT COURT BUILDING
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title
CONTROLS

e-file: 12221A-M2

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GENERAL NOTES DEMOLITION

1. PRIOR TO BIDDING, THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND TO VERIFY LOCATION, SIZE AND QUANTITY OF ITEMS TO BE REMOVED. SUBMITTAL OF A BID SHALL SIGNIFY WILLINGNESS TO COMPLY WITH THE DEMOLITION PLANS AND ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
2. DOCUMENTATION OF EXISTING SYSTEMS IS BASED ON AVAILABLE RECORD DRAWINGS AND CASUAL FIELD OBSERVATION. MAJOR DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
3. CONTRACTOR SHALL REMOVE ALL PORTIONS OF EXPOSED SYSTEMS. COMPONENTS EMBEDDED WITHIN OR BENEATH THE EXISTING STRUCTURE MAY BE ABANDONED IN PLACE, CUT BEHIND WALL/FLOOR/CEILING SURFACE AS REQUIRED FOR PATCHING OF FINISH. WATER-CONTAINING SYSTEMS SHALL BE CAPPED WATERTIGHT.
4. WHERE EXISTING ELECTRICAL SYSTEMS PENETRATE EXTERIOR WALLS, CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING SUCH PENETRATIONS TO MATCH EXISTING, UNO.
5. REMOVE EACH ITEM OF EQUIPMENT, DEVICE, AND FIXTURE INDICATED ON DEMOLITION PLANS AND ITS ASSOCIATED CIRCUITRY BACK TO THE PROTECTIVE DEVICE IN THE PANEL, SWITCHBOARD, OR CONTROLLER, EXCEPT AS OTHERWISE NOTED.
   A. ASSOCIATED CIRCUITRY INCLUDES CONDUIT, CONDUCTORS, BOXES, WIRING DEVICES, COVER PLATES, WIREWAYS, SWITCHES, STARTERS, ETC., WHICH ARE ASSOCIATED WITH THE ITEM TO BE REMOVED.
   B. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.
   C. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOORS. PATCH SURFACES.
   D. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.
   E. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK TO MATCH EXISTING.
6. EXACT CIRCUITING FOR LOADS NOTED FOR DEMOLITION SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO DEMOLITION.
7. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT THAT ARE TO REMAIN OR THAT ARE TO BE REUSED.
8. ALL EQUIPMENT SHALL BE RECYCLED OR DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS.

GENERAL NOTES NEW WORK

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2009, IEBC 2009 AND 2008 NEC.
2. MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED, ARE TO CENTER LINE OF EQUIPMENT.
3. PROVIDE GROUNDING CONDUCTORS IN ALL BRANCH CIRCUIT RACEWAYS.
4. MECHANICAL EQUIPMENT IS SHOWN IN APPROXIMATE LOCATIONS. FOR EXACT LOCATION OF MECHANICAL EQUIPMENT AND PIPING SEE MECHANICAL DRAWINGS.
5. PROVIDE FUSES IN ALL FUSED DISCONNECT SWITCHES. FUSE RATINGS SHALL BE IN ACCORDANCE WITH EQUIPMENT MANUFACTURERS' RECOMMENDATIONS.
6. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE NEUTRAL CONDUCTORS WHERE REQUIRED.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION OF SYSTEMS AND COMMENCEMENT OF INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO MECHANICAL) AS IT AFFECTS THE ELECTRICAL WORK, AND AS THE ELECTRICAL WORK AFFECTS OTHER TRADES, TO INSURE THAT THE CONSTRUCTION DOCUMENTS ARE CLOSELY FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
8. THE DESIGN IS BASED ON MANUFACTURERS AND MODELS INDICATED, AND IS INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS AND/OR SUPPORT FOR EQUIPMENT OR SYSTEM(S) WITH RELATION TO THE OTHER BUILDING/SYSTEMS. SEE SPECIFICATION SECTIONS FOR TECHNICAL REQUIREMENTS.

