MECHANICAL LEGEND

SYMBOL	DESCRIPTION
PLAN-VIEW LINE TYPES	
	WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE
	WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK
	WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK
DRAWING SET APPEARANCE	
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PIPING LINE TYPES	
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
CD	CONDENSATE DRAIN
MECHANICAL PIPING ACCESSORIES	
	CHECK VALVE (DIRECTION OF FLOW INDICATED)
	PRESSURE RELIEF VALVE
	PRESSURE REGULATING VALVE
	MANUAL BALANCING VALVE
	UNION
	TEMPERATURE & PRESSURE TEST PORT
	FLOW DIRECTION
	FLEX PIPING CONNECTOR
	THERMOMETER
	PRESSURE GAUGE
	SOLENOID VALVE
	Y-STRAINER
	STRAINER WITH BLOW OFF
	DRAIN VALVE (3/4" UNLESS OTHERWISE NOTED)
	MANUAL AIR VENT
MECHANICAL DUCTWORK ACCESSORIES	
	DUCT WITH MANUAL VOLUME DAMPER
MECHANICAL STATS & SENSORS	
FS	FLOW SENSOR
CS	CURRENT SENSOR
ES	END SWITCH
T	LOW VOLTAGE THERMOSTAT WITH LOCKABLE GUARD
FL	FLUID SENSOR
V	VIBRATION SENSOR
RD	REFRIGERANT MONITOR
NOX	NITROGEN DIOXIDE SENSOR
MECHANICAL MISCELLANOUS	
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
I	HARD WIRE INTERLOCK
	POINT OF DEMOLITION TO EXISTING (FIELD VERIFY EXISTING UTILITY SERVICE TYPE, PRIOR TO TERMINATING CONNECTION)

STANDARD HVAC ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	HD	HEAD	RO	REVERSE OSMOSIS
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AFF	ABOVE FINISHED FLOOR	HPR	HIGH PRESSURE RETURN	SA	SUPPLY AIR
AMP	AMPERE		(STEAM CONDENSATE)	SAT	SUPPLY AIR TEMPERATURE
AP	ACCESS PANEL	HSTAT	HUMIDISTAT	SC	SHADING COEFFICIENT
APD	AIR PRESSURE DROP	HTG	HEATING	SCD	SMOKE CONTROL DAMPER
ARI	AIR CONDITIONING AND REFRIGERATION INSTITUTE	HWR	HEATING HOT WATER RETURN	SD	SMOKE DETECTOR
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	HWS	HEATING HOT WATER SUPPLY	SENS	SENSIBLE HEAT
BAS	BUILDING AUTOMATION SYSTEM	HZ	HERTZ	SP	STATIC PRESSURE
BD	BACKDRAFT DAMPER	I/O	INPUT/OUTPUT	TAB	TESTING, ADJUSTING, BALANCE
BHP	BRAKE HORSEPOWER	IAQ	INDOOR AIR QUALITY	TDH	TOTAL DYNAMIC HEAD
BTU	BRITISH THERMAL UNIT	IN HG	INCHES OF MERCURY	TDS	TOTAL DISSOLVED SOLIDS
BTUH	BRITISH THERMAL UNIT PER HOUR	IN WC	INCH WATER COLUMN	TSP	TOTAL STATIC PRESSURE
CD	CEILING DIFFUSER	IN WG	INCH WATER GAUGE	TSTAT	THERMOSTAT
CFH	CUBIC FEET PER HOUR	IPLV	INTERGRATED PART LOAD VALUE	UL	UNDERWRITERS LABORATORY
CFM	CUBIC FEET PER MINUTE	INST	INSTALLED	VAV	VARIABLE AIR VOLUME
CHWR	CHILLED WATER RETURN	KW	KILOWATT	VFD	VARIABLE FREQUENCY DRIVE
CHWS	CHILLED WATER SUPPLY	KWH	KILOWATT HOUR	WB	WET-BULB (TEMPERATURE)
CI	CAST IRON	LAT	LEAVING AIR TEMPERATURE	WG	WATER GAGE
CLG	COOLING	LBS/HR	POUNDS PER HOUR	WPD	WATER SIDE PRESSURE DROP
CO	CARBON MONOXIDE	LF	LINEAR FOOT (FEET)	WIRE	WIRED
CO2	CARBON DIOXIDE	LPR	LOW PRESSURE RETURN		
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CV	CONSTANT VOLUME	LPS	LOW PRESSURE STEAM		
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CWS	CONDENSER WATER SUPPLY	MAX	MAXIMUM		
DB	DECIBELS	MBH	1000 BTUH		
DB	DRY-BULB TEMPERATURE	MCA	MINIMUM BRANCH CIRCUIT AMPACITY		
DC	DISCONNECT	MERV	MINIMUM EFFICIENCY REPORTING VALUE		
DDC	DIRECT DIGITAL CONTROLS	MIN	MINIMUM		
DEG	DEGREE DELTA(CHANGE IN TEMPERATURE)	MOD	MOTOR OPERATED DAMPER		
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F	FAHRENHEIT	PD	PRESSURE DROP		
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FA	FREE AREA	PRS	PRESSURE REGULATING (VALVE) STATION		
FD	FIRE DAMPER	PRV	PRESSURE REGULATING VALVE		
FLA	FULL LOAD AMPERES	PSI	POUNDS PER SQUARE INCH		
FPM	FEET PER MINUTE	PSIA	POUNDS PER SQUARE INCH – ABSOLUTE		
FPS	FEET PER SECOND	PSIG	POUNDS PER SQUARE INCH – GAGE		
FT	FEET	RA	RETURN AIR		
FURN	FURNISHED	RAT	RETURN AIR TEMPERATURE		
GA	GAUGE	RH	RELATIVE HUMIDITY		
GAL	GALLONS	RL	REFRIGERANT LIQUID LINE		
GPM	GALLONS PER MINUTE	RLA	RUN LOAD AMPERE		

