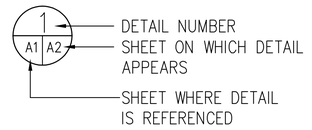
MONUMENT TERRACE BUILDING
BOILER REPLACEMENT
THE CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

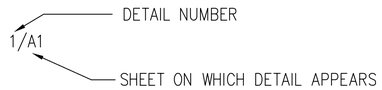
LIST OF DRAWINGS

SYMBOLS

DETAIL INDICATOR SYMBOL



TEXT DETAIL REFERENCE



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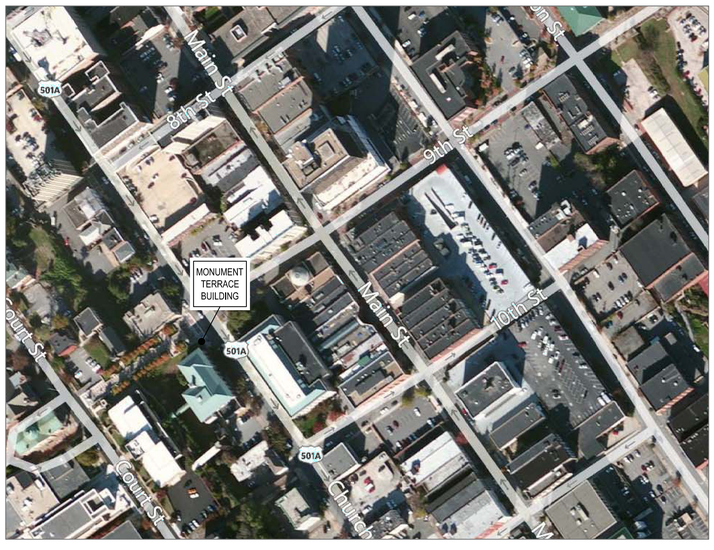
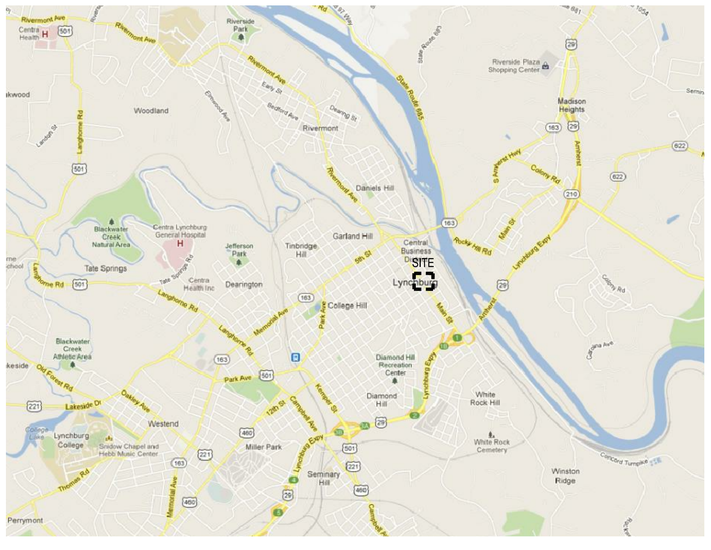


SITE MAP - MONUMENT TERRACE BUILDING



VICINITY MAP - LYNCHBURG, VA

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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
CP-B1	60 1x5-1/4	IN-LINE CIRCULATOR	B-1, PRIMARY	49.7	32	17.5	4.750	5.250	1750	1/2	120-1
CP-B2	60 1x5-1/4	IN-LINE CIRCULATOR	B-2, PRIMARY	49.7	32	17.5	4.750	5.250	1750	1/2	120-1

NOTES:
1. DESIGN AND PERFORMANCE BASED ON BELL & GOSSETT.
2. CP-B: POWER PROVIDED FROM DRY CONTACT ON BOILER.
3. REFER TO CONTROL DRAWINGS FOR PUMP CONTROL.

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	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	10.5	600	568	32	13	125	160	4	4	120-1	7	15
B-2	HEATING WATER	KB-601	NG	4.0	10.5	600	568	32	13	125	160	4	4	120-1	7	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
DAS	HEATING WATER	DAS-3-R	87	0.2

NOTES:
1. DAS: DESIGN AND PERFORMANCE DATA BASED ON ARMSTRONG.
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.

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2009, IEBC 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) 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. FIRESTOP ALL NEW PENETRATIONS THROUGH EXISTING FIRE RATED PARTITIONS TO MAINTAIN EXISTING RATING.
9. 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.
10. 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.
11. THE EXISTING BAS IS JOHNSON CONTROLS. CONTRACTOR TO CONNECT TO EXISTING SYSTEM AS INDICATED.
12. ALL DOMESTIC COLD WATER PIPING SHALL BE TYPE L COPPER. ALL HYDRONIC HEATING AND NG PIPING SHALL BE SCHEDULE 40 BLACK STEEL OR TYPE L.
13. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS TO ALL MOTOR-DRIVEN EQUIPMENT.
14. 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. COMPONENTS EMBEDDED WITHIN OR BENEATH THE EXISTING STRUCTURE MAY BE ABANDONED IN PLACE, CUT BEHIND WALL/FLOOR/CEILING/ROOF SURFACE AS REQUIRED FOR PATCHING OF FINISH. SYSTEMS SHALL BE CAPPED WATER TIGHT.
4. WHERE EXISTING MECHANICAL SYSTEMS PENETRATE EXTERIOR WALLS/ROOF, CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING SUCH PENETRATIONS TO MATCH EXISTING, UNO.
5. 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