ABBREVIATIONS

A	AMPERE
A/E	ARCHITECT/ENGINEER
DIAM	DIAMETER
ETC	ETCETERA
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HR	HOUR
IEBC	INTERNATIONAL EXISTING BUILDING CODE
IN	INCHES
MAX	MAXIMUM
MCM	THOUSANDS OF CIRCULAR MILS
MIN	MINIMUM
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC
P	POLE
PCF	POUNDS PER CUBIC FOOT
PNL	PANEL
T	TONS
THKNS	THICKNESS
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VUSBC	VIRGINIA UNIFORM STATEWIDE BUILDING CODE
WP	WEATHERPROOF
WT	WEIGHT

ELECTRICAL LEGEND (XX)

CIRCUIT HOMERUN

EXISTING TO BE REMOVED

EXISTING TO REMAIN

WIRING DEVICES

(E) EQUIPMENT CONNECTION

S_X WALL SWITCH, AT 48"AFF UNO.
SUBSCRIPTS INDICATE THE FOLLOWING:
(NONE) SINGLE POLE
M MANUAL MOTOR STARTER

VFD VARIABLE FREQUENCY DRIVE

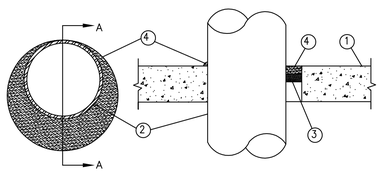
(J) JUNCTION BOX

$\boxtimes_X$ MOTOR STARTER
SUBSCRIPTS INDICATE NEMA SIZE

POWER DISTRIBUTION

PANELBOARD, SURFACE MOUNTED

System No. C-AJ-1001
June 15, 2005
F Rating - 3 Hr
T Rating - 0 Hr
W Rating - Class I (See Item 4)



SECTION A-A

	A Max Pipe Diam in.	B Max Annular Space in.	C Packing Matl Type (a)	D Min Caulk Thkns in.
1				
2	10	1	BR, CF, GF or MW	1/2 (b)
3	10	1	CF or MW	1/2 (c)
4	30	2 1/2	BR, CF, GF or MW	1 (b)

1. FLOOR OR WALL ASSEMBLY – MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX DIAM OF CIRCULAR THROUGH OPENING IS 32-1/2 IN.

1A. STEEL SLEEVE (OPTIONAL, NOT SHOWN) – NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO CONCRETE FLOOR OR WALL SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL.

2. THROUGH PENETRANT – ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (POINT CONTACT) TO MAX 1-3/8 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE – NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
A1. IRON PIPE – NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
B. CONDUIT – NOM 6 IN. DIAM (OR SMALLER) RIGID STEEL CONDUIT.
C. CONDUIT – NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.

3. PACKING MATERIAL – POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF TIGHTLY-PACKED CERAMIC (ALUMINA SILICA) FIBER BLANKET, MINERAL WOOL BATT OR GLASS FIBER INSULATION MATERIAL USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF SOLID CONCRETE OR CONCRETE BLOCK WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4). AS AN ALTERNATE WHEN MAX PIPE SIZE IS 10 IN. DIAM AND WHEN MAX ANNULAR SPACE IS 1 IN., A MIN 1 IN. THICKNESS OF TIGHTLY-PACKED CERAMIC FIBER BLANKET OR MINERAL WOOL BATT PACKING MATERIAL MAY BE RECESSED MIN 1/2 IN. FROM BOTTOM SURFACE OF FLOOR OR FROM EITHER SIDE OF SOLID CONCRETE WALL.

4. FILL,VOID OR CAVITY MATERIALS* - CAULK OR SEALANT – APPLIED TO FILL THE ANNULAR SPACE TO THE MIN THICKNESS SHOWN IN THE FOLLOWING TABLE:

(A) BR = POLYETHYLENE BACKER ROD.
CF = CERAMIC FIBER BLANKET.
GF = GLASS FIBER INSULATION.
MW = MINERAL-WOOL BATT.
(B) CAULK INSTALLED FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL.
(C) CAULK INSTALLED FLUSH WITH BOTTOM SURFACE OF FLOOR OR ONE SURFACE OF SOLID (NON-CONCRETE BLOCK) WALL.

3M COMPANY – CP 25WB+ CAULK OR FB-3000 WT SEALANT.
(NOTE: W RATING APPLIES ONLY WHEN FB-3000 WT SEALANT IS USED.)

*BEARING THE UL CLASSIFICATION MARKING

1 / - E0.0 FIRESTOP DETAIL
NO SCALE

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CIRCUIT COURT BUILDING
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title
LEGEND, SCHEDULES, DETAILS

