

BOILER REPLACEMENT PROJECT

FOR KENTON COUNTY AIRPORT BOARD AT CINCINNATI/NORTHERN KENTUCKY INTERNATIONAL AIRPORT

OWNER
CINCINNATI/NORTHERN KENTUCKY
INTERNATIONAL AIRPORT
PO BOX 752000
CINCINNATI, OH 45275-200C
CONTACT: THAD FOGLE
PHONE: (859) 743-5978
EMAIL: TFOGLE@CVGAIRPORT.COM

MEP ENGINEER
KLH ENGINEERS
1538 ALEXANDRIA PIKE
SUITE 11
FORT THOMAS, KY 41075
CONTACT: CHRIS MEHAFFIE, PE
PHONE: (859)-442-8050
EMAIL: CMEHAFFIE@KLHENGERS.COM

DRAWING INDEX - BOILER

SHEET NUMBER	SHEET NAME	CURRENT REVISION ISSUED	CURRENT REVISION DATE	CURRENT REVISION DESCRIPTION
B-G0-001	BOILER PROJECT COVER SHEET	No	04/18/25	ISSUE FOR BID
B-TA1-101	ARCHITECTURAL - TERMINAL ROOF PLANS & DETAILS	No	04/18/25	ISSUE FOR BID
B-TA1-102	ARCHITECTURAL - TERMINAL BASEMENT PLANS & DETAILS	No	04/18/25	ISSUE FOR BID
B-BA1-101	ARCHITECTURAL - CONCOURSE B ROOF PLANS & DETAILS	No	04/18/25	ISSUE FOR BID
B-TM1-001	MECHANICAL TERMINAL COVER SHEET	No	04/18/25	ISSUE FOR BID
B-TM1-000	MECHANICAL DEMOLITION TERMINAL - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-TM3-100	MECHANICAL TERMINAL - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-TM3-501	MECHANICAL TERMINAL SCHEMATIC	No	04/18/25	ISSUE FOR BID
B-TM3-601	MECHANICAL TERMINAL SCHEDULES	No	04/18/25	ISSUE FOR BID
B-BA1-001	MECHANICAL CONCOURSE B COVER SHEET	No	04/18/25	ISSUE FOR BID
B-BA1-100	MECHANICAL DEMOLITION CONCOURSE B - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-BA3-100	MECHANICAL CONCOURSE B - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-BA3-501	MECHANICAL CONCOURSE B SCHEMATIC	No	04/18/25	ISSUE FOR BID
B-BA3-601	MECHANICAL CONCOURSE B SCHEDULES	No	04/18/25	ISSUE FOR BID
B-BA3-602	MECHANICAL CONCOURSE B DETAILS	No	04/18/25	ISSUE FOR BID
B-TM3-602	MECHANICAL TERMINAL DETAILS	No	04/18/25	ISSUE FOR BID
B-EE-000	ELECTRIC GENERAL INFORMATION	No	04/18/25	ISSUE FOR BID
B-TE1-100	ELECTRIC DEMOLITION TERMINAL - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-TE4-100	ELECTRIC POWER TERMINAL - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-TE4-700	ELECTRIC POWER TERMINAL - PANEL SCHEDULES	No	04/18/25	ISSUE FOR BID
B-BE1-100	ELECTRIC DEMOLITION CONCOURSE B - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-BE4-100	ELECTRIC POWER CONCOURSE B - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-BE4-101	ELECTRIC POWER CONCOURSE B - BASEMENT LEVEL PLAN	No	04/18/25	ISSUE FOR BID
B-BE4-700	ELECTRIC POWER CONCOURSE B - PANEL SCHEDULES	No	04/18/25	ISSUE FOR BID



PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION
AND EFFICIENCY PROGRAM - BOILER
REPLACEMENT PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE:
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: CAM CHECKED BY: CAM

BOILER PROJECT COVER SHEET

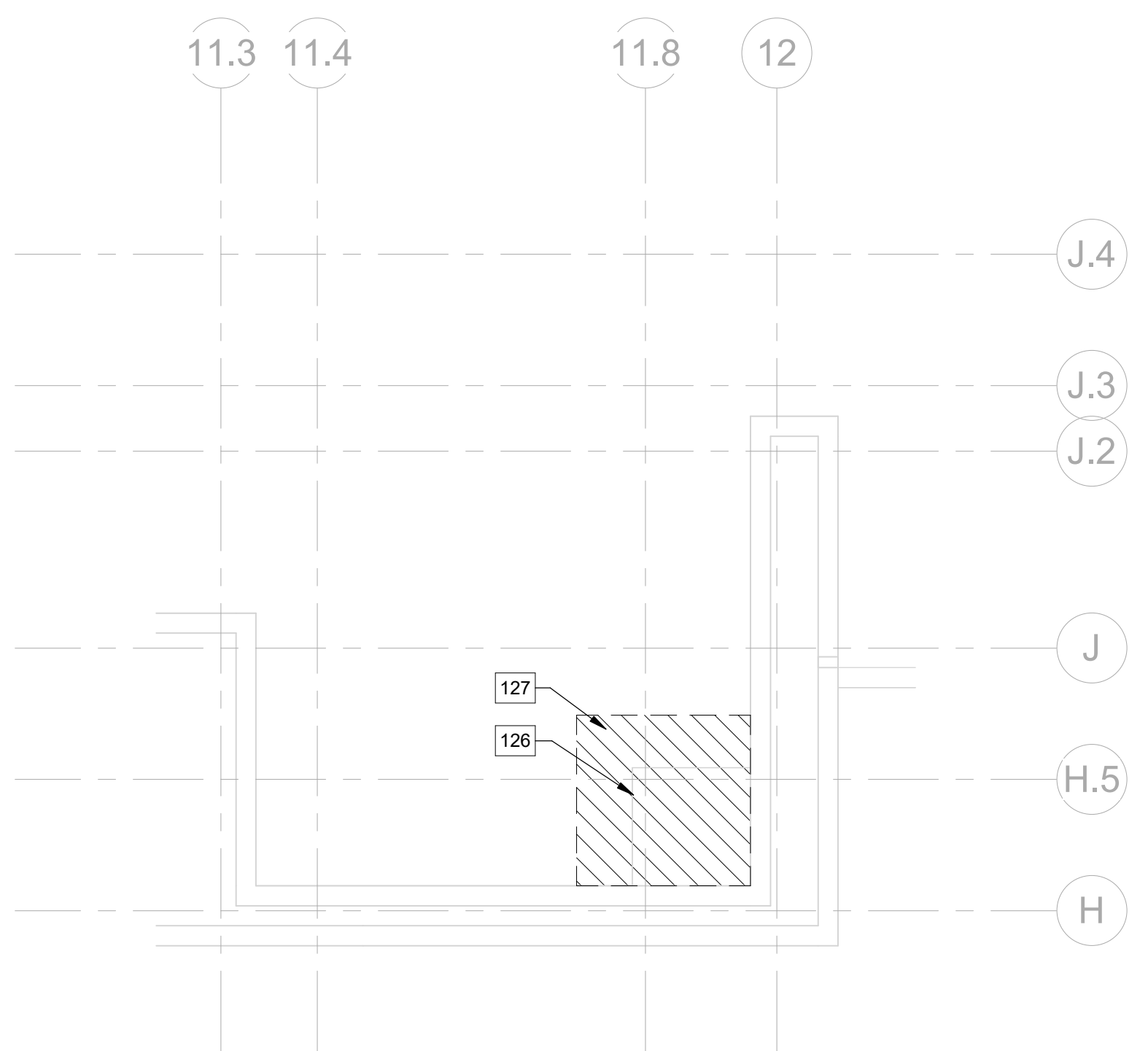
B-G0-001

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

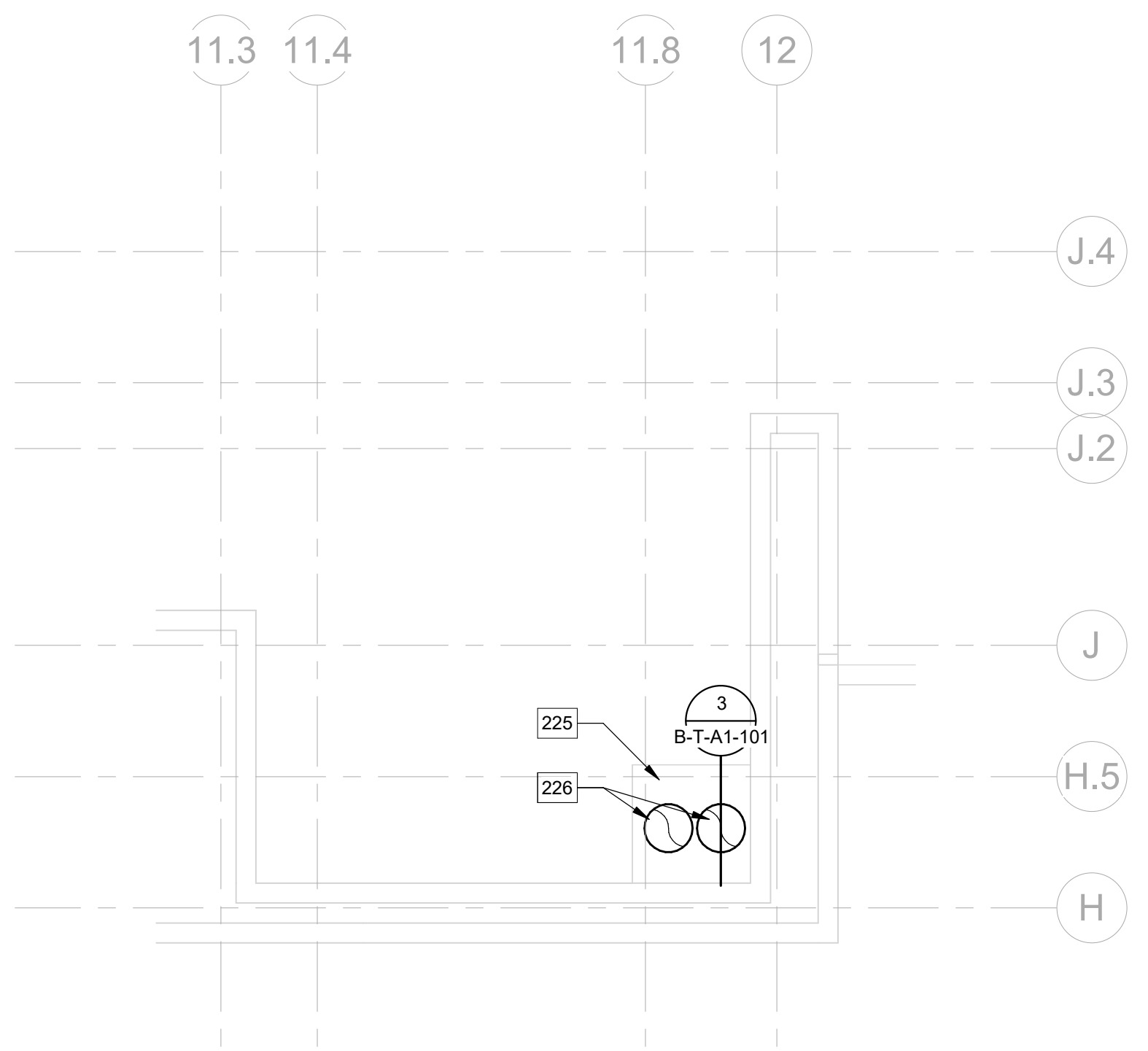
4/18/2025 12:42:56 Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_R25.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE: CVG Airport Authority. All rights reserved. Notes and other documents and instruments prepared by the Consultant as instruments of service shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

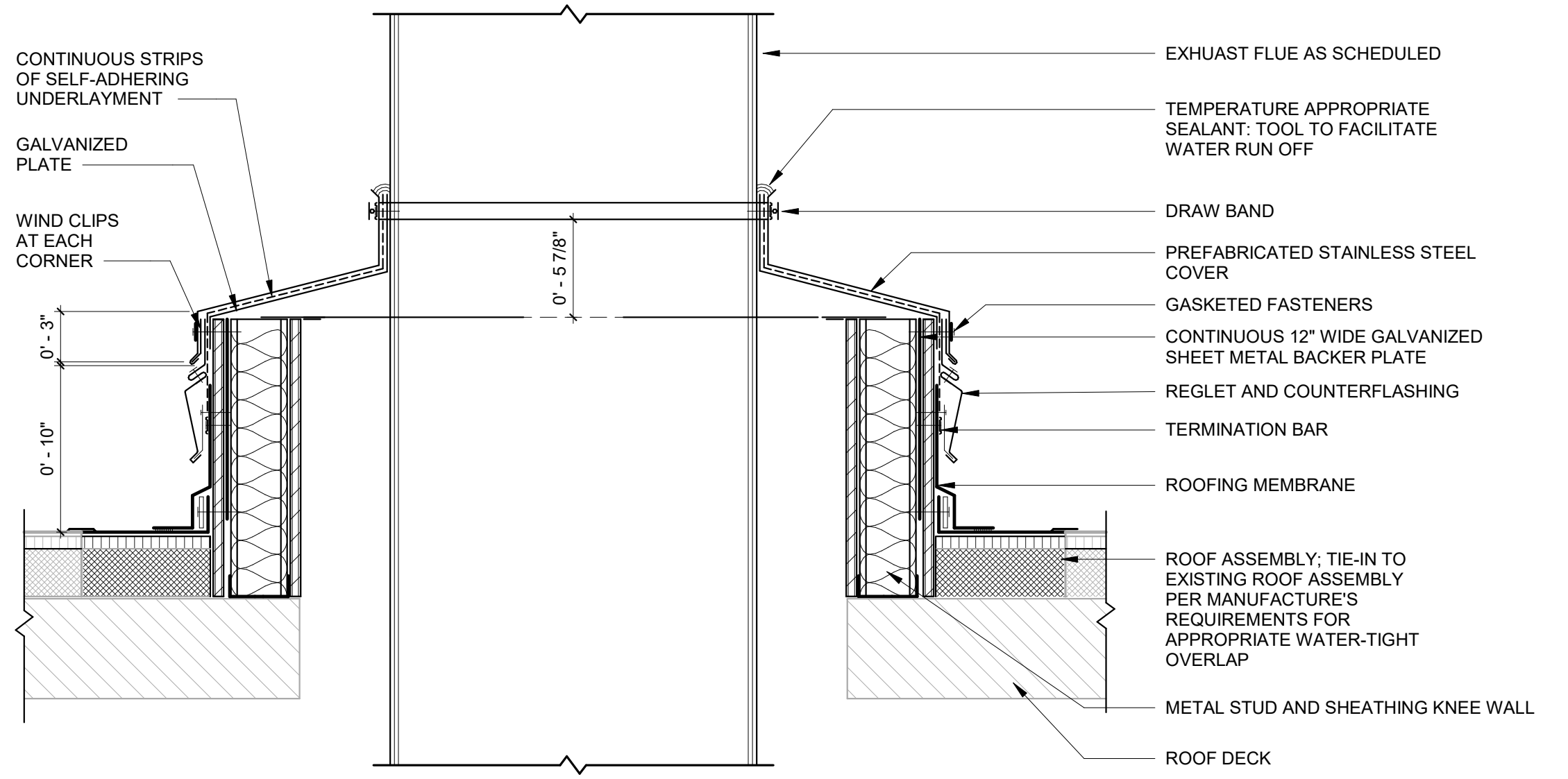
4/17/2025 12:58:56 Autodesk Docs://CVG - Rehab and Efficiency Program/ARCH-GreshamSmith-Terminal_P25.rvt



1 BOILER FLUE TERMINAL DEMOLITION PLAN
3/16" = 1'-0"
0 2 4 6 8 10'

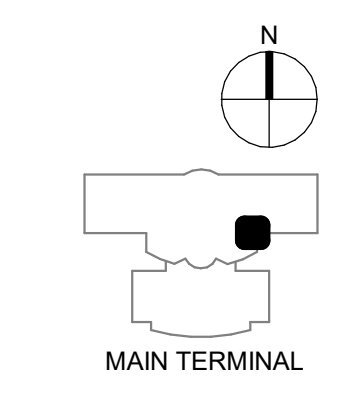


2 BOILER FLUE TERMINAL NEW CONSTRUCTION PLAN
3/16" = 1'-0"
0 2 4 6 8 10'



GENERAL NOTE:
VERIFY DIAMETER AND HEIGHT OF PIPE ABOVE ROOF WITH EQUIPMENT AND ADJACENT ROOF REQUIREMENTS.

3 EXHAUST DETAIL
NOT TO SCALE

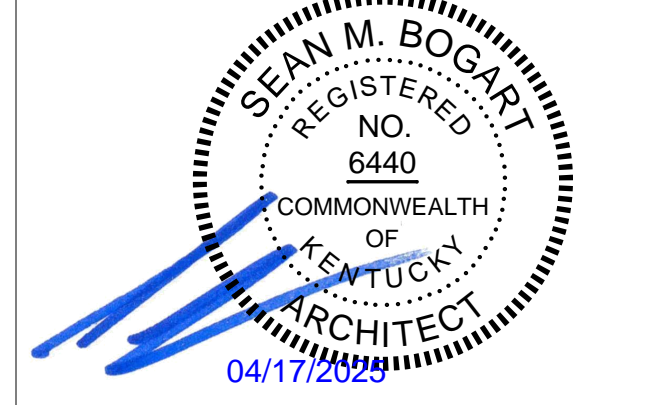


Keynote Legend	
Key Value	Keynote Text
126	EXISTING ROOF PENETRATION. VERIFY EXTENTS IN FIELD.
127	DEMOLISH EXISTING ROOFING AS REQUIRED; SEE DETAIL THIS SHEET. VERIFY EXTENTS OF DEMOLITION IN FIELD.
225	PENETRATION COVERING; SEE DETAIL THIS SHEET.
226	NEW EXHAUST FLUES THROUGH EXISTING OPENING IN ROOF SLAB.



PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

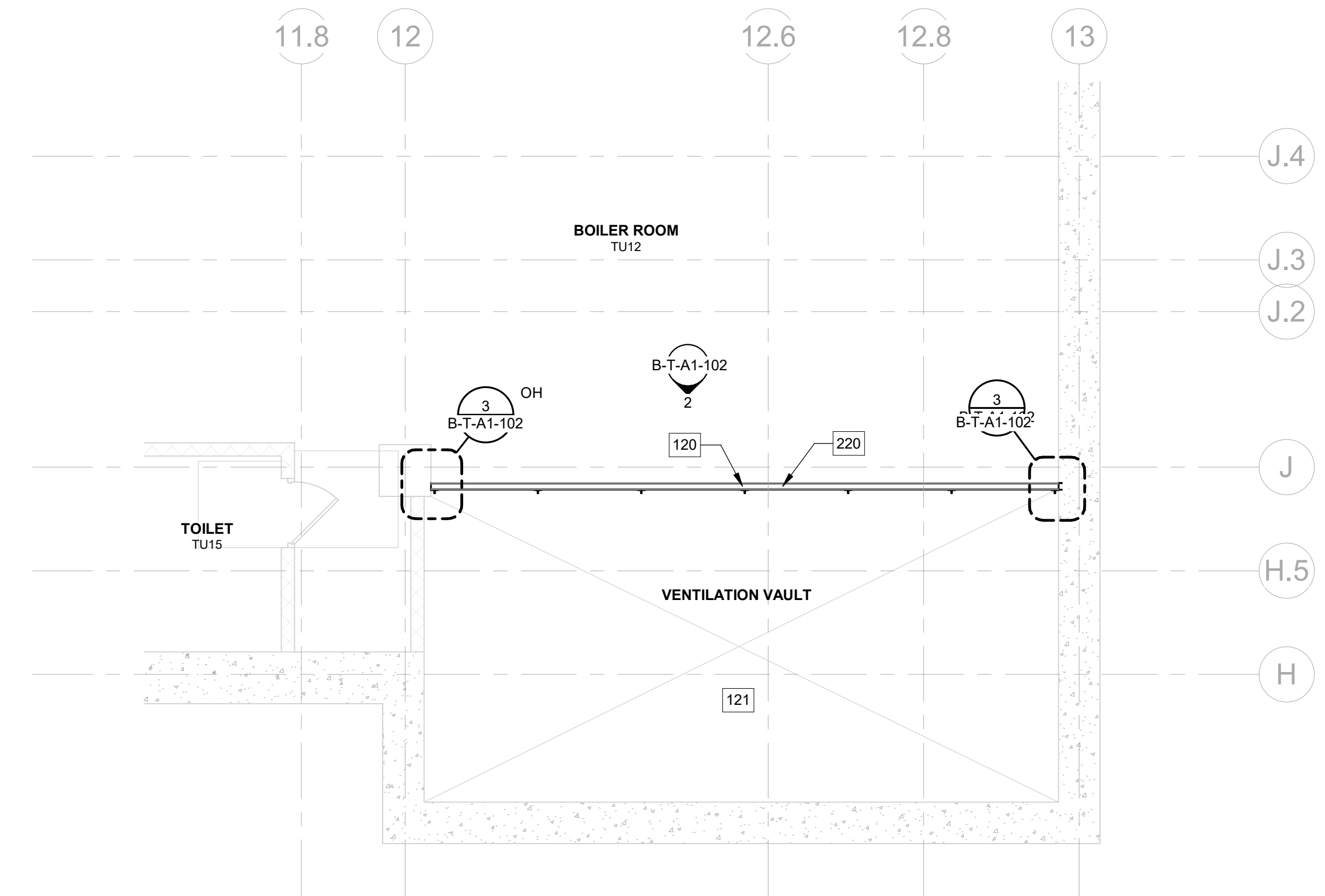
SCALE: As indicated
DATE: 04/18/2025
PROJECT NUMBER: 26944.00
DRAWN BY: MH CHECKED BY: DH

ARCHITECTURAL - TERMINAL ROOF PLANS & DETAILS

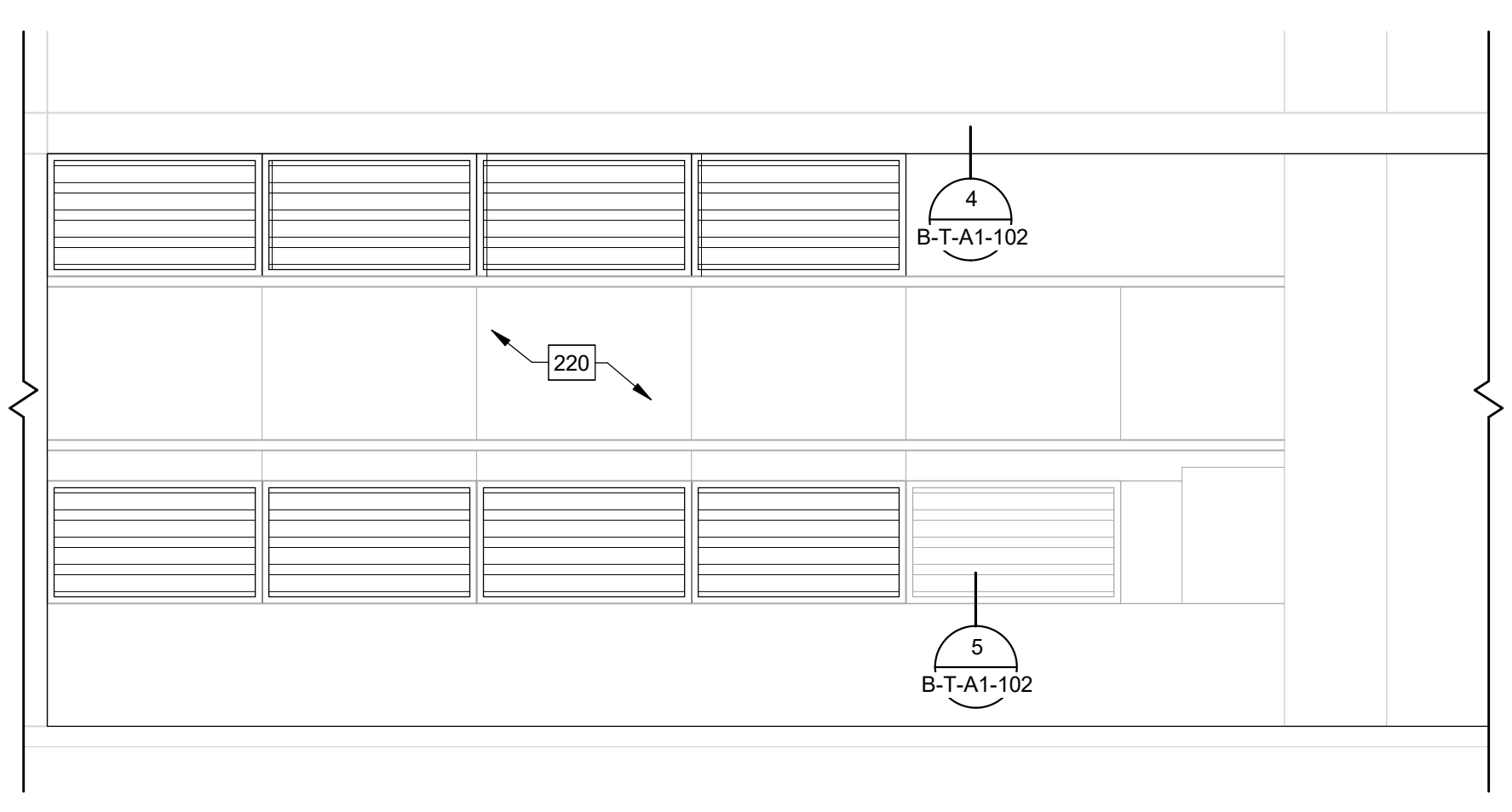
B-T-A1-101

OWNERSHIP OF INSTRUMENTS OF SERVICE: CVG Airport Authority, Inc. All rights reserved. Notes and other documents and instruments prepared by the Consultant as instruments of service shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

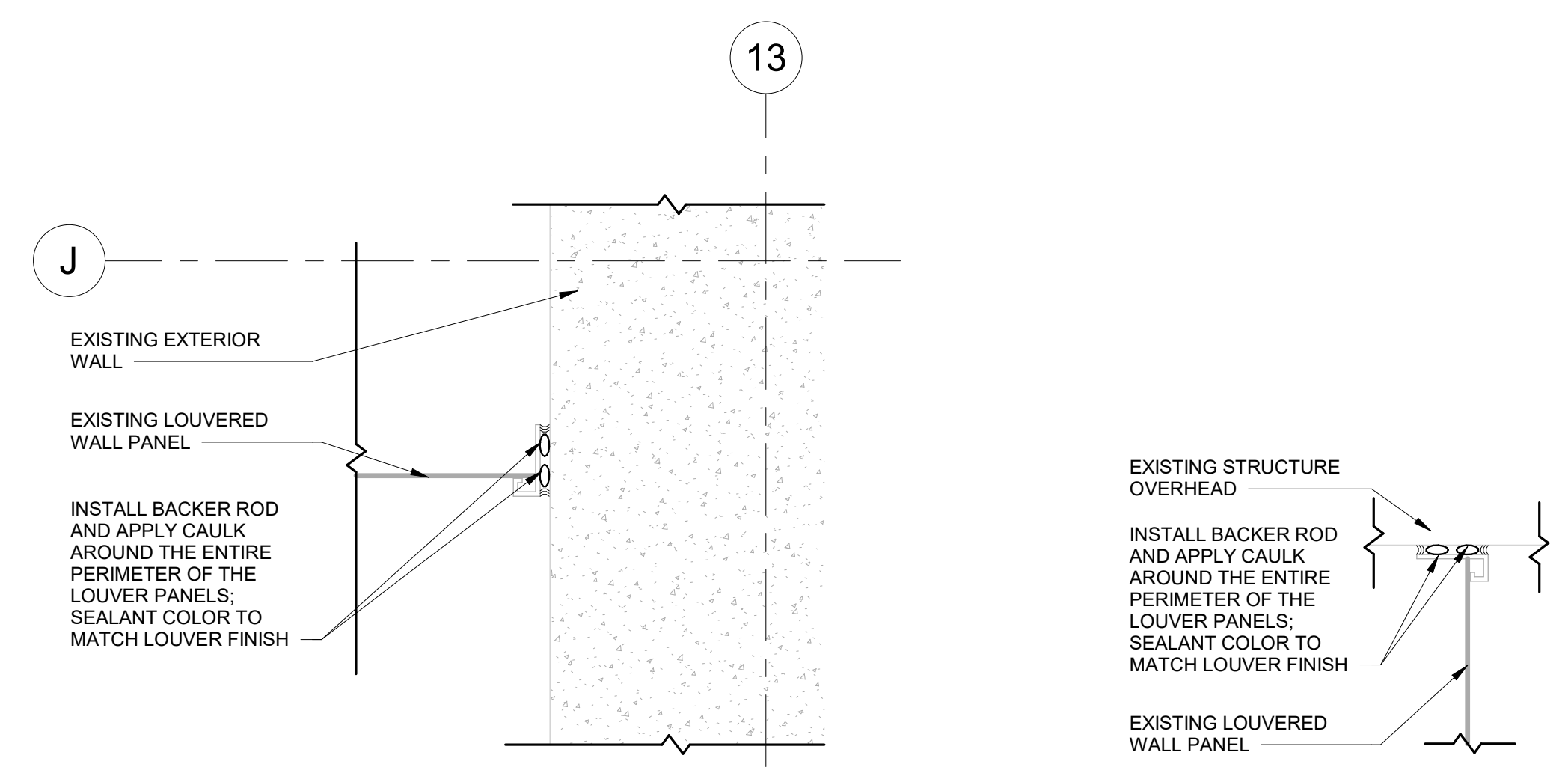
4/17/2025 12:59:00 Autodesk Docs://CVG - Rehab and Efficiency Program/ARCH-GreshamSmith-Terminal_P25.rvt



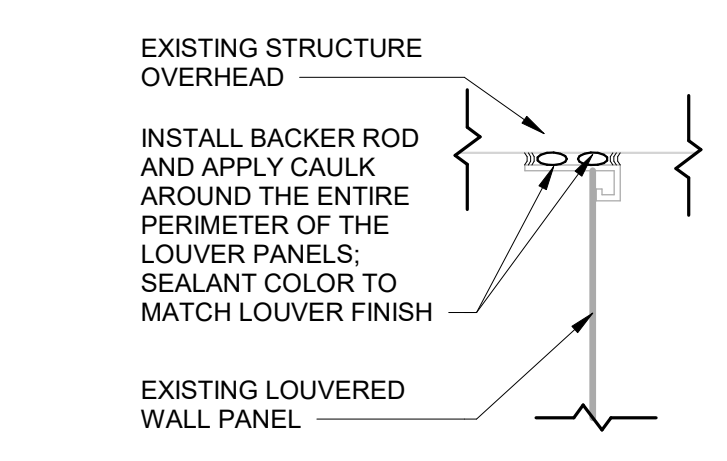
1 BOILER TERMINAL NEW CONSTRUCTION PLAN
3/16" = 1'-0"



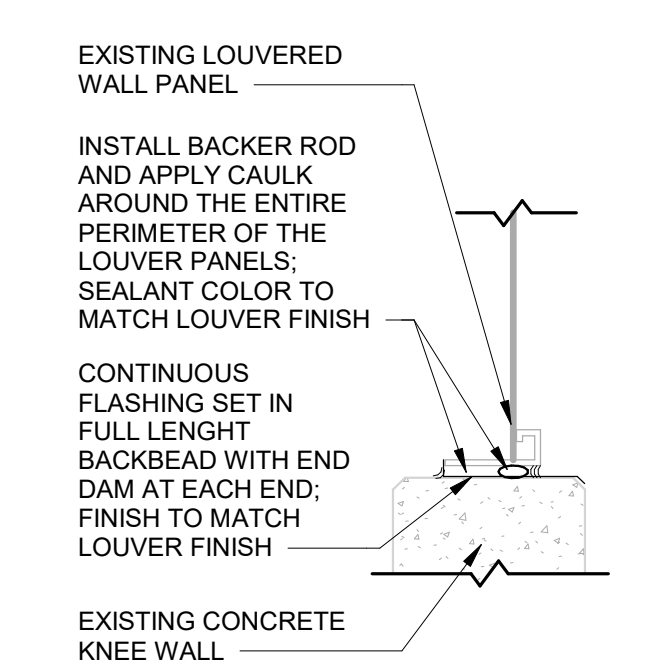
2 EAST LOUVER NEW CONSTRUCTION ELEVATION
1/4" = 1'-0"



3 JAMB DETAIL
1 1/2" = 1'-0"



4 HEADER DETAIL
1 1/2" = 1'-0"



5 SILL DETAIL
1 1/2" = 1'-0"

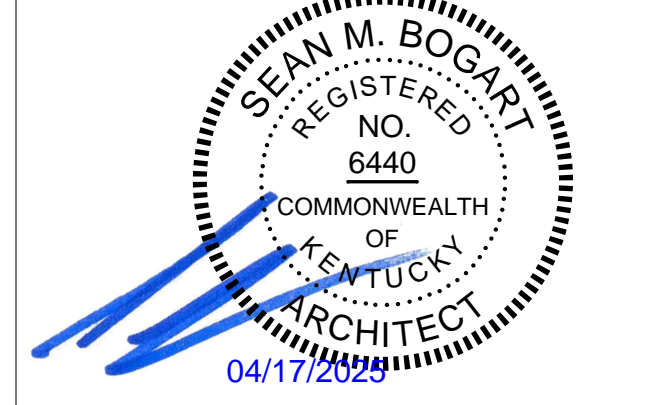
Keynote Legend

Key Value	Keynote Text
120	CAREFULLY REMOVE SHEET METAL PANEL WALL AND ASSOCIATED STRUCTURAL FRAME BRACING AS REQUIRED FOR REMOVAL OF BOILERS AND INSTALLATION OF NEW BOILERS. STORE AND PROTECT FOR REINSTALLATION. DOCUMENT EXISTING ANCHORING PRIOR TO REMOVAL. REFER TO MECHANICAL DRAWINGS FOR MODIFICATIONS TO PANEL WALL LOUVERS.
121	REMOVABLE METAL GRATE OVERHEAD AT GRADE.
220	REINSTALL SHEET METAL PANEL WALL SYSTEM AND ASSOCIATED STRUCTURAL FRAME BRACING AS PREVIOUSLY INSTALLED. REFER TO MECHANICAL DRAWINGS FOR LOUVERS REPLACEMENTS WITHIN WALL.



PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048

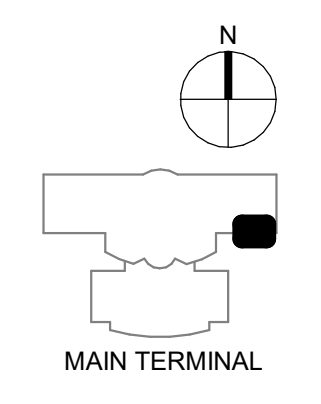


REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: As indicated
DATE: 04/18/2025
PROJECT NUMBER: 26944.00
DRAWN BY: MH CHECKED BY: DH

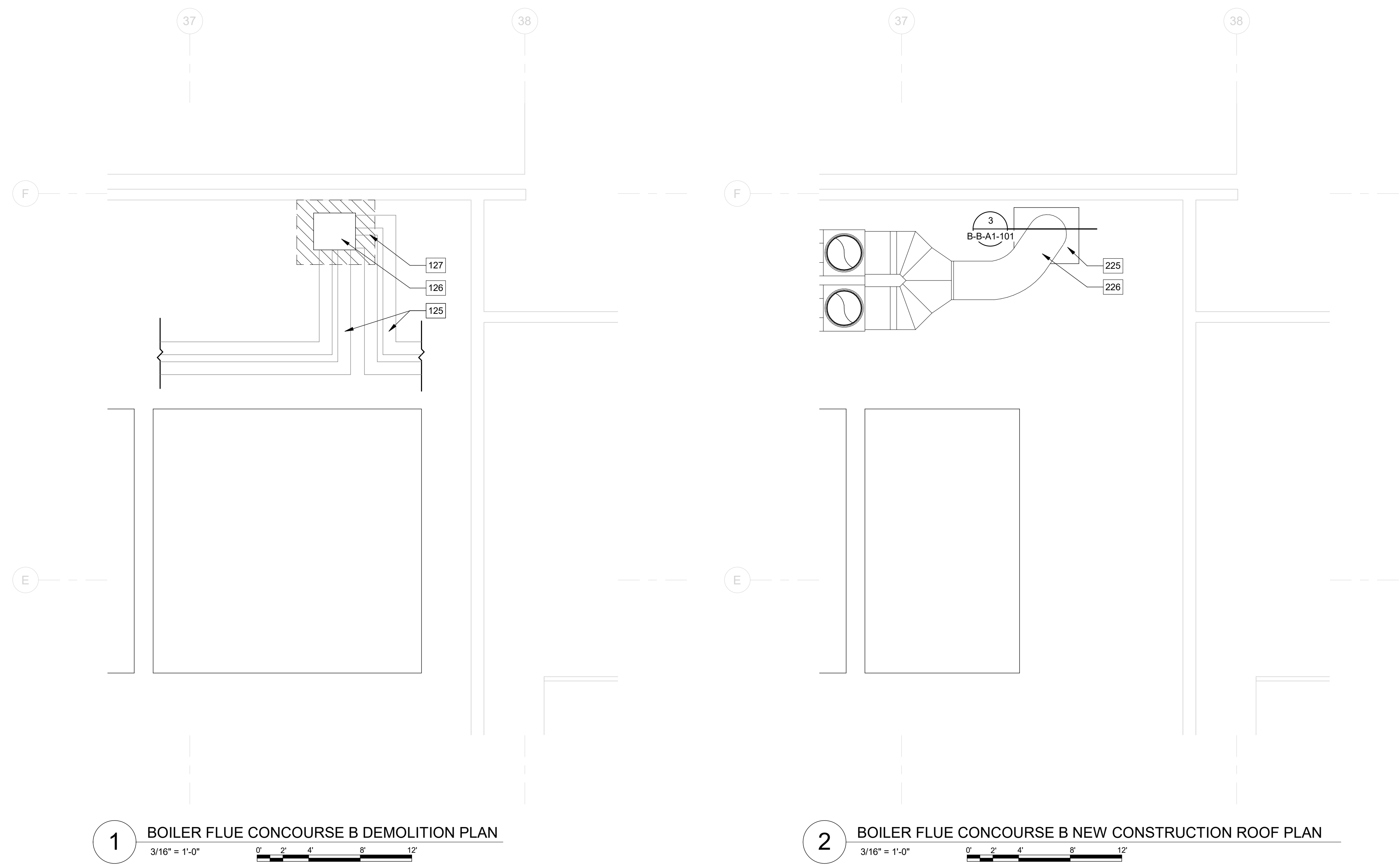
ARCHITECTURAL - TERMINAL BASEMENT PLANS & DETAILS

B-T-A1-102



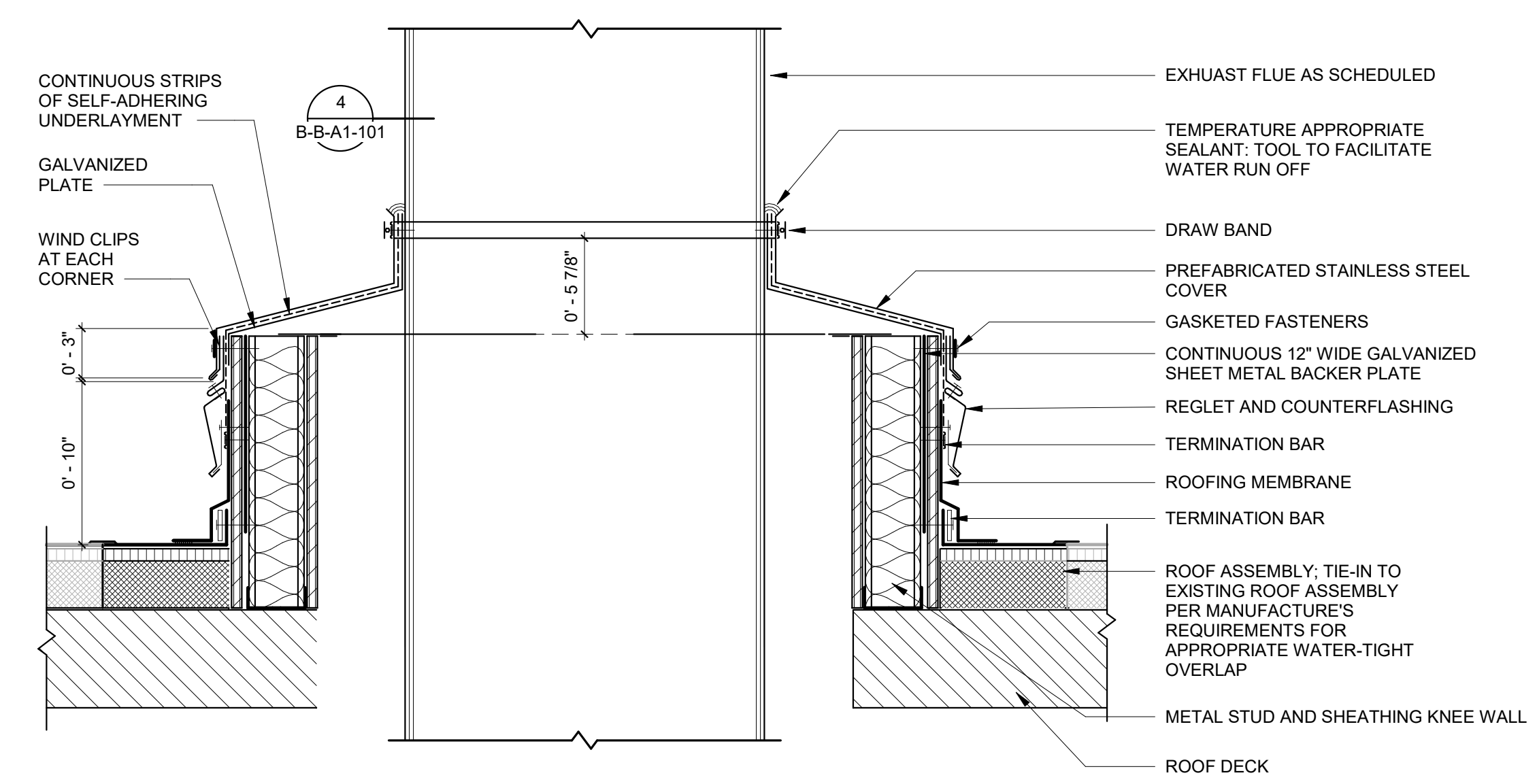
OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/17/2025 12:58:56 Autodesk Docs://CVG - Rehab and Efficiency Program/ARCH-GreshamSmith-Terminal_R25.rvt



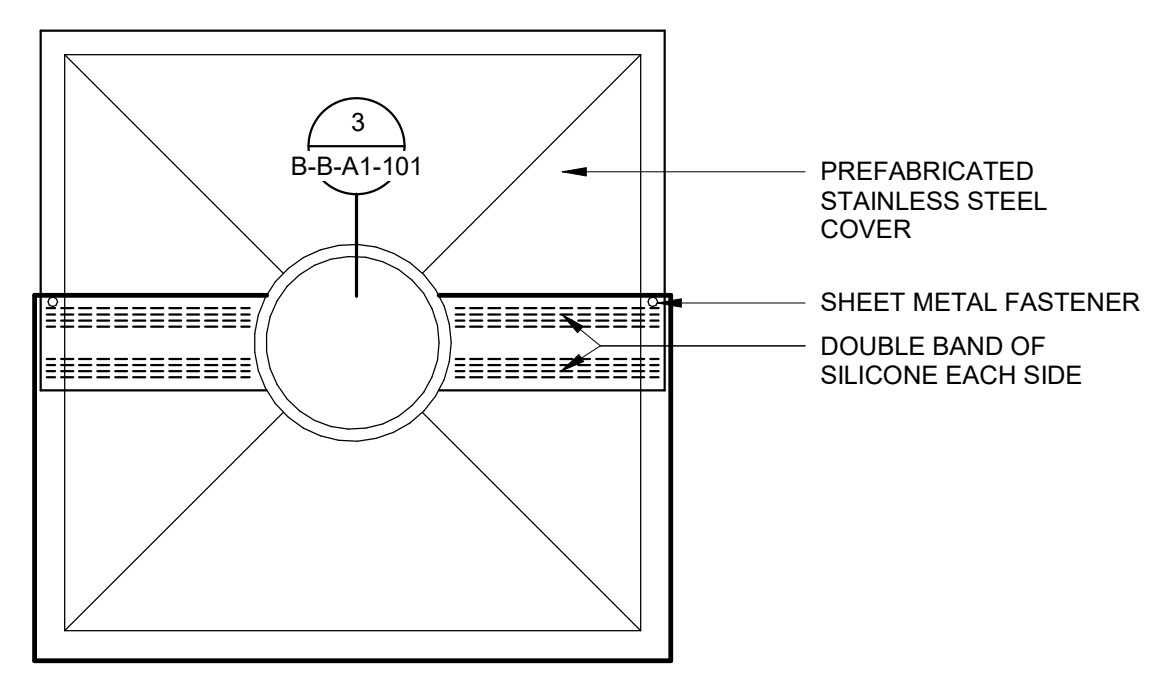
1 BOILER FLUE CONCOURSE B DEMOLITION PLAN
 3/16" = 1'-0"

2 BOILER FLUE CONCOURSE B NEW CONSTRUCTION ROOF PLAN
 3/16" = 1'-0"



GENERAL NOTE:
 VERIFY DIAMETER AND HEIGHT OF PIPE ABOVE ROOF WITH EQUIPMENT AND ADJACENT ROOF REQUIREMENTS.

3 EXHAUST DETAIL
 1 1/2" = 1'-0"



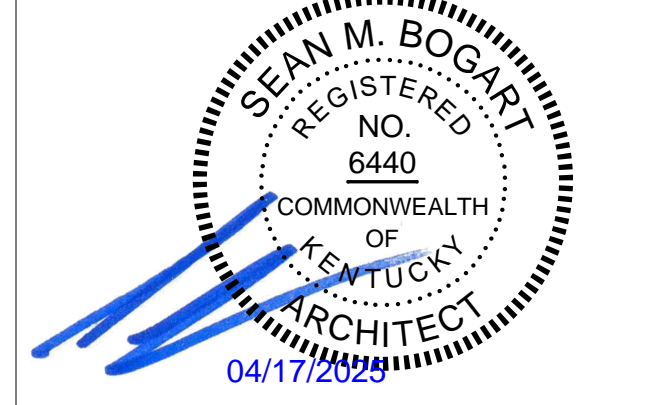
4 ROOF PENETRATION COVER PLAN
 NOT TO SCALE

Keynote Legend	
Key Value	Keynote Text
125	EXISTING EXPANSION LOOPS.
126	EXISTING ROOF PENETRATION. VERIFY EXTENTS IN FIELD.
127	DEMOLISH EXISTING ROOFING AS REQUIRED; SEE DETAIL THIS SHEET. VERIFY EXTENTS OF DEMOLITION IN FIELD.
225	PENETRATION COVERING; SEE DETAIL THIS SHEET.
226	NEW EXHAUST FLUES THROUGH EXISTING OPENING IN ROOF SLAB.



PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048

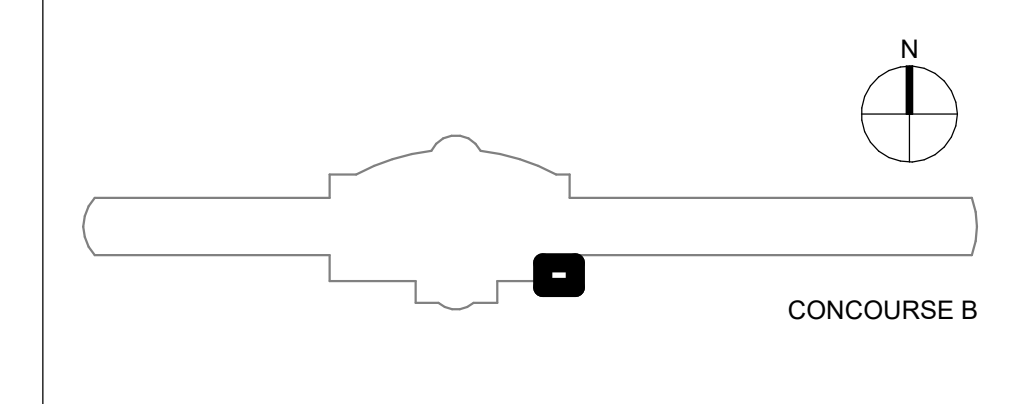


REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: As indicated
 DATE: 04/18/2025
 PROJECT NUMBER: 26944.00
 DRAWN BY: MH CHECKED BY: DH

ARCHITECTURAL - CONCOURSE B ROOF PLANS & DETAILS

B-B-A1-101



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL TERMINAL COVER SHEET

B-T-M1-001

MECHANICAL LEGEND (not all may apply)

GENERAL ABBREVIATIONS

AAD	AUTOMATIC AIR DAMPER	DET	DETAIL	HX	HEAT EXCHANGER	REQD	REQUIRED
AAV	AUTOMATIC AIR VENT	DIA	DIAMETER	IA	INSTRUMENT AIR	REV	REVISED
AB	AIR BLENDER	DN	DOWN	IE	INVERT ELEVATION	RG	RETURN GRILLE
AC	AIR CONDITIONING UNIT	DPR	DAMPER	IN	INCH	RH	RELATIVE HUMIDITY/ROOF
ACC	AIR COOLED CONDENSER	DPT	DEW POINT TEMPERATURE	INV	INVERT	RV	RELIEF VENT
ACCU	AIR COOLED CONDENSING UNIT	DR	DRAIN	KEC	KITCHEN EQUIPMENT CONTRACTOR	RM	ROOM
AD	ACCESS DOOR	DTS	DUAL TEMPERATURE SUPPLY	KH	KITCHEN HOOD	RPM	REVOLUTIONS PER MINUTE
ADDL	ADDITIONAL	DTR	DUAL TEMPERATURE RETURN	KV	KITCHEN VENT	RR	RETURN REGISTER
ADJ	ADJUSTABLE	DWG	DRAWING	LAT	LEAVING AIR TEMPERATURE	SA	SUPPLY AIR
AF	AFTER FILTER	EA	EACH EXHAUST AIR	LB	POUND	SCHED	SCHEDULE
AFF	ABOVE FINISHED FLOOR	EAH	EXHAUST AIR HOOD	LD	LINEAR DIFFUSER	SCHWP	SECONDARY CHILLED WATER PUMP
ALT	ALTERNATE	EAL	EXHAUST AIR LOUVER	LVT	LEAVING WATER TEMPERATURE	SD	SUCTION DIFFUSER
ALUM	ALUMINUM	EAT	ENTERING AIR TEMPERATURE	MATL	MATERIAL	SECT	SECTION
AP	ACCESS PANEL	EC	ELECTRICAL CONTRACTOR	NAV	MANUAL AIR VENT	SG	SUPPLY GRILLE
APPROX	APPROXIMATE	EF	EXHAUST FAN	MAX	MAXIMUM	SHWP	SECONDARY HOT WATER PUMP
ARCH	ARCHITECTURAL	EG	EXHAUST GRILLE	NBH	BTUS PER HOUR, THOUSAND	SHT	SHEET
AUTO	AUTOMATIC	EL	ELEVATION	NC	NORMAL	SL	SOUND LINING
AVG	AVERAGE	ELEC	ELECTRICAL/ELECTRICAL	NCW	MECHANICAL CITY WATER	SM	SURFACE MOUNT
BAS	BUILDING AUTOMATION SYSTEM	EQ	EQUAL	MECH	MECHANICAL	SPEC	SPECIFICATIONS
BBB	BALANCED BACKDRAFT DAMPER	EQUIP	EQUIPMENT	MFG/MFR	MANUFACTURER	SPT	STATIC PRESSURE TRANSMITTER
BE	BOTTOM ELEVATION	EQUIV	EQUIVALENT	MIN	MINIMUM	SQ	SQUARE
BF	BUTTERFLY	ER	EXHAUST REGISTER	MISC	MISCELLANEOUS	SQ FT/SF	SQUARE FOOT (FEET)
BFP	BLOCKFLOW PREVENTER	ESP	EXTERNAL STATIC PRESSURE	MSW	MECHANICAL SOFT WATER	SQ IN	SQUARE INCHES
BLDG	BUILDING	ET	EXPANSION TANK	NA	NOT APPLICABLE	SR	SUPPLY REGISTER
BLR	BOILER	EUH	ELECTRIC UNIT HEATER	NC	NORMALLY CLOSED/NOISE CRITERIA	SS	STAINLESS STEEL
BOD	BOTTOM OF DUCT	EW	ELECTRIC WATER HEATER	NG	NATURAL GAS	STD	STANDARD
BOP	BOTTOM OF PIPE	EWT	ENTERING WATER TEMPERATURE	NO	NOT IN CONTRACT	STL	STEEL
BOT	BOTTOM	EXCL	EXCLUDING	NO	NORMALLY OPEN	STRUCT	STRUCTURAL
BP	BOOSTER PUMP	EXST	EXISTING	NOM	NOMINAL	TCC	TEMPERATURE CONTROL CONTRACTOR
BTU	BRITISH THERMAL UNIT	EXP	EXPANSION	NTS	NOT TO SCALE	TCV	TEMPERATURE CONTROL VALVE
BTUH	BTUS PER HOUR	F	DEGREE FAHRENHEIT	OA	OUTSIDE AIR	TE	TOP ELEVATION
BY	BALL VALVE	FD	FLAT DRAIN	OHM	OUTSIDE AIR HOOD	TI	TEMPERATURE INDICATOR
CA	COMPRESSED AIR	FF	FINISHED FLOOR	OAL	OUTSIDE AIR LOUVER	TMV	THERMOSTATIC MIXING VALVE
CAF	COMBUSTION AIR FAN	FH	FIRE HYDRANT	OC	ON CENTER	TSP	TOTAL STATIC PRESSURE
CW	COUNTER CLOCKWISE	FL	FLOOR	OC	OCCUPANCY SENSOR	TSTAT	THERMOSTAT
CD	CEILING DIFFUSER	FOB	FLAT ON BOTTOM	OPG	OPENING	TXV	THERMAL EXPANSION VALVE
CFM	CUBIC FEET PER MINUTE	FOR	FUEL OIL RETURN	OS&Y	OUTSIDE SCREW AND YOKE	TYP	TYPICAL
CH	CHECK VALVE	FOIS	FUEL OIL SUPPLY	OZ	OUNCE	TW	TEMPERED WATER
CH	CHILLER	FOT	FLAT ON TOP	PC	PLUMBING CONTRACTOR	UG	UNDERGROUND
CHWP	CHILLED WATER PUMP	FPC	FIRE PROTECTION CONTRACTOR	PCHWP	PRIMARY CHILLED WATER PUMP	UH	UNIT HEATER
CHWR	CHILLED WATER RETURN	FEET	FEET PER MINUTE	PERIM	PERIMETER	UN	UNLESS OTHERWISE NOTED
CHWS	CHILLED WATER SUPPLY	FPVAV	FAN POWERED VAV	PF	PRE FILTER	UNO	UNLESS NOTED OTHERWISE
CI	CAST IRON	FS	FLOOR SINK	PH	PHASE	VAC	VACUUM
COL	COLLUM	GA	GALVE	PHWP	PRIMARY HOT WATER PUMP	VA	VALVE
CONN	CONNECTION	GALV	GALVANIZED	PI	PRESSURE INDICATOR	VAV	VARIABLE AIR VOLUME
CT	COOLING TOWER	GC	GENERAL CONTRACTOR	PLBG	PLUMBING	VDD	VOLUME DAMPER
CJ	CONDENSING UNIT	GPH	GALLONS PER HOUR	PRESS	PRESSURE	VERT	VERTICAL
CUH	CABINET UNIT HEATER	GPM	GALLONS PER MINUTE	PRV	PRESSURE REDUCING VALVE	VFD	VARIABLE FREQUENCY DRIVE
CU FT	CUBIC FEET	HEX	HEAT EXCHANGER	PS	PRESSURE SWITCH	VOL	VOLUME
CU IN	CUBIC INCH	HORIZ	HORIZONTAL	PSD	PLENUM SLOT DIFFUSER	WI	WITH
CW	CITY WATER	HR	HOUR	PSI	POUND PER SQUARE INCH	W/O	WITHOUT
CWP	CONDENSING WATER PUMP	HT	HEAT TRACE	PSIA	POUND PER SQUARE INCH ABSOLUTE	WB	WET BULB TEMPERATURE
CWS	CONDENSING WATER SUPPLY	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	PSIG	POUND PER SQUARE INCH GAUGE	WG	WATER GAUGE
CWR	CONDENSING WATER RETURN	HWP	HOT WATER PUMP	PVC	POLYVINYL CHLORIDE	WP	WEATHER PROOF
DB	DRY BULB TEMPERATURE	HWR	HOT WATER RETURN	RCP	RECIRCULATION PUMP	XP	EXPLOSION PROOF
DDC	DIRECT DIGITAL CONTROL	HWS	HOT WATER SUPPLY	REF	REFERENCE		

MECHANICAL SYMBOLS

	BALANCING VALVE		PRESSURE TEMPERATURE TEST STATION (PTTS)		BALANCED BACKDRAFT DAMPER		AIR DEVICE TYPE - DEVICE WIDTH (IN) - NECK SIZE (IN) CFM INDICATED
	AUTOMATIC/MANUAL CALIBRATED CIRCUIT SENSOR (VENTURI)		THERMOMETER		AUTOMATIC AIR DAMPER		CD-LAY IN CEILING DIFFUSER, PD=PERFORATED DIFFUSER, LD=LINEAR DIFFUSER, RD=ROUND DIFFUSER, RG=RETURN GRILLE
	GATE VALVE		MANUAL AIR VENT (A=AUTOMATIC)		MANUAL DAMPER		DUCT TURN DOWN
	BUTTERFLY VALVE		WATER FLOW TRANSMITTER		THERMOSTAT OR TEMPERATURE SENSOR		DUCT TURN UP
	GLOBE VALVE		SUPPLY DIFFUSER		STATIC PRESSURE TRANSMITTER		INTERNALLY LINED DUCTWORK (DIMENSIONS INDICATED ARE OUTSIDE SHEET METAL DIMENSIONS)
	BALL VALVE		RETURN DIFFUSER		POINT OF CONNECTION		MANUFACTURED DOUBLE WALL DUCTWORK (DIMENSIONS INDICATED ARE INSIDE SHEET METAL DIMENSIONS)
	CHECK VALVE		EXHAUST DIFFUSER		POINT OF REMOVAL		CHILLED WATER SUPPLY
	GAS COCK		PLENUM SLOT DIFFUSER		DUCT SMOKE DETECTOR		CHILLED WATER RETURN
	TEMPERATURE REGULATING VALVE		DUCT TAP LEFT		HUMIDITY TRANSMITTER		CONDENSING WATER SUPPLY
	PRESSUR RELIEF VALVE		DUCT TAP RIGHT		CARBON MONOXIDE SENSOR		CONDENSING WATER RETURN
	RELIEF VALVE		AIR FLOW DIRECTION		CARBON DIOXIDE SENSOR		HOT WATER SUPPLY
	STRAINER		OPPOSED BLADE DAMPER		CARBON DIOXIDE SENSOR		HOT WATER RETURN
	3-WAY VALVE		PARALLEL BLADE DAMPER		CARBON DIOXIDE SENSOR		DUAL TEMPERATURE SUPPLY
	VALVE AND END CAP		FIRE DAMPER (HORIZONTAL OR VERTICAL)		CARBON DIOXIDE SENSOR		DUAL TEMPERATURE RETURN
	UNION		SMOKE DAMPER (HORIZONTAL OR VERTICAL)		CARBON DIOXIDE SENSOR		DRAIN
	FLANGED CONNECTION		COMBINATION SMOKE FIRE DAMPER		CARBON DIOXIDE SENSOR		REFRIGERANT HOT GAS
	REDUCER		TEMPERATURE TRANSMITTER		CARBON DIOXIDE SENSOR		REFRIGERANT LIQUID
	ELBOW UP				CARBON DIOXIDE SENSOR		REFRIGERANT SUCTION
	PIPE TEE DOWN				CARBON DIOXIDE SENSOR		NEW DUCT OR PIPING
	ELBOW DOWN				CARBON DIOXIDE SENSOR		EXISTING DUCT OR PIPING
	INSERTION TYPE FLOW METER				CARBON DIOXIDE SENSOR		EXISTING DUCT OR PIPING TO BE REMOVED
	STRIP-ON TYPE FLOW METER				CARBON DIOXIDE SENSOR		

CONTROL SYMBOL LEGEND

	ANALOG INPUT SIGNAL		TEMPERATURE TRANSMITTER
	ANALOG OUTPUT SIGNAL		ROOM TEMPERATURE SENSOR
	DIGITAL INPUT SIGNAL		RELATIVE HUMIDITY SENSOR
	DIGITAL OUTPUT SIGNAL		CARBON DIOXIDE SENSOR
	END SWITCH		DIFFERENTIAL PRESSURE SWITCH
	DIFFERENTIAL PRESSURE TRANSMITTER		HUMIDITY TRANSMITTER
	STATIC PRESSURE TRANSMITTER		DUCT MOUNTED SMOKE DETECTOR
	LOW TEMPERATURE SWITCH		CURRENT TRANSFORMER SWITCH
	AIR FLOW TRANSMITTER		
	END SWITCH		
	NORMALLY OPEN		
	NORMALLY CLOSED		

GENERAL NOTES (DEMOLITION):

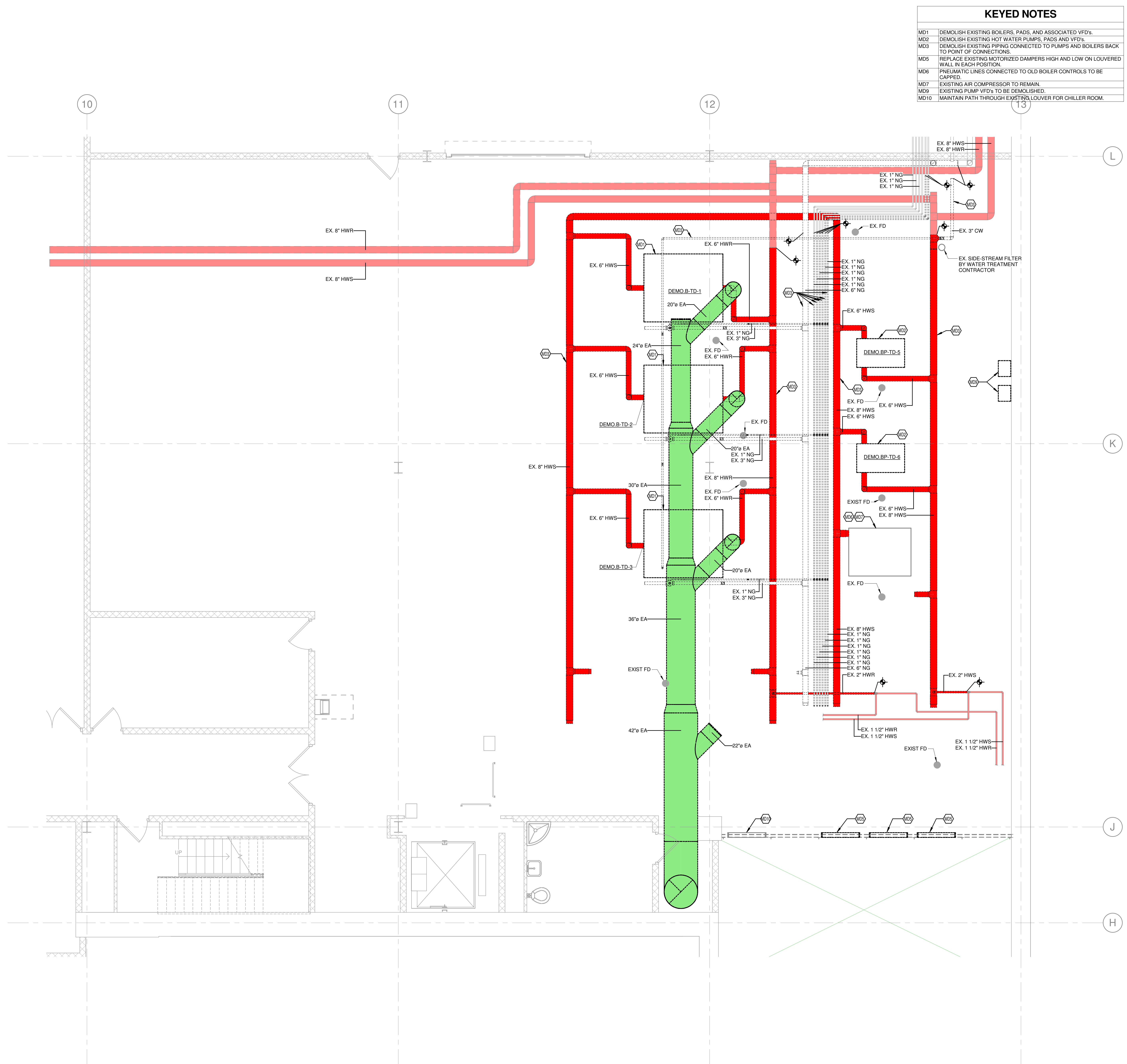
- UNLESS OTHERWISE NOTED, ALL DUCTWORK AND PIPING SHOWN DASHED AND DARK IS TO BE REMOVED.
- CONTRACTOR TO COORDINATE DEMOLITION WITH OTHER TRADES BEFORE BEGINNING WORK.
- REFER TO **B-T-M1-001** OR GENERAL NOTES AND ABBREVIATIONS.
- CONTRACTOR SHALL TAKE OVERALL CFM MEASUREMENTS ON ALL EXISTING TO REMAIN EQUIPMENT PRIOR TO COMMENCING ANY DEMOLITION WORK. INFORMATION GATHERED SHALL BE UTILIZED FOR RE-BALANCING SYSTEM. CONTRACTOR SHALL RE-BALANCE ALL SYSTEMS AT THE CONCLUSION OF THE PROJECT.
- THIS CONTRACTOR SHALL PATCH AND REPAIR ALL HOLES, DAMAGE OR MODIFICATIONS LEFT BY REMOVAL OF DUCTWORK AND REPAIR WALLS, FLOORS, CEILINGS, ETC. TO MATCH EXISTING. ALL PATCHING AND FINISHING SHALL BE PERFORMED BY A QUALIFIED TRADESPERSON. ALL DEMOLITION WORK AND INSTALLATION SHALL BE COORDINATED WITH OWNER PRIOR TO STARTING.
- ALL REMOVED EQUIPMENT IN WORKING ORDER SHALL BE REVIEWED BY THE OWNER'S REPRESENTATIVE. IF OWNER'S REPRESENTATIVE WISHES TO RETAIN THE EQUIPMENT, CONTRACTOR REMOVING EQUIPMENT SHALL DELIVER EQUIPMENT TO LOCATION AS DIRECTED BY THE OWNER'S REPRESENTATIVE. IF THE OWNER'S REPRESENTATIVE WISHES THE EQUIPMENT TO BE DISPOSED OF, THE CONTRACTOR REMOVING THE EQUIPMENT SHALL DISPOSE OF EQUIPMENT WITH NO ADDITIONAL COST TO THE OWNER.