A/E	ARCHITECT/ENGINEER
AHJ	AUTHORITY HAVING JURISDICTION
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
COEF	COEFFICIENT
CONC	CONCRETE
CW	COLD WATER
DIA, DIAM	DIAMETER
EQUIP	EQUIPMENT
ET	EXPANSION TANK
ETC	ETCETERA
EWT	ENTERING WATER TEMPERATURE (°F)
DAS	DIRT-AIR SEPARATOR
FLA	FULL LOAD AMPS
FLR	FLOOR
FT	FEET OR FOOT
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	HOT WATER
HWR/S	HOT WATER RETURN/SUPPLY
IEBC	INTERNATIONAL EXISTING 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
RPM	REVOLUTIONS PER MINUTE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V-PH	VOLTAGE-PHASE
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
- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- RL — REFRIGERANT LINE
- DOMESTIC COLD WATER (CW)

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

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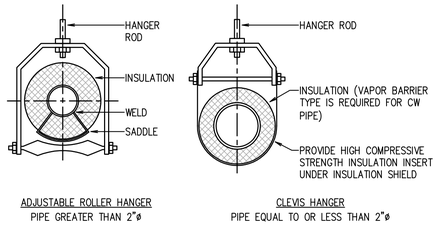
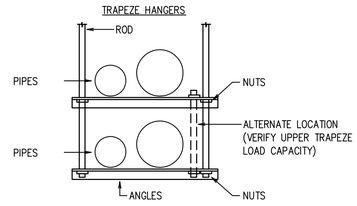


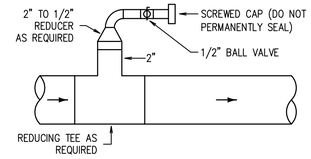
1 – M0.1 PIPE HANGER DETAILS

SCALE: NONE



2 – M0.1 COMBUSTION AIR INTAKE AND VENT HANGER

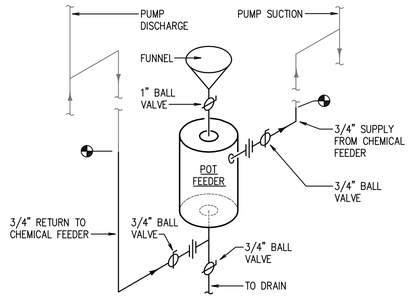
SCALE: NONE



3 – M0.1 PIPING AIR VENT/DRAIN DETAIL

SCALE: NONE

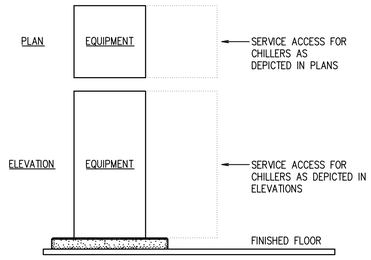
NOTES:
1. INSTALL AIR VENT AT ALL HIGH POINTS IN PIPING.



4 – M0.1 POT FEEDER DETAIL

SCALE: NONE

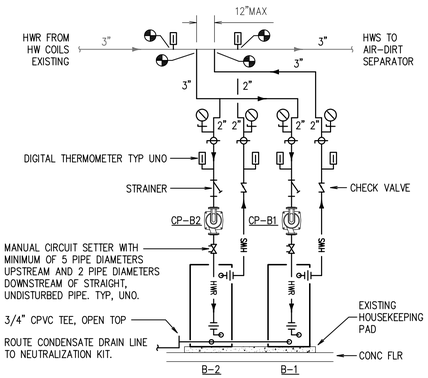
NOTES:
1. DETAIL IS FOR HHW SYSTEM.



5 – M0.1 EQUIPMENT SERVICE CLEARANCE DETAIL

SCALE: NONE

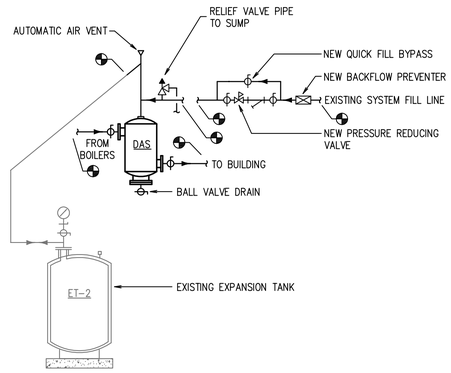
NOTES:
1. LOCATE ALL EQUIPMENT, WHICH MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. MAINTAIN A CLEAR PATH WITHOUT OBSTRUCTION TO ALLOW FOR ACCESS TO EQUIPMENT.
3. PROVIDE A MINIMUM OF TWO FEET OF CLEARANCE IN FRONT OF EQUIPMENT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



6 – M0.1 BOILER PIPING DETAIL

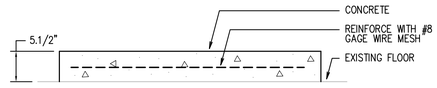
SCALE: NONE

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 SUMP 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.

