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			FIRE PROTECTION		PLUMBING SYSTEMS
	=F(AF)=		- FIRE - ANTIFREEZE	2 1/2"	PIPE SIZE
	⊏F(CA)─		FIRE - CLEAN AGENT	========:XX	PIPING ROUTED BELOW SLAB OR GRAD
	=F(DEL)=		- FIRE - DELUGE	AV	ACID VENT
	F(D)—		- FIRE - DRAIN	AW	ACID WASTE
	=F(DRY)=		- FIRE - DRY	BBD	BOILER BLOWDOWN
	F(PA)		- FIRE - PRE-ACTION	CA(##)	COMPRESSED AIR (NOMINAL PRESSUR
	F		- FIRE - WET	CD(P)	CONDENSATE DISCHARGE PUMPED
	\ /		SPRINKLER GUARD FOR UPTICHT, PENDANT OR SIDEWALL SPRINKLER	CD	CONDENSATE DRAIN
	AC		ABBREVIATION FOR ANTICORROSION	DI	DIONIZED WATER
	HT		ABBREVIATION FOR HIGH TEMPERATURE	DIR—	DIONIZED WATER RECIRCULATING
			SPARE CABINET FOR 12 SPRINKLERS	DW———DOW	DISTILLED WATER
	SAN		DRAINAGE PIPING	DCW—	DOMESTIC COLD WATER
	•		FIRE EXTINGUISHER	DCW(S)	DOMESTIC COLD WATER SOFTENED
	\prec		SIAMESE FIRE DEPARTMENT CONNECTION	DHW— —	DOMESTIC HOT WATER
	\rightarrow		PRIVATE HYDRANT - ONE HOSE OUTLET	DHWR	DOMESTIC HOT WATER RECIRCULATION
	•		PUBLIC HYDRANT - TWO HOSE OUTLETS	D	DRAIN
	-		PUBLIC HYDRANT - TWO HOSE OUTLETSAND PUMPER CONNECTION	GW	GREASE WASTE
	0		UPRIGHT SPRINKLER	H	HUMIDIFICATION
	•		PENDANT SPRINKLER	LV	LABORATORY VENT
	∇		SIDEWALL SPRINKLER	LW	LABORATORY WASTE
	● ^{DP}		DRY PENDANT SPRINKLER	G	NATURAL GAS (LOW PRESSURE)
	\bigvee^{DP}		DRY SIDEWALL SPRINKLER	GD	GARAGE DRAINAGE
	FCP		FIRE ALARM CONTROL PANEL	GV	NATURAL GAS VENT
	FVC		FIRE VALVE CABINET		MEDIUM PRESSURE GAS
	SPCAB		SPRINKLER CABINET	NPCW—	NON-POTABLE COLD WATER
	ЕФ				
			FIRE HOSE VALVE ASSEMBLY	NPCW(S)	NON-POTABLE COLD WATER SOFTENED
	ુ જ		FIRE DAMPER	NPHW——NPHW(C)	NON-POTABLE HOT WATER
	Ø ~		SMOKE DAMPER	NPHW(S)	NON-POTABLE HOT WATER SOFTENED
	Ø		FIRE SMOKE DAMPER	PTS—	PNEUMATIC TRANSPORT
	ර	181	DUCT MOUNTED SMOKE SENSOR	PG	PROPANE GAS
<u> P</u>	₽	Fş ∴!	SUPERVISED BUTTERFLY VALVE	RO	REVERSE OSMOSIS
ē	<u> </u>	♂	SUPERVISED BUTTERFLY VALVE NORMALLY CLOSED	====ROR	REVERSE OSMOSIS RECIRCULATION
•		T	SUPERVISED GATE VALVE	SL	SAMPLING LINE
•			SUPERVISED OUSIDE SCREW AND YORK (OS&Y) VALVE	====SAN	SANITARY DRAIN
•	<u> </u>	<u> </u>	SUPERVISED OS&Y VALVE	SAN(O)	SANITARY DRAIN (OIL)
¢	T	8	SUPERVISED WATERFLOW SWITCH	SAN(P)	SANITARY PUMPED
-> GODE		8	SUPERVISED BACKFLOW PREVENTER	SAN(RAD)	SANITARY RADIOACTIVE
-D		b	WET ALARM CHECK VALVE WITH TRIMING	ST——ST—	STORM DRAIN
⇔ •1	U	al.		ST(0)	STORM DRAIN OVERFLOW
			DELUGE ALARM CHECK WITH TRIMING		
				ST(P)	STORM DRAIN PUMPED
	#		AIR MENTENANCE DEVICE	VAC-	VACUUM (AIR)
			FLOOR AIR COMPRESSOR TANK	VAC(EX)	VACUUM PUMP EXHAUST
L M	- III	í E	MOUNTED AIR COMPRESSOR ASSEMBLY	V	VENT (OIL)
			DRY ALARM CHCEK VALVE WITH TRIMING	V(0)	VENT (OIL)
			PREACTION ALARM CHECK VALVE WITH TRIMING	V(SE)	VENT (SEWAGE EJECTOR)
<u>@</u>			BOSTER PUMP (ALBANY PUMP)		PIPE INSULATION
(te	₽	ē	TEST AND DRAIN VALVE	<u> </u>	FIXTURE TRAP
	A	rÔ	PRESSURE REDUCING VALVE	СВ 🔾	CATCH BASIN
04	ю	٥	1-1/2 FIRE CONNECTION ANGLE VALVE	MH \bigcirc	MAN HOLE
oн	ю	0	2-1/2 FIRE CONNECTION ANGLE VALVE	RD ∅	ROOF DRAIN
□=	2	‡	FLOOR CONTROL VALVE ASSEMBLY	FD ∅	FLOOR DRAIN
(D)	8	ā	CHECK VALVE	FFD ∅	FUNNEL FLOOR DRAIN
Q.	윰	÷	TREADED BALL VALVE		TRAP PRIMER
- €	æ	8	GROOVED BALL VALVE	` <u> </u>	HOSE BIBB
ø	Ť	-		·	
	Ÿ.	Ī	HYDRAULIC GONG		PLUMBING FIXTURES
0		-	ELECTRIC BELL		LAB & MEDICAL GAS
ø	⊚	ⅎ	ELBOW WITH DRAIN 1 IN.		
Ø	Œ	Œ	GROOVE ELBOW	WAGD-	ANESTHETIC EVACUATION
		₩O	GROOVE TEE	CO2	CARBON DIOXIDE
	8.	Ø Ø	FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	DA	DENTAL COMPRESSED AIR
	0 E]	₿	SIAMESE PROJECTING CONNECTION «Y»	DV	DENTAL VACUUM
		(3)	SIAMESE CONNECTION «Y» FREE STANDING	He	HELIUM
G	9	ΦĐ	BODY FOR FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	H2	HYDROGEN
Щ	D	•	CONCENTRIC GROOVED MECHANICAL REDUCER	IA	INSTRUMENT AIR
0	8	•	GROOVED MECHANICAL TEE OR CAP	LCA	LABORATORY COMPRESSED AIR
0	B	•	REDUCING COUPLING	LVCA—	LABORATORY VACUUM
î	B	•	THREADED MECHANICAL TEE OR CAP	NA	MEDICAL AIR
8	A	ф	THREADED MECHANICAL CROSS	NVA	
8	Ø A				MEDICAL VACUUM
I I	*	ф -Ф	THREADED MECHANICAL TEE	N2	NITROGEN
, STA	Æ.	Z	HORIZONTAL SPLIT CASE FIRE PUMP	N2O	NITROUS OXIDE
			END SUCTION FIRE PUMP	02	OXYGEN
				Â	MEDICAL AIR OUTLET
			VERTICAL INLINE FIRE PUMP	⟨ŷ⟩	MEDICAL VACUUM OUTLET
	D	GOOD	FIRE PUMP ANGLE BODY 4 WAY	⟨N⟩	MEDICAL NITROGEN OUTLET
				\(\nabla_N\) \(\nabla_N\) \(\nabla_N\) \(\nabla_N\) \(\nabla_N\)	MEDICAL NITROUS OXIDE OUTLET
		0	JOCKEY PUMP	\Diamond	MEDICAL OXYGEN OUTLET
				(A)	LAB AIR SINGLE BENCH OUTLET
			PREACTION CABINET	∀	LAB VACUUM SINGLE BENCH OUTLET
				N -	LAB NITROGEN SINGLE BENCH OUTLET
 d		—	EIDE HOSE DACK	_	
		9=	FIRE HOSE RACK	(NO) >	LAB NITROUS OXIDE SINGLE BENCH OUT
		D Q		(i)	LAB OXYGEN SINGLE BENCH OUTLET
		U	SEISMIC EXPANSION LOOP	A	LAB DOUBLE 45 DEGREE BENCH OUTLE
حيليك	Ī	-		A	LAB DOUBLE BENCH OUTLET
	T		WALL POST INDICATOR VALVE (PIV)	A	LAB QUAD 45 DEGREE BECNH OUTLET
	П			~ `	MEDICAL GAS MASTER ALARM PANEL
			HANGER	17772	MEDICAL GAS AREA ALARM PANEL
	-	1	IIIIIOLIX		
				_= <u> </u> xxxx	
	_	Ø	HYDRANT VALVE CONTROL	— — — — — — — — — — — — — — — — — — —	MEDICAL GAS ZONE VALVE
	<u> </u>			F	MEDICAL GAS ZONE VALVE BALL VALVE