GENERAL NOTES (NEW):

- UNLESS OTHERWISE NOTED, ALL DUCTWORK AND PIPING SHOWN DARK IS NEW.
- ALL WORK SHALL BE INSTALLED PER THE STATE BUILDING CODE, STATE MECHANICAL CODE AND ALL LOCAL APPLICABLE CODES.
- VERIFY CONDITIONS IN THE FIELD PRIOR TO BID AND CONSTRUCTION.
- WHERE CONFLICTS EXIST AMONG DRAWINGS, SPECIFICATIONS AND EQUIPMENT SCHEDULES, THE MORE STRINGENT SHALL APPLY.
- REFER TO DRAWINGS **B-T-M1-001**, **AND B-T-M2-001** FOR MECHANICAL DETAILS, DIAGRAMS AND SCHEDULES.
- CONTRACTOR SHALL CAREFULLY COORDINATE DUCTWORK AND PIPING PATHWAY LOCATIONS WITH OTHER TRADES AND EXISTING CONDITIONS. ALL DUCTWORK AND PIPING SHALL BE INSTALLED AS TIGHT TO THE STRUCTURE AS POSSIBLE. CONNECTIONS TO THE SUPPLY AIR DEVICES MAY BE MADE WITH FLEXIBLE DUCTWORK. ALL CONDITIONS SHALL BE FIELD VERIFIED BEFORE ORDERING EQUIPMENT OR FABRICATED MATERIAL.
- CONTRACTOR SHALL PROVIDE ALL ROOF OR WALL NON-COMBUSTIBLE FRAMING AS REQUIRED TO INSTALL EQUIPMENT, DUCTWORK, AND PIPING. COORDINATE NEW WORK WITH OTHER TRADES PRIOR TO BEGINNING CONSTRUCTION. NO WORK IS TO BE INSTALLED OR FABRICATED UNTIL AFTER THE PROJECT COORDINATION HAS BEEN APPROVED BY THE OWNER'S REPRESENTATIVE.
- INSTALL A MANUAL BALANCE DAMPER IN ALL BRANCH DUCTS, INCLUDING ALL SUPPLY, RETURN, AND EXHAUST GRILLES.
- INSTALL A SHUT-OFF VALVE IN ALL PIPING BRANCHES.
- ALL SQUARE THROATED ELBOWS SHALL HAVE AIRFOIL TURNING VANES AND SHALL ONLY BE USED WHEN RADIIUS ELBOWS WILL NOT FIT.
- ALL ROUND BRANCH DUCT CONNECTIONS SHALL BE MADE WITH BELLMOUTH FITTINGS OR ANGLED TEES. STRAIGHT SPIN-IN TAP COLLARS SHALL NOT BE ACCEPTABLE.
- ALL DAMPERS, VALVES, AND CONTROL COMPONENTS THAT ARE LOCATED ABOVE CEILINGS SHALL BE INSTALLED WHERE COMPLETELY ACCESSIBLE. CONTRACTOR SHALL PROVIDE ACCESS PANELS AS REQUIRED.
- ALL NEW VARIABLE AIR VOLUME TERMINAL UNITS ARE TO BE INSTALLED WHERE COMPONENTS ARE COMPLETELY ACCESSIBLE. CONTRACTOR SHALL COORDINATE TO PROVIDE THE VAV UNIT WITH A CONTROL ENCLOSURE AND PIPE CONNECTIONS ON THE MOST ACCESSIBLE SIDE OF THE UNIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE CORRECT LEFT OR RIGHT HAND CONFIGURATION.
- DUCTWORK CONNECTION TO DIFFUSER / VAV TO BE THE SAME SIZE AS THE NECK SIZE UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED, ALL DUCTWORK SHALL BE FABRICATED FROM GALVANIZED STEEL METAL. INSTALLED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR GAUGE, REINFORCEMENT, AND SUPPORT. 2" W.G. PRESSURE CLASS FOR ALL DUCTWORK UNLESS NOTED OTHERWISE. ALL JOINTS AND SEAMS SHALL BE SEALED AND FASTENED AND MADE AIRTIGHT IN ACCORDANCE OF CHAPTER 13 OF THE STATE BUILDING CODE.
- CONTRACTOR SHALL TAKE OVERALL CFM MEASUREMENTS ON ALL EXISTING DUCTWORK TO REMAIN PRIOR TO COMMENCING ANY WORK. INFORMATION GATHERED SHALL BE UTILIZED FOR REBALANCING SYSTEM. CONTRACTOR SHALL REBALANCE ALL SYSTEMS AT THE CONCLUSION OF THE PROJECT.
- UL LISTED FIRESTOPPING SHALL BE USED AT ANY PENETRATION THROUGH A FIRE RATED ASSEMBLY. REFER TO ARCHITECTURAL CONSTRUCTION DOCUMENTS FOR LOCATIONS OR RATED ASSEMBLIES. CONTRACTOR SHALL USE UL LISTED FIRESTOP SYSTEM METHODS FOR "THROUGH-PENETRATION ASSEMBLIES." TYPICAL OF ALL FIRE RATED WALLS.
- DUCTWORK AND PIPING SHALL BE SUPPORTED INDEPENDENT OF CEILING, CONDUIT, OTHER DUCTWORK, OTHER PIPING, ETC.
- IN AREAS WHERE CEILINGS ARE NOT BEING REPLACED, AND CONTRACTOR HAS WORK ABOVE CEILINGS, CONTRACTOR SHALL PATCH AND REPAIR CEILINGS TO MATCH EXISTING.
- CONTRACTOR SHALL COORDINATE ALL REQUIRED WALL PENETRATIONS FOR DUCT OR PIPING WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION OF NEW WALLS. ALL DUCT PENETRATIONS SHALL BE IN COMPLIANCE WITH THE PROJECT SPECIFICATIONS. CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING REQUIRED FOR DUCT PENETRATIONS THROUGH WALLS.
- CONTRACTOR SHALL COORDINATE ALL REQUIRED ROOF OPENINGS FOR DUCTWORK WITH THE GENERAL CONTRACTOR.
- CONTRACTOR SHALL PROVIDE ALL ADDITIONAL STEEL FRAMING AS REQUIRED TO INSTALL ROOF MOUNTED EQUIPMENT CURBS.
- CONTRACTOR SHALL INSTALL ALL EQUIPMENT, DUCTWORK, PIPING, VALVES, INSULATION, SUPPORTS ETC. AS INDICATED OR AS REQUIRED TO ALLOW OPERATION AND USE OF ALL AREAS AND ALL SYSTEMS REQUIRED FOR OCCUPIED USE DURING CONSTRUCTION.
- CONTRACTOR TO VERIFY EXISTING DUCTWORK / PIPING SUPPLY AND RETURN SYSTEM, SIZE, AND TYPE PRIOR TO MAKING CONNECTIONS.

OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 12:43:51 Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_1225.rvt



KEYED NOTES	
MD1	DEMOLISH EXISTING BOILERS, PADS, AND ASSOCIATED VFD'S.
MD2	DEMOLISH EXISTING HOT WATER PUMPS, PADS AND VFD'S.
MD3	DEMOLISH EXISTING PIPING CONNECTED TO PUMPS AND BOILERS BACK TO POINT OF CONNECTIONS.
MD5	REPLACE EXISTING MOTORIZED DAMPERS HIGH AND LOW ON LOUVERED WALL IN EACH POSITION.
MD6	PNEUMATIC LINES CONNECTED TO OLD BOILER CONTROLS TO BE CAPPED.
MD7	EXISTING AIR COMPRESSOR TO REMAIN.
MD9	EXISTING PUMP VFD'S TO BE DEMOLISHED.
MD10	MAINTAIN PATH THROUGH EXISTING LOUVER FOR CHILLER ROOM.

1 MECHANICAL DEMOLITION PLAN - TERMINAL - BASEMENT LEVEL - B-T3-01_02_03
 1/4" = 1'-0"



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGINEERS.COM
 1538 ALEXANDRIA PIKE, SUITE 111
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO



kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2328
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: AB CHECKED BY: BG

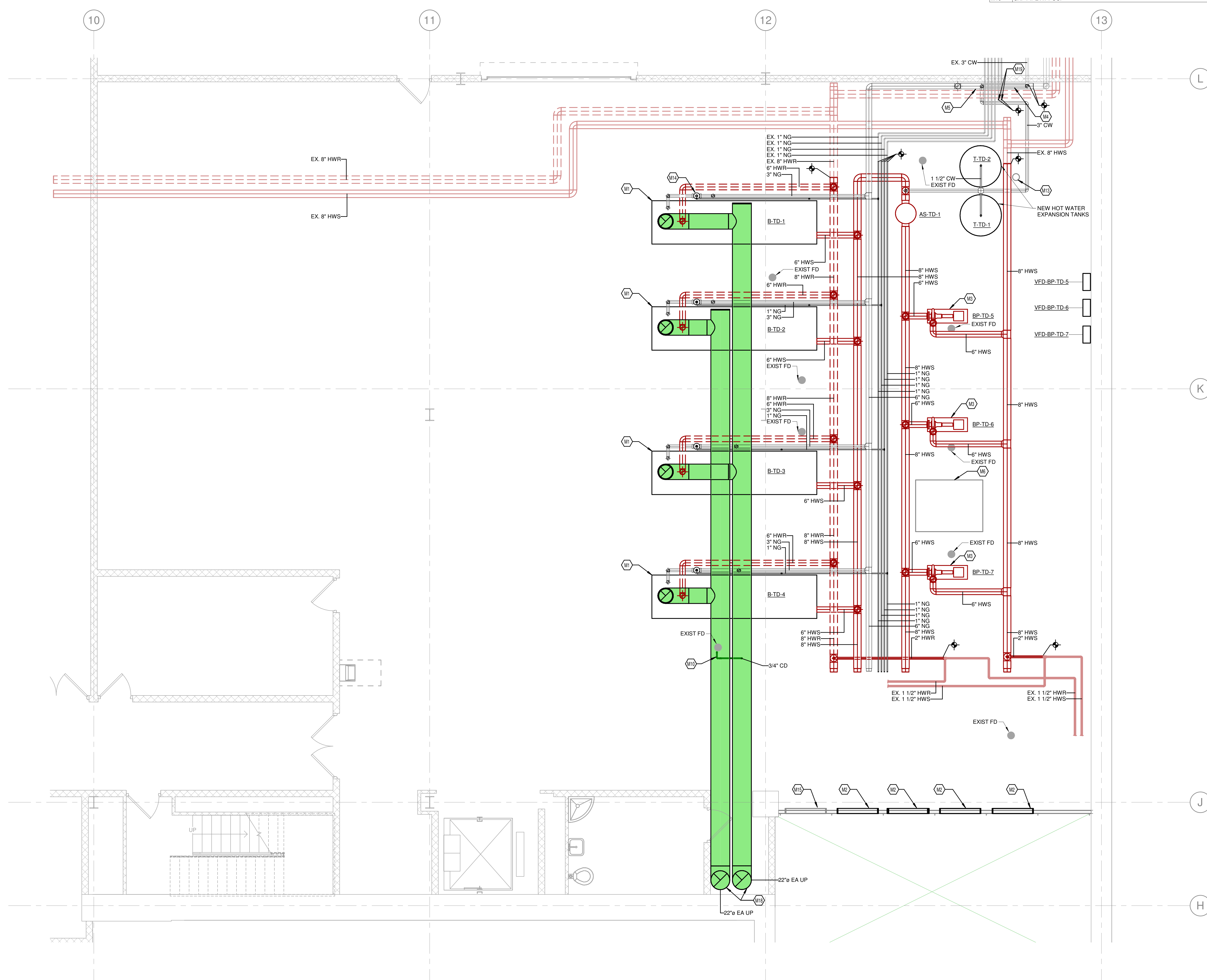
MECHANICAL DEMOLITION
 TERMINAL - BASEMENT LEVEL
 PLAN

B-T-M1-100

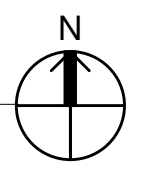
OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 12:45:02Autodesk Docs:CVG - Rehab and Efficiency Program\MECH\KLH\CVG_125.rvt

KEYED NOTES	
M1	INSTALL NEW BOILERS.
M2	(1) SET OF 36X24 MOTORIZED DAMPERS PER BOILER, ONE AS HIGH AS POSSIBLE, ONE AS LOW AS POSSIBLE IN THE REMOVABLE WALL PANEL.
M3	INSTALL NEW PUMPS.
M4	INSTALL WATER METER IN NEW PIPING. INSTALL WATER METER LOW ALONG WALL.
M5	INSTALL GAS METER IN NEW PIPING. INSTALL GAS METER LOW ALONG WALL.
M6	EXISTING AIR COMPRESSOR TO REMAIN.
M10	INSTALL AND ROUTE NEW CONDENSATE DRAIN FOR BOILER FLUE TO NEAREST FLOOR DRAIN. INCLUDE ACID NEUTRALIZER ON CONDENSATE DRAIN.
M13	EXISTING SIDE-STREAM FILTER BY WATER TREATMENT CONTRACTOR TO REMAIN AND BE RECONNECTED.
M14	INSTALL NATURAL GAS REGULATOR FOR EACH BRANCH TO BOILER (TYP.).
M15	EXISTING REFRIGERANT EXHAUST MAKEUP DAMPER TO REMAIN.
M18	ROUTE BOILER FLUE STRAIGHT UP TERMINATE BOILER FLUE VERTICAL RUN WITH SCREEN 8'-0" 1/4" ABOVE ROOF.
M19	CAP PIPE AT POC.



1 MECHANICAL PLAN - TERMINAL - BASEMENT LEVEL - B-T3-01_02_03
 1/4" = 1'-0"



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGINEERS.COM
 1538 ALEXANDRIA PIKE, SUITE 111
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO

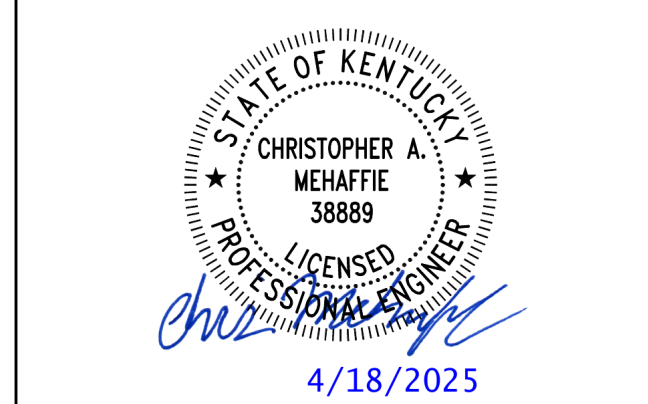


kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2238
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: AB CHECKED BY: BG

MECHANICAL TERMINAL -
 BASEMENT LEVEL PLAN

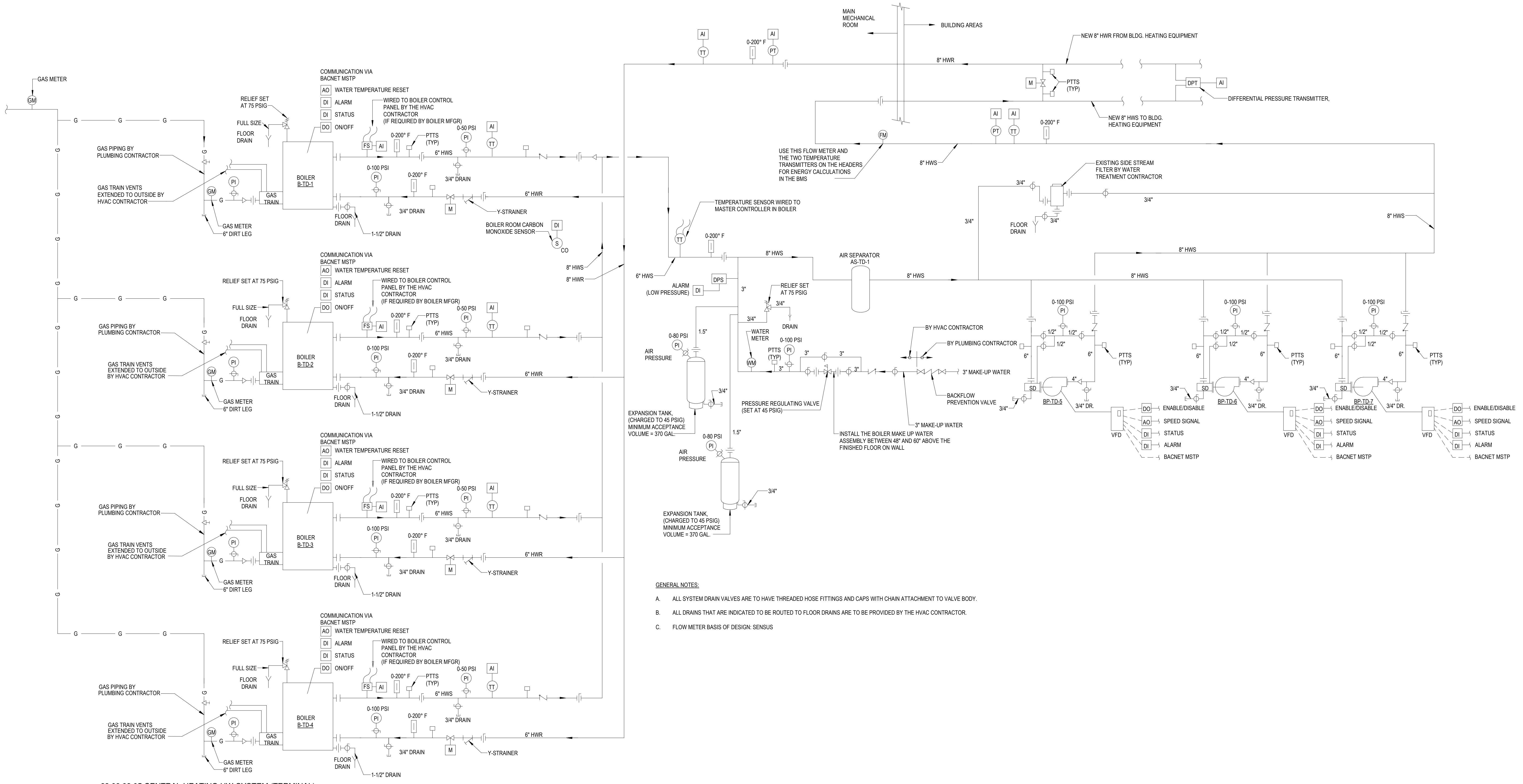
B-T-M3-100

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL TERMINAL SCHEMATIC

B-T-M3-501



- GENERAL NOTES:**
- A. ALL SYSTEM DRAIN VALVES ARE TO HAVE THREADED HOSE FITTINGS AND CAPS WITH CHAIN ATTACHMENT TO VALVE BODY.
 - B. ALL DRAINS THAT ARE INDICATED TO BE ROUTED TO FLOOR DRAINS ARE TO BE PROVIDED BY THE HVAC CONTRACTOR.
 - C. FLOW METER BASIS OF DESIGN: SENSUS

① 23.09.93.05 CENTRAL HEATING HW SYSTEM (TERMINAL)
12" = 1'-0"

4/18/2025 12:46:06Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_P25.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL TERMINAL
SCHEDULES

B-T-M3-601

Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Boiler 1 Hot Water Return Temp	X								X		X
Boiler 1 Hot Water Supply Temp	X								X		X
Boiler 2 Hot Water Return Temp	X								X		X
Boiler 2 Hot Water Supply Temp	X								X		X
Boiler 3 Hot Water Return Temp	X								X		X
Boiler 3 Hot Water Supply Temp	X								X		X
Boiler 4 Hot Water Return Temp	X								X		X
Boiler 4 Hot Water Supply Temp	X								X		X
Hot Water Differential Pressure	X								X		X
Primary Hot Water Return Pressure	X								X		X
Primary Hot Water Supply Pressure	X								X		X
Primary Hot Water Return Temp	X								X		X
Primary Hot Water Supply Temp	X								X		X
Boiler 1 Hot Water Supply Temp Setpoint Reset		X							X		X
Boiler 2 Hot Water Supply Temp Setpoint Reset		X							X		X
Boiler 3 Hot Water Supply Temp Setpoint Reset		X							X		X
Boiler 4 Hot Water Supply Temp Setpoint Reset		X							X		X
Hot Water Pump 1 VFD Speed	X								X		X
Hot Water Pump 1 VFD H/O/A			X								
Hot Water Pump 2 VFD Speed		X							X		X
Hot Water Pump 2 VFD H/O/A			X								
Hot Water Pump 3 VFD Speed		X							X		X
Hot Water Pump 3 VFD H/O/A			X								
Boiler 1 Alarm Status			X						X	X	X
Boiler 1 Low Water Level			X						X	X	X
Boiler 1 Status			X						X	X	X
Boiler 2 Alarm Status			X						X	X	X
Boiler 2 Low Water Level			X						X	X	X
Boiler 2 Status			X						X	X	X
Boiler 3 Alarm Status			X						X	X	X
Boiler 3 Low Water Level			X						X	X	X
Boiler 3 Status			X						X	X	X
Boiler 4 Alarm Status			X						X	X	X
Boiler 4 Low Water Level			X						X	X	X
Boiler 4 Status			X						X	X	X
Hot Water Pump 1 VFD Fault			X						X		X
Hot Water Pump 1 Status			X						X		X
Hot Water Pump 2 VFD Fault			X						X		X
Hot Water Pump 2 Status			X						X		X
Hot Water Pump 3 VFD Fault			X						X	X	X
Hot Water Pump 3 Status			X						X		X
Boiler 1 Enable				X							X
Boiler 2 Enable				X							X
Boiler 3 Enable				X							X
Boiler 4 Enable				X							X
Hot Water Pump 1 Start/Stop			X								X
Hot Water Pump 2 Start/Stop			X								X
Hot Water Pump 3 Start/Stop			X								X
Hot Water Differential Pressure Setpoint					X				X		X
Outside Air Temp					X						X
Boiler 1 Failure										X	X
Boiler 1 High Hot Water Supply Temp										X	X
Boiler 1 Low Hot Water Supply Temp										X	X
Boiler 1 Running in Hand										X	X
Boiler 1 Runtime Exceeded										X	X
Boiler 2 Failure										X	X
Boiler 2 High Hot Water Supply Temp										X	X
Boiler 2 Low Hot Water Supply Temp										X	X
Boiler 2 Running in Hand										X	X
Boiler 2 Runtime Exceeded										X	X
Boiler 3 Failure										X	X
Boiler 3 High Hot Water Supply Temp										X	X
Boiler 3 Low Hot Water Supply Temp										X	X
Boiler 3 Running in Hand										X	X
Boiler 3 Runtime Exceeded										X	X
Boiler 4 Failure										X	X
Boiler 4 High Hot Water Supply Temp										X	X
Boiler 4 Low Hot Water Supply Temp										X	X
Boiler 4 Running in Hand										X	X
Boiler 4 Runtime Exceeded										X	X
High Hot Water Differential Pressure										X	X
High Primary Hot Water Supply Temp										X	X
Hot Water Pump 1 Failure										X	X
Hot Water Pump 1 Running in Hand										X	X
Hot Water Pump 1 Runtime Exceeded										X	X
Hot Water Pump 2 Failure										X	X
Hot Water Pump 2 Running in Hand										X	X
Hot Water Pump 2 Runtime Exceeded										X	X
Hot Water Pump 3 Failure										X	X
Hot Water Pump 3 Running in Hand										X	X
Hot Water Pump 3 Runtime Exceeded										X	X
Lead Boiler Failure										X	X
Low Hot Water Differential Pressure										X	X
Low Primary Hot Water Supply Temp										X	X
Boiler 1 Isolation Valve				X							
Boiler 2 Isolation Valve				X							
Boiler 3 Isolation Valve				X							
Boiler 4 Isolation Valve				X							
Boiler 1 Combustion Air Damper (Upper)				X							
Boiler 1 Combustion Air Damper (Lower)				X							
Boiler 2 Combustion Air Damper (Upper)				X							
Boiler 2 Combustion Air Damper (Lower)				X							
Boiler 3 Combustion Air Damper (Upper)				X							
Boiler 3 Combustion Air Damper (Lower)				X							
Boiler 4 Combustion Air Damper (Upper)				X							
Boiler 4 Combustion Air Damper (Lower)				X							
Boiler Room Gas Meter				X							
Boiler 1 Gas Meter				X							
Boiler 2 Gas Meter				X							
Boiler 3 Gas Meter				X							
Boiler 4 Gas Meter				X							

TERMINAL BOILER SCHEDULE																
DESIGNATION	BOILER TYPE	FLUE SIZE (INCHES)	COMB. AIR INLET SIZE (INCHES)	PERFORMANCE DATA				MIN. FLOW REQUIREMENT (GPM)	MIN. OPERATING GAS PRESSURE (INCHES W.C.)	MAX. OPERATING GAS PRESSURE (PSI)	ELECTRICAL DATA			BASIS OF DESIGN		
				INPUT (BTUHR)	OUTPUT (BTUHR)	FULL FIRE EFFICIENCY	TURN DOWN RATIO				FLOW (GPM)	SUPPLY VOLTS	PH Hz	MOCPS (AMPS)	MANUFACTURER	MODEL NO.
B-TD-1	CONDENSING	16"	12"	6,000,000	5,236,800	92.0%	10:1	300.0	NA	35	5	460	3 60	22	CLEAVERBROOKS	SFC-E
B-TD-2	CONDENSING	16"	12"	6,000,000	5,236,800	92.0%	10:1	300.0	NA	35	5	460	3 60	22	CLEAVERBROOKS	SFC-E
B-TD-3	CONDENSING	16"	12"	6,000,000	5,236,800	92.0%	10:1	300.0	NA	35	5	460	3 60	22	CLEAVERBROOKS	SFC-E
B-TD-4	CONDENSING	16"	12"	6,000,000	5,236,800	92.0%	10:1	300.0	NA	35	5	460	3 60	22	CLEAVERBROOKS	SFC-E

TERMINAL PUMP SCHEDULE																		
DESIGNATION	SERVES	TYPE	FLUID MEDIA	FLOW (GPM)	HEAD (ft)	RPM	BHP	HP	MECHANICAL EFFICIENCY	VOLTS	PH Hz	SPEED DRIVE	CONNECTION SIZES		BASIS OF DESIGN		ACCESSORIES	NOTES
													SUCTION	DISCHARGE	MANUFACTURER	MODEL NO.		
BP-TD-5	TICKETING	END SUCTION	HOT WATER	500	119	1800	20.3	25	73.9%	460	3 60	Yes	4"	3"	B&G	E1510.3GB	SUCTION DIFFUSER	
BP-TD-6	TICKETING	END SUCTION	HOT WATER	500	119	1800	20.3	25	73.9%	460	3 60	Yes	4"	3"	B&G	E1510.3GB	SUCTION DIFFUSER	
BP-TD-7	TICKETING	END SUCTION	HOT WATER	500	119	1800	20.3	25	73.9%	460	3 60	Yes	4"	3"	B&G	E1510.3GB	SUCTION DIFFUSER	

TERMINAL EXPANSION TANK SCHEDULE						
DESIGNATION	SERVES	VOLUME (GAL)	CONNECTION SIZES		BASIS OF DESIGN	
			INLET	OUTLET	MANUFACTURER	MODEL NO.
T-TD-1	CONCOURSE B BOILERS	422	1.5"	0.75"	B&G	B1600
T-TD-2	CONCOURSE B BOILERS	422	1.5"	0.75"	B&G	B1600

TERMINAL AIR SEPARATOR SCHEDULE							
DESIGNATION	SERVES	DESIGN FLOW (GPM)	MAX FLOW (GPM)	CONNECTION SIZES		BASIS OF DESIGN	
				INLET	OUTLET	MANUFACTURER	MODEL NO.
AS-TD-1	TERMINAL BOILERS	1130	1610	6"	6"	B&G	CRS-SF-HV

BOILER SYSTEM OPERATION

THE BOILER SYSTEM SHALL BE ENABLED WHEN THE OUTSIDE AIR TEMP DROPS BELOW 40 °F (ADJ).
THE BOILER SYSTEM SHALL BE DISABLED WHEN THE OUTSIDE AIR TEMP RISES ABOVE 60 °F (ADJ).
BETWEEN THESE OUTSIDE TEMPERATURES, THE BOILER SYSTEM SHALL BE ENABLED ON CALLS FOR HEATING AND DISABLED WHEN ALL SPACES ARE SATISFIED.
EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

PUMP OPERATION

UPON A CALL FOR HEATING, A HOT WATER PUMP SHALL START. THE BYPASS VALVE SHALL BE CLOSED. THE PUMP SHALL MODULATE TO MAINTAIN THE HOT WATER SYSTEMS DIFFERENTIAL PRESSURE SETPOINT. IF THE DIFFERENTIAL SETPOINT IS SATISFIED, THE BYPASS VALVE SHALL OPEN AND MODULATE TO MAINTAIN MINIMUM FLOW (AS MEASURED THROUGH THE FLOW METER) THROUGH THE BOILER.

IF THE DIFFERENTIAL PRESSURE SETPOINT CANNOT BE MAINTAINED FOR 15 MINUTES (ADJ), AND THE PUMP IS AT FULL SPEED, A SECOND PUMP SHALL START. THE LEAD PUMP SHALL SLOW DOWN TO 50% SPEED WHEN THE SECOND PUMP STARTS AND THEN BOTH PUMPS SHALL MODULATE TOGETHER TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT. IF THE DIFFERENTIAL PRESSURE IS STILL NOT MAINTAINED FOR 15 MINUTES (ADJ), THE THIRD PUMP SHALL BE STARTED IN THE SAME MANNER.

WHEN MINIMUM FLOW IS SATISFIED, BYPASS WILL BE CLOSED.
WHEN THE DIFFERENTIAL PRESSURE SETPOINT IS MAINTAINED FOR 15 MINUTES (ADJ), PUMPS SHALL BE STOPPED IN A SEQUENCE THE REVERSE OF ABOVE.

UPON A PUMP FAILURE, ANOTHER PUMP SHALL START AND RUN AND AN ALARM SHALL BE SENT TO THE BMS.
PUMP ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.
- VFD FAULT.

BOILER OPERATION

UPON A CALL FOR HEATING, ONE BOILER ISOLATION VALVE SHALL OPEN. ONCE FLOW IS PROVEN, THAT BOILER SHALL START AND OPERATE TO MAINTAIN ITS DISCHARGE TEMPERATURE SETPOINT OF 140 °F (ADJ).

IF THE DISCHARGE TEMPERATURE SETPOINT CANNOT BE MAINTAINED FOR 15 MINUTES (ADJ), A SECOND BOILER SHALL START AND OPERATE TO MAINTAIN ITS DISCHARGE TEMPERATURE SETPOINT. SUBSEQUENT BOILERS SHALL BE STARTED IN THE SAME SEQUENCE TO MAINTAIN THE DISCHARGE TEMPERATURE SETPOINT.

IF THE DISCHARGE TEMPERATURE SETPOINT IS MAINTAINED FOR 15 MINUTES (ADJ), BOILERS SHALL BE STOPPED IN A SEQUENCE THE REVERSE OF THE ABOVE.

UPON A BOILER FAILURE, THAT BOILER'S ISOLATION VALVE SHALL CLOSE, ANOTHER BOILER SHALL START, AND AN ALARM SHALL BE SENT TO THE BMS.

BOILER SAFETIES, EACH BOILER:
THE FOLLOWING SAFETIES SHALL BE MONITORED:

- BOILER ALARM.
- LOW WATER LEVEL.
- DISCHARGE TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER ALARM.
- LOW WATER LEVEL ALARM.
- HIGH DISCHARGE TEMPERATURE (ADJ).
- LOW DISCHARGE TEMPERATURE (ADJ).

DISCHARGE TEMPERATURE SETPOINT RESET

THE DISCHARGE SUPPLY TEMPERATURE SETPOINT SHALL RESET USING A TRIM AND RESPOND ALGORITHM BASED ON HEATING REQUIREMENTS.
AS THE FACILITY'S HOT WATER VALVES OPEN BEYOND 90% (ADJ), THE SETPOINT SHALL BE RESET UPWARDS. ONCE THE HOT WATER COILS ARE SATISFIED AND VALVES ARE CLOSING, THEN THE SETPOINT SHALL BE RESET DOWNWARD TO REDUCE HEATING ENERGY USE.