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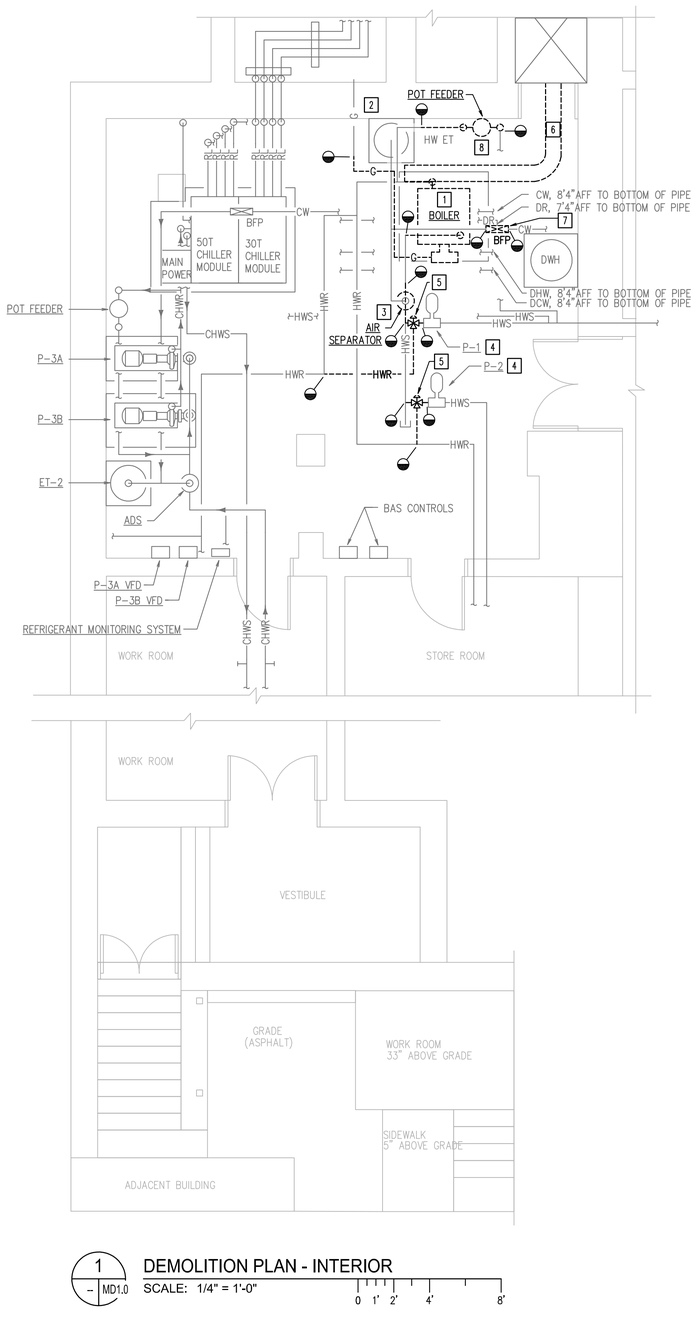
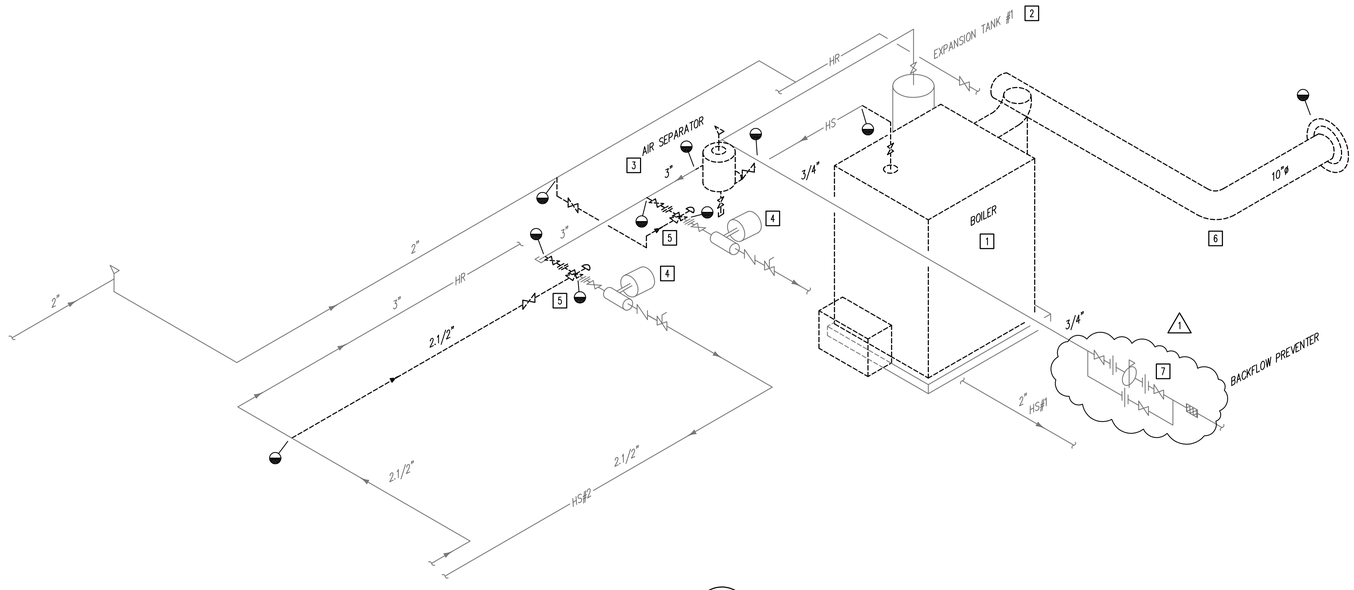
DEMO NOTES (XX)