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CINCINNATI, OH 45206
T: 513.621.5400
F: 513.621.5407

PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - CHILLER PLANT MODIFICATION PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048

STATE OF KENTUCKY
CHRISTOPHER A. MEHAFFIE
38889
LICENSED PROFESSIONAL ENGINEER
4/18/2025

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID
E	11/14/25	ISSUED FOR CONSTRUCTION

SCALE:	1/8" = 1'-0"
DATE:	04/18/25
PROJECT NUMBER:	26944.00
DRAWN BY: DS	CHECKED BY: KTS

MECHANICAL CONCOURSE B
COVER SHEET

H-B-M1-001

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KLH PROJECT # 26944

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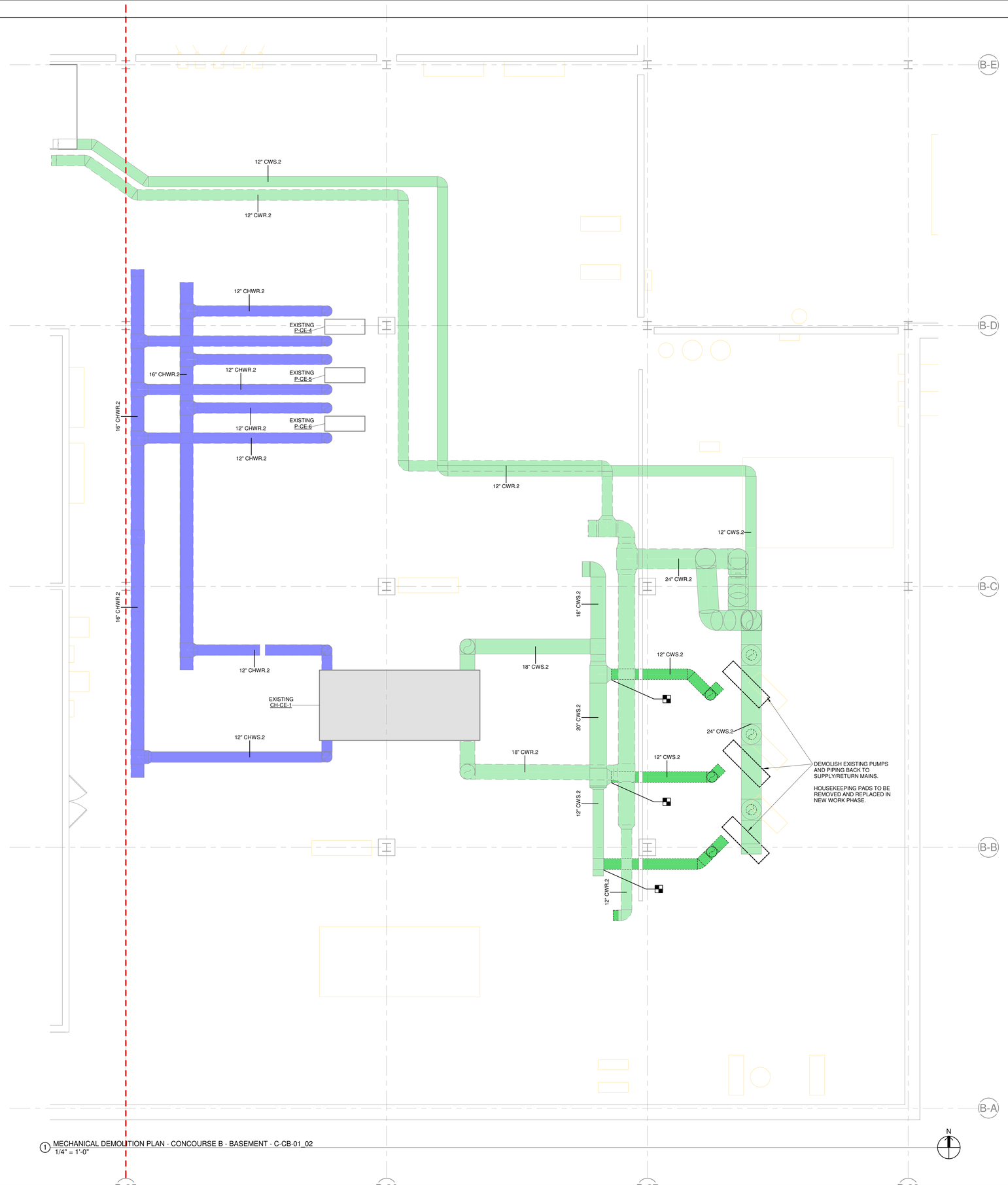