<u> S</u>				ווכ	PIPING SYSTEMS (HVAC)		
DE	-		===2 1/2 ====BB[PIPE SIZE BOILER BLOWDOWN		
JL	=		BFV		BOILER FEED WATER		
	Ξ		BR		BRINE RETURN		
RE)	-		===BS ==CHW		BRINE SUPPLY CHILLED WATER RETURN		
(L)	=		=CHWR		CHILLED WATER RETURN - GLYCOL		
	Ξ		_CHWF	R(P)	CHILLED WATER RETURN - PROCESS		(##
	=		CHW		CHILLED WATER SUPPLY		(##
	-		=CHWS =CHWS	, ,	CHILLED WATER SUPPLY - GLYCOL CHILLED WATER SUPPLY - PROCESS		5
	=		CWI	` ,	CONDENSER WATER RETURN		
	Ξ		CWR(,	CONDENSER WATER RETURN - COOLING TOWER		
)N	-		==CSV =CWS(CONDENSER WATER SUPPLY CONDENSER WATER SUPPLY - COOLING TOWER		
)N	=		CW3(\ DTF	•	DUAL TEMPERATURE RETURN (HOT OR CHILLED)		
	=		DTS	5	DUAL TEMPERATURE SUPPLY (HOT OR CHILLED)	18"x12"	—18"x
	=		==FCF		FLUID COOLER FILTRATION SUPPY	0 18"ø 0	18"
	-		—FCFI —FOF		FLUID COOLER FILTRATION RETURN FUEL OIL FILL	18"x12"ø	—18"x1
	=		FOF		FUEL OIL RETURN	18"x12"	—18"x
	Ξ		F0	5	FUEL OIL SUPPLY		─ ─ 30"x
	-		F0\		FUEL OIL VENT		
	-		──HPW ──HPW		HEAT RECOVERY LOOP RETURN HEAT PUMP WATER SUPPLY		
:D	=		HRF		HEAT RECOVERY LOOP RETURN	1111///////////////////////////////////	(11
	Ξ		—HRS		HEAT RECOVERY LOOP SUPPLY	i× I	
)	=		—HWR		HEATING WATER RETURN HEATING WATER RETURN - GLYCOL	[
	- -			(G)————————————————————————————————————	HEATING WATER RETURN - GLYCOL HEATING WATER SUPPLY		
	=			(G)		- UP I	
	Ξ		G-		NATURAL GAS VENT	<u> </u>	
	=		──GV ──RAI)———	· NATURAL GAS VENT · RADON GAS		
	=			HG)		7	
	=		==REF((L)	REFRIGERANT LIQUID		
	=		•	S)			
	-			/V)	REFRIGERANT VENT RELIEF VENT	777	
	Ξ		S(##		STEAM (NOMINAL PRESSURE)		
	-		,	#)	STEAM - CLEAN (NOMINAL PRESSURE)		
	<u>-</u>		──C(## ──PC(#	•	STEAM CONDENSATE (NOMINAL PRESSURE) STEAM PUMPED CONDENSATE (NOMINAL PRESSURE)	[29]	
	=		SV	,	STEAM VENT		
		<u></u>		(©)	PIPE INSULATION		
	RE/	AL OBJE	:CT	SYMBOL	PIPING COMPONENTS	<u>{</u>	•
	©	Ā	A	—⋈—	ISOLATION VALVE (GENERIC)	-	>
		Ā		—⋈—	GATE VALVE		
		Ī		— >	GLOBE VALVE	BDD	>
	† -	Î P	To be	— — — [—	BUTTERFLY VALVE NPS 6 AND LESS BUTTERFLY VALVE NPS 8 AND MORE		>
	ec E	1	8	—ф—	BALL VALVE	COD	
	- - 	Ä	Ò	—Ю—	PLUG VALVE		>
	- ⊳	- ⊠	豆	- ₩-	NEEDLE VALVE		
<u>.S</u>			\bar{\bar{\bar{\bar{\bar{\bar{\bar{	─ V	CHECK VALVE (GENERIC) BALANCING VALVE	<u> </u>	>
		_			FLOW LIMITING VALVE		>
	i⊚i ⊗ 2-WAY		Ö B	_\$	PRESSURE REDUCING VALVE	CAR	
	□ IS 2-WAY			— ₩—	2-WAY CONTROL VALVE (GENERIC)		>
	Q 3-WAY □ I	₽ ₽		————	TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE 3-WAY CONTROL VALVE (GENERIC)	<u> </u>	>
	3-WAY			4	THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE	\	
	Þ	呂	日		SOLENOID 2-WAY CONTROL VALVE	<u>}</u>	>
				—————————————————————————————————————	SOLENOID 3-WAY CONTROL VALVE FLOAT OPERATED VALVE ACTUATOR	◆	\bowtie
	Œ	Ą.	8	↓ —	SAFETY OR RELIEF VALVE	T	<u>~~~</u>
				≰I—	ANGLE VALVE		
		† † †	#		BOILER STOP AND CHECK VALVE	<u> </u>	-QUANT TYPE
	©i=□i		о ф		DOUBLE CHECK VALVE ASSEMBLY MULTI-PURPOSE VALVE (SHUT-OFF, BALANCING AND CHECK)		SIZE (II
			₫	W W	REDUCE PRESSURE BACKFLOW PREVENTER		VOLUM
			8		SUCTION DIFFUSER		<u></u>
				—	PUMP (GENERIC)		<u></u>
	\otimes		9	—————————————————————————————————————	Y-STRAINER (GENERIC) STEAM TRAP (GENERIC)		·
	Δ	0	•	~ Ъ	AUTOMATIC AIR VENT		
	Δ			~	MANUAL AIR VENT		
T ==	←	-		<u> </u>	VACUUM BREAKER	\bigotimes	
UTLET			— —		SHOCK ABSORBER TEMPERATURE GAUGE		
ET	<u>Ø</u>	•	5	<u>φ</u>	PRESSURE GAUGE	_	
	0			<u> </u>	TEMPERATURE AND PRESSURE TRAP	─	
	ы	⊢ #	\bigcirc	— <u></u>	SIGHT FLOW GLASS	UC	
	Ħ	Ħ	0	— <u>xxx</u> —	FLEXIBLE CONNECTOR EXPANSION JOINT	<u> </u>	
					GUIDE		
				×	ANCHOR	<u> </u>	-QUANT
				1%	FLOW ARROW PIPING SLOPE	<u> </u>	TYPE LENGT
	а	0		_ *	PIPING SLOPE PIPE CAP		CAPAC
				<u></u>	PIPE BREAK		
	$= \prod_{i=1}^{n} \exists i$			$\longleftarrow \widetilde{\downarrow} \longrightarrow$	PIPE CROSS		
	•			o	PIPING ELBOW UP PIPING ELBOW DOWN		
					PIPING TEE UP		
					PIPING TEE DOWN		