1. REMOVE AND RECYCLE BOILER AND PIPING AS SHOWN. BUILDING HEATING WATER LOOP TO REMAIN.
2. EXISTING EXPANSION TANK TO REMAIN.
3. REMOVE AND RECYCLE EXISTING AIR SEPARATOR.
4. EXISTING PUMP AND ASSOCIATED ISOLATION VALVES TO REMAIN.
5. REMOVE BOILER BYPASS, CONTROL VALVE, AND ISOLATION VALVE. PIPING AND ISOLATION VALVE SHALL BE RECYCLED. CONTROL VALVE SHALL BE SALVAGED FOR OWNER'S REUSE AND STORED AWAY FROM CONSTRUCTION ACTIVITIES TO PROTECT AGAINST DAMAGE.
6. REMOVE AND RECYCLE EXISTING FLUE CONNECTOR TO CHIMNEY AND SEAL CHIMNEY PENETRATION WATER & AIR TIGHT TO MATCH SURROUNDING MATERIALS. REMOVE AND RECYCLE STEEL CHIMNEY LINER.
7. EXISTING BACKFLOW PREVENTER TO REMAIN.
8. REMOVE AND RECYCLE EXISTING WATER TREATMENT POT FEEDER.



1 – MD1.0 DEMOLITION PLAN - INTERIOR
SCALE: 1/4" = 1'-0"
0 1' 2' 4' 8'



2 – MD1.0 HOT WATER ISOMETRIC DIAGRAM - DEMOLITION
SCALE: NONE

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FLOOR PLANS
DEMOLITION

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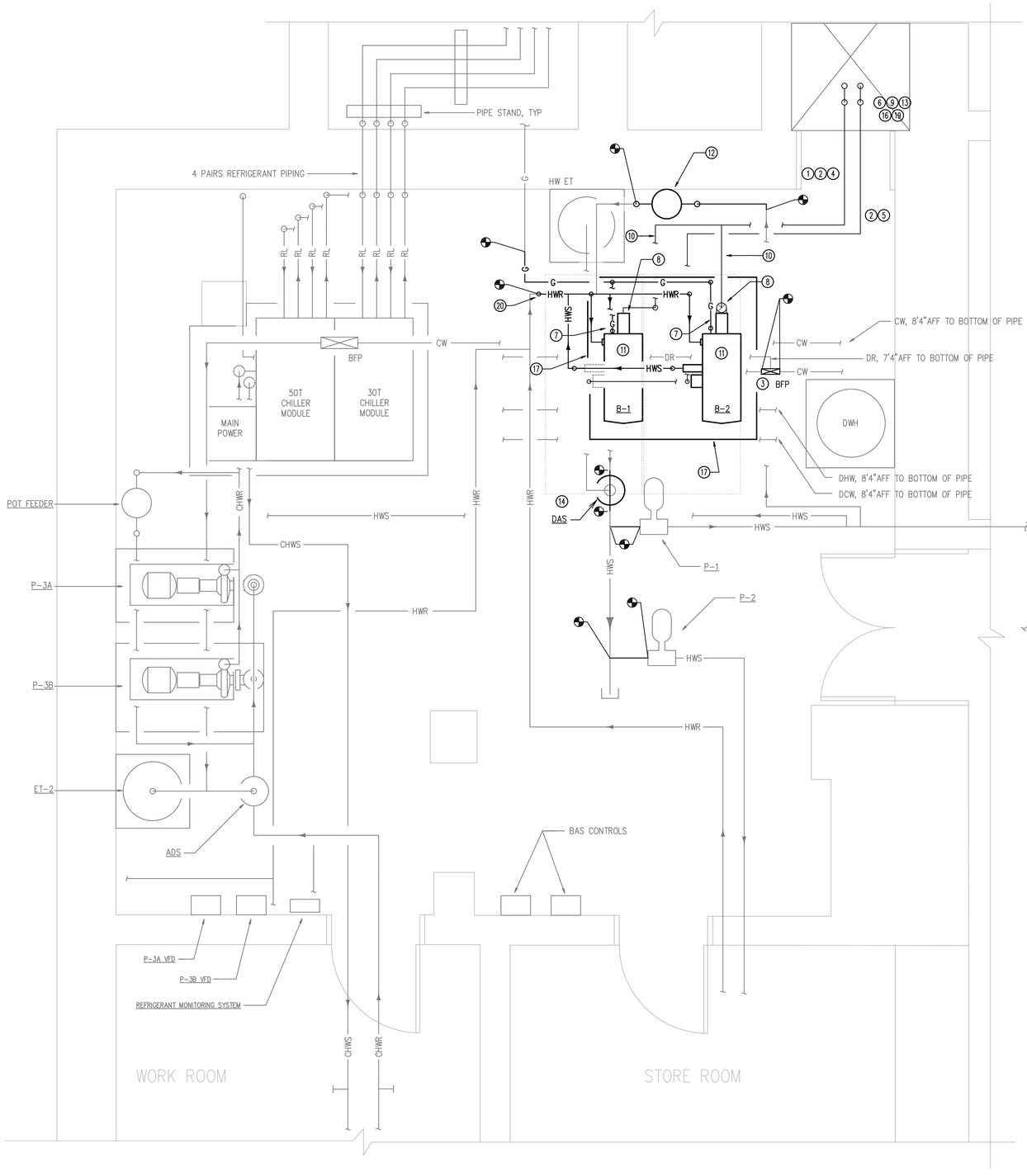
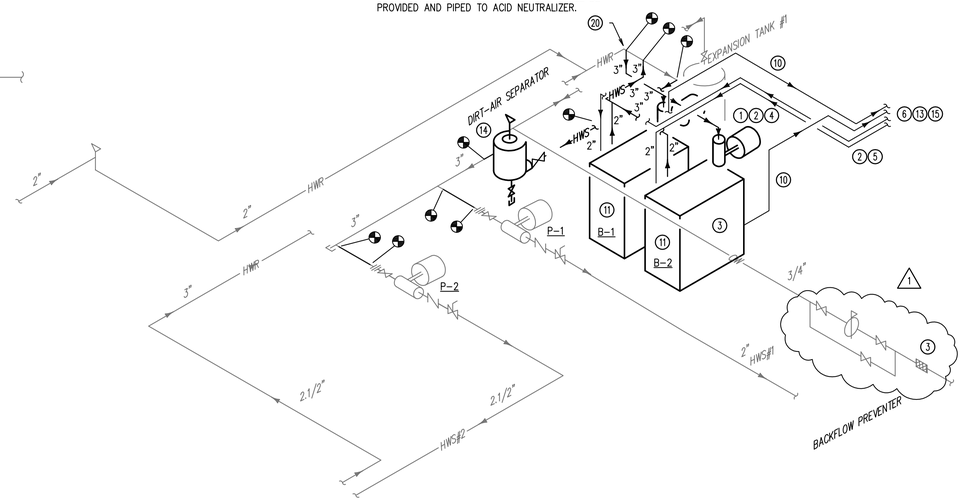