1 MECHANICAL DEMOLITION PLAN - CONCOURSE B - BASEMENT - C-CB-01_02
1/4" = 1'-0"

CVG AIRPORT AUTHORITY

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MECHANICAL DEMOLITION CONCOURSE B - BASEMENT LEVEL PLAN

H-B-M1-100

KLH PROJECT # 26944

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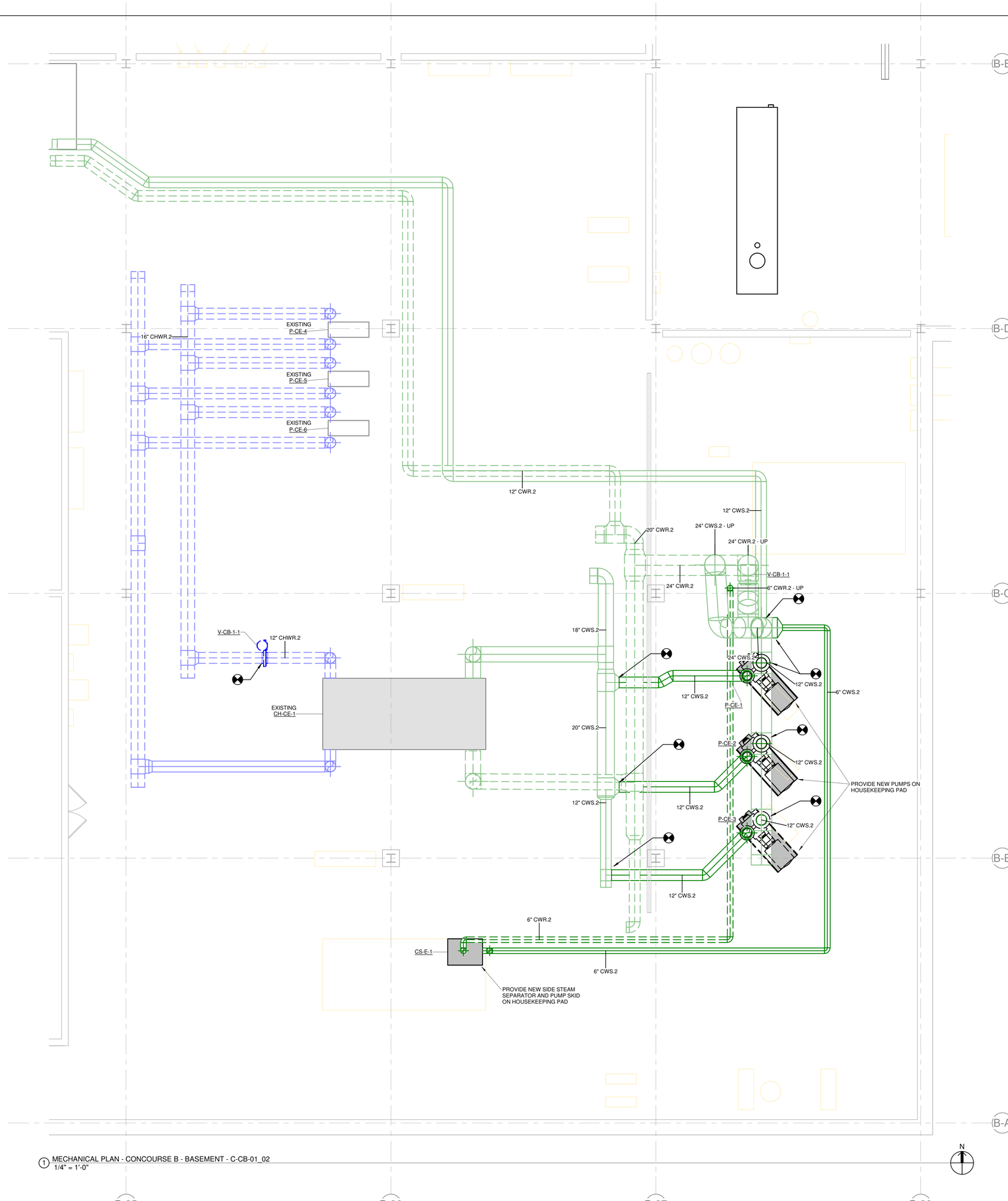

1 MECHANICAL PLAN - CONCOURSE B - BASEMENT - C-CB-01_02
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KEYED NOTES

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MECHANICAL CONCOURSE B - BASEMENT LEVEL PLAN

H-B-M3-100

KLH PROJECT # 26944

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MECHANICAL LEGEND

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MECHANICAL TERMINAL COVER SHEET

H-T-M1-001

KLH PROJECT # 26944

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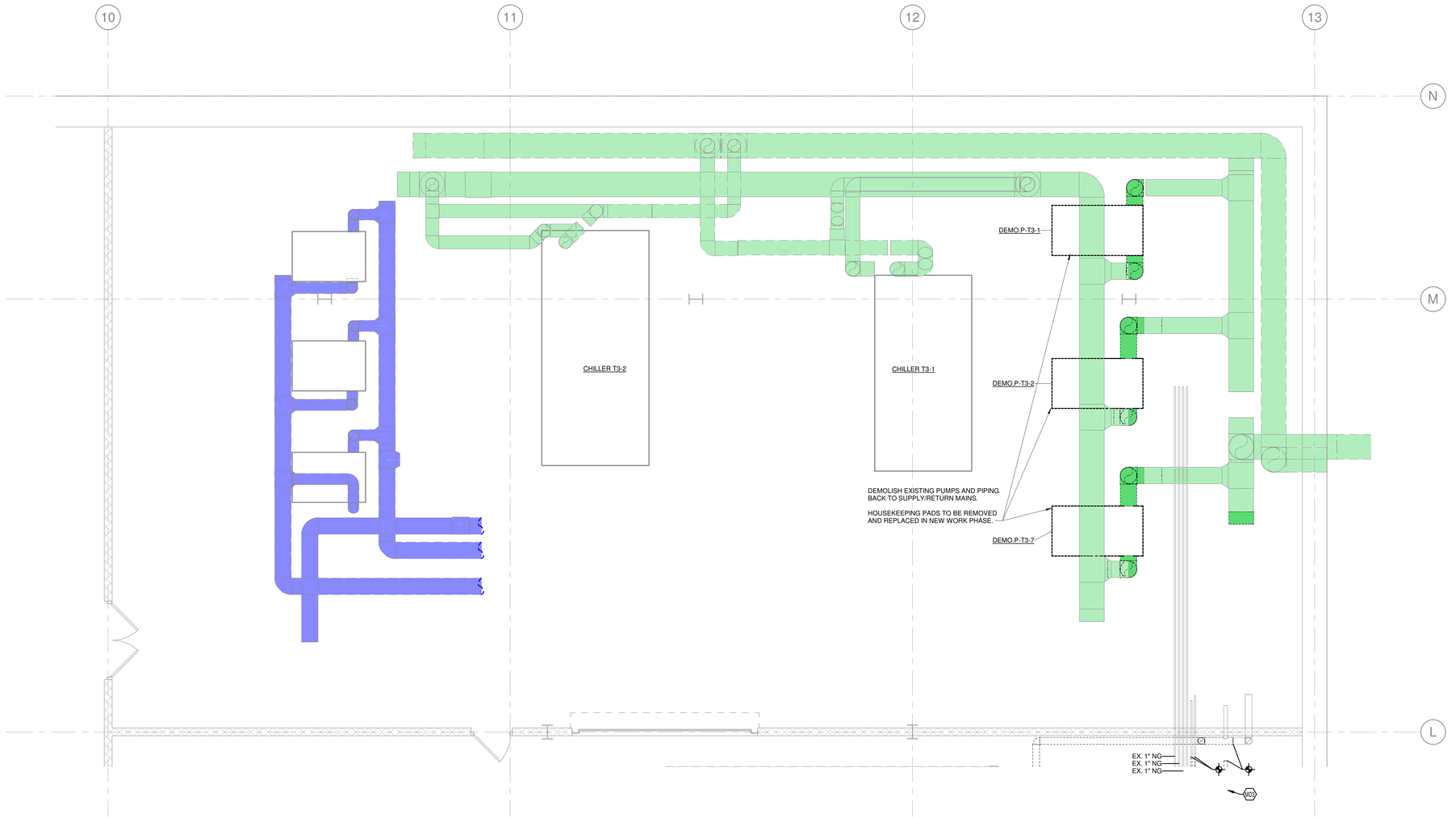
KEYED NOTES