□ □ ◎ — □ ECCENTRIC REDUCER

——I STANDARD CLEAN-OUT IN LINE END OF RUN

—Ю STANDARD CLEAN-OUT THROUGH FLOOR END OF RUN

———— STANDARD CLEAN-OUT THROUGH FLOOR IN LINE

Y-PATTERN MANUAL BALANCING/SHUT-OFF VALVE

—

→ DIFFERENTIAL PRESSURE CONTROL VALVE

PRESSURE INDEPENDENT CONTROL VALVE

			PIPING SYSTEMS (HVAC)			WORK DEFINITION
	2 1/2		PIPE SIZE			NEW WORK (N)
	──BBD ──BFW		BOILER BLOWDOWN BOILER FEED WATER			EXISTING (E) REMOVE EXISTING (D)
	===BR		BRINE RETURN			REMOVE EXISTING EQUIPMENT (D)
	==BS- =CHW		BRINE SUPPLY CHILLED WATER RETURN			FUTURE TEMPORARY, AS NOTED
	CHWR		CHILLED WATER RETURN - GLYCOL			RELOCATE (R)
	CHWR	R(P)	CHILLED WATER RETURN - PROCESS		(###)	KEY NOTE
	=CHW :CHWS		CHILLED WATER SUPPLY CHILLED WATER SUPPLY - GLYCOL			EQUIPMENT IDENTIFICATION CONNECTION TO EXISTING
	CHWS	. ,	CHILLED WATER SUPPLY - PROCESS			DISCONNECT (CUT AND CAP)
	CWF		CONDENSER WATER RETURN			(HVAC)
	CWR(0 CSV	,	CONDENSER WATER RETURN - COOLING TOWER CONDENSER WATER SUPPLY			*NOTE: ALL DUCT SIZES ARE INTERIOR, FREE DIMENSIONS
	CWS(0		CONDENSER WATER SUPPLY - COOLING TOWER			ALWAYS WIDTH (HORIZONTAL DIM.) x HEIGHT (VERTICAL DIM.)
	DTF		DUAL TEMPERATURE RETURN (HOT OR CHILLED)	4011-4011	4.0114.011	AIR FLOW ARROW
	──DTS ==FCFS		DUAL TEMPERATURE SUPPLY (HOT OR CHILLED) FLUID COOLER FILTRATION SUPPY	18"x12"		RECTANGULAR DUCT AND SIZE* ROUND DUCT AND SIZE*
	=FCFF		FLUID COOLER FILTRATION RETURN	18"x12"ø	—18"x12"ø—	₹ FLAT OVAL DUCT AND SIZE*
	—FOF		FUEL OIL FILL	18"x12" }	10",10"	EXTERIOR DUCT TREATMENT* RECTANGULAR DUCT WITH ACOUSTIC LINING*
	==F0F ==F0S		FUEL OIL RETURN FUEL OIL SUPPLY		→ 30"x12"	DUCT SECTION, SUPPLY AIR. APPLIES TO RECT., ROUND AND OVAL
	=FOV	/	FUEL OIL VENT			DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL
	=HPW		HEAT RECOVERY LOOP RETURN			DUCT SECTION, RETURN AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, EXHAUST AIR. APPLIES TO RECT., ROUND AND OVAL
	≕HPW ≕HRF		HEAT PUMP WATER SUPPLY HEAT RECOVERY LOOP RETURN		(1)	FLEXIBLE DUCT
	=HRS	5	HEAT RECOVERY LOOP SUPPLY	i x		ELBOW TURN, SUPPLY DOWN. APPLIES TO RECT., ROUND AND OVAL
	=HWF		HEATING WATER RETURN	×		DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL
	=HWR(==HW§	, ,	HEATING WATER RETURN - GLYCOL HEATING WATER SUPPLY			DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL
	=HWS(G)	HEATING WATER SUPPLY - GLYCOL	Y UP		CHANGE IN DUCT ELEVATION RISING IN DIRECTION INDICATED
	G-		NATURAL GAS VENT		 1	CHANGE IN DUCT ELEVATION DROPPING IN DIRECTION INDICATED END CAP
	──GV ──RAE		NATURAL GAS VENT RADON GAS			ELBOW, RECTANGULAR, SMOOTH RADIUS WITH SPLITTER VANES (0.25 R/W DEFAULT)
	REF(H	IG)	REFRIGERANT HOT GAS			ELBOW, RECTANGULAR, SMOOTH RADIUS WITHOUT VANES
	=REF(REFRIGERANT LIQUID	\supset		(1.5 R/W DEFAULT)
	=REF(; =REF(;	,	REFRIGERANT SUCTION REFRIGERANT VENT	5		ELBOW, ROUND, SMOOTH RADIUS (1.5 R/W DEFAULT)
	==RV		RELIEF VENT			
	─S(## =CS(#;	,	STEAM (NOMINAL PRESSURE) STEAM - CLEAN (NOMINAL PRESSURE)	<u> </u>		MITERED ELBOW, RECTANGULAR, WITHOUT VANES
	—03(#‡ —C(##	•	STEAM CONDENSATE (NOMINAL PRESSURE)	(2)		MITERED ELBOW, RECTANGULAR, WITH TURNING VANES
	=PC(#	#)	STEAM PUMPED CONDENSATE (NOMINAL PRESSURE)			
ē	<u></u> SV⁻ - -ृ	(D)	STEAM VENT PIPE INSULATION			RECTANGULAR TO ROUND TRANSITION
	==	-				DUCT ACCESS DOOR (TOP, SIDE, BOTTOM)
AL OBJEC	et A	SYMBOL	PIPING COMPONENTS			FLEXIBLE CONNECTION
	ă	\longrightarrow	ISOLATION VALVE (GENERIC) GATE VALVE	<u> </u>		TELABLE CONNECTION
Ī	<u>I</u>	— > □	GLOBE VALVE	BDD	>	BACKDRAFT DAMPER
I P		—	BUTTERFLY VALVE NPS 6 AND LESS BUTTERFLY VALVE NPS 8 AND MORE		>	CABLE OPERATED DAMPER
!	8	—ф —	BALL VALVE	COD		
Ħ	Ò	── Ö 	PLUG VALVE	}	>	MANUAL DAMPER
	7	→ *	NEEDLE VALVE CHECK VALVE (GENERIC)	<u> </u>	>	MOTORIZED DAMPER
	Ö	⊗	BALANCING VALVE	M		
4 #	1 1	— <u></u> ∐—	FLOW LIMITING VALVE	CAR	>	PRESSURE INDEPENDENT REGULATOR
			PRESSURE REDUCING VALVE 2-WAY CONTROL VALVE (GENERIC)	\$	>	FIRE DAMPER
			TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE	•		
		───	3-WAY CONTROL VALVE (GENERIC)	† †	>	SMOKE DAMPER
IO B	 ©	— ₽—	THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE SOLENOID 2-WAY CONTROL VALVE	-	>	SMOKE AND FIRE DAMPER
		───	SOLENOID 3-WAY CONTROL VALVE	` \		
Ą.	A		FLOAT OPERATED VALVE ACTUATOR SAFETY OR RELIEF VALVE	(T)		DUCT SILENCER/TRANSFER ELBOW CONTROL DEVICE (REFER TO CONTROLS LEGEND)
•	•	Δ ⁴ Δ∕—	ANGLE VALVE			AIR FLOW MEASURING STATION (REFER TO CONTROLS LEGEND)
# #	#	₽	BOILER STOP AND CHECK VALVE	<u> </u>	-QUANTITY	
	Ĉ ₫		DOUBLE CHECK VALVE ASSEMBLY MULTI-PURPOSE VALVE (SHUT-OFF, BALANCING AND CHECK	, –	TYPE SIZE (IN.)	AIR OUTLET OR INLET TAG)REFER TO SCHEDULE)
444	₫	M. T.	REDUCE PRESSURE BACKFLOW PREVENTER		VOLUME (CFN	И)
	≅		SUCTION DIFFUSER			RECTANGULAR DIFFUSER, SUPPLY.
\Box	*	— <u> </u>	PUMP (GENERIC) Y-STRAINER (GENERIC)		← [] →	OPTIONAL ARROWS SHOW THE FLOW DIRECTION.
Î	Î	—————————————————————————————————————	STEAM TRAP (GENERIC)			RECTANGULAR REGISTER OR GRILLE, RETURN
0	0	~~ <u>~</u>	AUTOMATIC AIR VENT			RECTANGULAR REGISTER OR GRILLE, EXHAUST
-		<u> </u>	MANUAL AIR VENT VACUUM BREAKER			NEOTANOULAN NEOTEN ON ONIELE, EXHAUST
y		<u>Q</u>	SHOCK ABSORBER	\bigotimes		ROUND DIFFUSER, SUPPLY
Ψ		<u>\</u>	TEMPERATURE GAUGE PRESSURE GAUGE			LINEAR DIFFUSER SIDEWALL REGISTER OR GRILLE, SUPPLY
Ū		<u> </u>	TEMPERATURE AND PRESSURE TRAP	<u>—</u>		SIDEWALL GRILLE, RETURN OR EXHAUST
			SIGHT FLOW GLASS	ŪČ		UNDERCUT DOOR
Ħ	0	— XX —	FLEXIBLE CONNECTOR EXPANSION JOINT			DOOR GRILLE OR LOUVER TRANSFER GRILLE OR LOUVER
			GUIDE			COIL (REFER TO CONTROLS LEGEND)
			ANCHOR	<u> </u>	-QUANTITY	
		1%	FLOW ARROW PIPING SLOPE		TYPE LENGTH (FT.)	RADIATION HEATING TAG (REFER TO SCHEDULE)
0			PIPE CAP	_	CAPACITY (MI	·
		~	PIPE BREAK			
		├	PIPE CROSS PIPING ELBOW UP			
		C	PIPING ELBOW DOWN			
			PIPING TEE UP			
0	0		PIPING TEE DOWN UNION CONNECTION			
ф	0	· 	FLANGED CONNECTION			
D	©	— □—	CONCENTRIC REDUCER			
D	\odot		ECCENTRIC REDUCER			

WORK DEFINITION

A /O	ALD CONDITIONING LINET
A/C AAV	AIR CONDITIONING UNIT AUTOMATIC AIR VENT
AAV ADA	AMERICANS WITH DISABILITIES ACT
ADA ADJ	AMERICANS WITH DISABILITIES ACT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED CEILING ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFG	ABOVE FINISH ROOF
AFR	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AVG	AVERGAGE
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
C/W	COMPLETE WITH
CAV	CONSTANT AIR VOLUME
CBV	CIRCUIT BALANCING VALVE
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB TEMEPRATURE
dB	DECIBEL(S)
dBA	A-WEIGHTED DECIBLES
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DIA./Ø	DIAMETER
DIFF	DIFFERENTIAL
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EA	EXHAUST AIR
EA (D)	EXHAUST AIR, DISHWASH
EA (G)	EXHAUST AIR, GENERAL
EA (K)	EXHAUST AIR, KITCHEN
EA (LAB)	EXHAUST AIR, LABORATORY
EA (LD)	EXHAUST AIR, LAUNDRY/DRYER