BOILER SEQUENCE OF OPERATION - TICKETING

NOT TO SCALE

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: NTS
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL CONCOURSE B COVER SHEET

B-B-M1-001

MECHANICAL LEGEND (not all may apply)

GENERAL ABBREVIATIONS

AAV	AUTOMATIC AIR DAMPER	DET	DETAIL	HX	HEAT EXCHANGER	REQ'D	REQUIRED
AB	AUTOMATIC AIR VENT	DIA	DIAMETER	IA	INSTRUMENT AIR	REV	REVISED
AC*	AIR BLENDER	DN	DOWN	IE	INVERT ELEVATION	RG	RETURN GRILLE
ACC	AIR CONDITIONING UNIT	DPR	DAMPERS	IN	INCH	RH	RELATIVE HUMIDITY/ROOF
ACCU	AIR COOLED CONDENSER	DPT	DEW POINT TEMPERATURE	INV	INVERT	RV	RELIEF VENT
AD	AIR COOLED CONDENSING UNIT	DR	DRAIN	KEC	KITCHEN EQUIPMENT CONTRACTOR	RM	ROOM
ADDL	ADDITIONAL	DTS	DUAL TEMPERATURE SUPPLY	KHC	KITCHEN HOOD	RPM	REVOLUTIONS PER MINUTE
ADJ	ADJUSTABLE	DTR	DUAL TEMPERATURE RETURN	KV	KITCHEN VENT	RR	RETURN REGISTER
AF	AFTER FILTER	DWG	DRAWING	LAT	LEAVING AIR TEMPERATURE	SA	SCHEDULE
AFF	ABOVE FINISHED FLOOR	EA	EACH EXHAUST AIR	LB	POUND	SCHWP	SECONDARY CHILLED WATER PUMP
ALT	ALTERNATE	EAH	EXHAUST AIR HOOD	LD	LINEAR DIFFUSER	SD	SUCTION DIFFUSER
ALUM	ALUMINUM	EAL	EXHAUST AIR LOUVER	LWT	LEAVING WATER TEMPERATURE	SECT	SECTION
AP	ACCESS PANEL	EAT	ENTERING AIR TEMPERATURE	MATL	MATERIAL	SG	SUPPLY GRILLE
APPROX	APPROXIMATE	EC	ELECTRICAL CONTRACTOR	MAV	MANUAL AIR VENT	SHWP	SECONDARY HOT WATER PUMP
ARCH	ARCHITECTURAL	EF	EXHAUST FAN	MAX	MAXIMUM	SHWT	SHEET
AUTO	AUTOMATIC	EG	EXHAUST GRILLE	MBH	BTUS PER HOUR, THOUSAND	SL	SOUND LINING
AVG	AVERAGE	EL	ELEVATION	MC	MECHANICAL CONTRACTOR	SM	SURFACE MOUNT
BAS	BUILDING AUTOMATION SYSTEM	ELEC	ELECTRICAL	MCW	MECHANICAL CITY WATER	SPEC	SPECIFICATIONS
BBD	BALANCED BACKDRAFT DAMPER	EQUIP	EQUIPMENT	MFG	MECHANICAL CITY WATER	SPT	STATIC PRESSURE TRANSMITTER
BE	BOTTOM ELEVATION	EQUIV	EQUIVALENT	MIN	MINIMUM	SQ	SQUARE
BF	BUTTERFLY	EQ	EQUAL	MISC	MISCELLANEOUS	SQ FT/FS	SQUARE FOOT (FEET)
BFP	BACKFLOW PREVENTER	ESP	EXTERNAL STATIC PRESSURE	MSW	MECHANICAL SOFT WATER	SQ IN	SQUARE INCHES
BLDG	BUILDING	ET	EXPANSION TANK	NA	NOT APPLICABLE	SR	SUPPLY REGISTER
BLR	BOILER	EV	ELECTRIC UNIT HEATER	NC	NORMALLY CLOSED/NOISE CRITERIA	SS	STAINLESS STEEL
BOD	BOTTOM OF DUCT	EWH	ELECTRIC WATER HEATER	NG	NATURAL GAS	STD	STANDARD
BOP	BOTTOM OF PIPE	EWT	ENTERING WATER TEMPERATURE	NO	NOT IN CONTRACT	STL	STEEL
BOT	BOTTOM	EXCL	EXCLUDING	NOM	NOMINALLY OPEN	STRUCT	STRUCTURAL
BP	BOOSTER PUMP	EXIST	EXISTING	NOM	NOMINAL	TCC	TEMPERATURE CONTROL CONTRACTOR
BTU	BRITISH THERMAL UNIT	EXP	EXPANSION	NTS	NOT TO SCALE	TCV	TEMPERATURE CONTROL VALVE
BTU/H	BTUS PER HOUR	FA	DEGREE FAHRENHEIT	NTF	NOT TO FIT	TE	TEMPERATURE
BV	BALL VALVE	FD	FLAT DRAIN	OAH	OUTSIDE AIR HOOD	TI	TEMPERATURE INDICATOR
CA	COMPRESSED AIR	FF	FINISHED FLOOR	OAL	OUTSIDE AIR LOUVER	TMV	THERMOSTATIC MIXING VALVE
CAF	COMBUSTION AIR FAN	FR	FIRE BRANT	ON CENTER	ON CENTER	TSP	TOTAL STATIC PRESSURE
CCW	COUNTER CLOCKWISE	FL	FLOOR	OC	OCCUPANCY SENSOR	TSTAT	THERMOSTAT
CD	CEILING DIFFUSER	FOB	FLAT ON BOTTOM	OPG	OPENING	TVX	THERMAL EXPANSION VALVE
CFM	CUBIC FEET PER MINUTE	FOR	FUEL OIL RETURN	OSBY	OUTSIDE SCREW AND YOKE	TYP	TYPICAL
CHV	CHECK VALVE	FOS	FUEL OIL SUPPLY	OZ	OUNCE	TW	TEMPERED WATER
CH	CHILLER	FOT	FLAT ON TOP	PC	PLUMBING CONTRACTOR	UG	UNDERGROUND
CHWP	CHILLED WATER PUMP	FPC	FIRE PROTECTION CONTRACTOR	POHP	PRIMARY CHILLED WATER PUMP	UH	UNIT HEATER
CHWR	CHILLED WATER RETURN	FFM	FEET PER MINUTE	PERIM	PERIMETER	UN	UNLESS OTHERWISE NOTED
CHWS	CHILLED WATER SUPPLY	FPA/V	FAN POWERED VAV	PF	PRE FILTER	UNO	UNLESS NOTED OTHERWISE
CI	CAST IRON	FS	FLOOR SINK	PH	PHASE	VAC	VACUUM
COL	COLUMN	GA	GALLONS PER HOUR	PHWP	PRIMARY HOT WATER PUMP	VA	VALVE
CONN	CONNECTION	GALV	GALVANIZED	PI	PRESSURE INDICATOR	VAV	VARIABLE AIR VOLUME
CT	COOLING TOWER	GC	GENERAL CONTRACTOR	PLBG	PLUMBING	VD	VOLUME DAMPER
CU	CONDENSING UNIT	GPH	GALLONS PER HOUR	PRESS	PRESSURE	VERT	VERTICAL
CUH	CABINET UNIT HEATER	GPM	GALLONS PER MINUTE	PRV	PRESSURE REDUCING VALVE	VFD	VARIABLE FREQUENCY DRIVE
CU FT	CUBIC FEET	HEX	HEAT EXCHANGER	PS	PRESSURE SWITCH	VOL	VOLUME
CU IN	CUBIC INCH	HORIZ	HORIZONTAL	PSIG	POUND PER SQUARE INCH GAUGE	W	WITH
CW	CITY WATER	HR	HOUR	PSI	POUND PER SQUARE INCH	WO	WITHOUT
CWP	CONDENSING WATER PUMP	HT	HEAT TRACE	PSIA	POUND PER SQUARE INCH ABSOLUTE	WB	WET BULB TEMPERATURE
CWS	CONDENSING WATER SUPPLY	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	PSIG	POUND PER SQUARE INCH GAUGE	WG	WATER GAUGE
CWR	CONDENSING WATER RETURN	HWP	HOT WATER PUMP	PVC	POLYVINYL CHLORIDE	WP	WEATHER PROOF
DB	DRY BULB TEMPERATURE	HWR	HOT WATER RETURN	RCP	RECIRCULATION PUMP	XP	EXPLOSION PROOF
DDC	DIRECT DIGITAL CONTROL	HWS	HOT WATER SUPPLY	REF	REFERENCE		

MECHANICAL SYMBOLS

	BALANCING VALVE		PRESSURE TEMPERATURE TEST STATION (PITS)		BALANCED BACKDRAFT DAMPER		CD-24-10 100 CFM		AIR DEVICE TYPE - DEVICE WIDTH (IN) - NECK SIZE (IN) CFM INDICATED CD-LAY-IN CEILING DIFFUSER, PD=PERFORATED DIFFUSER, LD=LINEAR DIFFUSER, RD=ROUND DIFFUSER, RG=RETURN GRILLE
	A-AUTOMATIC M-MANUAL CALIBRATED CIRCUIT SENSOR (VENTURI)		THERMOMETER		MANUAL AIR VENT (A-AUTOMATIC)		EQUIP. # 1		DUCT TURN DOWN
	GATE VALVE		WATER FLOW TRANSMITTER		POINT OF CONNECTION		EQUIP. # 2		DUCT TURN UP
	BUTTERFLY VALVE		SUPPLY DIFFUSER		POINT OF REMOVAL		EQUIP. # 3		INTERNALLY LINED DUCTWORK (DIMENSIONS INDICATED ARE OUTSIDE SHEET METAL DIMENSIONS)
	GLOBE VALVE		RETURN DIFFUSER		EQUIP. # 4		EQUIP. # 4		MANUFACTURED DOUBLE WALL DUCTWORK (DIMENSIONS INDICATED ARE INSIDE SHEET METAL DIMENSIONS)
	BALL VALVE		EXHAUST DIFFUSER		EQUIP. # CO		CHWS	CHILLED WATER SUPPLY	
	CHECK VALVE		PLENUM SLOT DIFFUSER		EQUIP. # CO2		CHWR	CHILLED WATER RETURN	
	GAS COCK		DUCT TAP LEFT		EQUIP. # CO2		CWS	CONDENSING WATER SUPPLY	
	TEMPERATURE REGULATING VALVE		DUCT TAP RIGHT		EQUIP. # CO2		CWR	CONDENSING WATER RETURN	
	PRESSURE RELIEF VALVE		AIR FLOW DIRECTION		EQUIP. # CO2		HWS	HOT WATER SUPPLY	
	RELIEF VALVE		OPPOSED BLADE DAMPER		EQUIP. # CO2		HWR	HOT WATER RETURN	
	STRAINER		PARALLEL BLADE DAMPER		EQUIP. # CO2		DTS	DUAL TEMPERATURE SUPPLY	
	3-WAY VALVE		FIRE DAMPER (HORIZONTAL OR VERTICAL)		EQUIP. # CO2		DTR	DUAL TEMPERATURE RETURN	
	VALVE AND END CAP		SMOKE DAMPER (HORIZONTAL OR VERTICAL)		EQUIP. # CO2		DR	DRAIN	
	UNION		COMBINATION SMOKE FIRE DAMPER		EQUIP. # CO2		RHG	REFRIGERANT HOT GAS	
	FLANGED CONNECTION		TEMPERATURE TRANSMITTER		EQUIP. # CO2		RL	REFRIGERANT LIQUID	
	REDUCER				EQUIP. # CO2		RS	REFRIGERANT SUCTION	
	ELBOW UP				EQUIP. # CO2			NEW DUCT OR PIPING	
	PIPE TEE DOWN				EQUIP. # CO2			EXISTING DUCT OR PIPING	
	ELBOW DOWN				EQUIP. # CO2			EXISTING DUCT OR PIPING TO BE REMOVED	
	INSERTION TYPE FLOW METER								
	STRAP-ON TYPE FLOW METER								

CONTROL SYMBOL LEGEND

	A	ANALOG INPUT SIGNAL		TT	TEMPERATURE TRANSMITTER
	AO	ANALOG OUTPUT SIGNAL		T	ROOM TEMPERATURE SENSOR
	DI	DIGITAL INPUT SIGNAL		H	RELATIVE HUMIDITY SENSOR
	DO	DIGITAL OUTPUT SIGNAL		S	CARBON DIOXIDE SENSOR
	ES	END SWITCH		DPS	DIFFERENTIAL PRESSURE SWITCH
	DPT	DIFFERENTIAL PRESSURE TRANSMITTER		HT	HUMIDITY TRANSMITTER
	SPT	STATIC PRESSURE TRANSMITTER		SD	DUCT MOUNTED SMOKE DETECTOR
	LTS	LOW TEMPERATURE SWITCH		CTS	CURRENT TRANSFORMER SWITCH
	AFT	AIR FLOW TRANSMITTER			
	ES	END SWITCH			
	NO	NORMALLY OPEN			
	NC	NORMALLY CLOSED			

GENERAL NOTES (DEMOLITION):

- UNLESS OTHERWISE NOTED, ALL DUCTWORK AND PIPING SHOWN DASHED AND DARK IS TO BE REMOVED.
- CONTRACTOR TO COORDINATE DEMOLITION WITH OTHER TRADES BEFORE BEGINNING WORK.
- REFER TO B-B-M1-001 OR GENERAL NOTES AND ABBREVIATIONS.
- CONTRACTOR SHALL TAKE OVERALL CFM MEASUREMENTS ON ALL EXISTING TO REMAIN EQUIPMENT PRIOR TO COMMENCING ANY DEMOLITION WORK. INFORMATION GATHERED SHALL BE UTILIZED FOR REBALANCING SYSTEM. CONTRACTOR SHALL RE-BALANCE ALL SYSTEMS AT THE CONCLUSION OF THE PROJECT.
- THIS CONTRACTOR SHALL PATCH AND REPAIR ALL HOLES, DAMAGE OR MODIFICATIONS LEFT BY REMOVAL OF DUCTWORK AND REPAIR WALLS, FLOORS, CEILINGS, ETC. TO MATCH EXISTING. ALL PATCHING AND FINISHING SHALL BE PERFORMED BY A QUALIFIED TRADESPERSONS. ALL DEMOLITION WORK AND INSTALLATION SHALL BE COORDINATED WITH OWNER PRIOR TO STARTING.
- ALL REMOVED EQUIPMENT IN WORKING ORDER SHALL BE REVIEWED BY THE OWNER'S REPRESENTATIVE. IF OWNER'S REPRESENTATIVE WISHES TO RETAIN THE EQUIPMENT, CONTRACTOR REMOVING EQUIPMENT SHALL DELIVER EQUIPMENT TO LOCATION AS DIRECTED BY THE OWNER'S REPRESENTATIVE. IF THE OWNER'S REPRESENTATIVE WISHES THE EQUIPMENT TO BE DISPOSED OF, THE CONTRACTOR REMOVING THE EQUIPMENT SHALL DISPOSE OF EQUIPMENT WITH NO ADDITIONAL COST TO THE OWNER.

GENERAL NOTES (NEW):

- UNLESS OTHERWISE NOTED, ALL DUCTWORK AND PIPING SHOWN DARK IS NEW.
- ALL WORK SHALL BE INSTALLED PER THE STATE BUILDING CODE, STATE MECHANICAL CODE AND ALL LOCAL APPLICABLE CODES.
- VERIFY CONDITIONS IN THE FIELD PRIOR TO BID AND CONSTRUCTION.
- WHERE CONFLICTS EXIST AMONG DRAWINGS, SPECIFICATIONS AND EQUIPMENT SCHEDULES, THE MORE STRINGENT SHALL APPLY.
- REFER TO DRAWINGS B-B-M3-501, AND B-B-M3-501 FOR MECHANICAL DETAILS, DIAGRAMS AND SCHEDULES.
- CONTRACTOR SHALL CAREFULLY COORDINATE DUCTWORK AND PIPING PATHWAY / LOCATIONS WITH OTHER TRADES AND EXISTING CONDITIONS. ALL DUCTWORK AND PIPING SHALL BE INSTALLED AS TIGHT TO THE STRUCTURE AS POSSIBLE. CONNECTIONS TO THE SUPPLY AIR DEVICES MAY BE MADE WITH FLEXIBLE DUCTWORK. ALL CONDITIONS SHALL BE FIELD VERIFIED BEFORE ORDERING EQUIPMENT OR FABRICATED MATERIAL.
- CONTRACTOR SHALL PROVIDE ALL ROOF OR WALL NON-COMBUSTIBLE FRAMING AS REQUIRED TO INSTALL EQUIPMENT, DUCTWORK AND PIPING. COORDINATE NEW WORK WITH OTHER TRADES PRIOR TO BEGINNING CONSTRUCTION. NO WORK IS TO BE INSTALLED OR FABRICATED UNTIL AFTER THE PROJECT COORDINATION HAS BEEN APPROVED BY THE OWNER'S REPRESENTATIVE.
- INSTALL A MANUAL BLADE DAMPER IN ALL BRANCH DUCTS, INCLUDING ALL SUPPLY, RETURN, AND EXHAUST GRILLES.
- INSTALL A SHUT-OFF VALVE IN ALL PIPING BRANCHES.
- ALL SQUARE THROATED ELBOWS SHALL HAVE AIR/OIL TURNING VANES AND SHALL ONLY BE USED WHEN RADIUS ELBOWS WILL NOT FIT.
- ALL ROUND BRANCH DUCT CONNECTIONS SHALL BE MADE WITH BELLMOUTH FITTINGS OR ANGLED TEES. STRAIGHT SPIN-IN TAP COLLARS SHALL NOT BE ACCEPTABLE.
- ALL DAMPERS, VALVES, AND CONTROL COMPONENTS THAT ARE LOCATED ABOVE CEILING SHALL BE INSTALLED WHERE COMPLETELY ACCESSIBLE. CONTRACTOR SHALL PROVIDE ACCESS PANELS AS REQUIRED.
- ALL NEW VARIABLE AIR VOLUME TERMINAL UNITS ARE TO BE INSTALLED WHERE COMPONENTS ARE COMPLETELY ACCESSIBLE. CONTRACTOR SHALL COORDINATE TO PROVIDE THE VAV UNIT WITH A CONTROL ENCLOSURE AND PIPE CONNECTIONS ON THE MOST ACCESSIBLE SIDE OF THE UNIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE CORRECT LEFT OR RIGHT HAND CONFIGURATION.
- DUCTWORK CONNECTION TO DIFFUSER / VAV TO BE THE SAME SIZE AS THE NECK SIZE UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED, ALL DUCTWORK SHALL BE FABRICATED FROM GALVANIZED STEEL METAL. INSTALLED IN ACCORDANCE WITH SHADNA DUCT CONSTRUCTION STANDARDS FOR GAUGE, REINFORCEMENT, AND SUPPORT. 2" W.G. PRESSURE CLASS FOR ALL DUCTWORK. UNLESS NOTED OTHERWISE, ALL JOINTS AND SEAMS SHALL BE SEALED AND FASTENED AND MADE AIR/TIGHT IN ACCORDANCE OF STATE BUILDING CODE.
- CONTRACTOR SHALL TAKE OVERALL CFM MEASUREMENTS ON ALL EXISTING DUCTWORK TO REMAIN PRIOR TO COMMENCING ANY WORK. INFORMATION GATHERED SHALL BE UTILIZED FOR REBALANCING SYSTEM. CONTRACTOR SHALL REBALANCE ALL SYSTEMS AT THE CONCLUSION OF THE PROJECT.
- UL LISTED FIRESTOPPING SHALL BE USED AT ANY PENETRATION THROUGH A FIRE RATED ASSEMBLY. REFER TO ARCHITECTURAL CONSTRUCTION DOCUMENTS FOR LOCATIONS OR RATED ASSEMBLIES. CONTRACTOR SHALL USE UL LISTED FIRESTOP SYSTEM METHODS FOR THROUGH-PENETRATION ASSEMBLIES. TYPICAL OF ALL FIRE RATED WALLS.
- DUCTWORK AND PIPING SHALL BE SUPPORTED INDEPENDENT OF CEILING, CONDUIT, OTHER DUCTWORK, OTHER PIPING, ETC.
- IN AREAS WHERE CEILING ARE NOT BEING REPLACED, AND CONTRACTOR HAS WORK ABOVE CEILING, CONTRACTOR SHALL PATCH AND REPAIR CEILING TO MATCH EXISTING.
- CONTRACTOR SHALL COORDINATE ALL REQUIRED WALL PENETRATIONS FOR DUCT OR PIPING WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION OF NEW WALLS. ALL DUCT PENETRATIONS SHALL BE IN COMPLIANCE WITH THE PROJECT SPECIFICATIONS. CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING REQUIRED FOR DUCT PENETRATIONS THROUGH WALLS.
- CONTRACTOR SHALL COORDINATE ALL REQUIRED ROOF OPENINGS FOR DUCTWORK WITH THE GENERAL CONTRACTOR.
- CONTRACTOR SHALL PROVIDE ALL ADDITIONAL STEEL FRAMING AS REQUIRED TO INSTALL ROOF MOUNTED EQUIPMENT CURBS.
- CONTRACTOR SHALL INSTALL ALL EQUIPMENT, DUCTWORK, PIPING, VALVES, INSULATION, SUPPORTS ETC. AS INDICATED OR AS REQUIRED TO ALLOW OPERATION AND USE OF ALL AREAS AND ALL SYSTEMS REQUIRED FOR OCCUPIED USE DURING CONSTRUCTION.
- CONTRACTOR TO VERIFY EXISTING DUCTWORK / PIPING SUPPLY AND RETURN SYSTEM, SIZE, AND TYPE PRIOR TO MAKING CONNECTIONS.

OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all copyright, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 12:48:55 Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_125.rvt

KEYED NOTES	
MD1	DEMOLISH EXISTING BOILERS, PADS, AND ASSOCIATED VFD'S.
MD2	DEMOLISH EXISTING HOT WATER PUMPS, PADS AND VFD'S.
MD3	DEMOLISH EXISTING PIPING CONNECTED TO PUMPS AND BOILERS BACK TO POINT OF CONNECTIONS.
MD4	DEMOLISH EXISTING BOILER FLUE.
MD8	EXISTING WATER FILTER TO REMAIN.
MD9	EXISTING PUMP VFD'S TO BE DEMOLISHED.



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGINEERS.COM
 1538 ALEXANDRIA PIKE, SUITE 11
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO



kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2238
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048

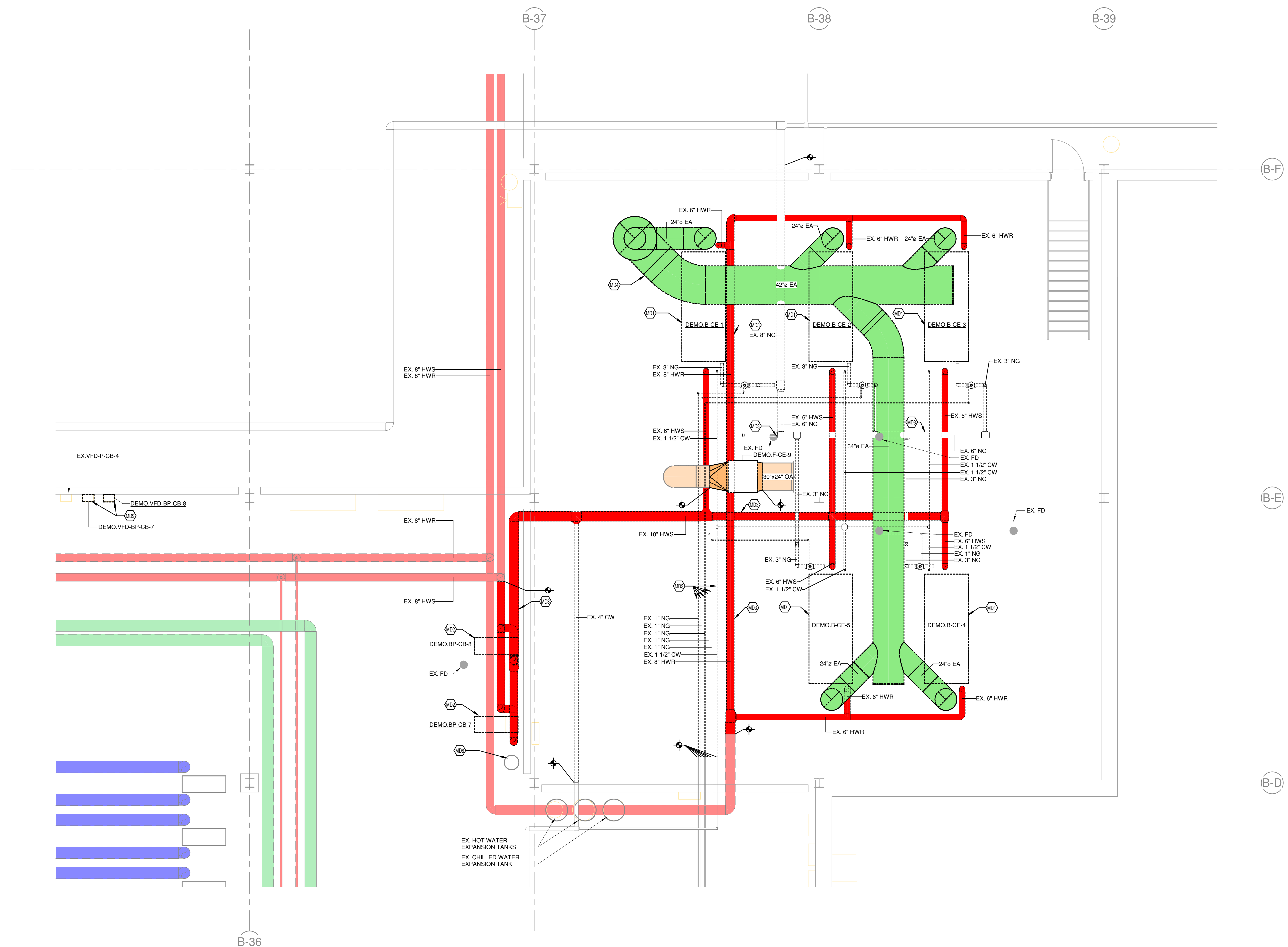


REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

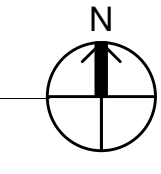
SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: AB CHECKED BY: BG

MECHANICAL DEMOLITION
 CONCOURSE B - BASEMENT
 LEVEL PLAN

B-B-M1-100



1 MECHANICAL DEMOLITION PLAN - CONCOURSE B - BASEMENT - B-CB-01_02_03_04_05
 1/4" = 1'-0"



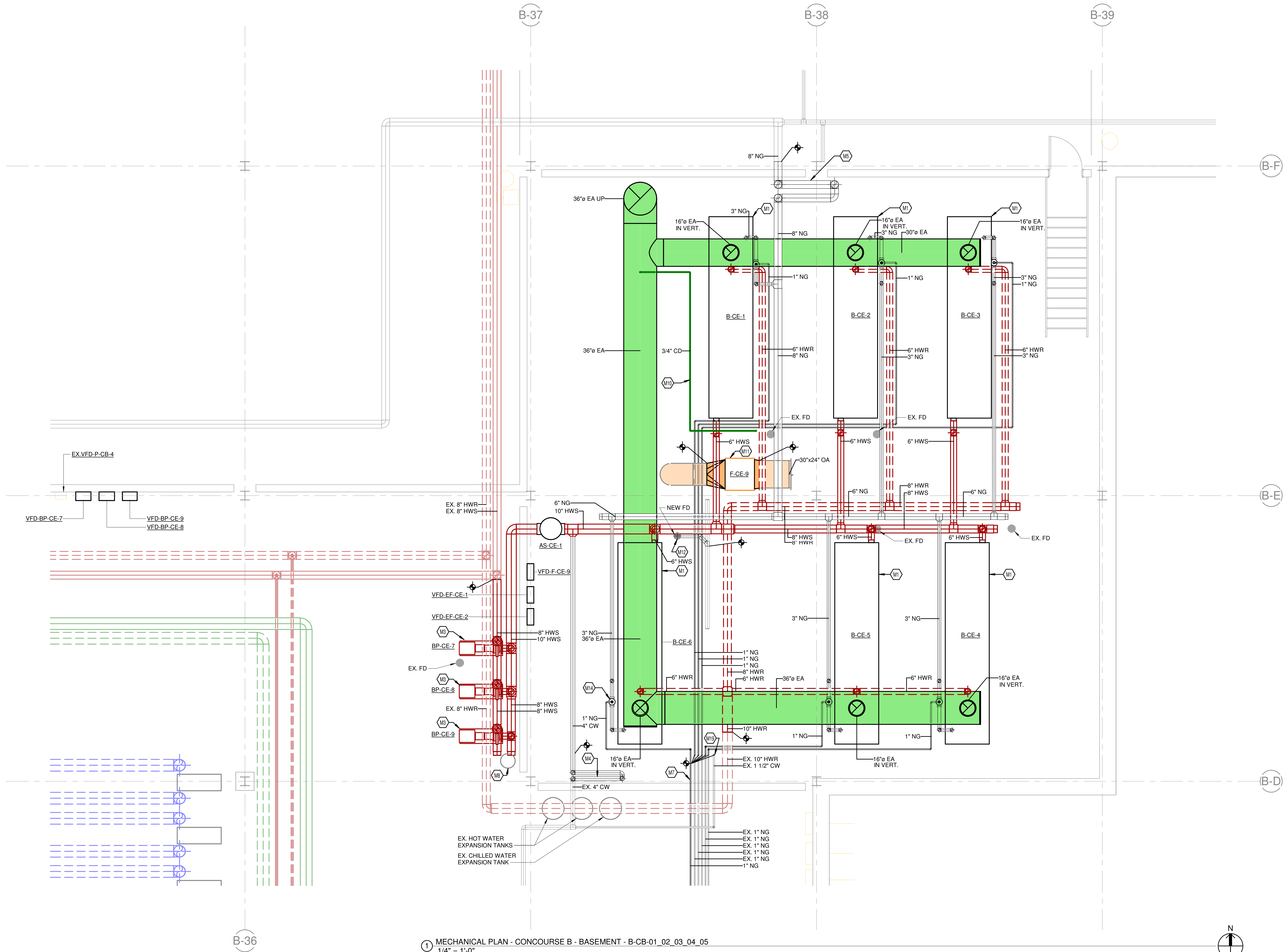
REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 1/4" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL CONCOURSE B -
BASEMENT LEVEL PLAN

B-B-M3-100

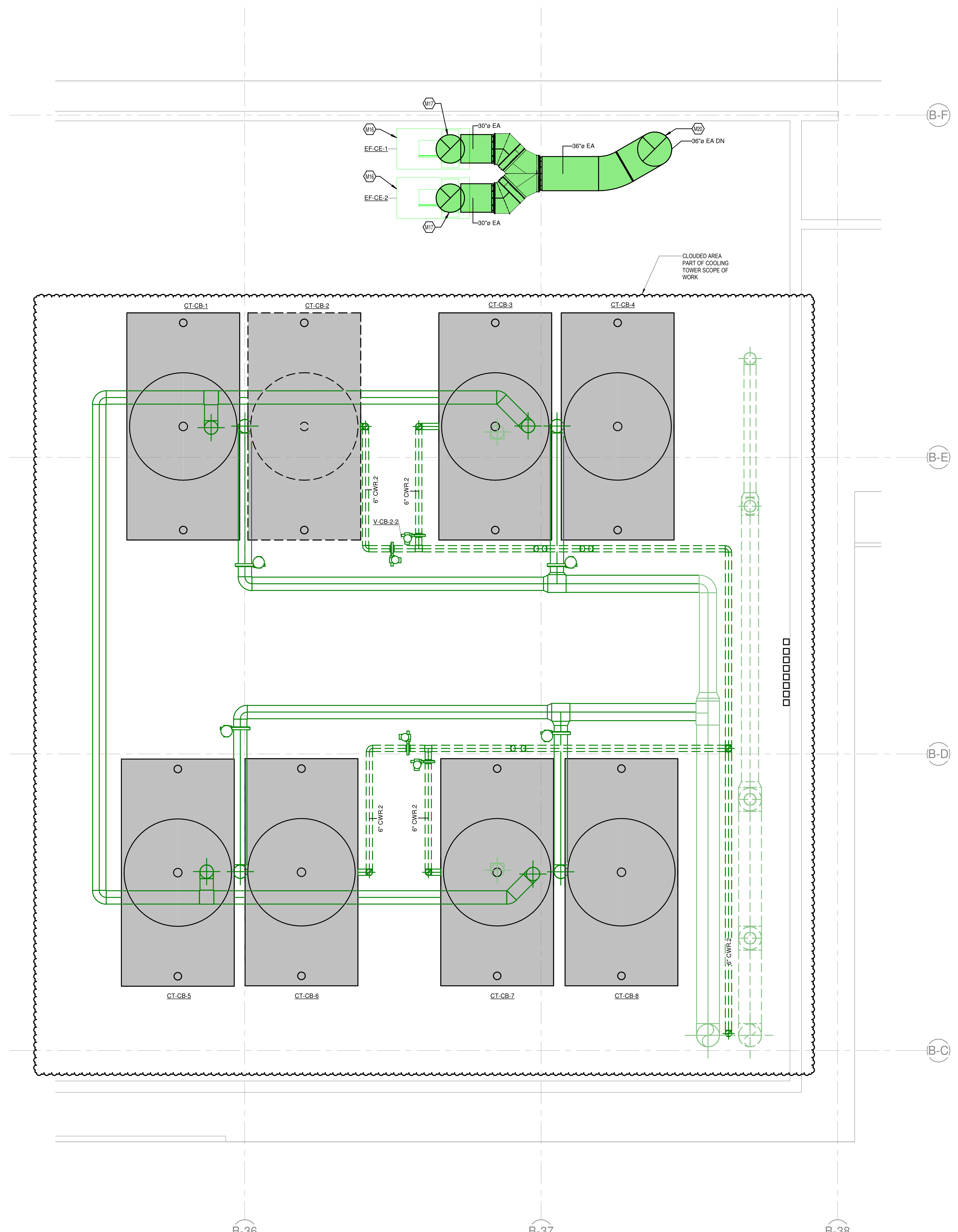
KEYED NOTES	
M1	INSTALL NEW BOILERS.
M3	INSTALL NEW PUMPS.
M4	INSTALL WATER METER IN NEW PIPING. INSTALL WATER METER LOW ALONG WALL.
M5	INSTALL GAS METER IN NEW PIPING. INSTALL GAS METER LOW ALONG WALL.
M7	NEW NG VENT LINE TO FOLLOW THE ROUTING OF THE EXISTING NG VENT LINES AND VENT TO SAFE LOCATION.
M8	RE-INSTALL EXISTING WATER FILTER FOR CHEMICAL TREATMENT.
M10	INSTALL AND ROUTE NEW CONDENSATE DRAIN FOR BOILER FLUE TO NEAREST FLOOR DRAIN. INCLUDE ACID NEUTRALIZER ON CONDENSATE DRAIN.
M11	REPLACE EXISTING COMBUSTION AIR FAN AND CONNECT TO EXISTING DUCTWORK. NEW COMBUSTION AIR FAN TO BE CONTROLLED BY NEW BOILERS.
M12	TIE IN NEW 4" PVC SANITARY LINE TO EXISTING 4" SANITARY LINE.
M14	INSTALL NATURAL GAS REGULATOR FOR EACH BRANCH TO BOILER (TYP.).
M19	CAP PIPE AT POC.