MD3	DEMOLISH EXISTING PIPING CONNECTED TO PUMPS AND BOILERS BACK TO POINT OF CONNECTIONS.



1 MECHANICAL DEMOLITION PLAN - TERMINAL - BASEMENT LEVEL - C-T3-01_02
1/4" = 1'-0"

CVG AIRPORT AUTHORITY

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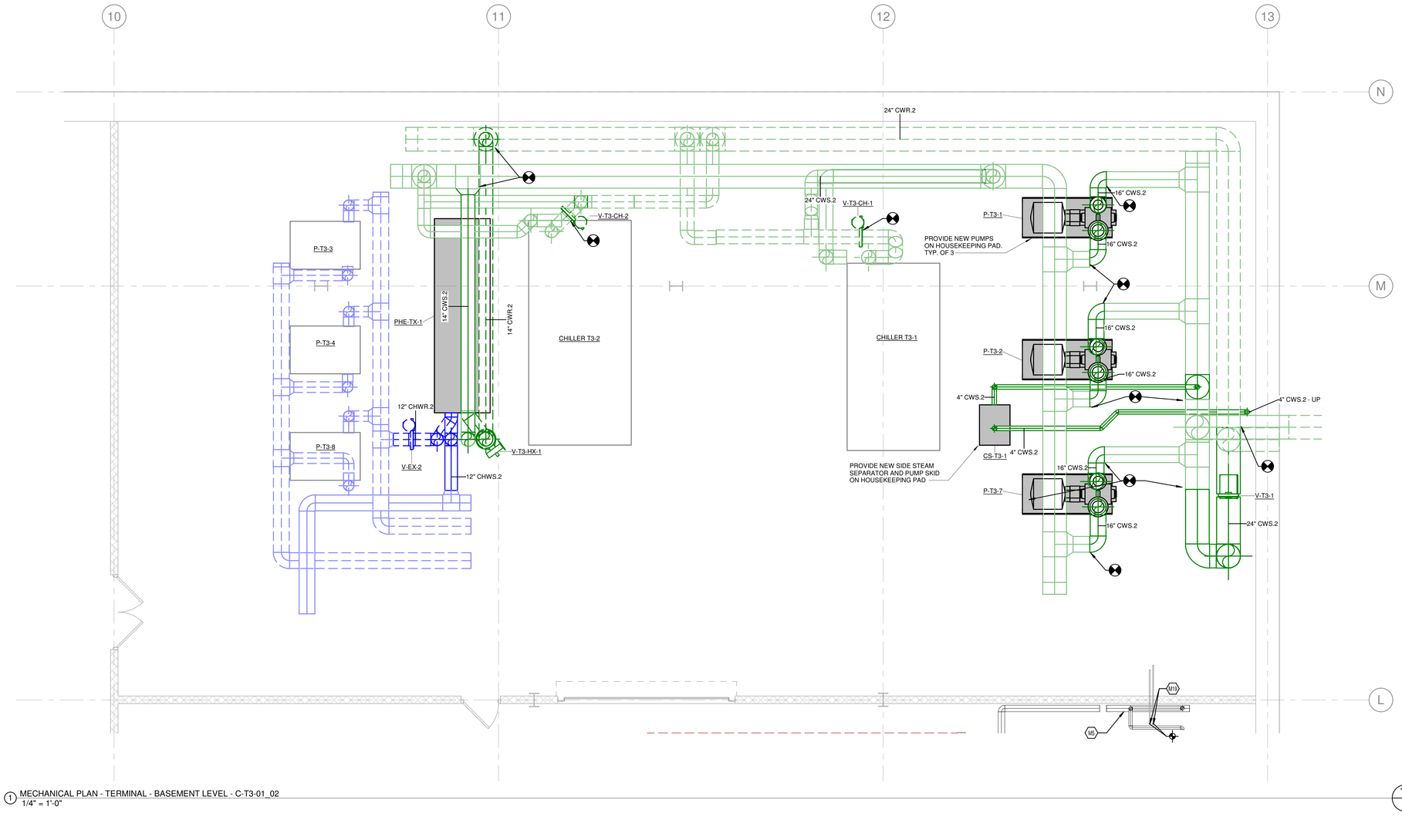
MECHANICAL DEMOLITION TERMINAL - BASEMENT LEVEL PLAN

H-T-M1-100

KEYED NOTES

M5	INSTALL GAS METER IN NEW PIPING. INSTALL GAS METER LOW ALONG WALL.
M19	CAP PIPE AT POC.