ECM MOTOR SYSTEM

ENERGY EFFICIENCY RATIO ETHELYENE GLYCOL EMCS ENERGY MANAGMENT CONTROL EXISTING RELOCATED (NEW CONSTRUCTION PLANS) EXISTING TO BE RELOCATED (DEMOLITION PLANS) EXTERNAL STATIC PRESSURE EWT ENTERING WATER TEMPERATURE EXIST / E EXISTING (DEMOLITION PLANS) FC FAIL CLOSED FLA FULL LOAD AMPERAGE FO FAIL OPEN FP FIRE PROTECTION FPM FEET PER MINUTE

FPS FEET PER SECOND FOOT/FEET GAUGE GAL GALLON (US) GC GENERAL CONTRACTOR GEO GEODETIC GPM GALLONS PER MINUTE HORSEPOWER HOUR CONDITIONING

INVERT ELEVATION INTEGRATED ENERGY EFFECIENCY R-# RETURN AIR GRILLE / REGISTER / DIFFUSER IEER RATIO INCHES IN WG INCHES WATER GAUGE IPLV INTEGRATED PART LOAD VALUE kW KILOWATT kWh KILOWATT HOUR LAT LEAVING AIR TEMPERATURE POUNDS LINEAR FEET

LWT M METER MAX MAXIMUM THOUSAND OF BTUH MBH MCA MINIMUM CIRCUIT AMPS VALUES MFR MANUFACTURER MINIMUM MOP MAXIMUM OVERCURRENT PROTECTION MWT MEAN WATER TEMPERATURE

NOT APPLICABLE

OFE OWNER FURNISHED EQUIPMENT

PSIG POUNDS PER SQUARE INCH, GAGE

PTS PNEUMATIC TUBE STATION PVC POLYVINYL CHLORIDE

RPM REVOLUTIONS PER MINUTE SUPPLY AIR

RATION

SP STATIC PRESSURE

TEMP TEMPERATURE

TSTAT THERMOSTAT

UC UNDER CUT (DOOR)

TYP TYPICAL

SRV SAFETY RELIEF VALVE TA TRANSFER AIR

TSP TOTAL STATIC PRESSURE

UNDERGROUND

WB WET BULB TEMPERATURE

VARIABLE FREQUENCY DRIVE

VAV VARIABLE AIR VOLUME

VIF VERIFY IN FIELD

WITH

WG WATER GAUGE

W/O WITHOUT

ZN-# ZONE °C CELSIUS °F FAHRENHEIT

VTR VENT-THRU-ROOF

SEER SEASONAL ENERGY EFFICIENCY

SP STAIR PRESSURIZATION AIR (*)

OFOI OWNER FURNISHED / OWNER INSTALLED

PG PROPYLENE GLYCOL

POE POINT OF ENTRANCE POS POINT OF SERVICE

PPM PARTS PER MILLION PSI POUNDS PER SQUARE INCH PSIA POUNDS PER SQUARE INCH, ABSOLUTE

RA RETURN AIR RELA RELIEF AIR REQD REQUIRED RH RELATIVE HUMIDITY

NOISE CRITERIA NORMALLY CLOSED NOT IN CONTRACT NO NORMALLY OPEN NOMINAL PIPE SIZE NPS NTS NOT TO SCALE OA OUTSIDE AIR OFCI OWNER FURNISHED, CONTRACTOR INSTALLED

EQUIPMENT IDENTIFICATION

AB-# AIR BLENDER

AF-# AIR FILTER

B-# BOILER

BT-# BATH TUB

CH-# CHILLER

CB-# CHILLED BEAM

CC-# COOLING COIL

CONV-# CONVECTOR

CT-# COOLING TOWER CU-# CONDENSING UNIT

CV-# CONTROL VALVE

DAC-# DOOR AIR CURTAIN

DF-# DRINKING FOUNTAIN

DU-# DEHUMIDIFICATION UNIT

DWH-# DOMESTIC WATER HEATER

ERU-# ENERGY RECOVERY UNIT

ES-# EMERGENCY SHOWER

EWS-# EYE WASH STATION

F(C)-# FAN CEILING

F(E)-# FAN EXHAUST

F(R)-# FAN RETURN

F(S)-# FAN SUPPLY

F-# FAN

F(T)-# FAN TRANSFER

FCU-# FAN COIL UNIT

FFU-# FAN FILTER UNIT

FPP-# FIRE PROTECTION PUMP

FTR-# FINNED TUBE RADIATOR

GFS-# GLYCOL FEED SYSTEM

H(C)-# HOOD (CANOPY)

H(I)-# HOOD (INTAKE)

H(R)-# HOOD (RELIEF)

H(RH)-# HOOD (RANGE)

H-# HUMIDIFIER

HC-# HEATING COIL

HP-# HEAT PUMP

LAV-# LAVATORY

MSK-# MOP SINK MV-# MIXING VALVE

P-# PUMP

RD-# ROOF DRAIN

RH-# RANGE HOOD

RP-# RADIANT PANEL

RTU-# ROOFTOP UNIT

SH-# SHOWER

SK-# SINK

HRU-# HEAT RECOVERY UNIT

HX-# HEAT EXCHANGER

MAU-# MAKEUP AIR UNIT

MD-# MOTORIZED DAMPER

MVP-# MEDICAL VACUUM PUMP

PDU-# POOL DEHUMIDIFICATION UNIT

PRV-# PRESSURE REDUCING VALVE

PTAC-# PACKAGED TERMINAL AIR CONDITIONER

RPBP-# REDUCED PRESSURE BACKFLOW PREVENTER

S-# SUPPLY GRILLE / REGISTER / DIFFUSER

SPC-# SOLAR PANEL COLLECTOR

SSF-# SIDE STREAM FILTER

T(B)-# TANK (BUFFER TANK)

T(E)-# TANK (EXPANSION TANK)

T(S)-# TANK (STORAGE TANK)

T-# TRANSFER AIR GRILLE

T(H)-# TANK (HYDRO PNEUMATIC TANK)

HT-# HYDROPNEUMATIC TANK

LATU-# LAB AIR TERMINAL UNIT

MAC-# MEDICAL AIR COMPRESSOR

H(K)-# HOOD (KITCHEN)

FPTU-# FAN POWERED TERMINAL UNIT

GSG-# GAS-FIRED STEAM GENERATOR(*)

H(HC)-# HOOD (HEAT AND CONDENSATE)

FD-# FLOOR DRAIN

FUR-# FURNACE

ETU-# EXHAUST TERMINAL UNIT

EWC-# ELECTRIC WATER COOLER

F(LE)-# FAN LABORATORY EXHAUST

E-# EXHAUST GRILLE / REGISTER / DIFFUSER

DG-# DOOR GRILLE

DS-# DUCT SILENCER

EL-# EXPANSION LOOP ERC-# ENERGY RECOVERY COIL

DCT-# DECONTAMINATION TANK

DCVA-# DOUBLE CHECK VALVE ASSEMBLY

DC-# DUST COLLECTOR

CUH-# CABINET UNIT HEATER

CRU-# CONDENSATE RETURN UNIT

AC-# AIR COMPRESSOR ACU-# AIR CONDITIONING UNIT

AHU-# AIR HANDLING UNIT

ATU-# AIR TERMINAL UNIT

BCU-# BLOWER COIL UNIT

AS-# AIR SEPARATOR

ADS-# AIR AND DIRT SEPARATOR

EA (W) EXHAUST AIR, WASHROOM EAT ENTERING AIR TEMPERATURE

EAV EXHAUST AIR VALVE ELECTRONICALLY COMMUNICATED EXISTING TO BE DEMOLISHED (DEMOLITION PLANS)

HEPA HIGH EFFICIENCY PARTICULATE AIR HVAC HEATING / VENTILATING / AIR

LEAVING WATER TEMPERATURE MERV MINIMUM EFFECIENCY REPORTING

UH-# UNIT HEATER UR-# URINAL USG-# UNFIRED STEAM GENERATOR UV-# UNIT VENTILATOR VA-# VALVE VFD-# VARIABLE FREQUENCY DRIVE WC-# WATER CLOSET WS-# WATER SOFTENER L-# LOUVER

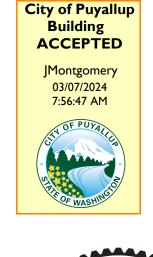
> FULL SIZED LEDGIBLE **COLOR** PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITTEE ON SITE FOR ALL INSPECTIONS (MIN. PLAN SIZE 24" X 36")

centeris



MECHANICAL DRAWINGS

PRMH20240272





Revision No. Description UPS YARD EQUIPMENT PERMIT SET 2/8/2024 DATA HALL PERMIT UPS & BATTERY ROOM INTERIORS 2/16/2024

City of Puyallup **Development & Permitting Services** ISSUED PERMIT Building Planning Engineering Public Works Fire Traffic