1 MECHANICAL PLAN - CONCOURSE B - BASEMENT - B-CB-01_02_03_04_05
1/4" = 1'-0"

OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 12:50:45Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_125.rvt



KEYED NOTES	
M16	INSTALL NEW INDUCED DRAFT FAN FOR BOILER FLUE.
M17	TERMINATE BOILER FLUE VERTICAL RUN WITH SCREEN 21'-0 3/8" ABOVE ROOF.
M20	REFER TO ARCHITECTURAL DRAWINGS FOR ROOF PENETRATION.



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGINEERS.COM
 1538 ALEXANDRIA PIKE, SUITE 111
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO



kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2238
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048



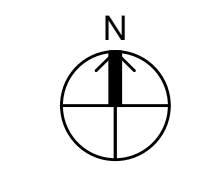
REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: AB CHECKED BY: BG

MECHANICAL CONCOURSE B - CLUB LEVEL PLAN

B-B-M3-101

MECHANICAL PLAN - CONCOURSE B - CLUB LEVEL - B-CB-01_02_03_04_05_06_07_08
 1/4" = 1'-0"



PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
AND EFFICIENCY PROGRAM - BOILER
REPLACEMENT PROJECT**

PROJECT ADDRESS:
**3087 Terminal Dr
Hebron, KY 41048**

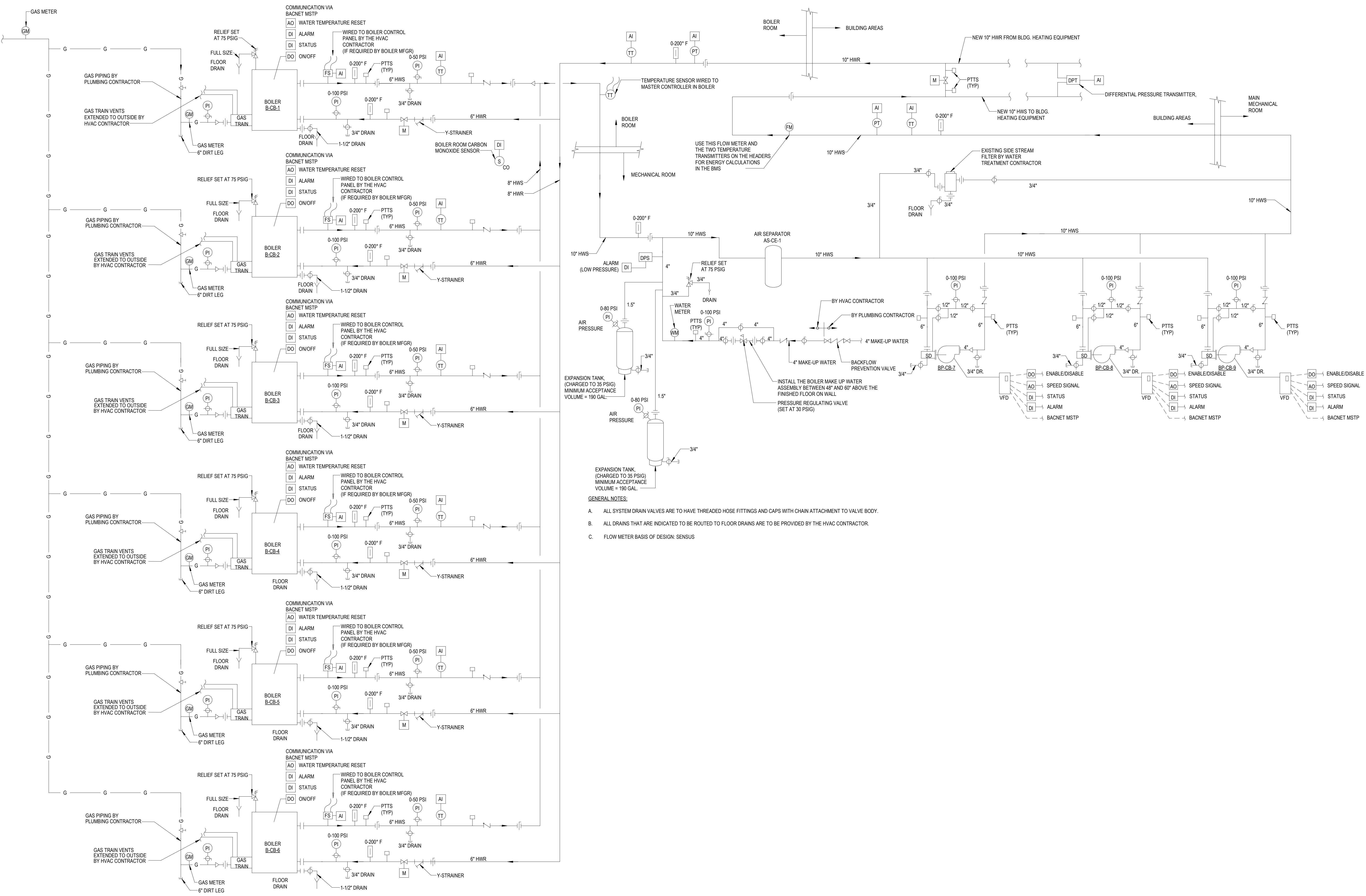


REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL CONCOURSE B
SCHEMATIC

B-B-M3-501



- GENERAL NOTES:
- ALL SYSTEM DRAIN VALVES ARE TO HAVE THREADED HOSE FITTINGS AND CAPS WITH CHAIN ATTACHMENT TO VALVE BODY.
 - ALL DRAINS THAT ARE INDICATED TO BE ROUTED TO FLOOR DRAINS ARE TO BE PROVIDED BY THE HVAC CONTRACTOR.
 - FLOW METER BASIS OF DESIGN: SENSUS

① 23.09.93.05 CENTRAL HEATING HW SYSTEM (CONCOURSE B)
12" = 1'-0"

4/18/2025 12:52:17 Autodesk Docs:CVG - Rehab and Efficiency Program\MECH\KLH\CVG_P25.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

MECHANICAL CONCOURSE B
SCHEDULES

B-B-M3-601

Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Boiler 1 Hot Water Return Temp	X								X		X
Boiler 1 Hot Water Supply Temp	X	X							X		X
Boiler 2 Hot Water Return Temp	X								X		X
Boiler 2 Hot Water Supply Temp	X	X							X		X
Boiler 3 Hot Water Return Temp	X								X		X
Boiler 3 Hot Water Supply Temp	X	X							X		X
Boiler 4 Hot Water Return Temp	X								X		X
Boiler 4 Hot Water Supply Temp	X	X							X		X
Boiler 5 Hot Water Return Temp	X								X		X
Boiler 5 Hot Water Supply Temp	X	X							X		X
Boiler 6 Hot Water Return Temp	X								X		X
Boiler 6 Hot Water Supply Temp	X	X							X		X
Hot Water Differential Pressure	X								X		X
Primary Hot Water Return Pressure	X								X		X
Primary Hot Water Supply Pressure	X	X							X		X
Primary Hot Water Return Temp	X								X		X
Primary Hot Water Supply Temp	X	X							X		X
Boiler 1 Hot Water Supply Temp Setpoint Reset	X								X		X
Boiler 2 Hot Water Supply Temp Setpoint Reset	X								X		X
Boiler 3 Hot Water Supply Temp Setpoint Reset	X								X		X
Boiler 4 Hot Water Supply Temp Setpoint Reset	X								X		X
Boiler 5 Hot Water Supply Temp Setpoint Reset	X								X		X
Boiler 6 Hot Water Supply Temp Setpoint Reset	X								X		X
Hot Water Pump 1 VFD Speed	X								X		X
Hot Water Pump 1 VFD H/O/A		X									
Hot Water Pump 2 VFD Speed		X							X		X
Hot Water Pump 2 VFD H/O/A			X								
Hot Water Pump 3 VFD Speed		X							X		X
Hot Water Pump 3 VFD H/O/A			X								
Hot Water Pump 4 VFD Speed	X								X		X
Hot Water Pump 4 VFD H/O/A			X								
Boiler 1 Alarm Status	X								X		X
Boiler 1 Low Water Level	X								X		X
Boiler 1 Status	X								X		X
Boiler 2 Alarm Status	X								X		X
Boiler 2 Low Water Level	X								X		X
Boiler 2 Status	X								X		X
Boiler 3 Alarm Status	X								X		X
Boiler 3 Low Water Level	X								X		X
Boiler 3 Status	X								X		X
Boiler 4 Alarm Status	X								X		X
Boiler 4 Low Water Level	X								X		X
Boiler 4 Status	X								X		X
Boiler 5 Alarm Status	X								X		X
Boiler 5 Low Water Level	X								X		X
Boiler 5 Status	X								X		X
Boiler 6 Alarm Status	X								X		X
Boiler 6 Low Water Level	X								X		X
Boiler 6 Status	X								X		X
Hot Water Pump 1 VFD Fault	X								X		X
Hot Water Pump 1 Status	X								X		X
Hot Water Pump 2 VFD Fault	X								X		X
Hot Water Pump 2 Status	X								X		X
Hot Water Pump 3 VFD Fault	X								X		X
Hot Water Pump 3 Status	X								X		X
Hot Water Pump 4 VFD Fault	X								X		X
Hot Water Pump 4 Status	X								X		X
Boiler 1 Enable			X								X
Boiler 2 Enable			X								X
Boiler 3 Enable			X								X
Boiler 4 Enable			X								X
Boiler 5 Enable			X								X
Boiler 6 Enable			X								X
Hot Water Pump 1 Start/Stop		X									X
Hot Water Pump 2 Start/Stop		X									X
Hot Water Pump 3 Start/Stop		X									X
Hot Water Pump 4 Start/Stop		X									X
Hot Water Differential Pressure Setpoint					X				X		X
Outside Air Temp					X						X
Boiler 1 Failure									X		X
Boiler 1 High Hot Water Supply Temp									X		X
Boiler 1 Low Hot Water Supply Temp									X		X
Boiler 1 Running in Hand									X		X
Boiler 1 Runtime Exceeded									X		X
Boiler 2 Failure									X		X
Boiler 2 High Hot Water Supply Temp									X		X
Boiler 2 Low Hot Water Supply Temp									X		X
Boiler 2 Running in Hand									X		X
Boiler 2 Runtime Exceeded									X		X
Boiler 3 Failure									X		X
Boiler 3 High Hot Water Supply Temp									X		X
Boiler 3 Low Hot Water Supply Temp									X		X
Boiler 3 Running in Hand									X		X
Boiler 3 Runtime Exceeded									X		X
Boiler 4 Failure									X		X
Boiler 4 High Hot Water Supply Temp									X		X
Boiler 4 Low Hot Water Supply Temp									X		X
Boiler 4 Running in Hand									X		X
Boiler 4 Runtime Exceeded									X		X
Boiler 5 Failure									X		X
Boiler 5 High Hot Water Supply Temp									X		X
Boiler 5 Low Hot Water Supply Temp									X		X
Boiler 5 Running in Hand									X		X
Boiler 5 Runtime Exceeded									X		X
Boiler 6 Failure									X		X
Boiler 6 High Hot Water Supply Temp									X		X
Boiler 6 Low Hot Water Supply Temp									X		X
Boiler 6 Running in Hand									X		X
Boiler 6 Runtime Exceeded									X		X
High Hot Water Differential Pressure									X		X
High Primary Hot Water Supply Temp									X		X
Hot Water Pump 1 Failure									X		X
Hot Water Pump 1 Running in Hand									X		X
Hot Water Pump 1 Runtime Exceeded									X		X
Hot Water Pump 2 Failure									X		X
Hot Water Pump 2 Running in Hand									X		X
Hot Water Pump 2 Runtime Exceeded									X		X
Hot Water Pump 3 Failure									X		X
Hot Water Pump 3 Running in Hand									X		X
Hot Water Pump 3 Runtime Exceeded									X		X
Hot Water Pump 4 Failure									X		X
Hot Water Pump 4 Running in Hand									X		X
Hot Water Pump 4 Runtime Exceeded									X		X
Lead Boiler Failure									X		X
Low Hot Water Differential Pressure									X		X
Low Primary Hot Water Supply Temp									X		X
Boiler 1 Isolation Valve						X					
Boiler 2 Isolation Valve						X					
Boiler 3 Isolation Valve						X					
Boiler 4 Isolation Valve						X					
Boiler 5 Isolation Valve						X					
Boiler 6 Isolation Valve						X					
F-CE-9 Start/Stop						X					
EF-CE-1 Start/Stop						X					
EF-CE-2 Start/Stop						X					
Boiler Room Gas Meter						X					
Boiler 1 Gas Meter						X					
Boiler 2 Gas Meter						X					
Boiler 3 Gas Meter						X					
Boiler 4 Gas Meter						X					
Boiler 5 Gas Meter						X					
Boiler 6 Gas Meter						X					

CONCOURSE B BOILER SCHEDULE																	
DESIGNATION	BOILER TYPE	FLUE SIZE (INCHES)	COMB. AIR INLET SIZE (INCHES)	PERFORMANCE DATA						MIN. FLOW REQUIREMENT (GPM)	MIN. OPERATING GAS PRESSURE (INCHES W.C.)	MAX. OPERATING GAS PRESSURE (PSI)	ELECTRICAL DATA		BASIS OF DESIGN		
				INPUT (BTU/HR)	OUTPUT (BTU/HR)	FULL FIRE EFFICIENCY	TURN DOWN RATIO	FLOW (GPM)	MECHANICAL EFFICIENCY				SUPPLY VOLTS	MOCP (AMPS)	MANUFACTURER	MODEL NO.	NOTES
B-CE-1	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E
B-CE-2	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E
B-CE-3	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E
B-CE-4	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E
B-CE-5	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E
B-CE-6	CONDENSING	16"	12"	8,000,000	6,982,000	92.0%	10:1	300.0	N/A	37	5	460	3	60	33	CLEAVERBROOKS	SFC-E

CONCOURSE B PUMP SCHEDULE																		
DESIGNATION	SERVES	TYPE	FLUID MEDIA	FLOW (GPM)	HEAD (FT)	ELECTRICAL REQUIREMENTS				CONNECTION SIZES		BASIS OF DESIGN		ACCESSORIES	NOTES			
						RPM	BHP	HP	MECHANICAL EFFICIENCY	SUPPLY VOLTS	VARIABLE SPEED DRIVE	SUCTION (INCHES W.C.)	DISCHARGE (INCHES W.C.)			MANUFACTURER	MODEL NO.	
BP-CE-7	CONCOURSE B	END SUCTION	HOT WATER	1000	80	1800	23.6	30	85.3%	460	3	60	Yes	6"	5"	B&G	E1510 SEB	SUCTION DIFFUSER
BP-CE-8	CONCOURSE B	END SUCTION	HOT WATER	1000	80	1800	23.6	30	85.3%	460	3	60	Yes	6"	5"	B&G	E1510 SEB	SUCTION DIFFUSER
BP-CE-9	CONCOURSE B	END SUCTION	HOT WATER	1000	80	1800	23.6	30	85.3%	460	3	60	Yes	6"	5"	B&G	E1510 SEB	SUCTION DIFFUSER

CONCOURSE B FAN SCHEDULE													
DESIGNATION	SERVES	FAN TYPE	AIR FLOW (CFM)	WEIGHT (LBS)	DRIVE TYPE	ELECTRICAL DATA			VARIABLE SPEED DRIVE	CONTROL METHOD	BASIS OF DESIGN		NOTES
						RPM	VOLTS	PH			HP	MANUFACTURER	

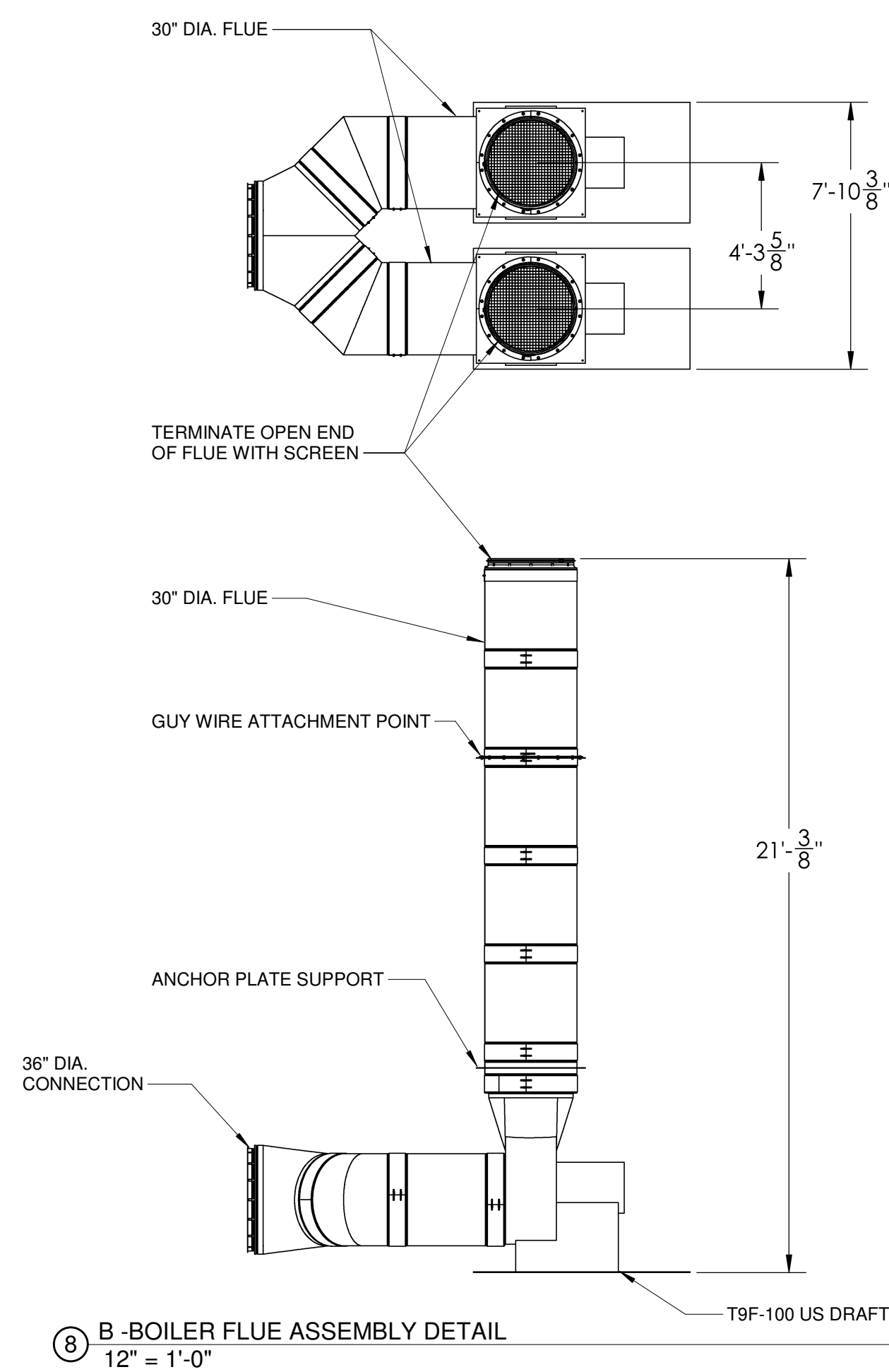
REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG
MECHANICAL CONCOURSE B
DETAILS

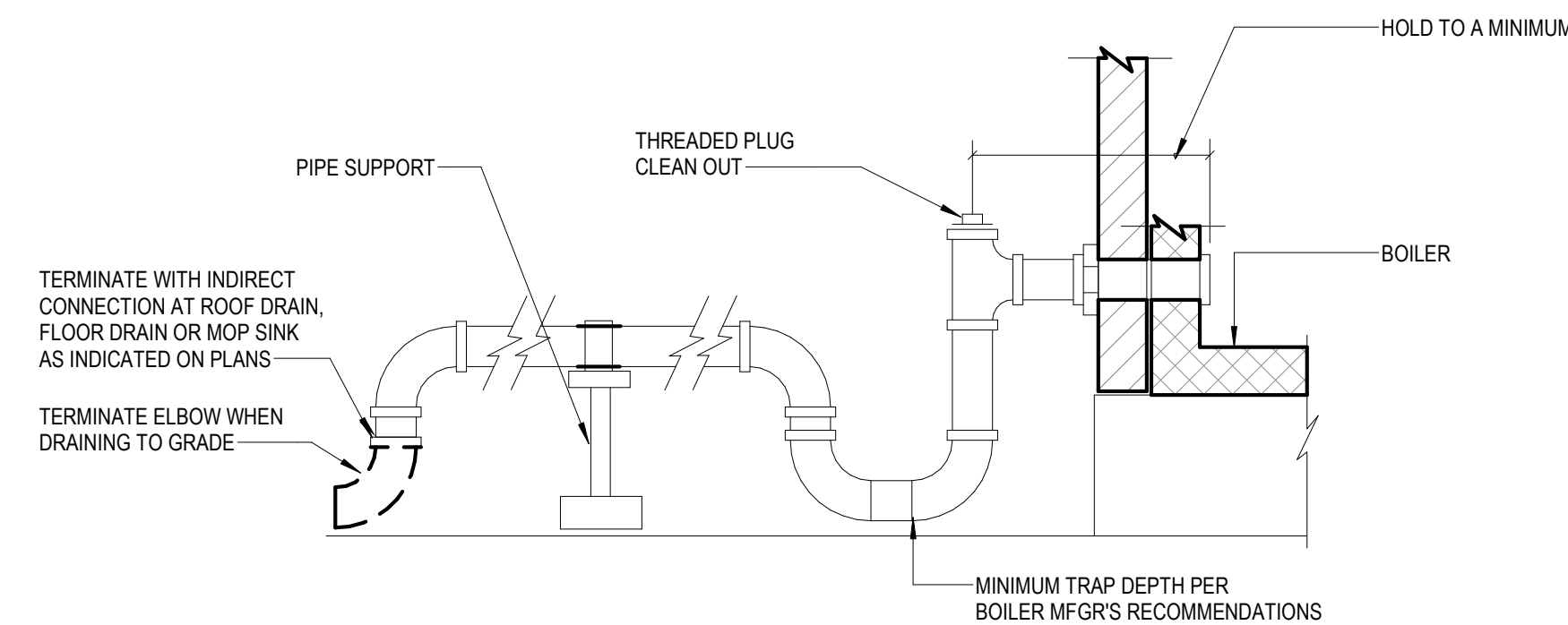
B-B-M3-602

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

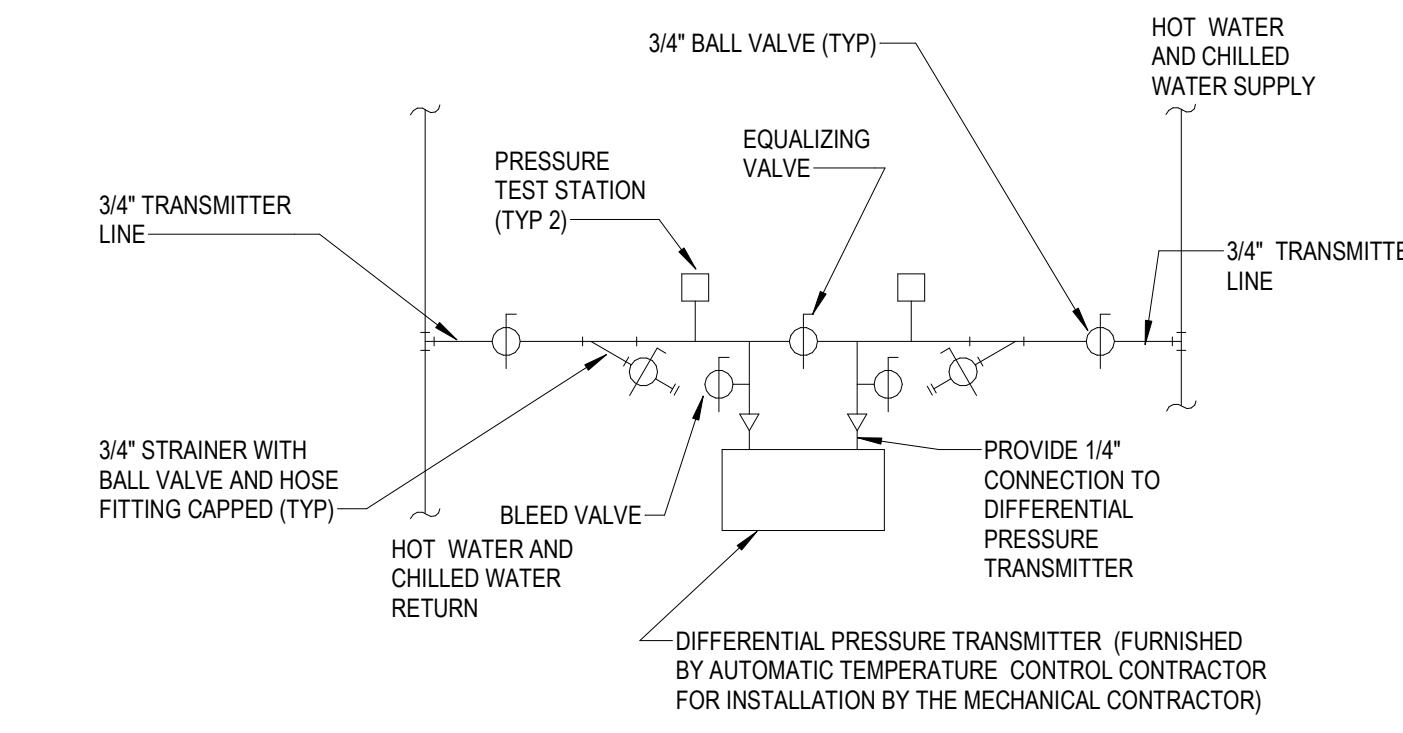
4/18/2025 12:52:30 Autodesk Docs:CVG - Rehab and Efficiency Program\MECH-KLH-CVG_P25.rvt



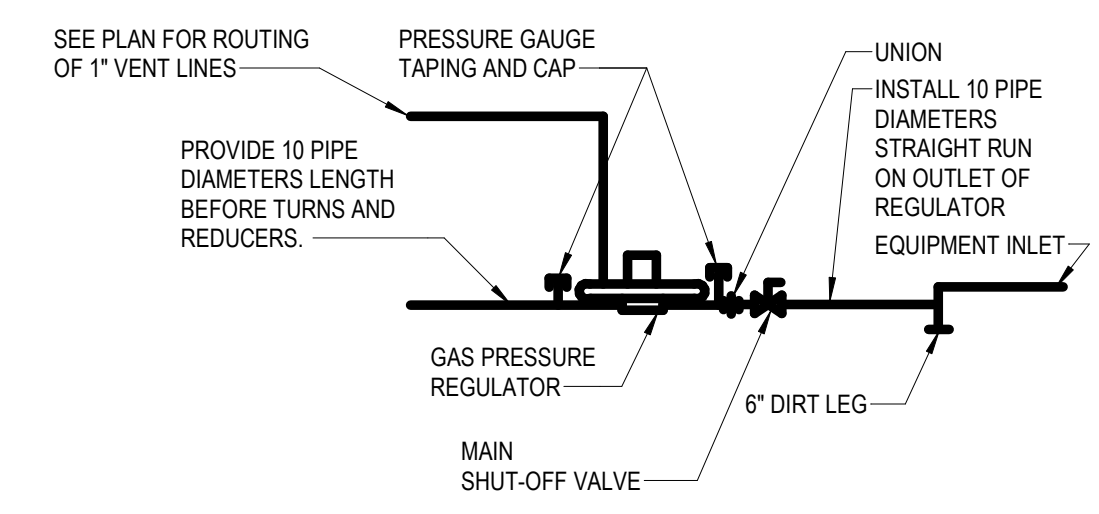
6 B - BOILER FLUE ASSEMBLY DETAIL
12" = 1'-0"



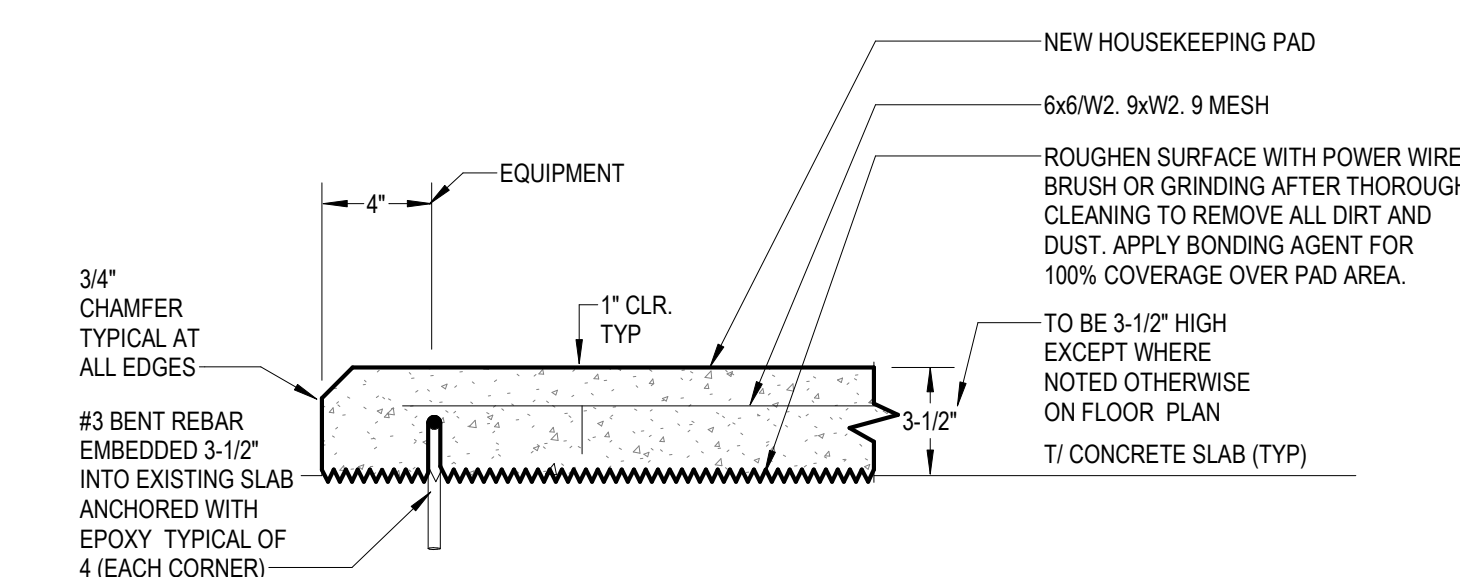
7 B - 23.81.26.13.02 CONDENSATE DRAIN DETAIL
12" = 1'-0"