1 MECHANICAL PLAN - TERMINAL - BASEMENT LEVEL - C-T3-01_02
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PROJECT TITLE:
CVG INDUSTRIAL REHABILITATION AND EFFICIENCY PROGRAM - CHILLER PLANT MODIFICATION PROJECT

PROJECT ADDRESS:
3087 Terminal Dr
Hebron, KY 41048

STATE OF KENTUCKY
CHRISTOPHER A. MEHAFFIE
38889
LICENSED PROFESSIONAL ENGINEER
4/18/2025

REVISIONS		
#	DATE	DESCRIPTION
D	04/18/25	ISSUE FOR BID
E	11/14/25	ISSUED FOR CONSTRUCTION

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

MECHANICAL TERMINAL - BASEMENT LEVEL PLAN

H-T-M3-100

KLH PROJECT # 26944

CVG Chiller Plant

Terminal 3

Disabled	Status	Isolation Valve	CHWP-3 / CHWP-4 / CHWP-8 Lead / Lag / Standby			SCHP-9 / SCHP-10 Lead / lag		V-1	V-2	V-3	V-4	V-13A	V-13B	V-14A	V-14B	V-5	V-12	V-10	V-11	V-15
Terminal 3 Waterside Economizer	Off	Open	Off	Off	Off	Off	Off	Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Terminal 3 Chiller C_T3-1	Off	Open	Off	Off	Off	Off	Off	Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Terminal 3 Chiller C-T3-2	Off	Open	Off	Off	Off	Off	Off	Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open

Concourse B

	Status	Isolation Valve	CHWP-4/ CHWP-5 / CHWP-6 Lead / Lag / Standby			V-6	V-8	V-9	V-7	V-10	V-11	V-15	V-16
Terminal 3 Waterside Economizer	Off	Closed	Off			Open	Modulates	Open	Open	Open	Open	Open	Open
Concourse B Chiller C-CB-1	Off	Closed	Off			Open	Modulates	Open	Open	Open	Open	Open	Open

Terminal 3

Stage 1	Status	Isolation Valve	CHWP-3 / CHWP-4 / CHWP-8 Lead / Lag / Standby			SCHP-9 / SCHP-10 Lead / lag		V-1	V-2	V-3	V-4	V-13A	V-13B	V-14A	V-14B	V-5	V-12	V-10	V-11	V-15
Terminal 3 Waterside Economizer	On	Open	On			On		Open	Open	Modulates	Open	Open	Modulates	Open	Modulates	Closed	Closed	Closed	Closed	Open
Terminal 3 Chiller C_T3-1	Off	Closed	On			On		Open	Open	Modulates	Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open
Terminal 3 Chiller C-T3-2	Off	Closed	On			On		Open	Open	Modulates	Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open

Concourse B

	Status	Isolation Valve	CHWP-4/ CHWP-5 / CHWP-6 Lead / Lag / Standby			V-6	V-8	V-9	V-7	V-10	V-11	V-15	V-16
Terminal 3 Waterside Economizer	On	Open	On			Open	Modulates	Open	Open	Open	Open	Open	Open
Concourse B Chiller C-CB-1	Off	Closed	On			Open	Modulates	Open	Open	Open	Open	Open	Open

Terminal 3

Stage 2	Status	Isolation Valve	CHWP-3 / CHWP-4 / CHWP-8 Lead / Lag / Standby			SCHP-9 / SCHP-10 Lead / lag		V-1	V-2	V-3	V-4	V-13A	V-13B	V-14A	V-14B	V-5	V-12	V-10	V-11	V-15
Terminal 3 Waterside Economizer	Off	Closed	On			On		Open	Open	Modulates	Open	Open	Modulates	Open	Modulates	Closed	Closed	Closed	Closed	Open
Terminal 3 Chiller C_T3-1	On	Open	On			On		Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Terminal 3 Chiller C-T3-2	Off	Closed	Off			On		Open	Open	Modulates	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open

Concourse B

	Status	Isolation Valve	CHWP-4/ CHWP-5 / CHWP-6 Lead / Lag / Standby			V-6	V-8	V-9	V-7	V-10	V-11	V-15	V-16
Concourse B													
Concourse B Chiller C-CB-1	Off	Closed	On			Open	Modulates	Open	Open	Open	Open	Open	Open

Terminal 3

Stage 3	Status	Isolation Valve	CHWP-3 / CHWP-4 / CHWP-8 Lead / Lag / Standby			SCHP-9 / SCHP-10 Lead / lag		V-1	V-2	V-3	V-4	V-13A	V-13B	V-14A	V-14B	V-5	V-12	V-10	V-11	V-15
Terminal 3 Waterside Economizer	Off	Closed	Off			On		Open	Open	Modulates	Open	Open	Modulates	Open	Modulates	Closed	Closed	Closed	Closed	Open
Terminal 3 Chiller C_T3-1	Off	Closed	Off			On		Open	Open	Modulates	Open	Open	Open	Open	Modulates	Open	Open	Open	Open	Open
Terminal 3 Chiller C-T3-2	Off	Closed	Off			On		Open	Open	Modulates	Open	Open	Open	Open	Modulates	Open	Open	Open	Open	Open

Concourse B

	Status	Isolation Valve	CHWP-4/ CHWP-5 / CHWP-6 Lead / Lag / Standby			V-6	V-8	V-9	V-7	V-10	V-11	V-15	V-16
Concourse B													
Concourse B Chiller C-CB-1	On	Open	On			Open	Modulates	Open	Open	Open	Open	Open	Open

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MECHANICAL TERMINAL CHILLERS

H-T-M3-601

KLH PROJECT # 26944

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BAS Upgrade General Notes

Upgrade the following Honeywell Panels and Controllers to Automatic Logic Controllers:

Boiler
Chiller and Cooling Tower
All Air Handlers in the scope of this project
Generator Monitoring
All Pneumatic Control Valves and Actuators shall be upgraded to electric.