MECHANICAL LEGEND AND

Title ABBREVIATIONS

M.VP.001

NOTE: NOT ALL SYMBOLS, SYSTEMS, AND ABBREVIATIONS MAY BE USED ON THIS PROJECT



DEMO NOTES

- 1. NOT ALL EXISTING CONDITIONS HAVE BEEN SHOWN. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO DEMO.
- 2. CONTRACTOR SHALL PROTECT ALL WORK AND EXISTING CONDITIONS ASSOCIATED WITH THIS CONTRACT FROM DAMAGE, COVER ENDS OF PIPING AND DUCTWORK NOT ACTIVELY BEING WORKED ON. IT IS THE CONTRACTOR RESPONSIBILITY TO REPAIR OR REPLACE ANY DAMAGED ITEMS THAT OCCURS DURING THIS CONSTRUCTION PROJECT AT NO COST TO THE OWNER.
- 3. DEMOLISH ALL REQUIRED EQUIPMENT, DUCTWORK, PIPING, HANGERS, CONTROLS AND ALL ASSOCIATED EXISTING SYSTEMS AS REQUIRED. TO REPLACE EACH SYSTEM, CONTRACTOR SHALL COORDINATE DEMOLITION WITH EXISTING SYSTEMS AND COMPONENTS TO REMAIN PRIOR TO WORK COMMENCING.
- 4. IT IS THE CONTRACTOR RESPONSIBILITY TO CLEAN UP ALL DEBRIS FROM SITE AT THE END OF EACH WORK DAY AND DISPOSE OFF EITHER IN LAY DOWN RECYCLE BINS PROVIDED BY THE CONTRACTOR OR OFFSITE ALL TOGETHER.
- 5. ALL DEMOLISHED EQUIPMENT SHALL BE TURNED OVER TO THE OWNER UNLESS DIRECTED OTHERWISE. IF NOT REQUIRED BY OWNER, DISPOSE AS REQUIRED.

GENERAL NOTES

- 1. THE MECHANICAL PLANS ARE DIAGRAMMATIC IN NATURE AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL OF THE DETAILS FOR THE EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT AND ENSURE THAT IT WILL FIT IN THE AVAILABLE SPACE.
- 2. MECHANICAL CONTRACTOR RESPONSIBLE FOR INSTALLATION OF COMPLETED AND OPERATIONAL SYSTEMS WITH DUE RESPECT TO ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.
- 3. IT IS THE CONTRACTOR RESPONSIBILITY TO FIELD VERIFY ALL CONNECTION POINTS PRIOR TO INSTALL. NOT ALL CONNECTION SIZES ARE SHOWN, BUT THOSE THAT ARE APPROXIMATE AND TAKEN FROM EXISTING AS-BUILTS AND FIELD OBSERVATIONS.
- 4. COORDINATE PIPE ROUTING WITH DUCTWORK, SPRINKLER PIPING AND ELECTRICAL POWER/LIGHTING CIRCUITING AND STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
- 5. CONTRACTORS TO VERIFY ALL GRADES, DIMENSIONS AND EXISTING CONDITIONS AT THE SITE BEFORE PROCEEDING WITH WORK. NOTIFY PRIME CONSULTANT OF ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL CONDITIONS BEFORE INSTALLATION.
- 6. EQUIPMENT AND SYSTEMS SHALL COMPLY WITH 2018 WASHINGTON STATE ENERGY AND MECHANICAL CODES.
- 7. COORDINATE INSTALLATION OF PIPING AND DUCTWORK WITH ELECTRICAL CONTRACTOR AND OTHER TRADES.
- 8. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS NEEDED TO CONSTRUCT WORK SHOULD IN THE CONSTRUCTION DOCUMENTS AND ACCOMPANYING SPECIFICATIONS.
- 9. IF THERE IS A CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, THE MOST STRINGENT WILL APPLY.
- 10. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURERS. CONTRACTOR TO PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
- 11. SYSTEMS ADHERE TO 2018 WSEC SECTION C403.2.3 VARIABLE FLOW CAPACITY: FOR FAN AND PUMP MOTORS 7.5 HP AND GREATER, INCLUDING MOTORS IN OR SERVING CUSTOM AND PACKAGED AIR HANDLERS SERVING VARIABLE AIR VOLUME SYSTEMS, CONSTANT VOLUME FANS, HEATING AND COOLING HYDRONIC PUMPING SYSTEMS, AND OTHER PUMP OR FAN MOTORS WHERE VARIABLE FLOWS ARE REQUIRED SHALL BE EQUIPPED WITH VARIABLE SPEED DRIVES.
- 12. SYSTEMS ADHERE TO SECTION C403.3.2 HVAC EQUIPMENT PERFORMANCE REQUIREMENTS: EQUIPMENT SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES C403.3.2(1) THROUGH C403.3.2(12) WHEN TESTED AND RATED IN ACCORDANCE WITH THE APPLICABLE TEST PROCEDURE.
- 13. SYSTEMS ADHERE TO C405.8 ELECTRIC MOTOR EFFICIENCY: A:ALL ELECTRIC MOTORS, FRACTIONAL OR OTHERWISE, SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES C405.8(1) THOUGH C405.8(4) WHEN TESTED IN ACCORDANCE WITH DOE 10 CFR UNLESS OTHER EXCEPTIONS ARE QUALIFIED AND MET BY THIS SECTION. B: FRACTIONAL HP FAN MOTORS THAT ARE 1/12 HP OR GREATER AND LESS THAN 1 HP (BASED ON THE OUTPUT POWER) WHICH ARE NOT COVERED IN TABLES C405.8(3) AND C405.8(4) SHALL BE ELECTRONICALLY COMMUTATED MOTORS OR SHALL HAVE A MINIMUM MOTOR EFFICIENCY OF 70 PERCENT WHEN RATED IN ACCORDANCE WITH DOE 10 CFR 431.
- 14. PENETRATIONS OF DUCTS, PIPES, CONDUITS, ETC IN WALLS REQUIRING PROTECTED OPENINGS SHALL BE FIRE STOPPED, FIRE STOP MATERIAL, SHALL BE A UL/ULC-LISTED ASSEMBLY APPROPRIATE FOR FIRE OR SMOKE PENETRATIONS AS APPLICABLE AND AS APPROVED BY THE FIRE MARSHAL.
- 15. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIRE, SMOKE, OR COMBINATION SMOKE/FIRE DAMPERS AND ACCESS PANELS COMMENSURATE WITH THE RATING OF THE WALL IN ALL DUCTWORK THAT PENETRATES FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITION IN ALL DUCTWORK THAT PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON THE DRAWINGS.
- 16. ALL BRANCH DUCTS SHALL HAVE VOLUME DAMPERS.
- 17. WHERE FLOW EXCEEDS 150 CFM, THE CONTRACTOR SHALL USE SMOOTH RADIUS ELBOWS OR TURNING VANES.
- 18. ALL DUCT JOINTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA
- 19. ALL DUCT DIMENSIONS ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED PROVIDED THAT THE NET FREE AREA IS MAINTAINED.
- 20. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.
- 21. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED AND TESTED IN ACCORDANCE WITH THE LOCAL REGULATIONS AND PROCEDURES DETAILED IN THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION. (SMACNA).
- 22. ALL DUCTWORK SHALL BE CONSTRUCTED AND SEALED PER IMC.
- 23. DUCTWORK SHALL MEET THE AIR LEAKAGE REQUIREMENTS OF 2018 WSEC C402.5 AND VAPOR RETARDER REQUIREMENTS PER THE IBC.
- 24. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAPS TO SUPPORT PIPES WILL NOT BE PERMITTED. REFER TO SPECIFICATIONS FOR MINUMUM SPACING OF PIPE SUPPORTS.
- 25. ALL EQUIPMENT TO BE INSTALLED ON MIN 6" THICK CONCRETE HOUSEKEEPING PADS.
- 26. ALL EQUIPMENT, DUCTS PIPING, AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE OF THE BUILDING OR OTHERWISE EXPOSED TO THE WEATHER SHALL BE COMPLETELY WEATHERPROOFED.
- 27. MECHANICAL EQUIPMENT, DUCTS AND PIPING ARE TO BE COORDINATED WITH STRUCTURAL JOISTS AND CROSS BRACING.
- 28. ALL EXPOSED PIPING IN OCCUPIED SPACES SUBJECT TO ARCHITECTURAL APPROVAL PRIOR TO INSTALLATION.
- 29. ALL DUCTWORK SHALL BE CONSTRUCTED AND SEALED PER IMC.
- 30. DUCTWORK SHALL MEET THE AIR LEAKAGE REQUIREMENTS OF 2018 WSEC C402.5 AND VAPOR RETARDER REQUIREMENTS PER THE IBC.
- 31. THE HVAC SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER PRIOR TO COMMISSIONING. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.
- 32. A BUILDING COMMISSIONING PROCESS AND FUNCTIONAL TESTING OF MECHANICAL SYSTEMS SHALL BE CARRIED OUT BY A CERTIFIED COMMISSIONING PROFESSIONAL IN ACCORDANCE WITH 2018 WSEC SECTION C408. THE MECHANICAL, ELECTRICAL, PLUMBING, AND CONTROL CONTRACTORS ARE REQUIRED TO PERFORM FUNCTIONAL PERFORMANCE TESTING OF ALL EQUIPMENT PRIOR TO TESTING BY THE COMMISSIONING AGENT. CONTRACTORS SHALL PROVIDE THE NECESSARY ASSISTANCE TO THE COMMISSIONING AGENT TO PERFORM COMMISSIONING DUTIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING CORRECTIVE ACTION IF ANY DEFICIENCIES ARE FOUND DURING COMMISSIONING.
- 33. SYSTEMS ADHERE TO 2018 WSEC SECTION C408 SYSTEM COMMISSIONING: A. A CERTIFIED COMMISSIONING PROFESSIONAL (CCP) SHALL LEAD THE COMMISSIONING PROCESS. A CCP IS AN INDIVIDUAL WHO IS CERTIFIED BY AN ANSI/ISO/IEC 17024:2012 ACCREDITED ORGANIZATION TO LEAD, PLAN, COORDINATE, AND MANAGE COMMISSIONING TEAMS AND
- IMPLEMENT THE COMMISSIONING PROCESS. B. A CERTIFIED COMMISSIONING PROFESSIONAL SHALL PERFORM THE
- a. DEVELOP A COMMISSIONING PLAN. b. REVIEW BUILDING DOCUMENTATION AND CLOSE-OUT SUBMITTALS.
- c. PROVIDE A COMMISSIONING REPORT. d. LIST SPECIFIC EQUIPMENT, APPLIANCES AND SYSTEMS COMMISSIONED.
- C. FUNCTIONAL TESTING SHALL BE COMPLETED FOR THE FOLLOWING SYSTEMS AND THEIR ASSOCIATED CONTROL SYSTEMS:
- a. MECHANICAL SYSTEMS
- b. SERVICE WATER HEATING SYSTEMS c. CONTROLLED RECEPTACLE AND LIGHTING SYSTEMS
- d. EQUIPMENT APPLIANCE AND SYSTEMS e. ENERGY METERING f. REFRIGERATION SYSTEMS
- D. A COMMISSIONING REPORT SHALL BE DELIVERED TO THE BUILDING OWNER AND INCLUDE: a. RESULTS OF THE FUNCTIONAL PERFORMANCE TESTS
- b. LIST OF DEFICIENCIES AND CORRECTIVE MEASURES IMPLEMENTED OR PROPOSED.
- c. FUNCTIONAL PERFORMANCE TEST PROCEDURES. d. COMMISSIONING PLAN.
- e_TAB REPORT. 34. TESTING AND BALANCING: ALL HVAC SYSTEMS SHALL BE BALANCED BY A LICENSED CONTRACTOR IN ACCORDANCE WITH ACCEPTED ENGINEERING STANDARDS AND SPECIFICATIONS PRIOR TO COMMISSIONING.
- 35. OWNER TRAINING BY CONTRACTORS FOR EACH PIECE OF EQUIPMENT OR SYSTEM SHALL INCLUDE: SYSTEM/EQUIPMENT OVERVIEW (WHAT IT IS, WHAT IT DOES, AND WHICH OTHER SYSTEMS OR EQUIPMENT DOES IT INTERFACE WITH). REVIEW OF THE AVAILABLE O&M MATERIALS. REVIEW OF THE RECORD DRAWINGS ON THE SUBJECT SYSTEM/EQUIPMENT. HANDS-ON DEMONSTRATION OF ALL NORMAL MAINTENANCE PROCEDURES, NORMAL OPERATING MODES, AND ALL EMERGENCY SHUTDOWN AND START-UP PROCEDURES.