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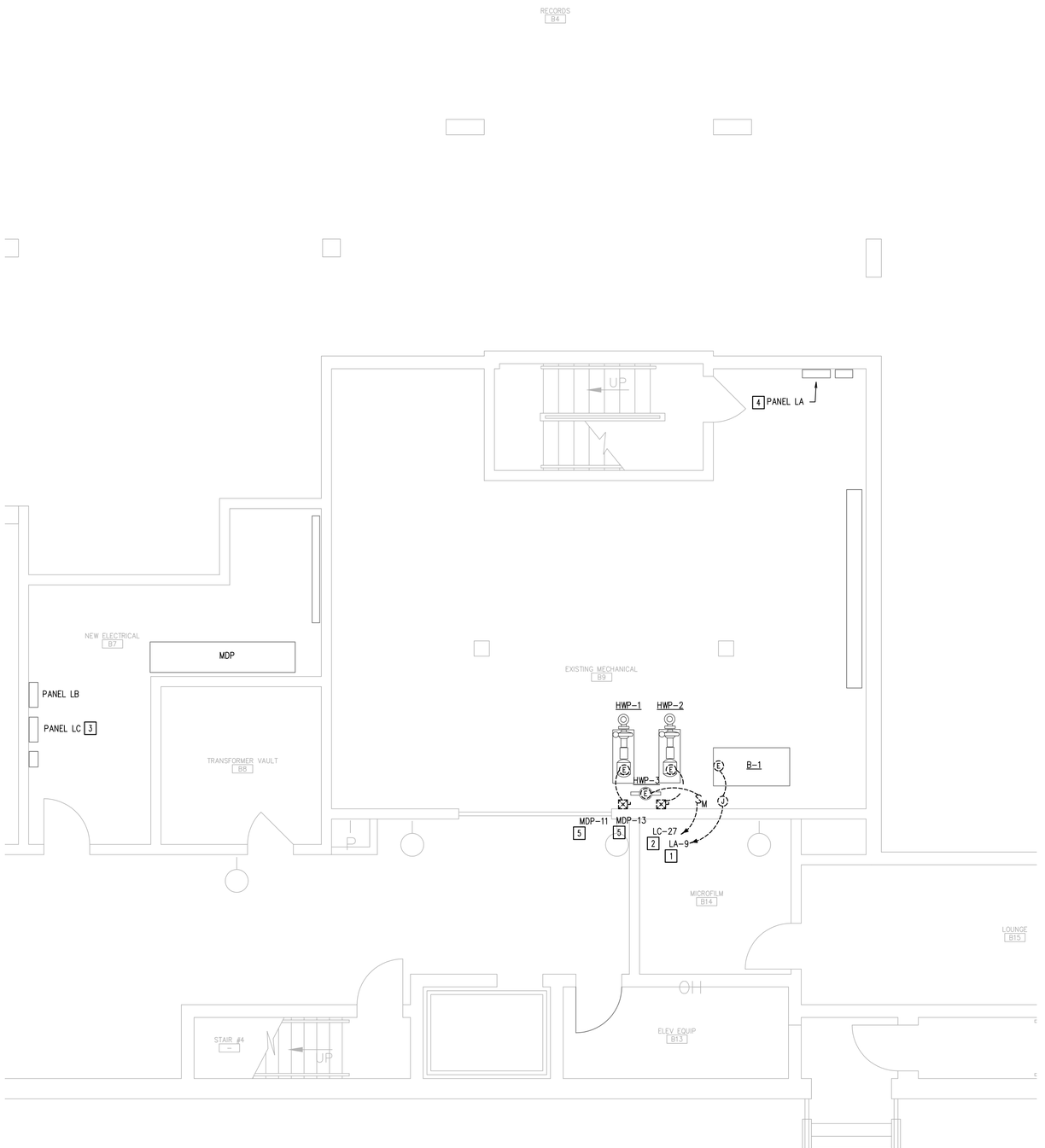
DEMO NOTES [X]

1. REMOVE AND RECYCLE WIRE AND CONDUIT BACK TO PANEL LA FROM BOILER TO BE REMOVED.
2. REMOVE AND RECYCLE SWITCH, WIRE, AND CONDUIT BACK TO PANEL LC FROM HOT WATER PUMP TO BE REMOVED.
3. DISCONNECT, REMOVE, AND RECYCLE BREAKER IN CIRCUIT 27 (20A, 3P, HOT WATER PUMP).
4. DISCONNECT, REMOVE, AND RECYCLE BREAKER IN CIRCUIT 9 (20A, 1P, BOILER).
5. REMOVE AND RECYCLE STARTER, WIRE, AND CONDUIT BACK TO PANEL MDP.