Pneumatic Control Valves and Actuators can be phased in, as the control signal will not change.

Control / Monitoring Point Name	Harware Points				Software Points						Display Status	Setpoint Value		Trending	
							Alarms								
	AI	AO	DI	DO	AV	DV	Low Limit Value	High Limit Value	General	Crtical w/Man Reset		Initial Setpoint 1	Initial Setpoint 2	Change of Value (COV)	Trend Loop Duration
Outside Air Temp	x										x			x	3 deg
Outside Air Humidity	x										x	65		x	3%
Outside Air Wetbulb					x						x	5		x	3 deg
Chiller Plant Chilled Water Suppy Temperature	x										x			x	3 deg
Chiller Plant Chilled Water Return Temperature	x										x			x	3 deg
Terminal 3 HEX Chilled Water Suppy Temperature	x										x			x	3 deg
Terminal 3 HEX Chilled Water Return Temperature	x										x			x	3 deg
C-T3-1 Chilled Water Suppy Temperature	x										x			x	3 deg
C-T3-1 Chilled Water Return Temperature	x										x			x	3 deg
C-T3-2 Chilled Water Suppy Temperature	x										x			x	3 deg
C-T3-2 Chilled Water Return Temperature	x										x			x	3 deg
Concourse B HEX Chilled Water Suppy Temperature	x										x			x	3 deg
Concourse B HEX Chilled Water Return Temperature	x										x			x	3 deg
C-CB-1 Chilled Water Suppy Temperature	x										x			x	3 deg
C-CB-1 Chilled Water Return Temperature	x										x			x	3 deg
Chilled Water Plant Supply Water Temperature Setpoint	x										x			x	2 psi
Terminal 3 Chilled Water Flow	x										x			x	10 gpm
Terminal 3 Chilled Water Supply Temperature	x										x			x	3 deg
Terminal 3 Chilled Water Return Temperature	x										x			x	3 deg
Terminal 3 Chilled Water Differential Pressure	x										x			x	2 psi
Terminal 3 Chilled Water Differential Pressure Setpoint					x						x			x	
Terminal A Chilled Water Flow	x										x			x	10 gpm
Terminal A Chilled Water Supply Temperature	x										x			x	3 deg
Terminal A Chilled Water Return Temperature	x										x			x	3 deg
Terminal A Chilled Water Differential Pressure	x										x			x	2 psi
Terminal A Chilled Water Differential Pressure Setpoint					x						x			x	
Concourse B Chilled Water Flow	x										x			x	10 gpm
Concourse B Chilled Water Supply Temperature	x										x			x	3 deg
Concourse B Chilled Water Return Temperature	x										x			x	3 deg
Concourse B Chilled Water Differential Pressure	x										x			x	2 psi
Concourse B Chilled Water Differential Pressure	x										x			x	2 psi
Terminal 3 PCHWP - 1 Start / Stop				x							x			x	
Terminal 3 PCHWP - 1 Status			x								x			x	
Terminal 3 PCHWP - 1 VFD Speed %		x									x			x	
Terminal 3 PCHWP - 2 Start / Stop				x							x			x	
Terminal 3 PCHWP - 2 Status			x								x			x	
Terminal 3 PCHWP - 2 VFD Speed %		x									x			x	
Terminal 3 PCHWP - 3 Start / Stop				x							x			x	
Terminal 3 PCHWP - 3 Status			x								x			x	
Terminal 3 PCHWP - 3 VFD Speed %		x									x			x	
Concourse B PCHWP - 1 Start / Stop				x							x			x	
Concourse B PCHWP - 1 Status			x								x			x	
Concourse B PCHWP - 1 VFD Speed %		x									x			x	
Concourse B PCHWP - 2 Start / Stop				x							x			x	
Concourse B PCHWP - 2 Status			x								x			x	
Concourse B PCHWP - 2 VFD Speed %		x									x			x	
Concourse B PCHWP - 3 Start / Stop				x							x			x	
Concourse B PCHWP - 3 Status			x								x			x	
Concourse B PCHWP - 3 VFD Speed %		x									x			x	
Terminal 3 SCHWP - 1 Start / Stop				x							x			x	
Terminal 3 SCHWP - 1 Status			x								x			x	
Terminal 3 SCHWP - 1 VFD Speed %		x									x			x	
Terminal 3 SCHWP - 2 Start / Stop				x							x			x	
Terminal 3 SCHWP - 2 Status			x								x			x	
Terminal 3 SCHWP - 2 VFD Speed %		x									x			x	
Concourse A SCHWP - 1 Start / Stop				x							x			x	
Concourse A SCHWP - 1 Status			x								x			x	
Concourse A SCHWP - 1 VFD Speed %		x									x			x	
Concourse A SCHWP - 2 Start / Stop				x							x			x	
Concourse A SCHWP - 2 Status			x								x			x	
Concourse A SCHWP - 2 VFD Speed %		x									x			x	
Terminal 3 V-1 Signal		x									x			x	
Terminal 3 V-1 Position	x										x			x	
Terminal 3 V-2 Signal		x									x			x	
Terminal 3 V-2 Position	x										x			x	
Terminal 3 V-3 Signal		x									x			x	
Terminal 3 V-3 Position	x										x			x	
Terminal 3 V-4 Signal		x									x			x	
Terminal 3 V-4 Position	x										x			x	
Terminal 3 V-13A Signal		x									x			x	
Terminal 3 V-13A Position	x										x			x	
Terminal 3 V-13B Signal		x									x			x	
Terminal 3 V-13B Position	x										x			x	
Terminal 3 V-14A Signal		x									x			x	
Terminal 3 V-14A Position	x										x			x	
Terminal 3 V-14B Signal		x									x			x	
Terminal 3 V-14B Position	x										x			x	
Terminal 3 V-5 Signal		x									x			x	
Terminal 3 V-5 Position	x										x			x	
Terminal 3 V-12 Signal		x									x			x	
Terminal 3 V-12 Position	x										x			x	
Terminal 3 V-10 Signal		x									x			x	
Terminal 3 V-10 Position	x										x			x	
Terminal 3 V-11 Signal		x									x			x	
Terminal 3 V-11 Position	x										x			x	
Terminal 3 V-15 Signal		x									x			x	
Terminal 3 V-15 Position	x										x			x	
Concourse B V-6 Signal		x									x			x	
Concourse B V-6 Position	x										x			x	
Concourse B V-8 Signal		x									x			x	
Concourse B V-8 Position	x										x			x	
Concourse B V-9 Signal		x									x			x	
Concourse B V-9 Position	x										x			x	
Concourse B V-7 Signal		x									x			x	
Concourse B V-7 Position	x										x			x	
Concourse B V-10 Signal		x									x			x	
Concourse B V-10 Position	x										x			x	
Concourse B V-11 Signal		x									x			x	
Concourse B V-11 Position	x										x			x	
Concourse B V-15 Signal		x									x			x	
Concourse B V-15 Position	x										x			x	
Concourse B V-16 Signal		x									x			x	
Concourse B V-16 Position	x										x			x	