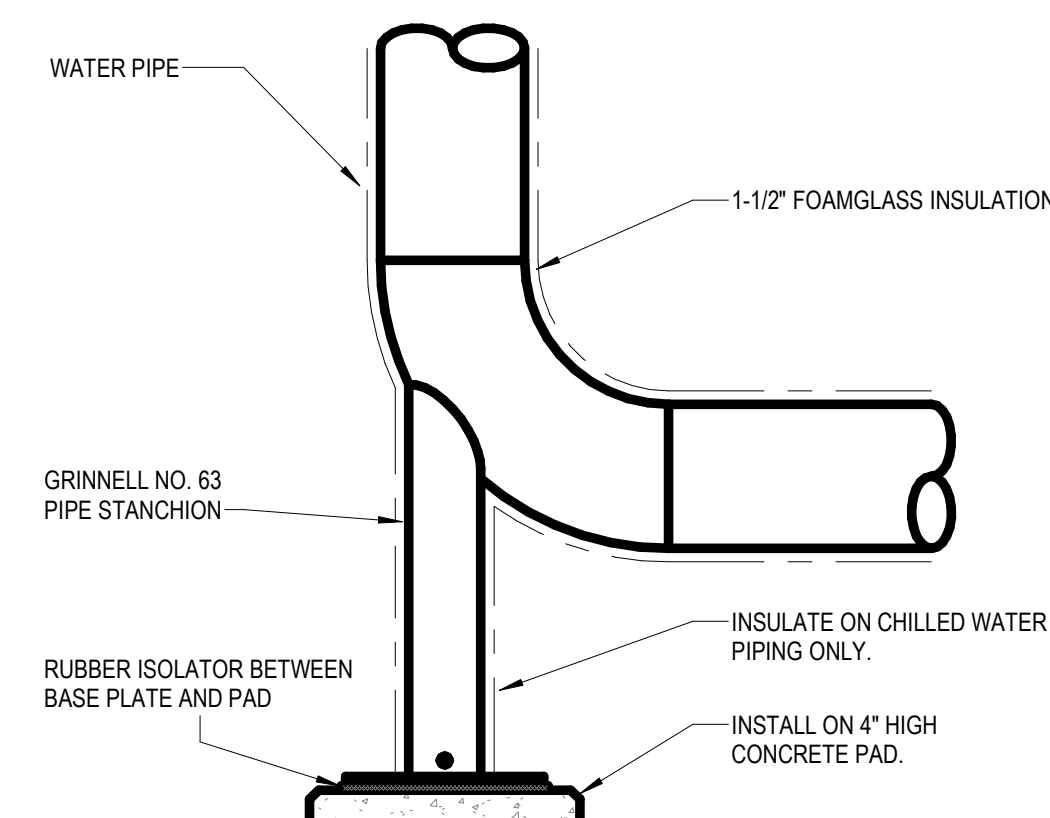
6 B - 23.21.14.07 DIFFERENTIAL PRESSURE TRANSMITTER DETAIL
12" = 1'-0"



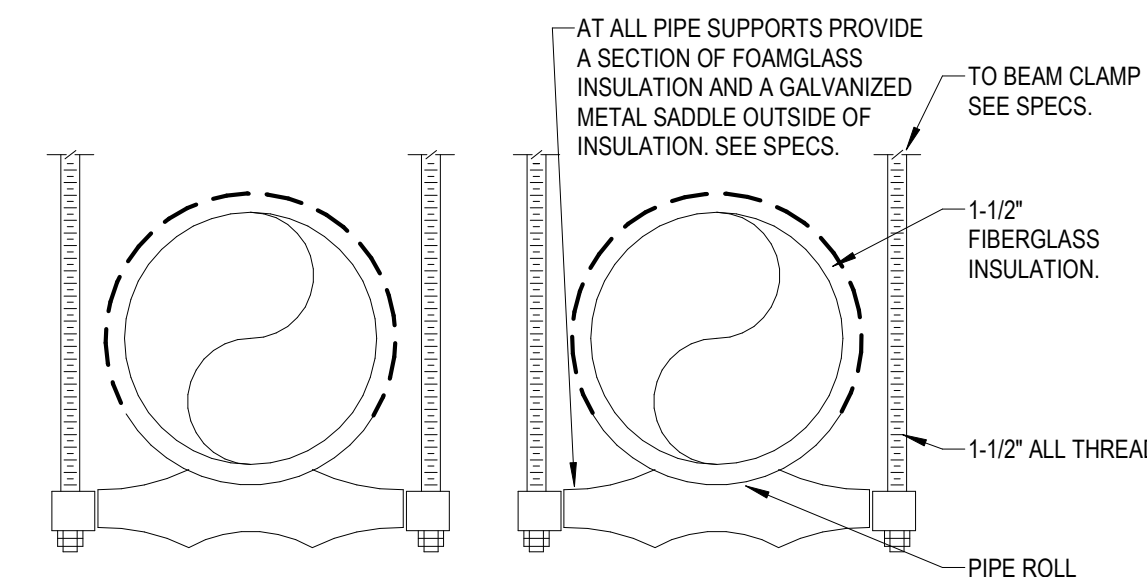
5 B - 22.05.53 NATURAL GAS PRV STATION
12" = 1'-0"



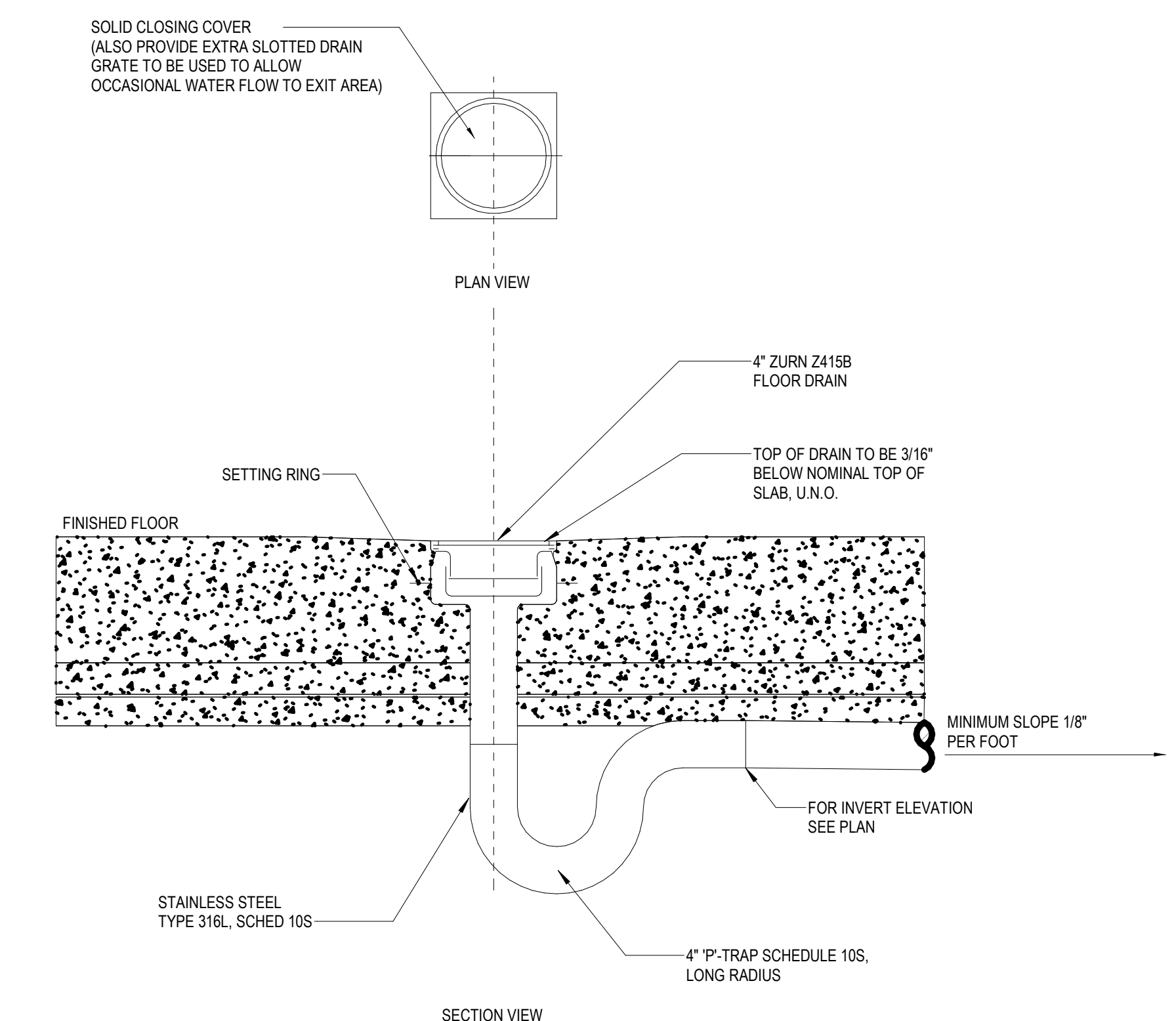
4 B - 23.81.26.13.01 CONCRETE PAD DETAIL
12" = 1'-0"



3 B - 22.05.29 TYPICAL PIPE STANCHION
12" = 1'-0"



2 B - 23.05.29.06 PIPE SUPPORT DETAIL - TYPE D
12" = 1'-0"



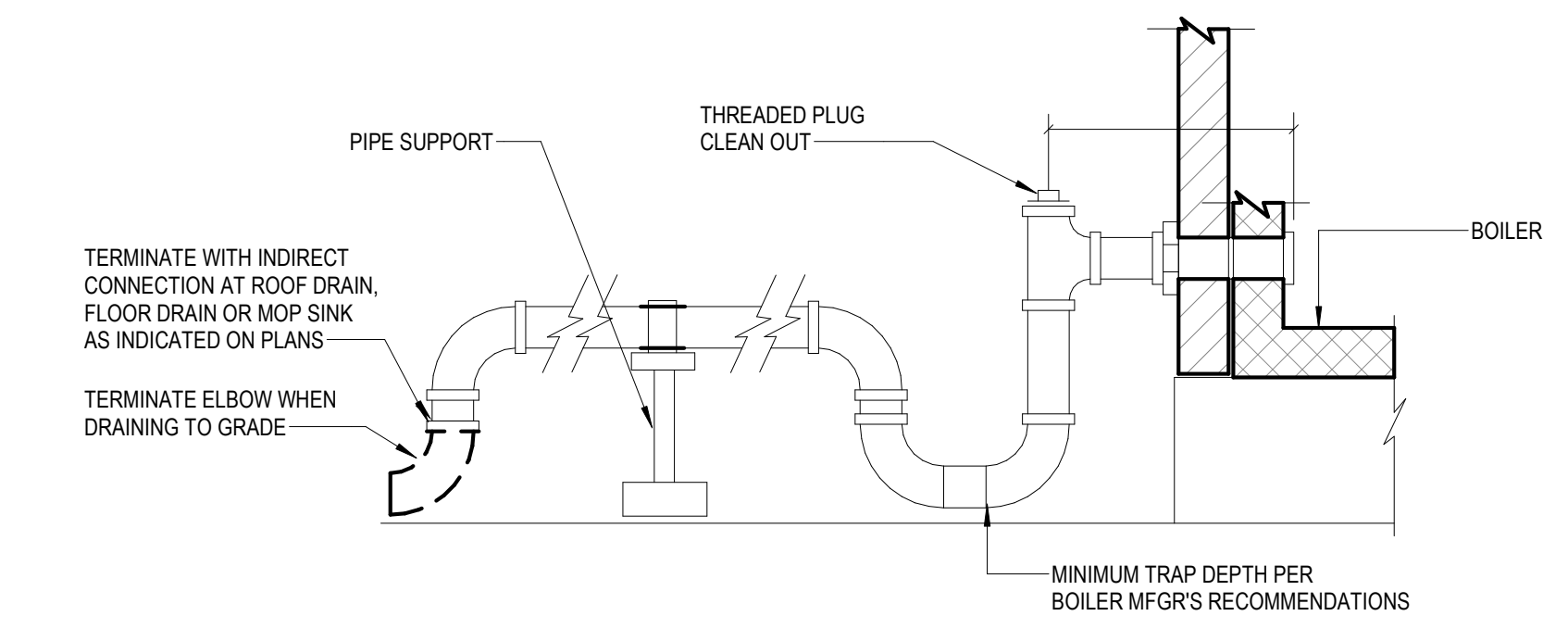
1 B - 22.10.06 FLOOR DRAIN - (FD-1) - GWP/511 UNDERGROUND
12" = 1'-0"

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

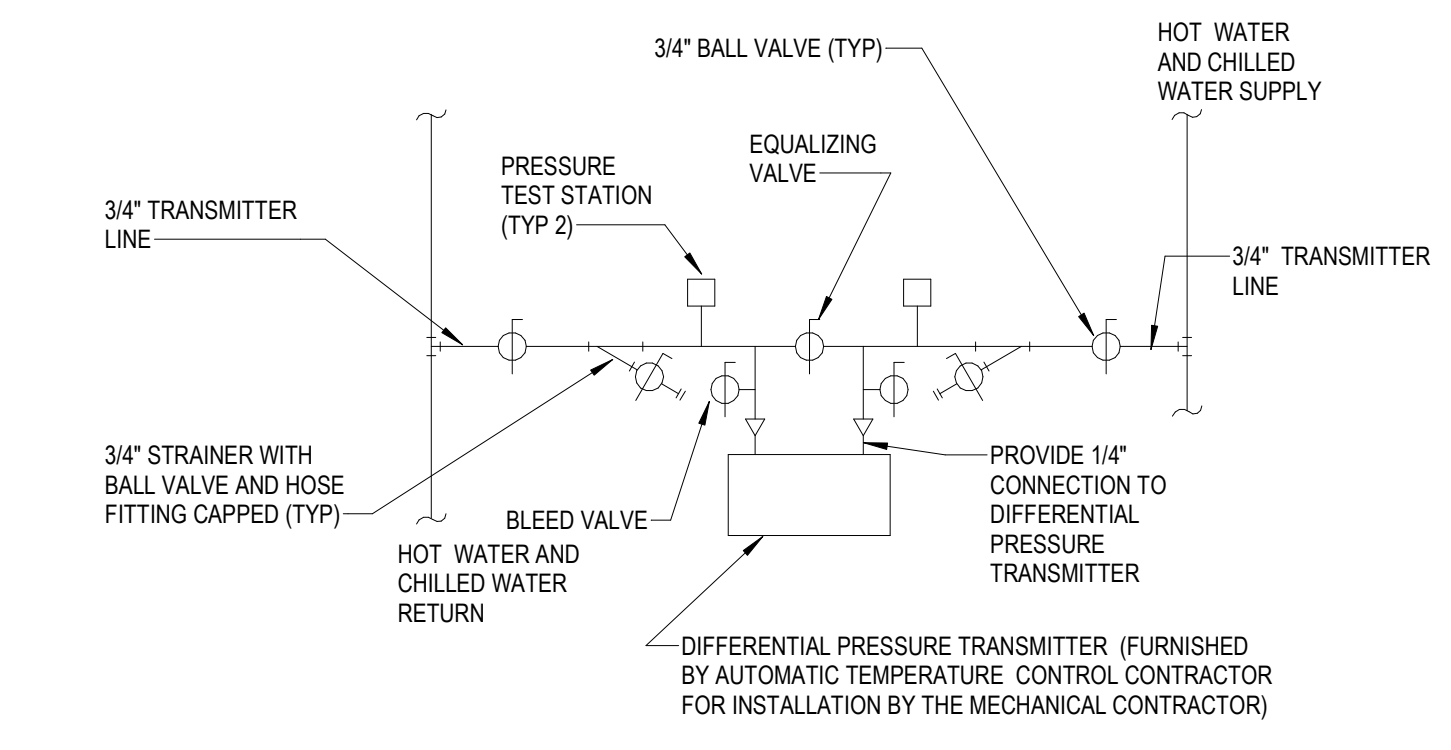
SCALE: 12" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: AB CHECKED BY: BG

**MECHANICAL TERMINAL
DETAILS**

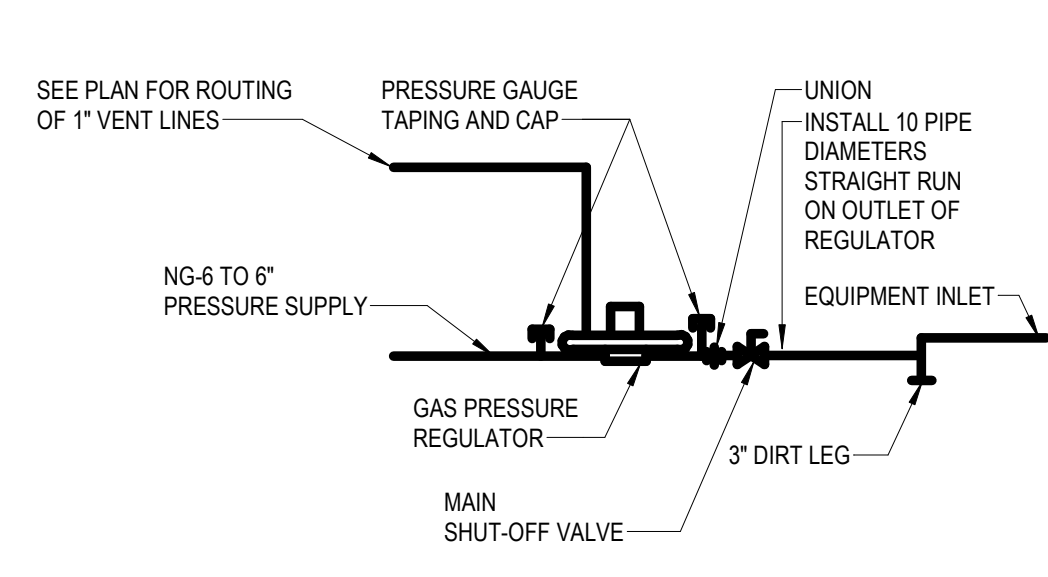
B-T-M3-602



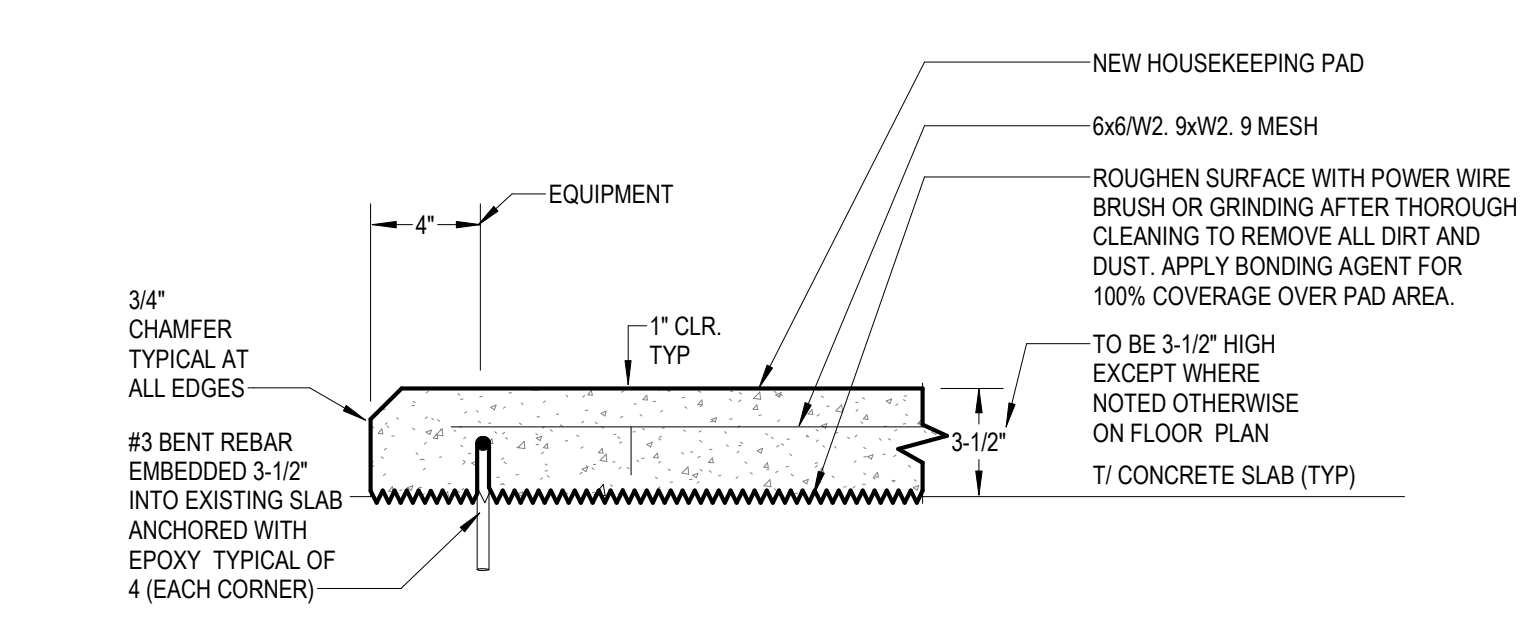
⑥ T - 23.81.26.13.02 CONDENSATE DRAIN DETAIL
NOT TO SCALE



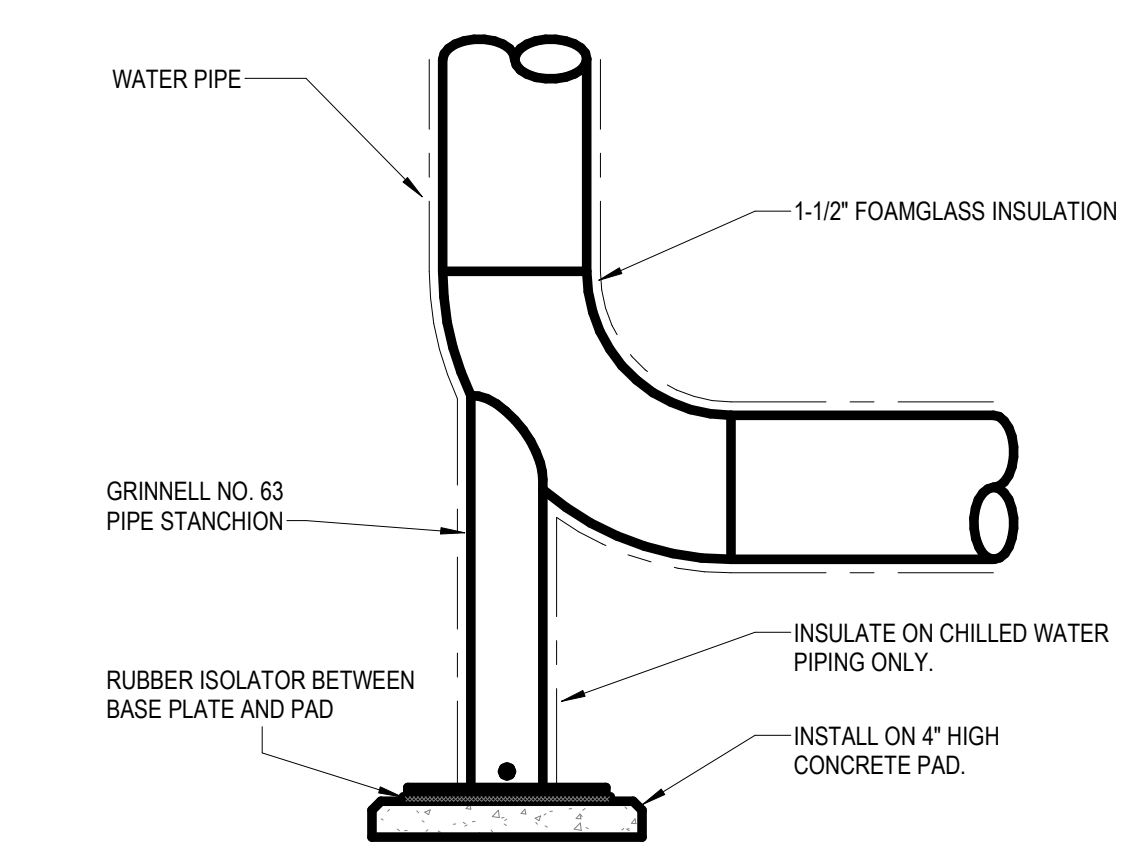
⑤ T - 23.21.14.07 DIFFERENTIAL PRESSURE TRANSMITTER DETAIL
NOT TO SCALE



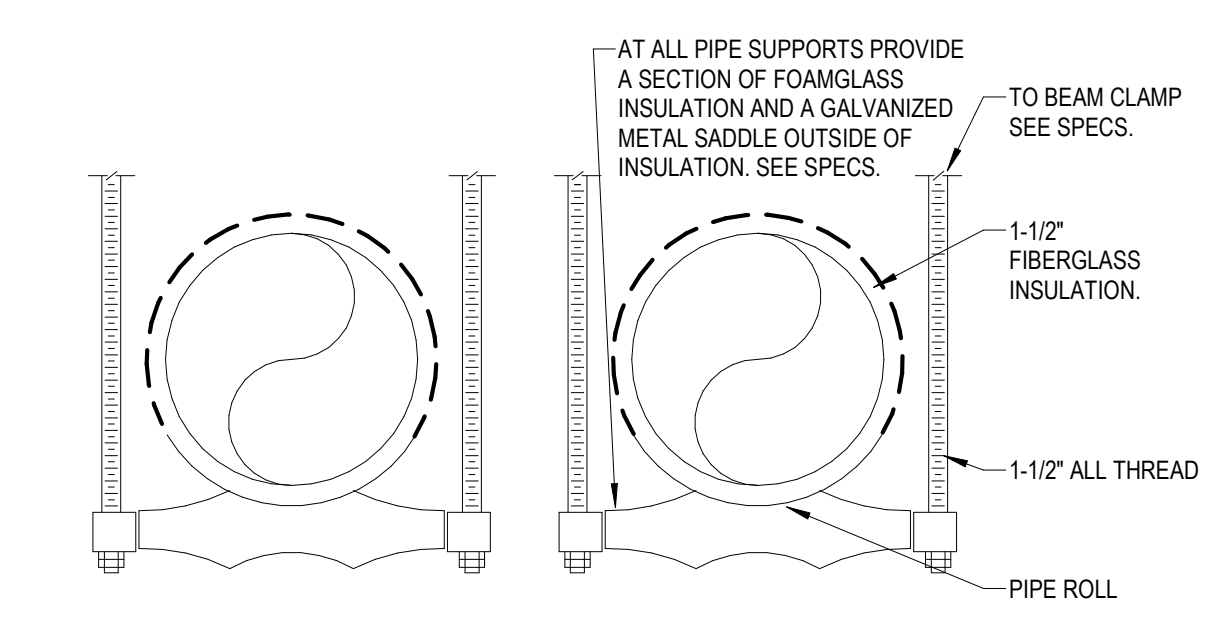
④ T - 22.05.53 NATURAL GAS PRV STATION
12" = 1'-0"



③ T - 23.81.26.13.01 CONCRETE PAD DETAIL
NOT TO SCALE



② T - 22.05.29 TYPICAL PIPE STANCHION
NOT TO SCALE



① T - 23.05.29.06 PIPE SUPPORT DETAIL - TYPE D
NOT TO SCALE

4/18/2025 12:52:24 Autodesk Docs:CVG - Rehab and Efficiency Program\MECH\KLH\CVG_1225.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.
All other notes and other documents and instruments prepared by the Consultant as instruments of service shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

OWNERSHIP OF INSTRUMENTS OF SERVICE shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

WIRING METHODS SCHEDULE table with columns: APPLICATION, RACEWAYS, OUTLET BOXES, CONDUIT BODIES, EQUIPMENT ENCLOSURES, SPLICE AND PULL BOXES, FASTENERS, STRUT, FABRICATED SUPPORTS, HANGER RODS, CONDUCTOR INSULATION, REMARKS. Includes rows for EXTERIOR, UNDERGROUND, INTERIOR, and REMARKS.

ELECTRICAL POWER STUDY

PROVIDE A POWER STUDY OF THE NEWLY INSTALLED PORTIONS OF THE POWER SYSTEM UNDER THIS CONTRACT THAT MEETS THE FOLLOWING REQUIREMENTS:

- GENERAL REQUIREMENTS: A. PROVIDE A WRITTEN REPORT THAT DOCUMENTS THE RESULTS OF THE STUDY... B. PROVIDE STUDY PERFORMED AND SEALED BY A PROFESSIONAL ENGINEER... C. PERFORM THE STUDY USING EASY POWER SOFTWARE...

COORDINATION STUDY

- A. PROVIDE ANALYSIS OF ALL TRIP SETTINGS TO AVOID NUISANCE TRIPPING... B. PROVIDE ADJUSTMENTS TO THE TYPES AND RATINGS OF EQUIPMENT... C. FURNISH ALL ADJUSTABLE OCPD SETTINGS IN THE POWER STUDY REPORT...

ARC-FLASH INCIDENT ENERGY ANALYSIS

- A. PROVIDE AN ARC-FLASH INCIDENT ENERGY ANALYSIS COMPLIANT WITH THE LATEST EDITIONS OF NFPA 70E AND IEEE 1584 THAT INCORPORATES... B. FOR ANY INCIDENT ENERGY FOUND TO BE HIGHER THAN ALLOWED AT ANY BUS IN THE SYSTEM... C. PROVIDE NFPA 70E COMPLIANT ARC-FLASH LABELS ON ALL STUDIED EQUIPMENT...

DIAGRAMMATIC NATURE OF DRAWINGS

THE DRAWINGS PROVIDED ARE DIAGRAMMATIC AND INTENDED TO REPRESENT THE GENERAL SCOPE, ARRANGEMENT, AND DESIGN INTENT OF THE PROJECT. THEY MAY NOT DEPICT EVERY DETAIL, SPECIFIC ROUTING, OR EXACT DIMENSIONS.

- CONTRACTOR'S VERIFICATION RESPONSIBILITIES: PRIOR TO THE PROCUREMENT AND INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT... VERIFY ALL ELECTRICAL BUILDING REQUIREMENTS, DIMENSIONS, AND INSTALLATION DETAILS... IDENTIFY AND REPORT ANY DISCREPANCIES BETWEEN THE PROVIDED DRAWINGS AND ACTUAL SITE CONDITIONS...

ADHERENCE TO INDUSTRY STANDARDS AND CODES

- THE ELECTRICAL CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES, STANDARDS, AND REGULATIONS... THE NATIONAL ELECTRICAL CODE (NEC) - 2023 VERSION... FULL ADHERENCE TO ELECTRICAL CODES, STANDARDS, AND REGULATIONS...

EXISTING CONDITIONS - GENERAL NOTES

- A. INTENT OF DOCUMENTS: EXISTING CONDITIONS SHOWN ON THE DRAWINGS ARE BASED ON VISUAL FIELD OBSERVATIONS... B. PRE-BID SURVEY: PERFORM A DETAILED PRE-BID WALK THROUGH FIELD INSPECTION... C. REUSE OF REMOVED MATERIALS: DO NOT REUSE REMOVED ELECTRICAL MATERIALS... D. EXISTING POWER DISTRIBUTION EQUIPMENT: WHERE MODIFICATIONS ARE MADE TO EXISTING POWER DISTRIBUTION EQUIPMENT...

EXISTING CONDITIONS - POWER CONTINUITY NOTES

THE FOLLOWING NOTES BROADLY DEFINE SOME OF THE SPECIALTY BASE BID SCOPE OF WORK REQUIRED TO PROVIDE SPECIAL TEMPORARY POWER FOR NEW AND EXISTING FACILITIES TO ACCOMMODATE UTILITY POWER INTERRUPTIONS.

- A. INVESTIGATION OF EXISTING CONDITIONS: LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREAS... B. COORDINATION WITH OWNER: CAREFULLY COORDINATE WORK AND SYSTEM SHUTDOWNS IN ADVANCE WITH OWNER'S REPRESENTATIVE... C. TEMPORARY ARRANGEMENTS: COMPLY WITH NFPA 70 (INCLUDING ARTICLE 590), NFPA 70E AND ALL OTHER PREVAILING CODES...

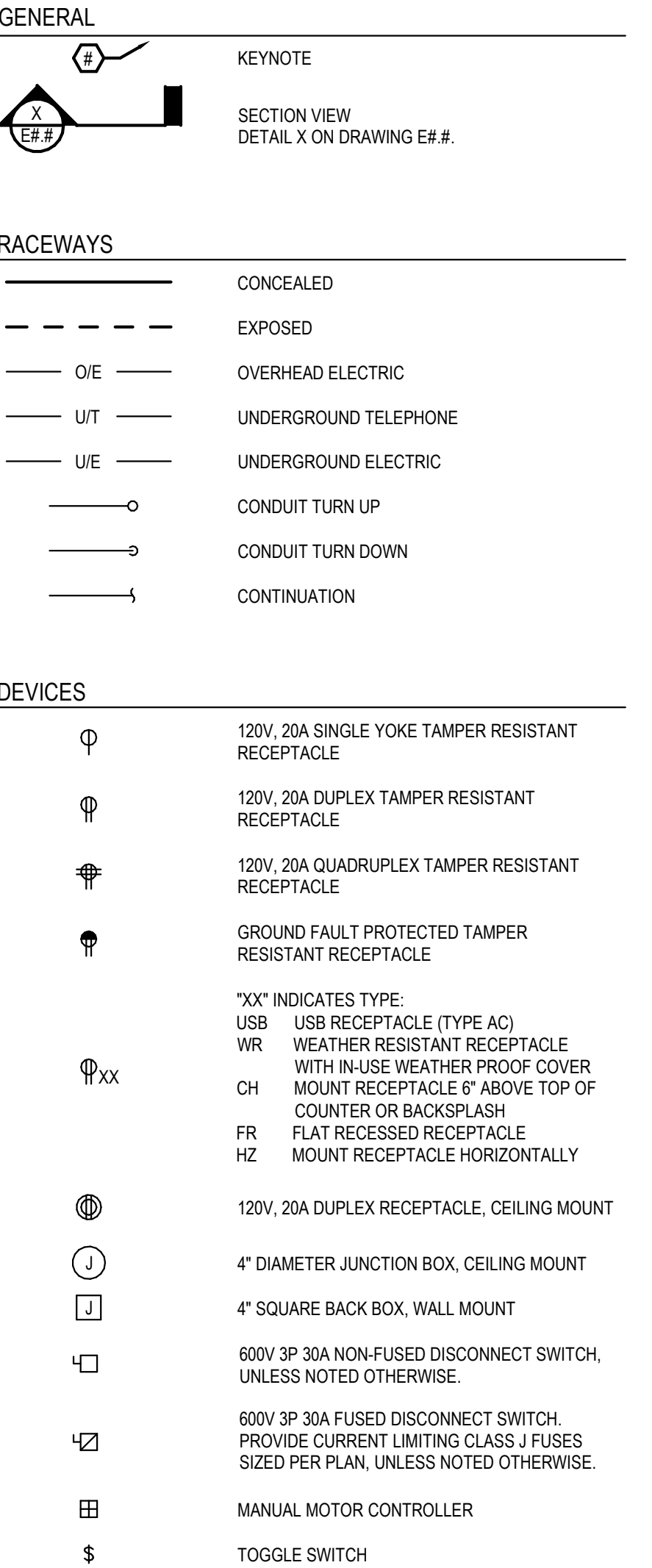
EXISTING CONDITIONS - DEMOLITION NOTES

- A. DEFINITION OF DEMOLITION: WHERE THE TERM "DEMOLITION" IS USED IN THE ELECTRICAL DOCUMENTS, INTERPRET IT TO MEAN DEMOLITION OR "SELECTIVE DEMOLITION"... B. GENERAL ACCOMMODATIONS: PROVIDE ELECTRICAL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION... C. REMOVAL OF ABANDONED WORK: REMOVE INACTIVE AND OBSOLETE RACEWAY SYSTEMS, EQUIPMENT DEVICES, CONDUIT, WIRING, CABLES, BOXES, SUPPORTS, CONTROLS, ETC...