1 – ED1.0 DEMOLITION PLAN - POWER

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

0 1' 2' 4' 8'

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FLOOR PLANS - DEMOLITION

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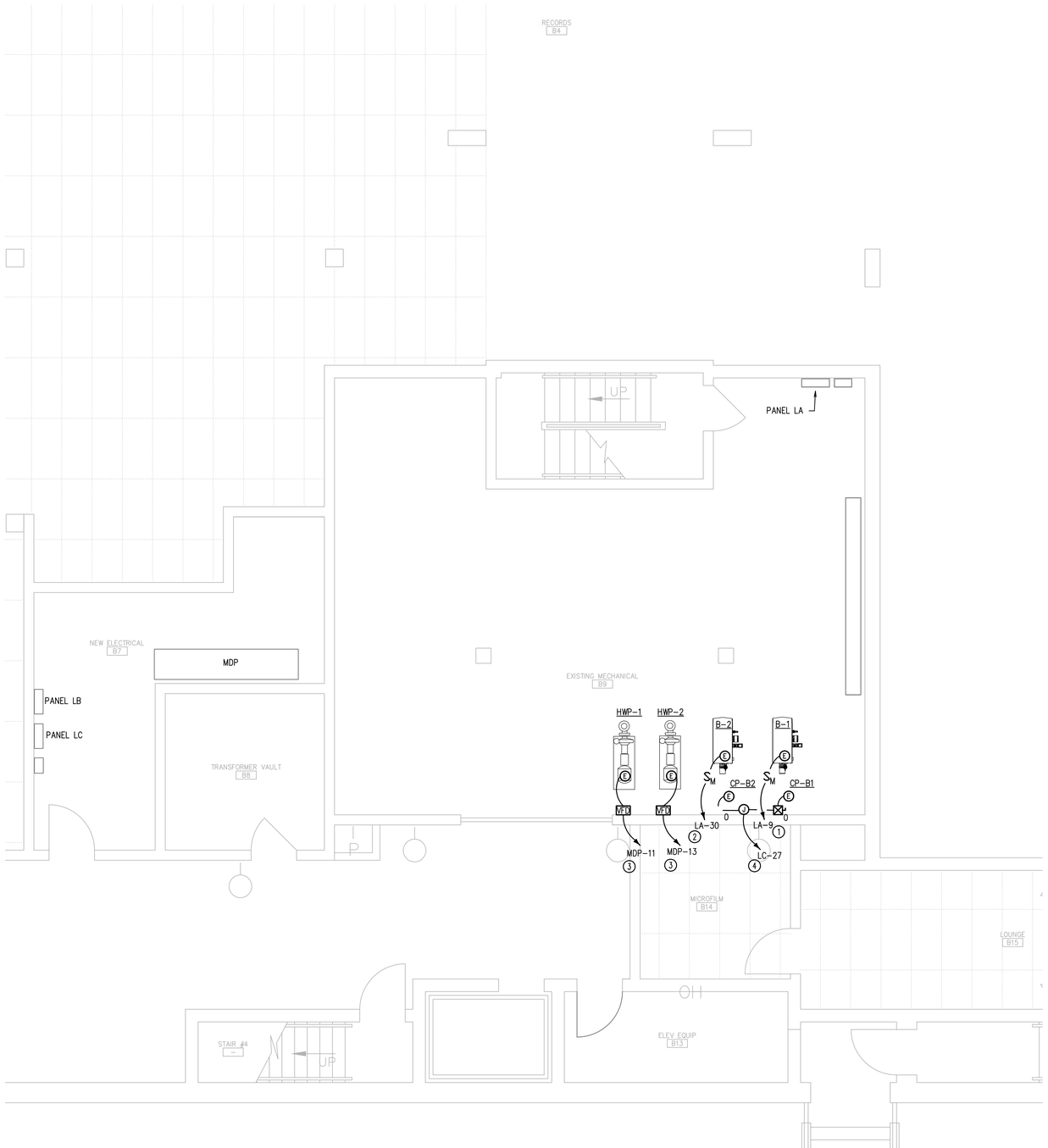
NEW WORK NOTES (W)

1. CIRCUIT TO NEW 15A, SINGLE POLE BREAKER INSTALLED IN CIRCUIT NUMBER 9 IN PANEL LA.
2. CIRCUIT TO NEW 15A, SINGLE POLE BREAKER INSTALLED IN CIRCUIT NUMBER 30 IN PANEL LA.
3. CIRCUIT TO EXISTING BREAKER IN MDP. REUSE EXISTING BREAKER.
4. CIRCUIT TO NEW 30A, THREE POLE BREAKER INSTALLED IN CIRCUIT NUMBER 27 IN PANEL LC WITH 4 #10 IN 3/4 INCH EMT.



1 / -- E1.0 NEW WORK PLAN

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

0 1' 2' 4' 8'

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FLOOR PLANS - NEW WORK

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