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MECHANICAL TERMINAL CHILLERS

H-T-M3-602

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KLH PROJECT # 26944

Chiller Plant Sequence

The Chilller Plant Shall have the following modes

The Chiller Plant shall maintain a Chilled Water Supply Temperature of 42 deg. (adj)

1 Chiller Stage 1

a Terminal 3 Waterside Economizer

1 Shall be enabled when the outside air wetbulb is below the outside air wetbulb setpoint of 40 deg. (adj)

2 Chiller Stage 2

a Terminal 3 Chiller C-T3-1 and Chiller C-T3-2

1 Shall be enabled when the outside air temperature is above the Chiller Stage 3 Setpoint of 70 deg (adj)

2 Chiller C-T3-1 shall be the lead chiller, C-T3-2 shall be the Lag Chiller

b Chiller C-T3-1 and Chiller C-T3-2 shall rotate based on the folowing options (user selectable)

1 Weekly

2 Monthly

3 Manual through a software switch on the BAS graphics

4 Pump Runtime, User adjustable

3 Chiller Stage 3

a Concourse B Chiller C-CB-1

1 Shall be enabled when the outside air temperature is above the Chiller Stage 3 Setpoint of 85 deg (adj)

2 Chiller C-CB-1 shall be enabled

5 Primary PCHWP Lead / Lag / Standby Pumps (Both Terminal 3 and Concourse B)

a The BAS shall integrate with the PCHWP VFD

b The Primary Chilled Water Pump (PCHWP) shall be enabled by the System Controller

c The CHWP (3) shall operate at in a Lead / Lag / Standby sequence, failure of the lead or lag pump for 5 min. (adj) the System Controller will start the standby pump

d The System Controller shall enable the Lead PCHWP based on the Mode

e The System Controller shall modulate the PCHWP speed thru a VFD to maintain the Chiller Evaporator Pressure Differential Setpoint per Chiller Manufacturer requirements

f The System Controller shall start the Lag PCHWP when the Lead CHWP is operating above 95 % and the Chilled Evaporator Differential Pressure is below the Chiller Evaporator Differential Pressure Setpoint for 5 min. The Lead & Lag CHWP shall run in unison

g The System Controller shall disable the Lag PCHWP when the VFD speed is below 60% and the Lead CHWP will operate to maintain Chiller Evaporator Differential Pressure Setpoint

h The System Controller shall disable the Lead PCHWP based on the mode

i The System Controller shall monitor the PCHWP status with a differential pressure switch across the pump

j The BAS shall alarm whenever any PCHWP is enabled but the CHWP status is off (PCHWP Fail)

k The BAS shall alarm whenever any PCHWP disabled but the CHWP status is on (PCHWP in Hand)

l The BAS shall alarm whenever any PCHWP VFD is in Alarm

m The designated lead pump will rotate upon on of the following conditions (user selectable)

1 Daily

2 Weekly

3 Monthly

4 Manual through a software switch on the BAS graphics

5 Pump Runtime, User adjustable

6 Secondary SCHWP Lead / Lag Pumps (For Terminal 3, Concourse A and Concourse B)

a The BAS shall integrate with the SCHWP VFD

b The Secondary Chilled Water Pump (SCHWP) shall be enabled based on the mode

c The SCHWP (2) shall operate at in a Lead / Lag sequence, failure of the lead pump for 5 min. (adj) the System Controller will start the lag pump

d The System Controller shall modulate the SCHWP speed thru a VFD (furnished by others) to maintain the Chilled Water Differential Pressure Setpoint of 10 psi (adj. as determined by the TAB contractor). Failure of the lead pump for 5 min. (adj) the BAS will start the standby pump shall modulate the CHWP speed thru a VFD (furnished by others) to maintain the Chilled Water Differential Pressure Setpoint of 10 psi (adj. as determined by the TAB contractor). Failure of the lead pump for 5 min. (adj) the BAS will start the standby pump

e The System Controller shall start the Lag SCHWP when the Lead SCHWP is operating above 95 % and the Chilled Water Differential Pressure is below the Cilled Water Differential Pressure Setpoint for 5 min. The Lead & Lag SCHWP shall run in unison

f The System Controller shall disable the Lag SCHWP when the VFD speed is below 60% and the Lead CHWP will operate to maintain Chilled Water differential Pressure setpoint

g The System Controller shall disable the Lead SCHWP based on the mode

h The System Controller shall monitor the SCHWP status with a differential pressure switch across the pump, minimum differential of 5 psi.