GENERAL NOTES:

- A. ALL WORK IS TO COMPLY WITH KCAB PUBLISHED CONSTRUCTION STANDARDS... B. PROJECT SCOPE INCLUDES ALL ELECTRICAL WORK INVOLVED WITH THE REPLACEMENT OF BOILERS... C. OVERALL PLANS ARE SHOWN FOR REFERENCE AND TO INDICATE WORK AREAS ONLY... D. PROJECT DOES NOT INCLUDE LIGHTING, LIGHTING CONTROLS, DATA/TECHNICAL SECURITY, OR FIRE ALARM SCOPE...

LEGEND:



REFER TO SHEETS O-T-E4-601, O-A-E4-601 AND O-B-E4-601 FOR ELECTRIC SINGLE-LINE DIAGRAMS.

CVG AIRPORT AUTHORITY logo and KLVH ENGINEERS logo with contact information for KOHRS LONNEMANN HELL ENGINEERS, INC.

Gresham Smith logo and kppf Consulting Engineers logo with address: 1203 Main Street, Suite 4 Cincinnati, OH 45202.

MOTZ ENGINEERING logo and project title: CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT. PROJECT ADDRESS: 3087 Terminal Dr Hebron, KY 41048.

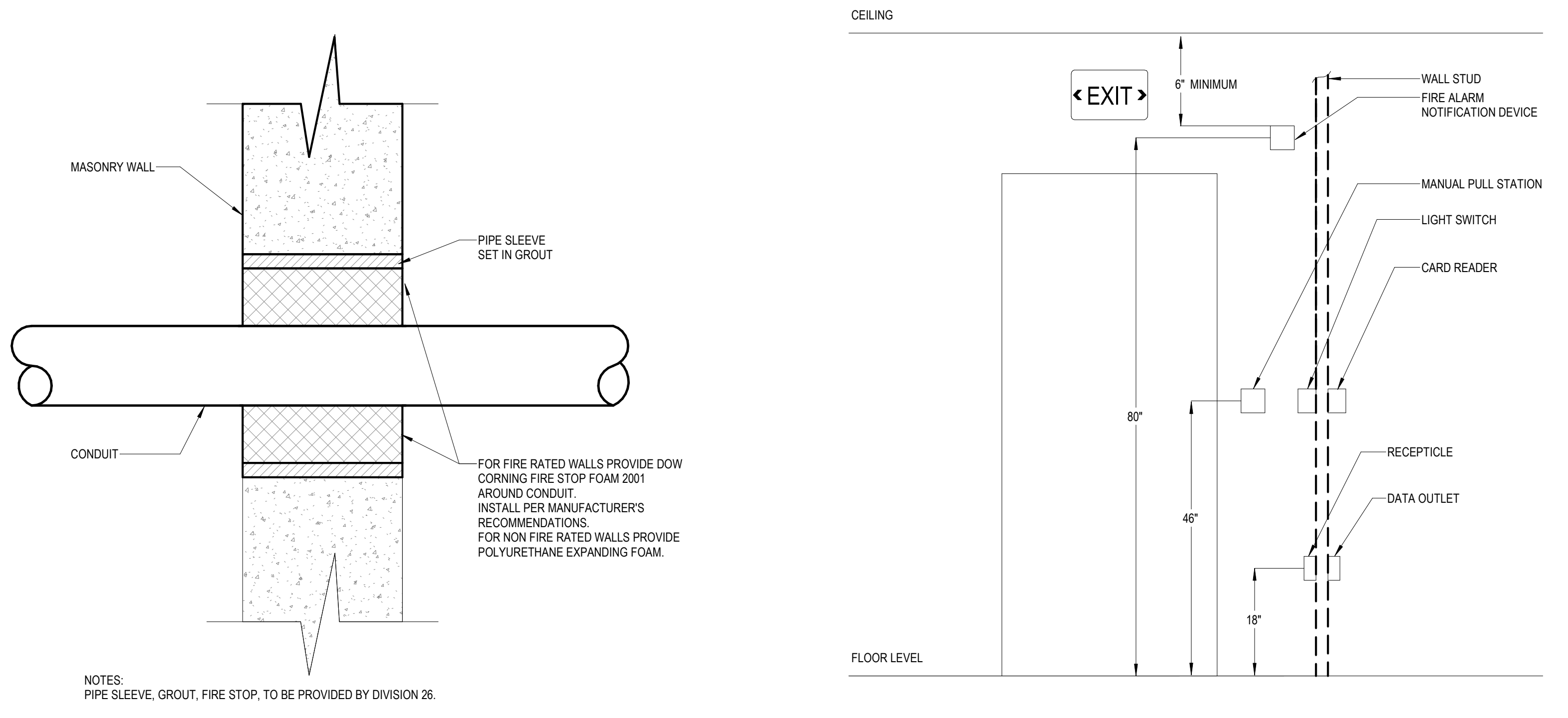
Professional Engineer Seal for BRANDON M. JOHNSON, State of Kentucky, License No. 3384, dated 4/18/2025.

REVISIONS table with columns: #, DATE, DESCRIPTION. Row 1: 04/18/25, ISSUE FOR BID.

SCALE: 12" = 1'-0" DATE: 04/18/25 PROJECT NUMBER: 26944.00 DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC GENERAL INFORMATION

B-B-E0-000



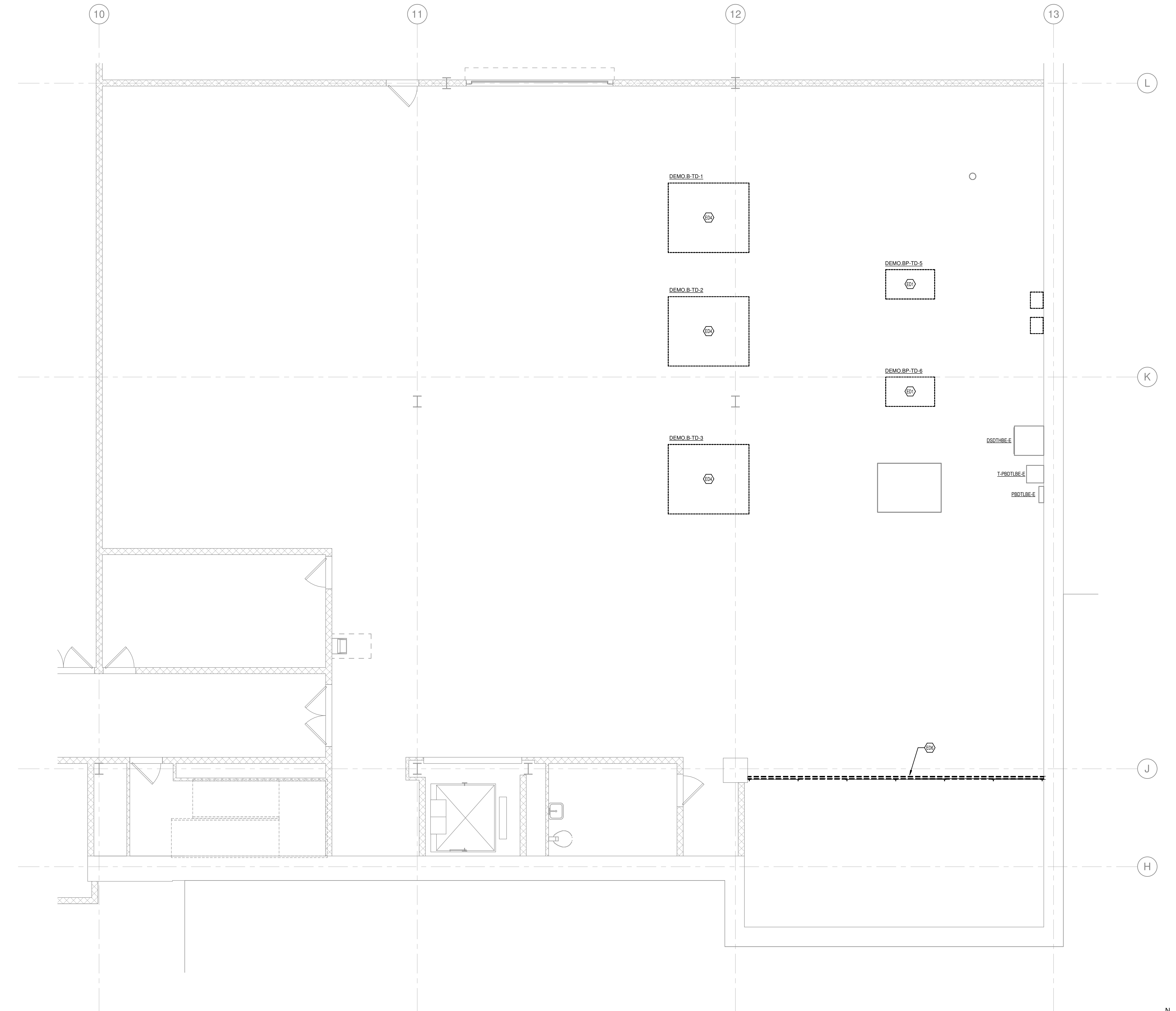
26.05.33.13 CONDUIT PENETRATION INTERIOR MASONRY WALL NOT TO SCALE

26.05.33.16 DEVICE MOUNTING HEIGHT NOT TO SCALE

4/18/2025 11:45:46Autodesk Docs:CVG - Rehab and Efficiency Program\EEC-KLVH_CVG_P25.rvt

4/18/2025 11:46:15Autodesk Docs://CVG - Rehab and Efficiency Program/ELEC-KLH-CVG_P125.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.



KEYED NOTES	
ED1	DISCONNECT POWER FOR DEMOLISHED MECHANICAL EQUIPMENT. DEMOLISH DISCONNECT. MAINTAIN CIRCUIT(S) FOR RECONNECTION TO NEW EQUIPMENT.
ED4	DISCONNECT POWER FOR DEMOLISHED MECHANICAL EQUIPMENT. DEMOLISH DISCONNECT. DEMOLISH EXISTING CIRCUIT BACK TO SOURCE. PROVIDE NEW CIRCUIT AS INDICATED. CONDUIT MAY BE RE-USED AS PRACTICABLE.
ED6	DISCONNECT AND MAINTAIN BRANCH CIRCUIT FOR MECHANICAL DAMPER 24V TRANSFORMERS. RECONNECT TO NEW MECHANICAL DAMPER TRANSFORMERS. EXTEND WIRING AND CONDUIT AS REQUIRED.



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGINEERS.COM
 1538 ALEXANDRIA PIKE, SUITE 111
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO

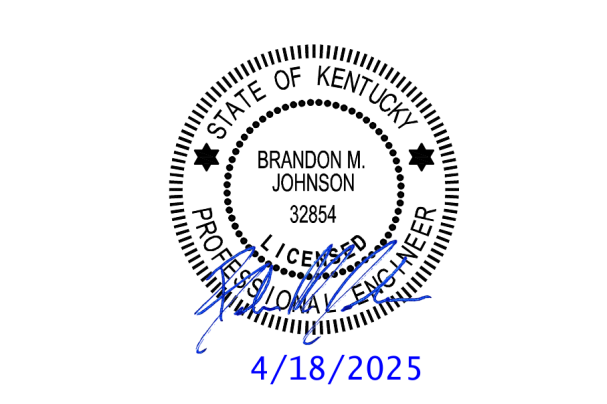


kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2238
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

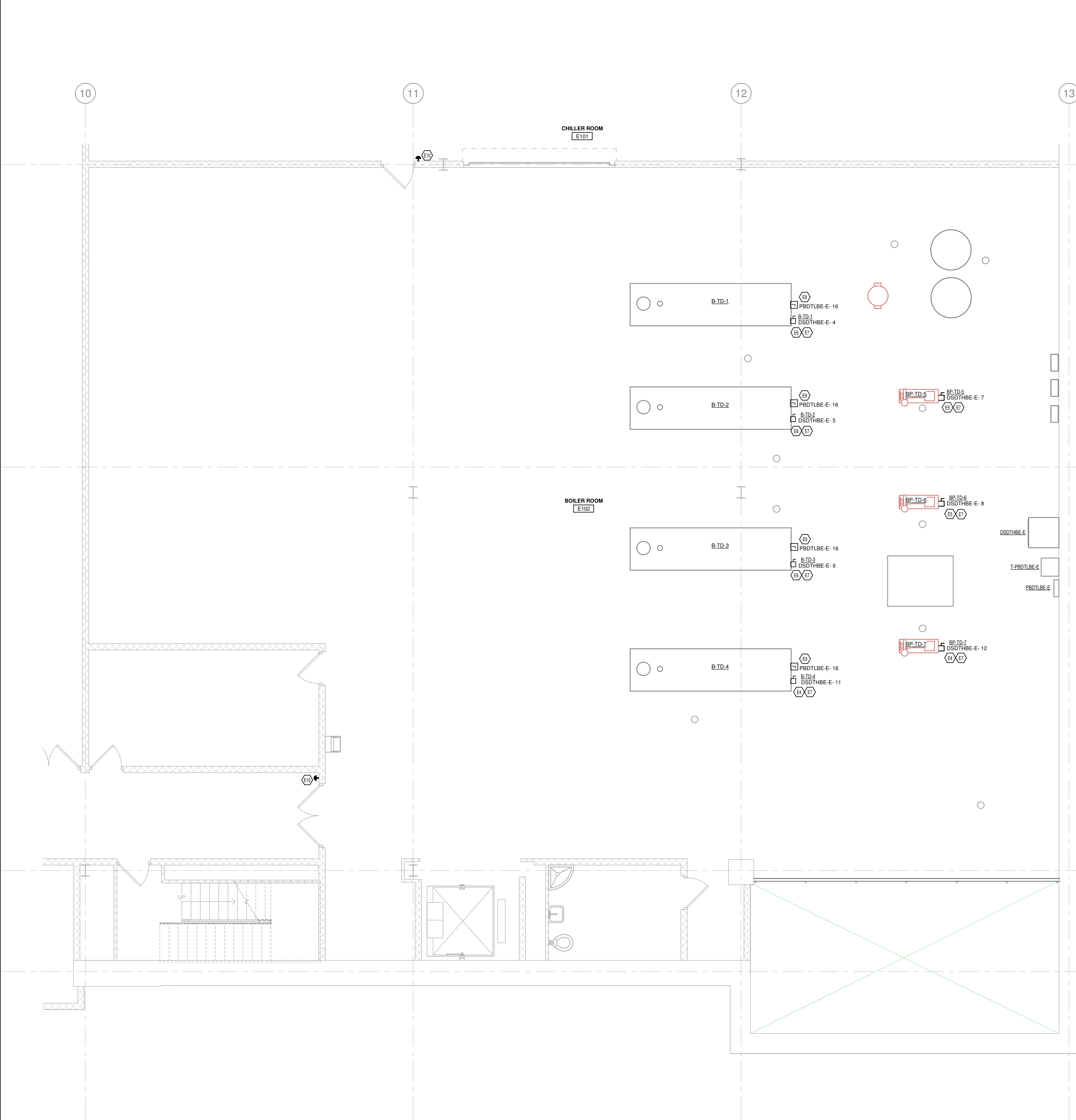
SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC DEMOLITION
 TERMINAL - BASEMENT LEVEL
 PLAN

B-T-E1-100

1 ELECTRIC DEMOLITION PLAN - TERMINAL - BASEMENT LEVEL - B-T-01_02_03
 1/4" = 1'-0"

4/18/2025 11:47:51 Autodesk Docs://CVG - Rehab and Efficiency Program/ELEC-KLH-CVG_P125.rvt
 OWNERSHIP OF INSTRUMENTS OF SERVICE: The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.



KEYED NOTES	
E4	RECONNECT NEW EQUIPMENT TO BRANCH CIRCUIT MADE AVAILABLE THROUGH DEMOLITION. EXTEND WIRING AND CONDUIT AS REQUIRED.
E5	PROVIDE NEW BRANCH CIRCUIT AS INDICATED. REFERENCE PANEL SCHEDULE FOR NEW BREAKERS AND BREAKER MODIFICATIONS.
E6	PROVIDE NEW BRANCH CIRCUIT AS INDICATED BACK TO NEW DISTRIBUTION PANEL.
E7	VFD FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY DIVISION 26.
E9	PROVIDE POWER CONNECTION INDICATED FOR UNIT CONTROL PANEL.
E10	PROVIDE EMERGENCY POWER OFF MUSHROOM SWITCH. SWITCH TO BE TIED INTO BOILER CONTROLLERS FOR EMERGENCY POWER AND GAS SHUTDOWN. COORDINATE CONNECTIONS WITH MECHANICAL CONTROLS CONTRACTOR.

ELECTRICAL DISCONNECT SCHEDULE - BOILERS - TERMINAL									
EQUIPMENT TAG	DISCONNECT TYPE	ELECTRICAL LOAD	VOLTAGE	POLES	FUSE SIZE	FRAME SIZE	BRANCH CIRCUIT SIZE	CKT NUMBER	MIN AIC RATING
B-TD-1	Non-Fused Disconnect	10546 VA	480 V	3	30 A	3/4" C, 3P12, #12G	3/4" C, 3P12, #12G	DSDTHBE-E-4	42000A
B-TD-2	Non-Fused Disconnect	10546 VA	480 V	3	30 A	3/4" C, 3P12, #12G	3/4" C, 3P12, #12G	DSDTHBE-E-5	42000A
B-TD-3	Non-Fused Disconnect	10546 VA	480 V	3	30 A	3/4" C, 3P12, #12G	3/4" C, 3P12, #12G	DSDTHBE-E-6	42000A
B-TD-4	Non-Fused Disconnect	10546 VA	480 V	3	30 A	3/4" C, 3P12, #12G	3/4" C, 3P12, #12G	DSDTHBE-E-11	42000A

MECHANICAL-ELECTRICAL CONNECTION SCHEDULE - BOILERS - TERMINAL		
EQUIPMENT TAG	DESCRIPTION	ELECTRIC CONNECTION SUMMARY
B-TD-1	BOILER	B-TD-1 - 480V/3PH, 12.7A
B-TD-2	BOILER	B-TD-1 - 480V/3PH, 12.7A
B-TD-3	BOILER	B-TD-1 - 480V/3PH, 12.7A
B-TD-4	BOILER	B-TD-1 - 480V/3PH, 12.7A

ELECTRICAL DISCONNECT SCHEDULE - BOILER PUMPS - TERMINAL									
EQUIPMENT TAG	DISCONNECT TYPE	ELECTRICAL LOAD	VOLTAGE	POLES	FUSE SIZE	FRAME SIZE	BRANCH CIRCUIT SIZE	CKT NUMBER	MIN AIC RATING
BP-TD-5	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1" C, 3P4, #6G	1" C, 3P4, #6G	DSDTHBE-E-7	42000A
BP-TD-6	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1" C, 3P4, #6G	1" C, 3P4, #6G	DSDTHBE-E-8	42000A
BP-TD-7	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1" C, 3P4, #6G	1" C, 3P4, #6G	DSDTHBE-E-12	42000A

MECHANICAL-ELECTRICAL CONNECTION SCHEDULE - BOILER PUMPS - TERMINAL		
EQUIPMENT TAG	DESCRIPTION	ELECTRIC CONNECTION SUMMARY
BP-TD-5	BOILER PUMP	BP-TD-5 - 480V/3PH, 25 HP
BP-TD-6	BOILER PUMP	BP-TD-6 - 480V/3PH, 25 HP
BP-TD-7	BOILER PUMP	BP-TD-7 - 480V/3PH, 25 HP

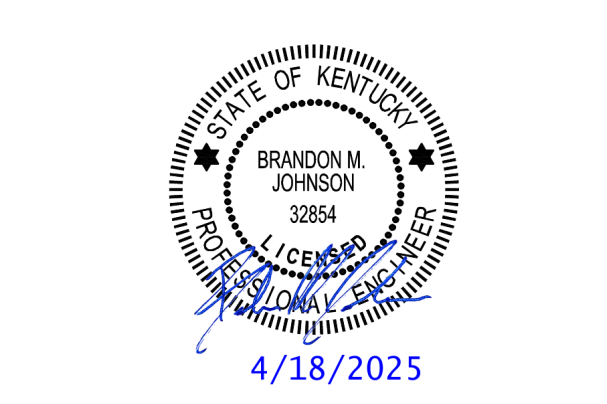


KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGRS.COM
 1538 ALEXANDRIA PIKE, SUITE 111
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-9050
 859-442-9058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO

Gresham Smith
kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2338
 www.kpff.com
 Project No: 2400430

MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT
 PROJECT ADDRESS:
**3087 Terminal Dr
 Hebron, KY 41048**



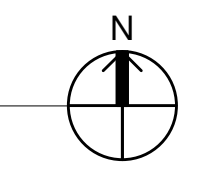
REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

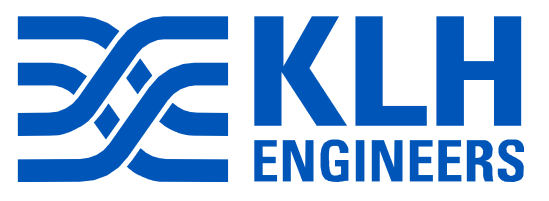
SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC POWER TERMINAL - BASEMENT LEVEL PLAN

B-T-E4-100

1 ELECTRIC POWER PLAN - TERMINAL - BASEMENT LEVEL - B-T-01_02_03
 1/4" = 1'-0"





KOHR'S LONNEMANN HEIL ENGINEERS, INC.
MECHANICAL/ELECTRICAL ENGINEERS
WWW.KLHENGRS.COM
1538 ALEXANDRIA PIKE, SUITE 111
FT. THOMAS, KENTUCKY 41075
800-354-9783
859-442-8050
859-442-8058 FAX
LEXINGTON, KENTUCKY
LOUISVILLE, KENTUCKY
COLUMBUS, OHIO



1203 Main Street, Suite 4
Cincinnati, OH 45202
C: 513.409.2338
www.kpff.com
Project No: 2400430



MOTZ ENGINEERING
HIGHER STANDARDS. BETTER RESULTS.

447 MORGAN STREET
CINCINNATI, OH 45206
T: 513.621.5400
F: 513.621.5407

PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION
AND EFFICIENCY PROGRAM - BOILER
REPLACEMENT PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048



4/18/2025

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE:
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC POWER TERMINAL -
PANEL SCHEDULES

B-T-E4-700

KLH PROJECT # 26944

MCC: DSDTHBE-E
Location: BOILER ROOM E102
Supply From: SSDTHBD
Mounting: SURFACE
Enclosure: Type 1

Volts: 480/277V 3PH 4W
Phases: 3
Wires: 4

A.I.C. Rating: EXISTING
Mains Type: MLO
Bus Rating: 800

Notes:
Panel Schedule indicates added loads only. Reference separate Load Summary.

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	(EX) AHU-TD-1	3	70 A	70 A	0 VA	
2	(EX) COMPRESSOR	3	50 A	50 A	0 VA	
3	(EX) T-PBDTLBE-E	3	30 A	30 A	960 VA	
4	B-TD-1	3	20 A	20 A	10546 VA	A
5	B-TD-2	3	20 A	20 A	10546 VA	A
6	B-TD-3	3	20 A	20 A	10546 VA	A
7	BP-TD-5	3	70 A	70 A	33216 VA	
8	BP-TD-6	3	70 A	70 A	33216 VA	
9	(EX) PANEL DPDTHBE-E	3	225 A	225 A	0 VA	
10	(EX) AIR COMPRESSOR	1	70 A	70 A	0 VA	
11	B-TD-4	3	20 A	20 A	10546 VA	B, NC
12	BP-TD-7	3	70 A	70 A	33216 VA	B, NC
13	CS-T3-1	3	20 A	20 A	9141 VA	
14						
15						
16						
17						
18						
19						
20						
Total Conn. Load:					151933 VA	
Total Amps:					183 A	

Legend:
A: Replace/Rework Motor Controller Switch fuse/breaker to the trip new rating indicated.
B: Provide new breaker in existing Space.
NC: Load is non-coincidental. Mechanical controls prevent operation of equipment except during failure of normal operation boiler/boiler pump

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	108789 VA	107.63%	117093 VA	Total Conn. Load: 151933 VA
Other	11508 VA	100.00%	11508 VA	Total Est. Demand: 160237 VA
Heating	31638 VA	100.00%	31638 VA	Total Conn. Current: 183 A
				Total Est. Demand Current: 193 A

Notes:
Breakers/Switches are existing to remain unless otherwise noted.

Branch Panel: PBDTLBE-E
Location: BOILER ROOM E102
Supply From: T-PBDTLBE-E
Mounting: SURFACE
Enclosure: TYPE 1

VOLTS: 208/120V
PHASES: 3
WIRES: 4

CONSTRUCTION PHASE: Existing
A.I.C. Rating: MCB 50AT, 100AF
Mains Type: MCB 50AT, 100AF
Bus Rating (A): 100

Notes:
Panel Schedule indicates added loads only. Reference separate Load Summary.

CKT	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	CKT
1	(EX) WATER HEATER		20 A	1	0	0		1	20 A		(EX) RCPT COLUMN L	2
3	(EX) WATER HEATER		20 A	1		0	0	1	20 A		(EX) WATER FOUNTAIN BOILER RM	4
5	(EX) CH-TD-17		20 A	1			0	0	1	20 A	(EX) RCPT EAST VES/CORRIDOR	6
7	(EX) FC-TD-1		20 A	1	0	0		1	20 A		(EX) RCPT AND LIGHTS 6A ELEVATOR PIT	8
9	(EX) BP-TD-5		20 A	1		0	0	1	20 A		(EX) RCPT ENG OFFICE	10
11	(EX) RECEPTACLE COLUMN L		20 A	1			0	0	1	20 A	(EX) RCPT ENG OFFICE	12
13	(EX) DAMPER ACCU		20 A	1	0	0		1	20 A		(EX) LIGHTS IN AIR WAY	14
15	(EX) RCPT EAST WALL		20 A	1		0	960	1	20 A	@	BOILER CONTROL PANELS	16
17	SPARE		20 A	1			0	0	1	20 A	SPARE	18
19	SPARE		20 A	1	0	0		1	20 A		SPARE	20
21	(EX) RIEFING EVAC DAMPER		20 A	1		0	0	1	20 A		SPARE	22
23	SPARE		20 A	1			0	0	1	20 A	SPARE	24
25	(EX) HONEYWELL PANEL		20 A	1	0	0		1	20 A		SPARE	26
27	(EX) RCPT BY HONEYWELL PANEL		20 A	1		0	0	1	20 A		SPARE	28
29	SPARE		20 A	1			0	0	1	20 A	SPARE	30
31	SPARE		20 A	1	0	0		1	20 A		SPARE	32
33	SPARE		20 A	1		0	0	1	20 A		SPARE	34
35	SPARE		20 A	1			0	0	1	20 A	SPARE	36
37	SPARE		20 A	1	0	0		1	20 A		SPARE	38
39	SPARE		20 A	1		0	0	1	20 A		SPARE	40
41	SPARE		20 A	1			0	0	1	20 A	SPARE	42
TOTAL LOAD:					0 VA	960 VA	0 VA					
TOTAL AMPS:					0 A	8 A	0 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
Receptacle	0 VA	0.00%	0 VA	TOTAL CONNECTED LOAD 960 VA
Lighting	0 VA	0.00%	0 VA	TOTAL ESTIMATED DEMAND 960 VA
Motor	0 VA	0.00%	0 VA	TOTAL CONNECTED CURRENT 3 A
Heating	0 VA	0.00%	0 VA	TOTAL ESTIMATED CURRENT 3 A
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	
Other	960 VA	100.00%	960 VA	

Notes:
@ RE-USE EXISTING BREAKER FOR NEW LOAD

LOAD SUMMARY - DSDTHBE-E

EXISTING LOADS (METER #...)	ACTUAL LOAD (VA)	DEMAND FACTOR (%)	CALCULATED LOAD (VA)
	0	125%	0
REMOVED LOADS			-83870
ADDED LOADS			
RECEPTACLE	0	100%, 50%	0
LIGHTING	0	100%	0
MOTOR	75573	125%, 100%	83877
HEATING	21092	100%	21092
OTHER	11506	100%	11506
TOTAL CALCULATED			33
AVAILABLE CAPACITY			665
SPARE CAPACITY			633
			KVA 39
			KVA 800
			AMPS
			AMPS

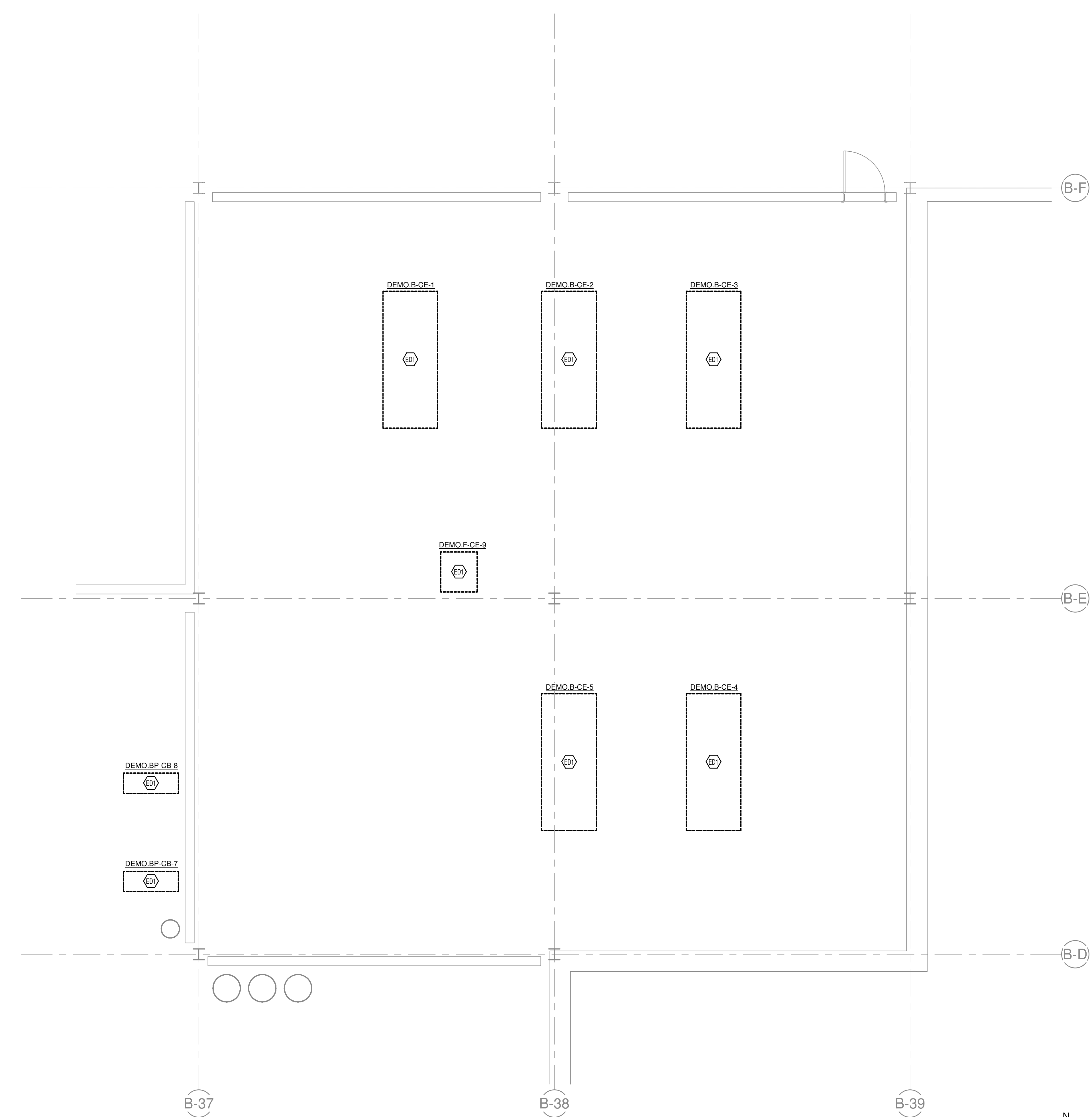
LOAD SUMMARY - PBDTLBE-E

EXISTING LOADS (METER #...)	ACTUAL LOAD (VA)	DEMAND FACTOR (%)	CALCULATED LOAD (VA)
	0	125%	0
ADDED LOADS			
RECEPTACLE	0	100%, 50%	0
LIGHTING	0	100%	0
MOTOR	0	125%, 100%	0
HEATING	0	100%	0
OTHER	960	100%	960
TOTAL CALCULATED			1
AVAILABLE CAPACITY			14
SPARE CAPACITY			13
			KVA 3
			KVA 40
			AMPS
			AMPS

OWNERSHIP OF INSTRUMENTS OF SERVICE
 The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 11:52:44Autodesk Docs://CVG - Rehab and Efficiency Program/ELEC-KLH-CVG_P25.rvt

KEYED NOTES	
ED1	DISCONNECT POWER FOR DEMOLISHED MECHANICAL EQUIPMENT. DEMOLISH DISCONNECT. MAINTAIN CIRCUIT(S) FOR RECONNECTION TO NEW EQUIPMENT.