MECHANICAL

PRMH20240272



Revision No. Description UPS YARD EQUIPMENT PERMIT SET 2/8/2024

UPS & BATTERY ROOM INTERIORS 2/16/2024

DATA HALL PERMIT

City of Puyallup Development & Permitting Services ISSUED PERMIT Planning Public Works Engineering

Traffic

Fire

MECHANICAL GENERAL NOTES

									FAN V	VALL SCH	HEDULE									
UNIT IDE	NTIFICATION							FAN WHE	EL			IN	DIVIDUAL F	AN	ELEC1	RICAL				
MARK	NUMBER	QUANTIT Y OF FANS		AIRFLOW PER FAN (CFM)		CONTROL	TYPE	SPEED (RPM)	MIN WHEEL DIA (IN)	SPEED (RPM)	DRIVE TYPE	FLA	MCA	MOP	VOLTS	PHASE	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
FW	001	40	650,000	16,250	0.5	MASTER CONTROLLER	EC AXIAL	985	37.48	1070	VFD	5	7.6	15	480	3	120	EBM-PAPST	W3G910LV1203	1,2
FW	002	40	650,000	16,250	0.5	MASTER CONTROLLER	EC AXIAL	985	37.48	1070	VFD	5	7.6	15	480	3	120	EBM-PAPST	W3G910LV1203	1,2
FW	003	40	650,000	16,250	0.5	MASTER CONTROLLER	EC AXIAL	985	37.48	1070	VFD	5	7.6	15	480	3	120	EBM-PAPST	W3G910LV1203	1,2
	ACKDRAFT DAMPE MS COMMUNICATI				OWER CONNEC	CTION FOR FAN GROUPINGS.														

UNIT	IDENTIFICATION						FAN W	HEEL		FAN N	10TOR		ELECT					
MARK	NUMBER	UNIT/AREA SERVED	STATUS	MAX AIRFLOW (CFM)	ESP (IN-WG)	CONTROL	TYPE	SPEED (RPM)	ВНР	HP	SPEED (RPM)	DRIVE TYPE	VOLTS	PHASE	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
EF	104 THRU 106, 109	S PERIMETER	ONLINE	50,000	0.75	VFD	MIXED FLOW	484	12.2	15	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	
EF	128 THRU 131, 133 THRU 144	S PERIMETER	ONLINE	50,000	0.75	VFD	MIXED FLOW	484	12.2	15	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	
EF	132 & 141	S PERIMETER	N+1	50,000	0.75	VFD	MIXED FLOW	484	12.2	15	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	
EF	147 & 148	W PERIMETER	N+1	50,000	0.75	VFD	MIXED FLOW	484	12.2	15	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	
EF	149 & 150	L1 ELEC RM	ONLINE	56,000	1.25	VFD	MIXED FLOW	554	18.9	20	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	

		DES	SIGN		CO	NSTRU(CTION						MAT	ERIAL						JOI	NTS			IN:	SULATIO	N	FΔ	CTORY	JACKE	Т		FIFI	D JACKI	FT		
SYSTEM	PIPE SIZE (IN)	MAX VELOCITY (FPS)	MAX FRICTION (FT/100')	OPERATING TEMP (F)	MIN WORKING PRESSURE (PSIG)		SSURE	TES DURATION (HRS)	LOCATION	COPPER TYPE K	COPPER TYPE L	A53 BS ERW SCH 40	A53 BS ERW STD	SCH 10 TYPE 316 STAINLESS STEEL	SCH 10 TYPE 304 STAINLESS STEEL	HDPE	PEX-A	SOLDERED	BRAZED	THREAGED	WELDED	PRESSURE FITTINGS	GROOVED	MINERAL FIBER, PREFORMED	FLEXIBLE ELASTOMERIC	THICKNESS (IN)	ASJ	ASJ-SS	FSK	NINAL	PVC - ALL	PVC - FITTINGS	PVC - TO 10 FEET AFF	ALUMINUM	STAINLESS STEEL	NOTES
									CONCEALED		Х							Х	Х						Х	0.5										
									EXPOSED		Х							Х	Х						Χ	0.5										
	2 AND LESS	4	4.0	44-56	125	200	125	2.5	MECHANICAL ROOM		Х							Х	Х						Х	0.5										
									OUTDOOR		X							X	X						X	0.5							-			
									UNDERGROUND		X							X	X						X	0.5										
									CONCEALED		X							X	X						X	0.5										
									EXPOSED		X							Х	Х						Х	0.5										
	2-1/2 - 8	8	4.0	44-56	125	200	125	2.5	MECHANICAL ROOM		Х							Х	Х						Х	0.5										
-) (4 DOD 4 TI) (F									OUTDOOR		Х							Х	Х						Х	0.5										
EVAPORATIVE WATER									UNDERGROUND		Х							Х	Х						Х	0.5										
WAIER									CONCEALED		Х							Х	Х						Х	0.5										
									EXPOSED		Х							Х	Х						Х	0.5										
	9 - 10	8	4.0	44-56	125	200	125	2.5	MECHANICAL ROOM		Х							Х	Х						Х	0.5										
									OUTDOOR		Х							Х	Х						Х	0.5										
									UNDERGROUND		Х							Х	Х						Х	0.5										
									CONCEALED		Х							Х	Х						Х	0.5										
									EXPOSED		Х							Х	Х						Х	0.5										
	12 AND GREATER	8	4.0	44-56	125	200	125	2.5	MECHANICAL ROOM		Х							Х	Х						Х	0.5										
									OUTDOOR		Х							Х	Х						Х	0.5										
									UNDERGROUND		Х							Х	Х						Х	0.5										