1 NEW WORK PLAN - INTERIOR
SCALE: 1/2" = 1'-0"

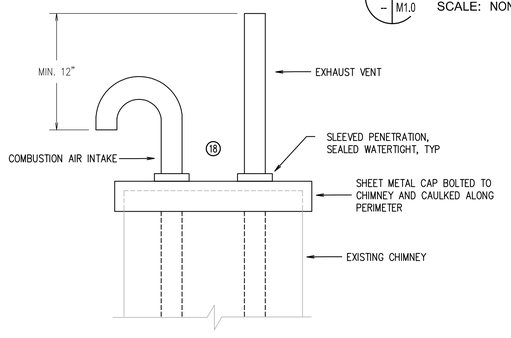
0 1' 2' 4'

NEW WORK NOTES (XX)

1. PROVIDE CPVC BOILER COMBUSTION AIR INTAKES AND BOILER VENTS. NEITHER THE BOILER COMBUSTION AIR INTAKES NOR THE BOILER VENTS SHALL EXCEED 100 EQUIVALENT FEET IN LENGTH. EACH 90° ELBOW SHALL EQUAL 5 EQUIVALENT FEET AND EACH 45° ELBOW SHALL EQUAL 3 EQUIVALENT FEET. ROUTE TO MINIMIZE EQUIVALENT LENGTH. IF SELECTED ROUTING WILL RESULT IN AN EQUIVALENT LENGTH GREATER THAN 100 FEET, VENT AND INTAKE PIPE SIZE SHALL TRANSITION FROM 4" TO 6" EXCEPT FOR THE FIRST AND FINAL TEN FEET IN ACCORDANCE WITH LOCHINVAR MEMO DATED AUGUST 19, 2009. AMEANS TO DRAIN CONDENSATE FROM TRANSITIONS SHALL BE PROVIDED AND PIPED TO ACID NEUTRALIZER.
2. ROUTE BOILER COMBUSTION AIR INTAKES AND BOILER VENTS AS CLOSE TO FINISHED CEILING AS POSSIBLE WHILE MINIMIZING NUMBER OF ELBOWS.
3. EXISTING BACKFLOW PREVENTER TO REMAIN.
4. TWO 4 INCH VENTS ALIGNED VERTICALLY. SEE 2/M0.0. SLOPE VENTS PER MANUFACTURER'S RECOMMENDATIONS.
5. TWO 4 INCH COMBUSTION AIR INTAKES ALIGNED VERTICALLY. SEE 2/M0.0.
6. TERMINATE COMBUSTION AIR INTAKE AND EXHAUST AIR AS DETAILED IN M1.0. PROVIDE 1/4" STAINLESS STEEL BIRD SCREEN AT TERMINATIONS.
7. PROVIDE GAS STOP AND PRESSURE REGULATOR FOR NEW 2" GAS LINE TO NEW BOILERS. PROVIDE 4 INCH DRIP LEG AT BOTTOM OF ALL GAS RISERS. PROVIDE A GAS STOP AT EACH BOILER.
8. PROVIDE CONDENSATE DRAIN LINE PIPE USING 3/4 INCH CPVC TO NEUTRALIZER KIT AND ALONG FLOOR TO SUMP.
9. PATCH AND SEAL EXISTING CHIMNEY AND TOP OF CHIMNEY WATER TIGHT.
10. VENT AND INTAKE TO TRANSITION FROM 4" TO 6" EXCEPT FOR THE FIRST AND FINAL TEN FEET IN ACCORDANCE WITH LOCHINVAR MEMO DATED AUGUST 19, 2009. A MEANS TO DRAIN CONDENSATE FROM TRANSITIONS SHALL BE PROVIDED AND PIPED TO ACID NEUTRALIZER.
11. PROVIDE AND INSTALL NEW BOILER, ASSOCIATED PIPING, AND APPURTENCES. SEE 3/M0.0.
12. PROVIDE NEW POT FEEDER.
13. BOILER VENT AND INTAKE SHALL BE RUN IN EXISTING CHIMNEY.
14. PROVIDE NEW AIR-DIRT SEPARATOR.
15. MAINTAIN 12" MINIMUM CLEARANCE BETWEEN COMBUSTION AIR INTAKES.
16. SLEEVE PENETRATIONS THROUGH EXISTING CHIMNEY WALL WITH MINIMUM SCHEDULE 20 BLACK STEEL PIPE FOR FULL THICKNESS OF WALL. CAULK INNER AND OUTER CIRCUMFERENCES OF PENETRATION TO PROVIDE AIR-TIGHT SEAL.
17. EXTEND EXISTING EQUIPMENT PAD 6" BEYOND EQUIPMENT ON ALL SIDES OF NEW EQUIPMENT. MATCH HEIGHT TO EXISTING PAD. SEE DETAIL 8/M0.1.
18. MAINTAIN MINIMUM 12" HORIZONTAL CLEARANCE FROM EDGE OF AIR INTAKE PIPE TO ADJACENT VENT PIPE FROM ANOTHER BOILER.
19. SECURE VERTICAL RISE OF INTAKE AND VENT PIPES TO INTERIOR OF CHIMNEY 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.
20. INSTALL TEE FOR BOILER LOOP HEATING WATER RETURN. ROUTE RETURN BENEATH EXISTING BUILDING LOOP. SEE 2/M1.0.