1 ELECTRIC DEMOLITION PLAN - CONCOURSE B - BASEMENT - B-CB-01_02_03_04_05
 1/4" = 1'-0"



KLH ENGINEERS
 KOHRS LONNEMANN HEIL ENGINEERS, INC.
 MECHANICAL/ELECTRICAL ENGINEERS
 WWW.KLHENGRS.COM
 1538 ALEXANDRIA PIKE, SUITE 11
 FT. THOMAS, KENTUCKY 41075
 800-354-9783
 859-442-8050
 859-442-8058 FAX
 LEXINGTON, KENTUCKY
 LOUISVILLE, KENTUCKY
 COLUMBUS, OHIO

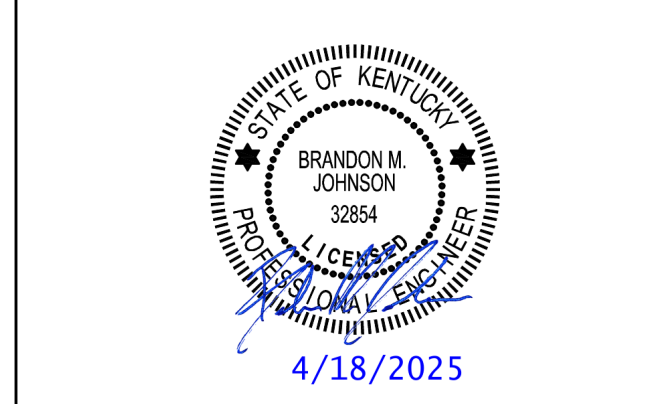


kpff
 Consulting Engineers
 1203 Main Street, Suite 4
 Cincinnati, OH 45202
 O: 513.409.2238
 www.kpff.com
 Project No: 2400430

M
MOTZ ENGINEERING
 HIGHER STANDARDS. BETTER RESULTS.
 447 MORGAN STREET
 CINCINNATI, OH 45206
 T: 513.621.5400
 F: 513.621.5407

PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
 AND EFFICIENCY PROGRAM - BOILER
 REPLACEMENT PROJECT**

PROJECT ADDRESS:
 3087 Terminal Dr
 Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

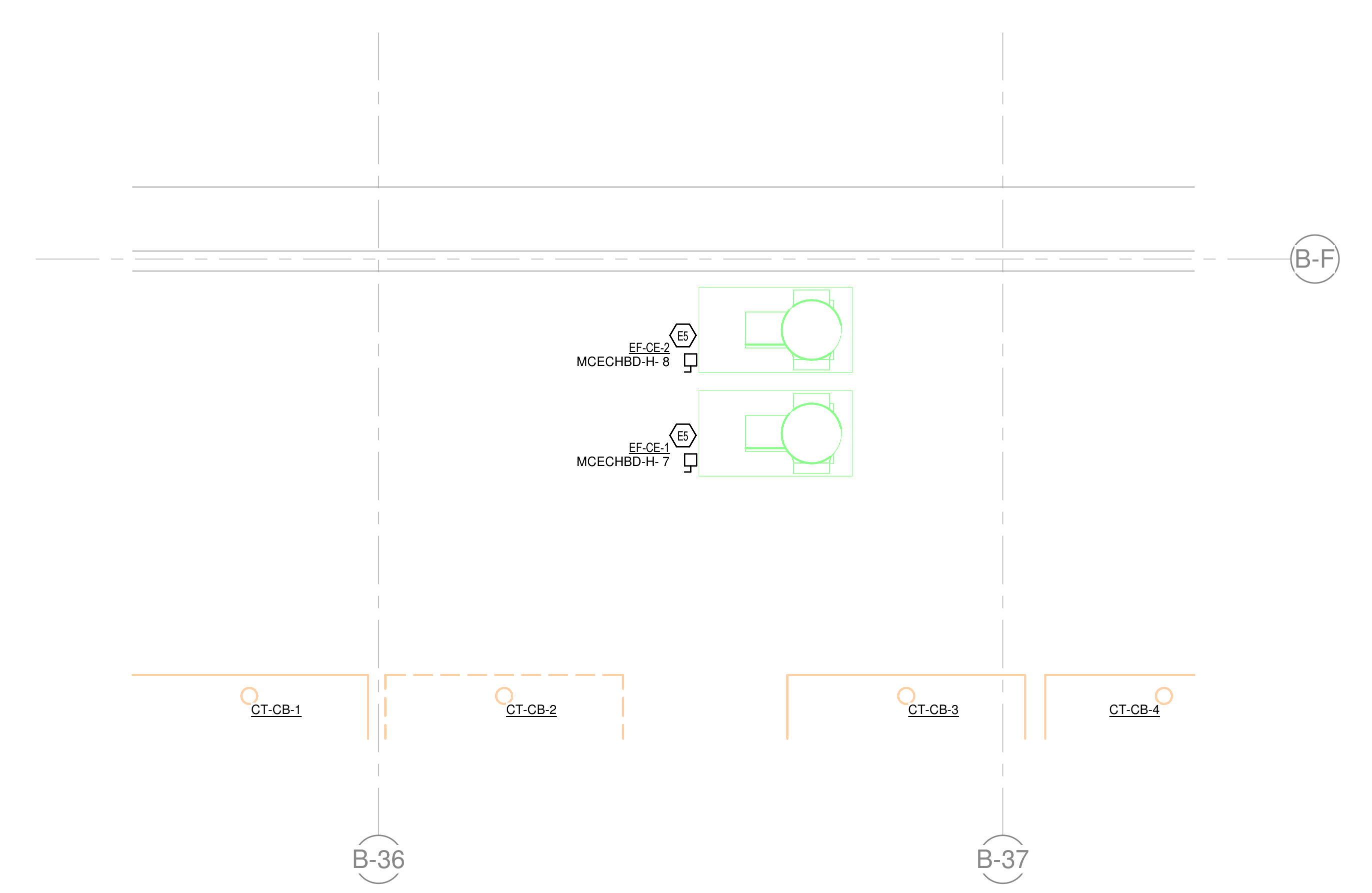
SCALE: 1/4" = 1'-0"
 DATE: 04/18/25
 PROJECT NUMBER: 26944.00
 DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC DEMOLITION
 CONCOURSE B - BASEMENT
 LEVEL PLAN

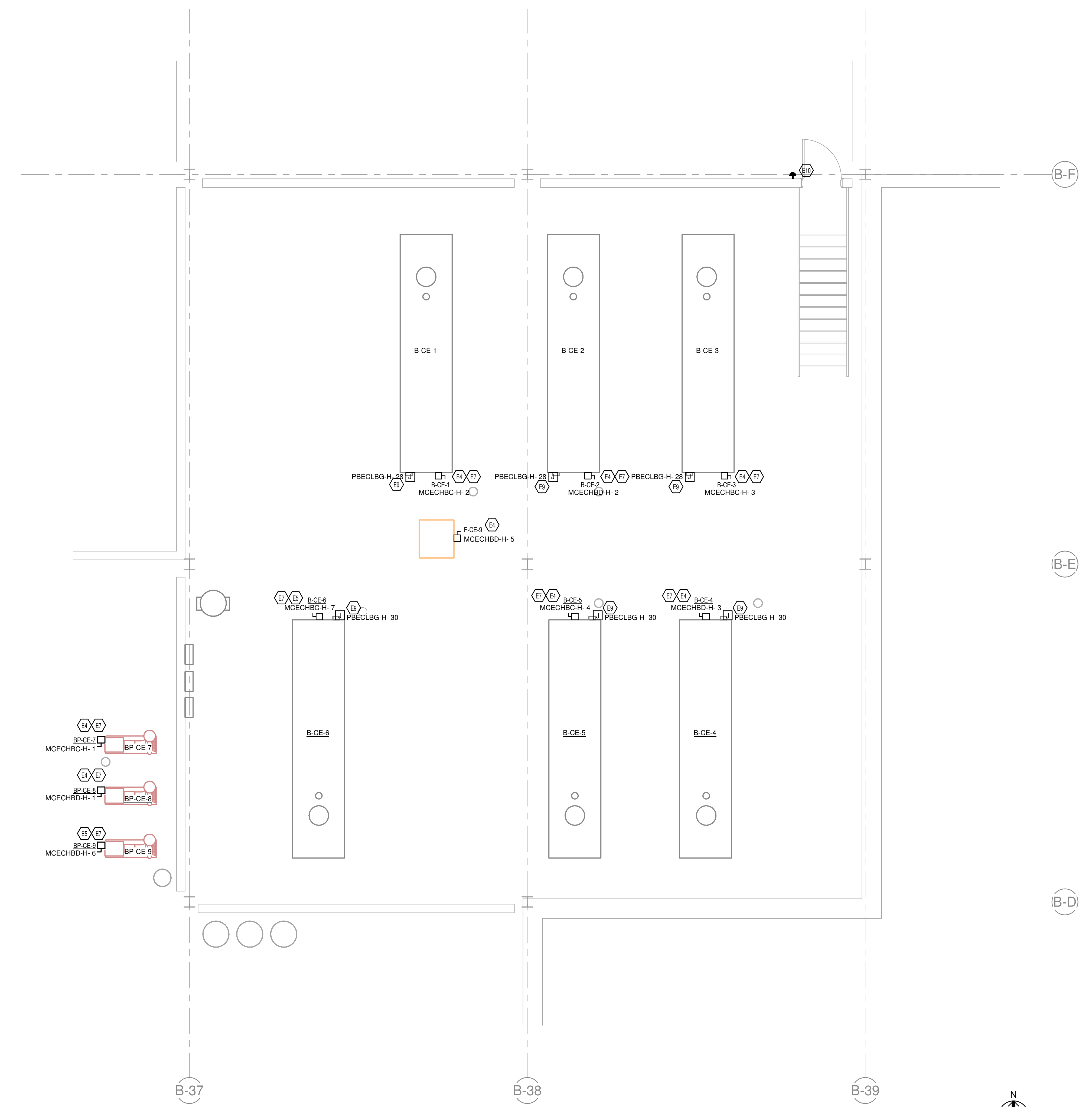
B-B-E1-100

OWNERSHIP OF INSTRUMENTS OF SERVICE: All notes, drawings and instruments prepared by the Consultant as instruments of service shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

4/18/2025 11:54:00 Autodesk Docs://CVG - Rehab and Efficiency Program/ELEC-KLH-CVG_P25.rvt



2 ELECTRIC POWER PLAN - CONCOURSE B - LEVEL 3 - CT-CB-01_02_03_04_05_06_07_08
1/4" = 1'-0"



1 ELECTRIC POWER PLAN - CONCOURSE B - BASEMENT - B-CB-01_02_03_04_05
1/4" = 1'-0"

KEYED NOTES	
E4	RECONNECT NEW EQUIPMENT TO BRANCH CIRCUIT MADE AVAILABLE THROUGH DEMOLITION. EXTEND WIRING AND CONDUIT AS REQUIRED.
E5	PROVIDE NEW BRANCH CIRCUIT AS INDICATED. REFERENCE PANEL SCHEDULE FOR NEW BREAKERS AND BREAKER MODIFICATIONS.
E7	WFD FURNISHED BY DIVISION 23. INSTALLED AND WIRED BY DIVISION 26.
E9	PROVIDE POWER CONNECTION INDICATED FOR UNIT CONTROL PANEL.
E10	PROVIDE EMERGENCY POWER OFF MUSHROOM SWITCH. SWITCH TO BE TIED INTO BOILER CONTROLLERS FOR EMERGENCY POWER AND GAS SHUTDOWN. COORDINATE CONNECTIONS WITH MECHANICAL CONTROLS CONTRACTOR.

ELECTRICAL DISCONNECT SCHEDULE - BOILER FANS - CONCOURSE B									
EQUIPMENT TAG	DISCONNECT TYPE	ELECTRICAL LOAD	VOLTAGE	POLES	FUSE SIZE	FRAME SIZE	BRANCH CIRCUIT SIZE	CKT NUMBER	MIN AIC RATING
EF-CE-1	Non-Fused Disconnect	17438 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBD-H-7	42000A	
EF-CE-2	Non-Fused Disconnect	17438 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBD-H-8	42000A	
F-CE-9	Non-Fused Disconnect	3986 VA	480 V	3	30 A	3/4" C, 3P12, #12G	MCECHBD-H-5	42000A	

MECHANICAL-ELECTRICAL CONNECTION SCHEDULE - BOILER FANS - CONCOURSE B		
EQUIPMENT TAG	DESCRIPTION	ELECTRIC CONNECTION SUMMARY
EF-CE-1	BOILER FLUE FAN	480V/3PH, 15 HP
EF-CE-2	BOILER FLUE FAN	480V/3PH, 15 HP
F-CE-9	COMBUSTION AIR FAN	480V/3PH, 3HP

ELECTRICAL DISCONNECT SCHEDULE - BOILERS - CONCOURSE B									
EQUIPMENT TAG	DISCONNECT TYPE	ELECTRICAL LOAD	VOLTAGE	POLES	FUSE SIZE	FRAME SIZE	BRANCH CIRCUIT SIZE	CKT NUMBER	MIN AIC RATING
B-CE-1	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-2	42000A	
B-CE-2	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-2	42000A	
B-CE-3	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-3	42000A	
B-CE-4	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-3	42000A	
B-CE-5	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-4	42000A	
B-CE-6	Non-Fused Disconnect	14847 VA	480 V	3	30 A	3/4" C, 3P10, #10G	MCECHBC-H-7	42000A	

MECHANICAL-ELECTRICAL CONNECTION SCHEDULE - BOILERS - CONCOURSE B		
EQUIPMENT TAG	DESCRIPTION	ELECTRIC CONNECTION SUMMARY
B-CE-1	BOILER	B-CE-1 - 480V/3PH, 18A
B-CE-2	BOILER	B-CE-2 - 480V/3PH, 18A
B-CE-3	BOILER	B-CE-3 - 480V/3PH, 18A
B-CE-4	BOILER	B-CE-4 - 480V/3PH, 18A
B-CE-5	BOILER	B-CE-5 - 480V/3PH, 18A
B-CE-6	BOILER	B-CE-6 - 480V/3PH, 18A

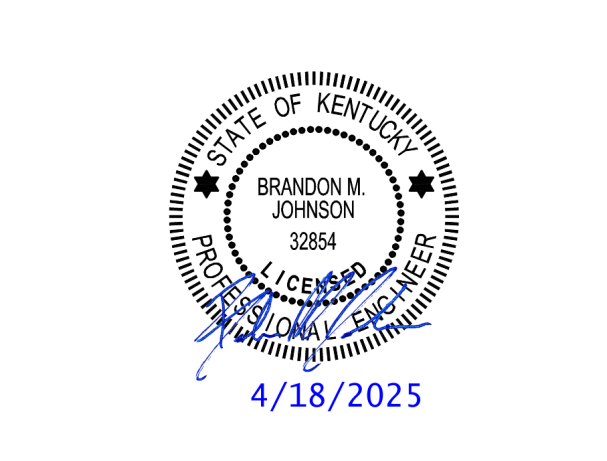
ELECTRICAL DISCONNECT SCHEDULE - BOILER PUMPS - CONCOURSE B									
EQUIPMENT TAG	DISCONNECT TYPE	ELECTRICAL LOAD	VOLTAGE	POLES	FUSE SIZE	FRAME SIZE	BRANCH CIRCUIT SIZE	CKT NUMBER	MIN AIC RATING
BP-CE-7	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1-1/4" C, 3P2, #8G	MCECHBC-H-1	42000A	
BP-CE-8	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1-1/4" C, 3P2, #8G	MCECHBC-H-1	42000A	
BP-CE-9	Non-Fused Disconnect	33216 VA	480 V	3	100 A	1-1/4" C, 3P2, #8G	MCECHBC-H-6	42000A	

MECHANICAL-ELECTRICAL CONNECTION SCHEDULE - BOILER PUMPS - CONCOURSE B		
EQUIPMENT TAG	DESCRIPTION	ELECTRIC CONNECTION SUMMARY
BP-CE-7	BOILER PUMP	BP-CE-7 - 480V/3PH, 30 HP
BP-CE-8	BOILER PUMP	BP-CE-8 - 480V/3PH, 30 HP
BP-CE-9	BOILER PUMP	BP-CE-9 - 480V/3PH, 30 HP



PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
AND EFFICIENCY PROGRAM - BOILER
REPLACEMENT PROJECT**

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

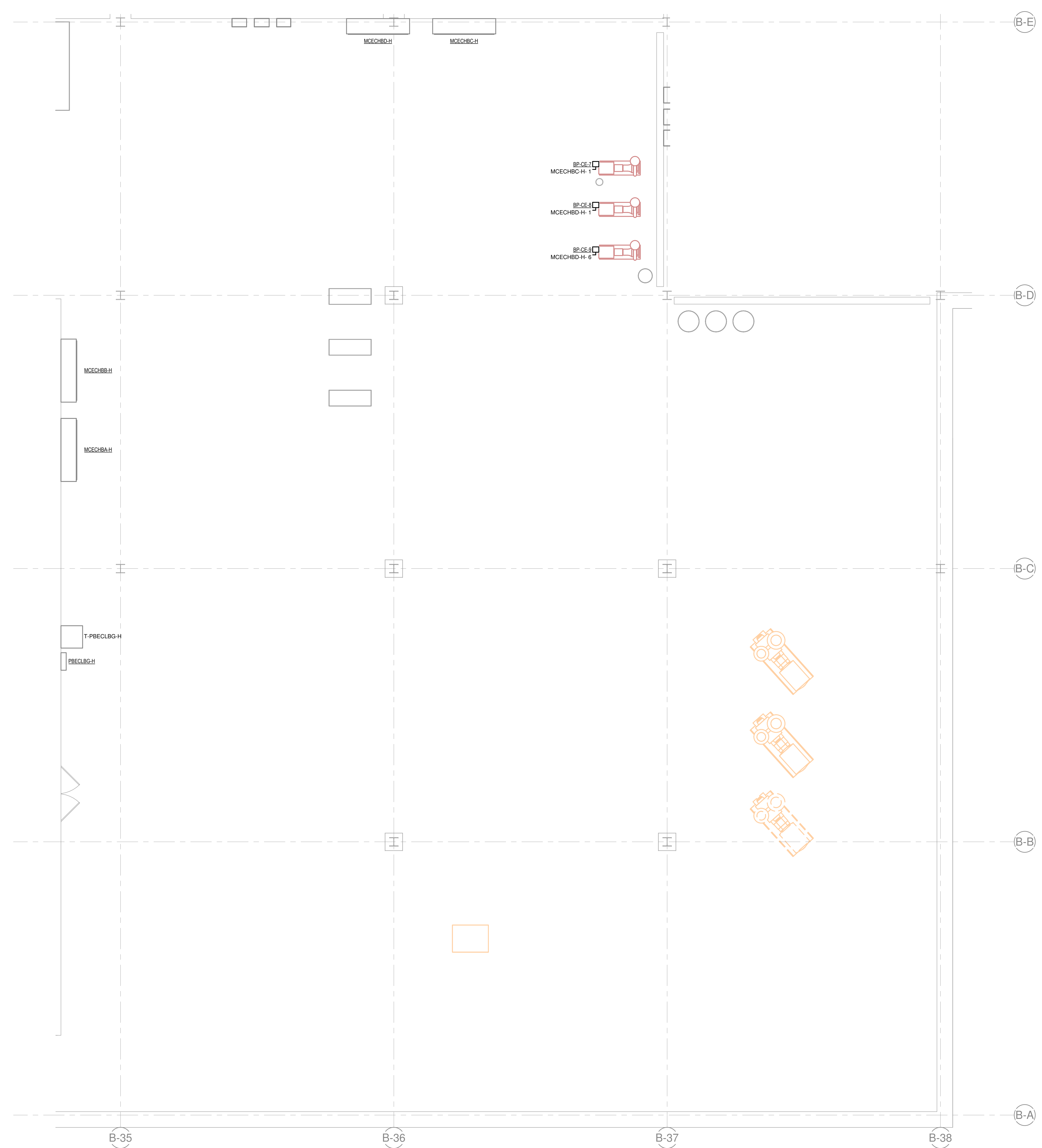
SCALE: 1/4" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC POWER
CONCOURSE B - BASEMENT
LEVEL PLAN

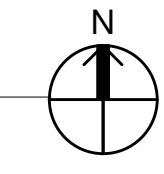
B-B-E4-100

4/18/2025 11:54:11 Autodesk Docs://CVG - Rehab and Efficiency Program/ELEC-KLH-CVG_P25.rvt

OWNERSHIP OF INSTRUMENTS OF SERVICE
The Consultant shall retain all common law, statutory and other reserved rights, including, without limitation, the copyright therein.

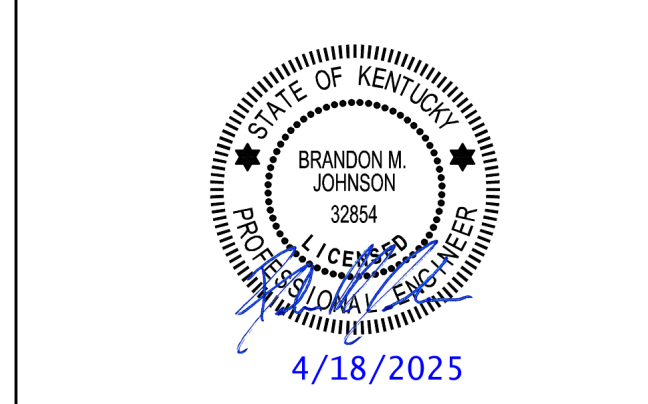


1 ELECTRIC POWER PLAN - CONCOURSE B - BASEMENT LEVEL - CONCOURSE B - EAST -
ELECTRICAL ROOM REFERENCE
1/4" = 1'-0"



PROJECT TITLE:
**CVG INDUSTRIAL REHABILITATION
AND EFFICIENCY PROGRAM - BOILER
REPLACEMENT PROJECT**

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE: 1/4" = 1'-0"
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC POWER
CONCOURSE B - BASEMENT
LEVEL PLAN

B-B-E4-101

Branch Panel: PBCELBG-H												
LOCATION:				VOLTS: 208/120V				CONSTRUCTION PHASE: Existing				
SUPPLY FROM: T-PBCELBG-H				PHASES: 3				A.I.C. RATING: MAINS TYPE: MCB 100A				
MOUNTING: SURFACE				WIRES: 4				BUS RATING (A): 100				
ENCLOSURE: TYPE 1												
NOTES: Panel Schedule indicates added loads only. Reference separate Load Summary.												
CKT	CIRCUIT DESCRIPTION	NOTES	TRIP	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP	NOTES	CIRCUIT DESCRIPTION	CKT
1	(EX) OVERHEAD DOOR		20 A	1	0	0		1	20 A		(EX) CONDENSOR WATER TREATMENT EQ	2
3	(EX) OVE RHEAD DOOR		20 A	2		0	0	1	20 A		(EX) CONDENSOR WATER TREATMENT EQ	4
5	(EX) AIR DRYER RC		20 A	1	0	0		1	20 A		(EX) RECEPT COL D 37	6
7	(EX) REC - MECHANICAL RM COL C-D-E		20 A	1		0	0	1	20 A		SPARE	8
9	(EX) REC BOILER RM		20 A	1		0	0	1	20 A		(EX) REC - MECHANICAL RM COL A-B-34-37	10
11	(EX) REC BOILER RM		20 A	1		0	0	1	20 A		SPARE	12
13	(EX) DDC CONTROL PANEL		20 A	1	0	0		1	20 A		(EX) UH-CE-1H	14
15	(EX) DDC CONTROL PANEL		20 A	1		0	0	1	20 A		(EX) UH-CE-2H	16
17	(EX) AHJ-CE-52 CONTROL PANEL		20 A	1			0	0	1	20 A	(EX) EXISTING LOAD	18
19	(EX) CONTROL AIR COMPRESSOR IC		20 A	1	0	0		1	20 A		(EX) LIGHTS EM GEN RM EXHAUST CHASE	20
21	SPARE		20 A	1		0	0	1	20 A		SPARE	22
23	SPARE		20 A	1			0	0	1	20 A	SPARE	24
25	SPARE		20 A	1	0	0		1	20 A		(EX) RIB XFMR EXHAUST FAN DAMPER ACTUATOR	26
27	SPARE		20 A	1		0	720	1	20 A	@	BOILER CONTROL PANEL	28
29	SPARE		20 A	1			0	720	1	@	BOILER CONTROL PANEL	30
31	SPARE		20 A	1	0	0						32
33	SPARE		20 A	1		0	0	3	50 A		SPARE	34
35	SPARE		20 A	1			0	0				36
37	SPACE		--	1	--	0						38
39	SPACE		--	1	--	0		3	60 A		SPARE	40
41	SPACE		--	1	--	0						42
TOTAL LOAD:					0 VA	720 VA	720 VA					
TOTAL AMPS:					0 A	7 A	7 A					
LOAD CLASSIFICATION												
CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS									
Receptacle	0 VA	0.00%	0 VA	TOTAL CONNECTED LOAD 1440 VA								
Lighting	0 VA	0.00%	0 VA	TOTAL ESTIMATED DEMAND 1440 VA								
Motor	0 VA	0.00%	0 VA	TOTAL CONNECTED CURRENT 4 A								
Heating	0 VA	0.00%	0 VA	TOTAL ESTIMATED CURRENT 4 A								
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA									
Other	1440 VA	100.00%	1440 VA									
NOTES:												
@ RE-USE EXISTING BREAKER FOR NEW LOAD												

LOAD SUMMARY - MCECHBC-H				
	ACTUAL LOAD (VA)	DEMAND FACTOR (%)	CALCULATED LOAD (VA)	
EXISTING LOADS (PER RECORD DRAWINGS)				
RECEPTACLE	360	100%	360	
LIGHTING	0	100%	0	
MOTOR	0	125%	0	
HEATING	9965	100%	9965	
OTHER	500	100%	500	
ADDED LOADS				
RECEPTACLE	0	100%	0	
LIGHTING	0	100%	0	
MOTOR	44850	125%	53154	
HEATING	139768	100%	139768	
OTHER	0	100%	0	
TOTAL CALCULATED 204 KVA 245 AMPS				
AVAILABLE CAPACITY 332 KVA 400 AMPS				
SPARE CAPACITY 128 KVA 154 AMPS				

LOAD SUMMARY - MCECHBD-H				
	ACTUAL LOAD (VA)	DEMAND FACTOR (%)	CALCULATED LOAD (VA)	
EXISTING LOADS (PER RECORD DRAWINGS)				
RECEPTACLE	360	100%	360	
LIGHTING	0	100%	0	
MOTOR	0	125%	0	
HEATING	0	100%	0	
OTHER	500	100%	500	
ADDED LOADS				
RECEPTACLE	0	100%	0	
LIGHTING	0	100%	0	
MOTOR	105294	125%	113598	
HEATING	113874	100%	113874	
OTHER	0	100%	0	
TOTAL CALCULATED 228 KVA 275 AMPS				
AVAILABLE CAPACITY 332 KVA 400 AMPS				
SPARE CAPACITY 104 KVA 125 AMPS				

LOAD SUMMARY - PBCELBG-H				
	ACTUAL LOAD (VA)	DEMAND FACTOR (%)	CALCULATED LOAD (VA)	
EXISTING LOADS (METER #..)				
	0	125%	0	
ADDED LOADS				
RECEPTACLE	0	100%	0	
LIGHTING	0	100%	0	
MOTOR	0	125%	0	
HEATING	0	100%	0	
OTHER	1440	100%	1440	
TOTAL CALCULATED 1 KVA 4 AMPS				
AVAILABLE CAPACITY 29 KVA 80 AMPS				
SPARE CAPACITY 27 KVA 76 AMPS				

MCC: MCECHBC-H												
LOCATION:				VOLTS: 480/277V 3PH 4W				A.I.C. RATING: EXISTING				
SUPPLY FROM: SSECHBD-H-SEC-A				PHASES: 3				MAINS TYPE: MLO				
MOUNTING: SURFACE				WIRES: 4				BUS RATING: 400				
ENCLOSURE: TYPE 1												
NOTES: Panel Schedule indicates added loads only. Reference separate Load Summary.												
CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks						
1	BP-CE-7	3	80 A	80 A	33216 VA							
2	B-CE-1	3	30 A	30 A	14947 VA							
3	B-CE-3	3	30 A	30 A	14947 VA							
4	B-CE-5	3	30 A	30 A	14947 VA							
5	(EX) PBCECHBC-H	3	150 A	150 A	80840 VA							
6	(EX) UNIT HEATER UH-CE-2H	3	15 A	15 A	0 VA							
7	B-CE-6	3	30 A	30 A	14947 VA	B						
8	CS-E-1	3	20 A	20 A	11634 VA							
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total Conn. Load:					185478 VA							
Total Amps:					223 A							
LOAD CLASSIFICATION												
CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS									
Motor	44850 VA	118.52%	53154 VA	TOTAL CONNECTED LOAD 185478 VA								
Other	500 VA	100.00%	500 VA	TOTAL EST. DEMAND: 193782 VA								
Heating	139768 VA	100.00%	139768 VA	TOTAL CONN. CURRENT: 223 A								
Receptacle	360 VA	100.00%	360 VA	TOTAL EST. DEMAND CURRENT: 233 A								
NOTES:												
Breakers/Switches are existing to remain unless otherwise noted.												

MCC: MCECHBD-H												
LOCATION:				VOLTS: 480/277V 3PH 4W				A.I.C. RATING: EXISTING				
SUPPLY FROM: SSECHBD-H-SEC-B				PHASES: 3				MAINS TYPE: MLO				
MOUNTING: SURFACE				WIRES: 4				BUS RATING: 400				
ENCLOSURE: TYPE 1												
NOTES: Panel Schedule indicates added loads only. Reference separate Load Summary.												
CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks						
1	BP-CE-8	3	80 A	80 A	33216 VA							
2	B-CE-2	3	30 A	30 A	14947 VA							
3	B-CE-4	3	30 A	30 A	14947 VA							
4	(EX) PBCECHBD-H	3	150 A	150 A	84840 VA							
5	BOILER RM EXHAUST FAN F-CE-9	3	20 A	20 A	3996 VA							
6	BP-CE-9	3	80 A	80 A	33216 VA	B						
7	EF-CE-1	3	30 A	30 A	17438 VA	B						
8	EF-CE-2	3	30 A	30 A	17438 VA	B						
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total Conn. Load:					220028 VA							
Total Amps:					265 A							
LOAD CLASSIFICATION												
CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS									
Motor	105294 VA	107.89%	113598 VA	TOTAL CONNECTED LOAD 220028 VA								
Other	500 VA	100.00%	500 VA	TOTAL EST. DEMAND: 228332 VA								
Heating	113874 VA	100.00%	113874 VA	TOTAL CONN. CURRENT: 265 A								
Receptacle	360 VA	100.00%	360 VA	TOTAL EST. DEMAND CURRENT: 275 A								
NOTES:												
Breakers/Switches are existing to remain unless otherwise noted.												

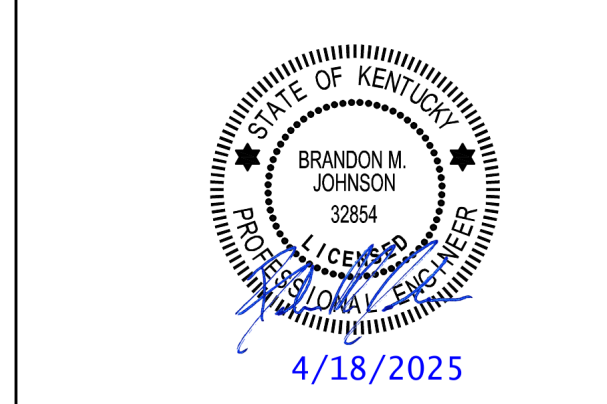


MOTZ ENGINEERING
HIGHER STANDARDS. BETTER RESULTS.

447 MORGAN STREET
CINCINNATI, OH 45206
T: 513.621.5400
F: 513.621.5407

PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - BOILER REPLACEMENT PROJECT

PROJECT ADDRESS:
**3087 Terminal Dr
Hebron, KY 41048**



REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID

SCALE:
DATE: 04/18/25
PROJECT NUMBER: 26944.00
DRAWN BY: CJW CHECKED BY: JRB

ELECTRIC POWER
CONCOURSE B - PANEL
SCHEDULES

B-B-E4-700