	UNIT IDENTIFICATIO	N				THROAT		HOC)D				
MARK	NUMBER	QUANTITY	AIRFLOW (CFM)	FREE AREA (S.F.)	WIDTH (IN)	LENGTH (IN)	THROAT VELOCITY (FPM)	MATERIAL	HEIGHT (IN)	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
IH	1, 2, 4, 8	4	40,000	50.00	63	123	800	ALUMINUM	52	450	WESTERN VENTS & CURBS	PHI INTAKE	1,2,3
IH	14-16, 19-20, 23-24	7	40,000	50.00	63	123	800	ALUMINUM	52	450	WESTERN VENTS & CURBS	PHI INTAKE	1,2,3
IH	27-30	4	40,000	50.00	63	123	800	ALUMINUM	52	450	WESTERN VENTS & CURBS	PHI INTAKE	1,2,3
IH	37-41	5	40,000	50.00	63	123	800	ALUMINUM	52	450	WESTERN VENTS & CURBS	PHI INTAKE	1,2,3

			DESIGN	CRITERIA	CON	STRUC	TION	PRODU	CT		M	ATERIAL					LINER					INS	ULATIO	N			FAC	TORY JAC	CKET		FIELD J	ACKET		NOTES
SYSTEM	APPLICATION	LOCATION	MAX VELOCITY (FPM)	MAX FRICTION (IN-WG/100')	DESIGN SYSTEM PRESSURE (IN-WG)	SEAL CLASS	MAX LEAKAGE RATE	SINGLE WALL DOUBLE WALL SOLID	DOUBLE WALL PERF LINER G90 GALV SHEET	STEEL G90 PVC COATED GALV SHEET STEEL	16 GA CARBON STEEL	ALUMINUM	304 STAINLESS STEEL 316 STAINLESS STEEL	FABRIC	FIBERGLASS	- 발 교	TURAL FI	THICKNESS (IN)	DENSITY (LB/FT³)	SERGLASS BLAI	FIBERGLASS BOARD	FLEXIBLE ELASTOMERIC FIRE RATED WRAP	RATED BOAF	NO N	ြလ	DENSITY (LB/FT³)	ASJ	ASJ-SS FSK	VINYL	FABRIC	PVC	ESS	ELF ADHI	
		CONCEALED	1,000	0.10	2	Α	6	Х	Х											Х				R-3.3	1.5	1.5		Х						1
SUPPLY AIR	ALL	EXPOSED	1,000	0.10	2	Α	6	Х	Х												Х			R-3.3	1	2.25		Х						1
		MECHANICAL ROOM	1,200	0.10	6	Α	6	Х	X												X			R-3.3	1	2.25		X						1
TUDNIAND		CONCEALED	1,000	0.10	2	Α	6	Х	X		'																	Х						1
ETURN AND RANSFER AIR	ALL	EXPOSED	1,000	0.10	2	Α	6	Х	X																			Х						1
ANOI LIVAIIV		MECHANICAL ROOM	1,200	0.10	6	Α	6	Х	X												X			R-8	2	2.25		Х						1
		CONCEALED	1,000	0.10	2	Α	6	Х	X																			Х						1
GENERAL	ALL	EXPOSED	1,000	0.10	2	А	6	Х	X																			Х						1
EXHAUST	ALL	LOUVER CAN	1,200	0.10	6	А	6	Х	X												Х			R-16	5	2.25		Х						1
		MECHANICAL ROOM	1,200	0.10	6	Α	6	Х	X												Х			R-8	2	2.25		Х						1
OUTSIDE AIR	ALL	LOUVER CAN	1,200	0.10	6	А	6	Х	X												X			R-16	5	2.25		Х						1
JUT SIDE AIR	ALL	MECHANICAL ROOM	1,200	0.10	6	Α	6	Х	X												х			R-8	2	2.25		Х						1

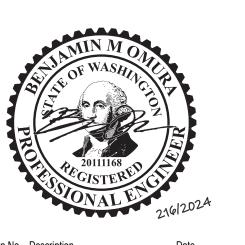




MECHANICAL DRAWINGS

CENTERIS /OLTAGE PARK UPS 019 39th AVENUE SE •UYALLUP, WA 98374

PRMH20240272



 Description
 Date

 PERMIT SET
 2/2/2024

 DATA HALL PERMIT
 2/16/2024

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building Planning

Engineering Public Works

Fire Traffic

 Drawn By:
 Checked By:

 JLV
 BO

MECHANICAL

Title SCHEDULES

												RECIRCULAT	ION AIR UNIT SCHEDULE													
TAG#	SCOPE OF WORK	2442115	A D.E.A. CED./ED			SUPPLY FAN					ELECT	RICAL	UNIT SIZ		FII	LTERS			EVAPORAT	TIVE COOLING N	/IEDIA - DESIGN	TO SLIDE INTO EXISTI	ING AHU CABINET	(
		MANUF.	AREA SERVED	SUPPLY FAN TYPE/QUANTITY	Y SUPPLY CFM	MIN. OSA CFM	SUPPLY E.S.P.	SUPPLY BHP	SUPPLY HP	VFD	GPS GROUP V	OLTAGE PHA	SE HEIGHT WIDTH LENGTH	TOTAL WEIGHT (LBS) PRE - FILTER EFF.	FINAL - FILTER EFF.	MEDIA AREA	MEDIA DEPTI	H EAT (DB/WB)	LAT (DB/WB)	EFFECTIVENES	S AIR PRESSURE DR	ROP WATER EVAP	P DRAIN PAN	DRAIN SIZ	ZE NOTES
RAU-01	EXISTING TO REMAIN	PACE CLEAFI—PAK	UPS/BATTERY RM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	А	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-02	EXISTING TO REMAIN	PACE CLEAFI—PAK	UPS/BATTERY RM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-03	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-04	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13		•	-	1	NO EVAP SE	CTIONS		_		
RAU-05	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-06	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-07	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-08	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-09	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-10	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	А	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 2"	1,2,3,4,5
RAU-11	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-12	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 2"	1,2,3,4,5
RAU-13	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-14	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	2"	1,2,3,4,5
RAU-15	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 3"	
RAU-16	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	Α	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-17	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 2"	1,2,3,4,5
RAU-18	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	_ 2"	1,2,3,4,5
RAU-19	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-20	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-21	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	Α	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-22	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	Α	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-23	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-24						1		T					NOT USED			T	T	1		T .						
RAU-25	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	Α	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-26	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-27	EXISTING UNIT TO BE ASSEMBLED	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	1,2,3,4,5
RAU-28	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	C	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-29	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13		T			NO EVAP SE			T		
RAU-30	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	C	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-31	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	04.550	40.00	101/-1		NO EVAP SE					12215
RAU-32	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	C	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 2"	1,2,3,4,5
RAU-33	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	3"	
RAU-34	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3"	
RAU-35	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	. 3	
RAU-36 RAU-37	EXISTING TO REMAIN EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM SERVER ROOM	DIRECT DRIVE PLU6 / 1 DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	C	460/3	126 IN. 134 IN. 321 IN. 126 IN. 134 IN. 321 IN.	12,500 LBS 12,500 LBS	2" MERV 8 2" MERV 8	12" MERV 13 12" MERV 13	91 FT2	12 IN	101/71	74.6/71	NO EVAP SE	0.26 IN	2.7.CDM	CTAINII FCC CTFFI	2"	
RAU-37	EXISTING TO REMAIN	PACE CLEAFI—PAK PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000 50,000	3,225 3,225	2.4	40.29 40.29	60 60	YES	Λ	460/3 460/3	126 IN. 134 IN. 321 IN. 126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 F12	12 IN	101/71	74.6/71	NO EVAP SE		2.7 GPIVI	STAINLESS STEEL		
RAU-39	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	,	2.4	40.29	60	YES	A D	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	2"	1,2,3,4,5
RAU-39	EXISTING UNIT TO BE ASSEMBLED	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225 3,225	2.4	40.29	60	YES	ם מ	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS 12,500 LBS	2" MERV 8	12" MERV 13	91 FT2 91 FT2	12 IN 12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	2"	1,2,3,4,5
RAU-40	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	<u> </u>	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2 91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	2"	1,2,3,4,5
RAU-42	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	Δ	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		1,2,3,4,3
RAU-43	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	3"	
RAU-44	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	3"	
RAU-45	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	<u> </u>	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		
RAU-46	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	3"	
RAU-47	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	A	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	<u>2"</u>	1,2,3,4,5
RAU-48	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		1,2,3,4,5
RAU-49	NEW EVAP/FILTER	PACE CLEAFI—PAK	L1 ELECTRICAL ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	В	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		1,2,3,4,5
RAU-50	NEW EVAP/FILTER	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES		460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		1,2,3,4,5
RAU-51	EXISTING UNIT TO BE ASSEMBLED	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	C	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL		1,2,3,4,5
RAU-52	EXISTING UNIT TO BE ASSEMBLED	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29	60	YES	С	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM		_ 3"	1,2,3,4,5
RAU-53	EXISTING TO REMAIN	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	40.29		YES	C	460/3	126 IN. 134 IN. 321 IN.	12,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN				, -, -, -, -, -, -, -, -, -, -, -, -, -,
RAU-54	- ***				,	, -		<u> </u>				-, -	NOT USED	,				· -	1 , , , , =	-, - =						
RAU-55	NEW RAU UNIT	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	37.7	40.5	YES	Α	460/3	132 IN. 134 IN. 270 IN.	14,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	STAINLESS STEEL	2"	1,2,3,4,5
RAU-56	NEW RAU UNIT	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	37.7		YES	A	460/3	132 IN. 134 IN. 270 IN.	14,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM			1,2,3,4,5
RAU-57	NEW RAU UNIT	PACE CLEAFI—PAK	SERVER ROOM	DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	37.7		YES	Α	460/3	132 IN. 134 IN. 270 IN.	14,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN	2.7 GPM	+		1,2,3,4,5
RAU-58	NEW RAU UNIT	PACE CLEAFI—PAK		DIRECT DRIVE PLU6 / 1	50,000	3,225	2.4	37.7		YES	Α	460/3	132 IN. 134 IN. 270 IN.	14,500 LBS	2" MERV 8	12" MERV 13	91 FT2	12 IN	101/71	74.6/71	88%	0.26 IN		STAINLESS STEEL		1,2,3,4,5
			= = ===	, -	,	, -						-, -		,					<u>, . – </u>	-,	1				1	, ,-,-,-