2 ISOMETRIC PLAN
– | M1.0
SCALE: NONE



3 BOILER VENT & INTAKE TERMINATION DETAIL
– | M1.0
SCALE: NONE

NOTES:
1. BASED ON LOCHINVAR INSTALLATION MANUAL.
2. TYPICAL OF TWO VENT/INTAKES.
3. ORNAMENTAL CAP ON CHIMNEY SHALL BE REMOVED AND DISCARDED.
4. EXISTING STEEL FLUE LINER SHALL BE REMOVED AND RECYCLED.

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MONUMENT TERRACE BUILDING
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title
FLOOR PLANS, ISOMETRIC

e-file: 12221A-M

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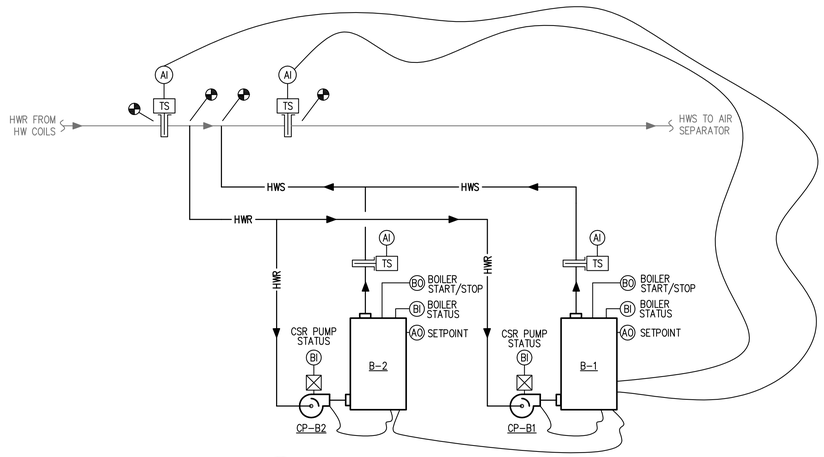

1 - M2.0 BOILER SYSTEM CONTROL SCHEMATIC

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

THE BUILDING HAS AN EXISTING JOHNSON CONTROLS BUILDING AUTOMATION SYSTEM (BAS). THE EXISTING BAS SHALL BE REUSED TO CONTROL BUILDING HOT WATER PUMPS AND ENABLE/DISABLE BOILERS. THE BOILER CONTROLLER, PROVIDED BY THE BOILER MANUFACTURER, SHALL CONTROL THE BOILERS AND BOILER PUMPS. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL HARDWARE (CONTROLLERS, SENSORS, WIRING, ETC.) AND PROGRAMMING TO MEET THE PRESCRIBED SEQUENCE OF OPERATION. THE EXISTING BAS DOES NOT HAVE A COMPUTER TERMINAL TO ACCESS THE PROGRAMMING; CONTRACTOR IS RESPONSIBLE FOR PROVIDING A LAPTOP COMPUTER TO FACILITATE PROGRAMMING OF THE EXISTING BAS.

1. IF A SENSED CHANGE RESULTS IN A PRESCRIBED ACTION, THE OPPOSITE OF THE SENSED CHANGE SHALL RESULT IN THE OPPOSITE ACTION.
2. OCCUPIED/UNOCCUPIED 365 DAY SCHEDULING, EQUIPMENT NAMES/NUMBERS, AND POINT/SENSOR NAMES SHALL BE COORDINATED WITH THE OWNER PRIOR TO COMPLETION OF CONSTRUCTION.
3. 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.
4. 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). THE BOILER CONTROLLER SHALL BE PROVIDED WITH MODBUS OPEN PROTOCOL GATEWAY TO FACILITATE CONNECTION TO FUTURE BUILDING AUTOMATION SYSTEM.
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 BAS WHEN FLOW IS PROVEN (VIA THE DIFFERENTIAL PRESSURE SENSOR) AND EITHER THE OUTSIDE AIR TEMPERATURE IS BELOW 55° F DB OR ON A CALL FOR HEATING / REHEAT.
4. THE CONTROLLER SHALL RESET THE HEATING WATER SUPPLY TEMPERATURE SETPOINT INVERSELY WITH THE OUTSIDE AIR TEMPERATURE. THE LINEAR RELATIONSHIP SHALL BE AS DEFINED BELOW:
   a. 100° F AT 50° 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 BUILDING HEATING LOOP SUPPLY TEMPERATURE SET POINT DIRECTLY DOWNSTREAM OF THE BOILERS.
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 BAS TO INDICATE THAT THE BOILER HAS FAILED.
9. ALL SETPOINTS SHALL BE ADJUSTABLE.