i The BAS shall alarm whenever any SCHWP is enabled but the SCHWP status is off (SCHWP Fail)

j The BAS shall alarm whenever the Lead SCHWP disabled but the SCHWP status is on (SCHWP in Hand)

k The BAS shall alarm whenever the SCHWP VFD is in Alarm

l The designated lead pump will rotate upon on of the following conditions (user selectable)

1 Daily

2 Weekly

3 Monthly

4 Manual through a software switch on the BAS graphics

5 Pump Runtime, User adjustable

7 Primary Bypass Valves V-3 and V-8

a The System Controller shall modulate the Primary Bypass Valve to maintain the Chiller Evaporator Differential Pressure Setpoint when the PCHWP VFD Speed is at 20%

8 Secondary Bypass Valves

a The System Controller shall modulate the Secondary Bypass Valve to maintain the Secondary Differential Pressure Setpoint when the SCHWP VFD Speed is at 20%

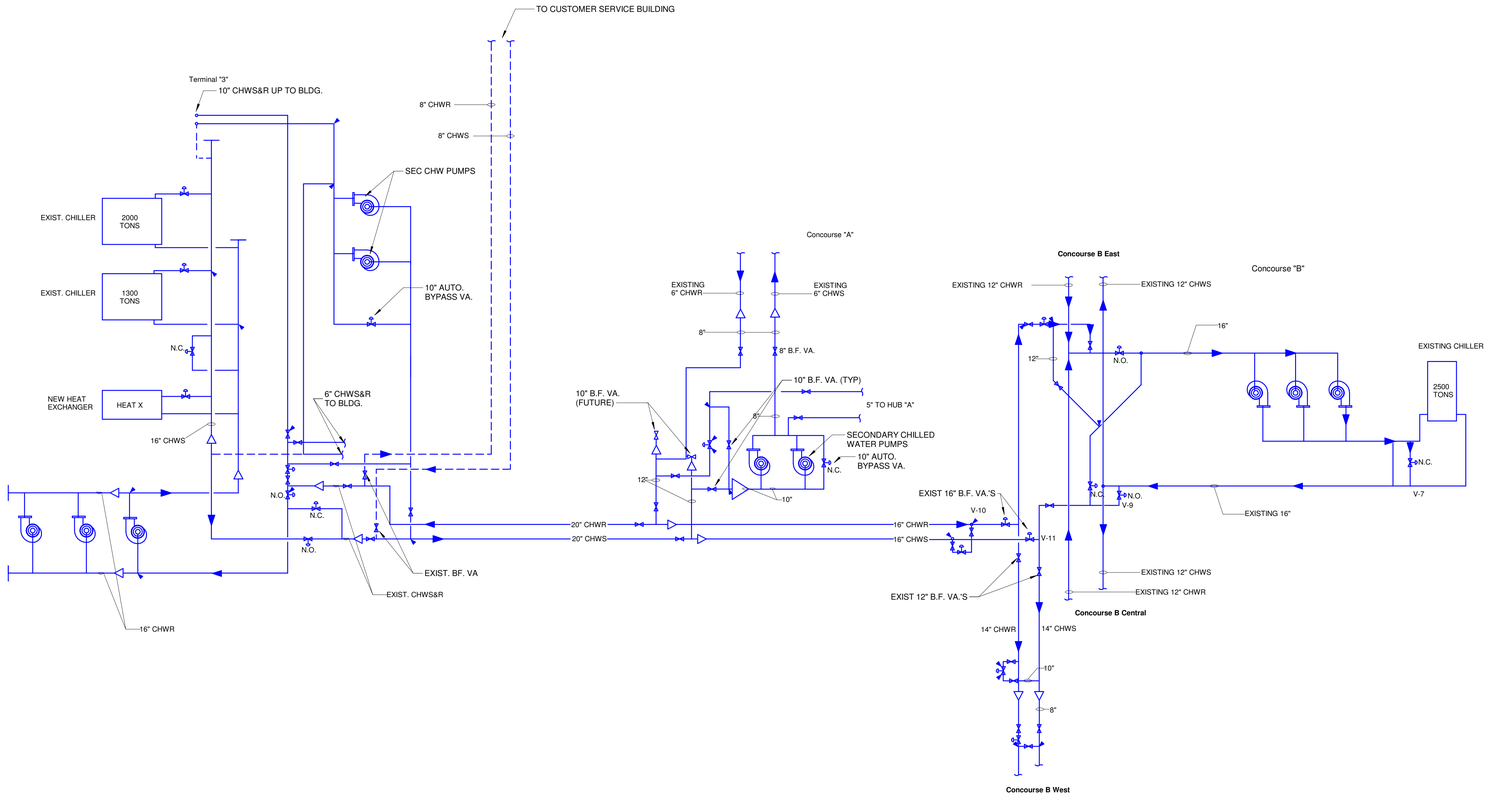
9 Chilled Water BTU Meters

a BTU Meters shall be install in the secondary piping where shown on the drawings for the following

1 Terminal 3

2 Concourse A

3 Concourse B



4/18/2025 12:46:47Autodesk Docs://CVG - Rehab and Efficiency Program/MECH-KLH-CVG_R25.rvt

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