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MONUMENT TERRACE
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title
CONTROLS

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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
PNL	PANEL
T	TONS
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VUSBC	VIRGINIA UNIFORM STATEWIDE BUILDING CODE
WP	WEATHERPROOF

ELECTRICAL LEGEND (XX)

CIRCUIT HOMERUN

EXISTING TO BE REMOVED

EXISTING TO REMAIN

WIRING DEVICES

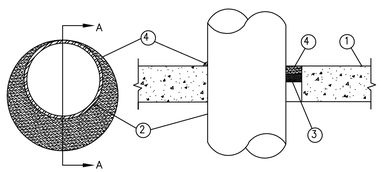
(E) EQUIPMENT CONNECTION

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

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	B	C	D
1	Max Pipe Diam in.	Max Annular Space in.	Packing Matl Type (a)	Min Caulk Thkns in.
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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MONUMENT TERRACE BUILDING
BOILER REPLACEMENT
CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title
LEGEND, SCHEDULES, DETAILS

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revision	date
1	05/12/14
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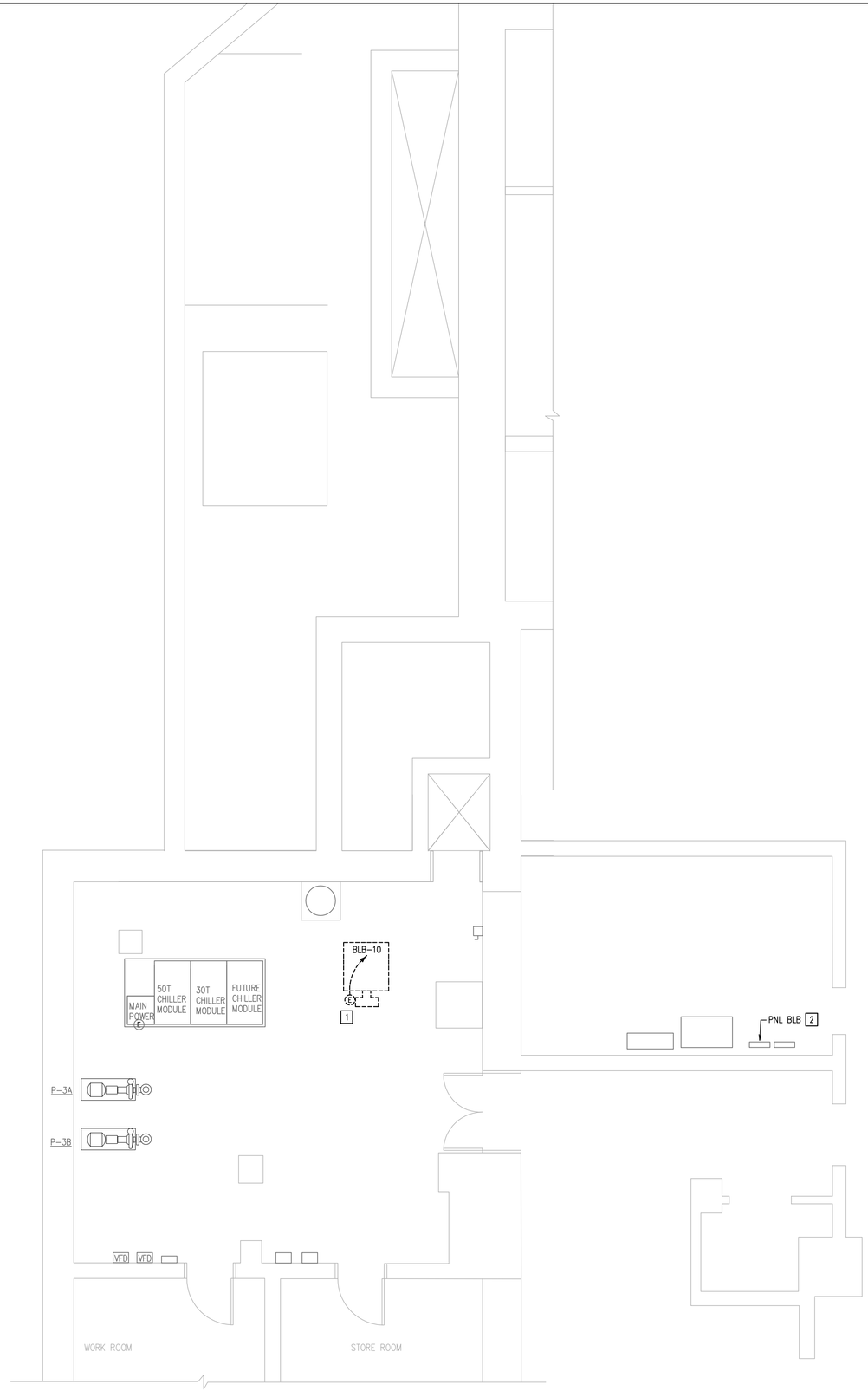
DEMO NOTES [X]

1. REMOVE AND RECYCLE SWITCH, WIRE AND CONDUIT BACK TO PANEL BLB FROM BOILER TO BE REMOVED.
2. DISCONNECT, REMOVE, AND RECYCLE EXISTING CIRCUIT BREAKERS IN CIRCUITS 10 (20A, 1P, BOILER) AND 26 (25A, 3P, SPARE).



1 – ED1.0 DEMOLITION PLAN

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

0 1' 2' 4' 8'

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MONUMENT TERRACE BUILDING
BOILER REPLACEMENT

CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

sheet title

FLOOR PLANS
DEMOLITION

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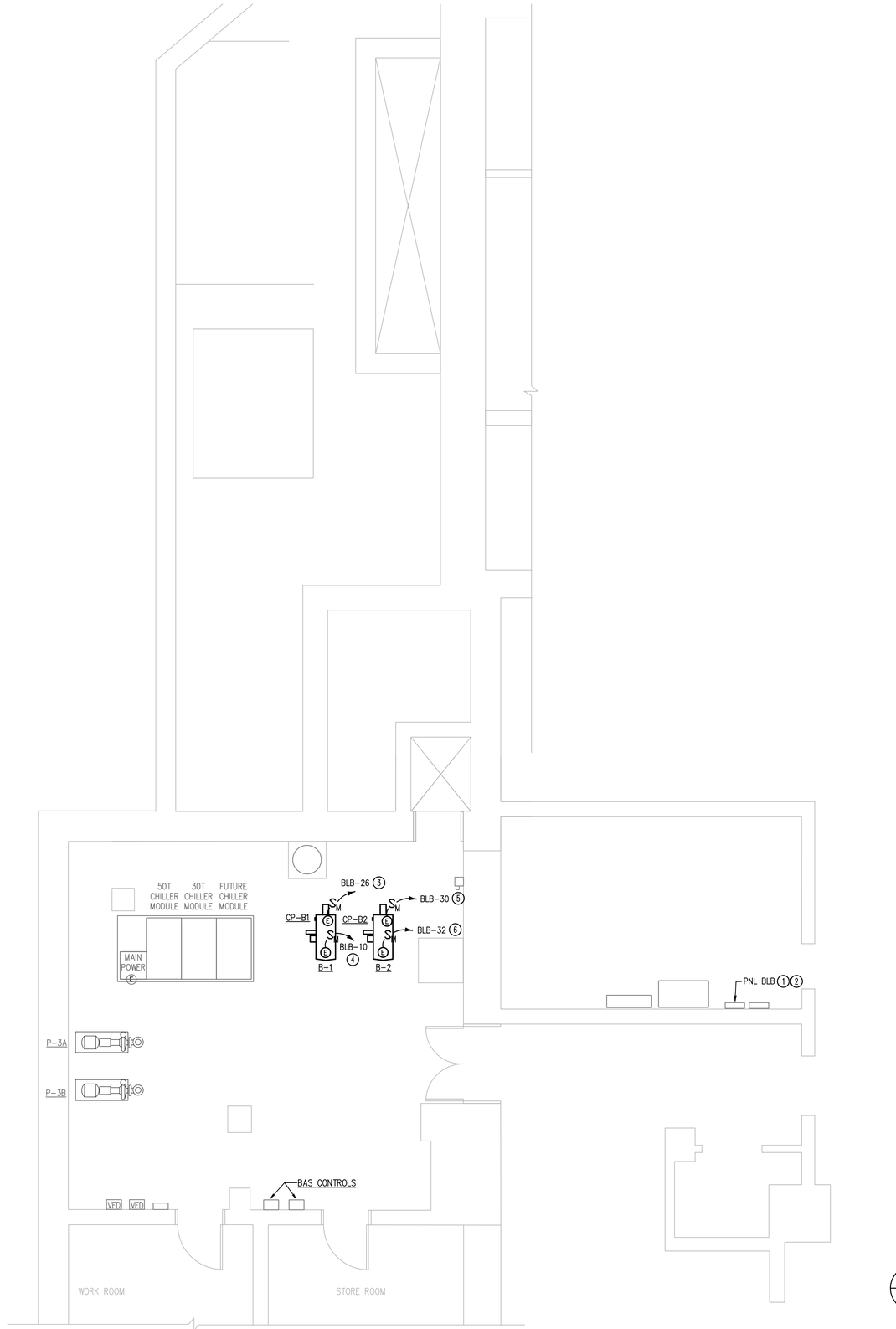
NEW WORK NOTES (W)

1. PANEL BLB IS A SQUARE D NQO PANELBOARD, CATALOG NUMBER 44-88525-10. PANEL BLB IS 120/208 VOLTS, 225 AMPS, 3 PHASE, 4 WIRE.
2. IN PANEL BLB, REPLACE EXISTING 25A THREE POLE BREAKER NUMBER 26 WITH TWO NEW 20A SINGLE POLE BREAKERS AND ONE 15A SINGLE POLE BREAKER. NUMBER NEW CIRCUITS 26, 30, AND 32, RESPECTIVELY. PROVIDE A TYPED UPDATED CIRCUIT DIRECTORY.
3. CIRCUIT CP-B1 TO BREAKER 26.
4. CIRCUIT B-1 TO BREAKER 10.
5. CIRCUIT CP-B2 TO BREAKER 30.
6. CIRCUIT B-2 TO BREAKER 32.



1 / E1.0 NEW WORK PLAN
SCALE: 1/4" = 1'-0"
0 1' 2' 4' 8'

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