NOTES:

1. EVAPORATIVE SECTION WILL NEED TO BE FIT COMPLETELY WITHIN THE EXISTING AHU CABINET (INCLUDING THE DRAIN PAN

2. EVAPORATIVE SECTION SHOULD BE PROVIDED WITH INTERNAL PIPING AND CONTROL VALVES.

3. EVAPORATIVE SECTION WILL BE PROVIDED WITH WATER FROM A REMOTE COMMON SUMP. ALL DRAIN WATER WILL ROUTE TO THIS REMOTE COMMON SUMP.

4. PROVIDE SINGLE SWITCH FOR (3) 8.5W LED VAPOR PROOF LIGHTS. EC TO PROVIDE POWER TO SEPARATE 120V/1PH ELECTRICAL CONNECTION TO LIGHTING CIRCUIT ON EACH RAU.

5. CONTROL CONTRACTOR TO REVIEW RAU SUBMITTALS AND SEQUENCE OF OPERATIONS. PROVIDE AND DESIGN A FAULT TOLERANT SYSTEM THAT CONSIDERS CONTROL DAMPER ACTUATOR FAIL POSITIONS AND DOES NOT RELY ON THE HIGH PRESSURE SAFETY SWITCH TO PROTECT THE DAMPERS AND MAKE UNITS SAFE. EVALUATE DOOR SAFETY SHUTDOWN OPTIONS WITH MC. NOTE USE OF ONBOARD CONTROL TRANSFORMER MAY BYPASS SAFETIES IF DISCONNECT IS USED TO REMOVE POWER. CONTROL SYSTEM SAFETIES TO REMAIN CONTINUOUSLY AVAILABLE.



MECHANICAL DRAWINGS

PRMH20240272



Revision No. Description

DATA HALL PERMIT 2/16/2024

City of Puyallup **Development & Permitting Services** ISSUED PERMIT Building Planning

Engineering Public Works

MECHANICAL Title SCHEDULES

Mech_Energy	25% Calcul	ation																				
Γ Load Imbient	25% ASHRAE	1,225.5 Chiller	kW Chiller	Chiller	Total Air	Per Air	Per Air	No. of Air	A in	Air Handler	Total Heat	Ugot	Heat	No. Fans	Heat	Primary	Dumn	Dumn	No. of	Duma	Duma	MLC
emperature (°F)		Capacity (Tons)	Energy (kW)	Energy Usage (kWh)	Handler Fan Airflow (cfm)	Handler Fan Airflow (cfm)	Handler Fan Brake Power (hp)	Handlers	Handler Fan Energy (kW)	Fan Energy	Rejection Airflow (cfm)	Rejection Fan Airflow (cfm)	Rejection Fan Energy (kW)	Operating	Rejection Fan Energy (kWh)	Pump Flov	Pump Brake Power (hp)	Pump Motor Efficiency (%)	Pumps	Pump Energy (kW)	Pump Energy (kWh)	MILC
95.0	7.0	0	0	0	250000	12500	0.6328125	20	9.437765	66.06435938					0	78.75	0.3125	78.4	8	1.86425	13.04975	1.0092
94.0	2.0	0	0	0	250000	12500	0.6328125			18.87553125					0	78.75	0.3125	70.4	8	1.86425	3.7285	1.0092
92.0	6.0	0	0	0	250000	12500	0.6328125			56.62659375					0	78.75	0.3125		8	1.86425	11.1855	1.009
90.0	14.0	0	0	0	250000	12500	0.6328125			132.1287188					0	78.75	0.3125		8	1.86425	26.0995	1.009
88.0	25.0	0	0	0	250000	12500	0.6328125			235.9441406					0	78.75	0.3125		8	1.86425	46.60625	1.009
86.0	25.0	0	0	0	250000	12500	0.6328125			235.9441406					0	78.75	0.3125		8	1.86425	46.60625	1.009
84.0	36.0	0	0	0	250000	12500	0.6328125			339.7595625					0	78.75	0.3125		8	1.86425	67.113	1.009
82.0	41.0	0	0	0	250000	12500	0.6328125		9.437765	386.9483906					0	78.75	0.3125		8	1.86425	76.43425	1.009
80.0	62.0	0	0	0	250000	12500	0.6328125	20	9.437765	585.1414688					0	78.75	0.3125		8	1.86425	158.46125	1.009
78.0	85.0	0	0	0	250000	12500	0.6328125	20	9.437765	802.2100781					0	78.75	0.3125		8	1.86425	180.83225	1.009
76.0	97.0	0	0	0	250000	12500	0.6328125		9.437765	915.4632656					0	78.75	0.3125		8	1.86425	197.6105	1.009
74.0	106.0	0	0	0	250000	12500	0.6328125	20	9.437765	1000.403156					0	78.75	0.3125		8	1.86425	253.538	1.009
72.0	136.0	0	0	0	250000	12500	0.6328125		9.437765	1283.536125					0	78.75	0.3125		8	1.86425	300.14425	
70.0	161.0	0	0	0	250000	12500	0.6328125		9.437765	1519.480266					0	78.75	0.3125		8	1.86425	348.61475	_
68.0	187.0	0	0	0	250000	12500	0.6328125		9.437765	1764.862172	250000	250000	4.884330	1	913.36987					0	0	1.011
66.0	259.0	0	0	0	250000	12500	0.6328125			2444.381297	250000	250000	4.884330		1265.04170					0	0	1.011
64.0	282.0	0	0	0	250000	12500	0.6328125			2661.449906	250000	250000	4.884330		1377.3813					0	0	1.011
62.0	303.0	0	0	0	250000	12500	0.6328125			2859.642984	250000	250000	4.884330		1479.95220					0	0	1.011
60.0	355.0	0	0	0	250000	12500	0.6328125			3350.406797	250000	250000	4.884330		1733.9374					0	0	1.011
58.0	383.0	0	0	0	250000	12500	0.6328125			3614.664234	250000	250000	4.884330		1870.6987					0	0	1.011
56.0	436.0	0	0	0	250000	12500	0.6328125			4114.865813	250000	250000	4.884330		2129.5682					0	0	1.011
54.0	380.0	0	0	0	250000	12500	0.6328125			3586.350938	250000	250000	4.884330		1856.04574					0	0	1.011
52.0	445.0	0	0	0	250000	12500	0.6328125			4199.805703	250000	250000	4.884330		2173.5272					0	0	1.011
50.0	542.0	0	0	0	250000	12500	0.6328125			5115.268969	250000	250000	4.884330		2647.3073					0	0	1.011
48.0	502.0	0	0	0	250000	12500	0.6328125			4737.758344	250000	250000	4.884330		2451.9341					0	0	1.011
46.0	439.0	0	0	0	250000	12500	0.6328125			4143.179109	250000	250000	4.884330		2144.22120					0	0	1.011
44.0	590.0	0	0	0	250000	12500	0.6328125			5568.281719	250000	250000	4.884330		2881.7552					0	0	1.011
42.0 40.0	656.0 709.0	0	0	0	250000	12500	0.6328125			6191.17425	250000	250000	4.884330		3204.1210					0	0	1.011
38.0	486.0	0	0	0	250000	12500	0.6328125			6691.375828	250000	250000	4.884330		3462.9906	12				0	0	1.011
36.0	428.0	0	0	0	250000	12500	0.6328125			4586.754094	250000	250000	4.884330		2373.784	. 1 0				0	0	1.011
34.0	247.0	0	0	0	250000 250000	12500 12500	0.6328125 0.6328125			. 4039.363688	250000 250000	250000 250000	4.884330 4.884330		2090.49362 1206.42972					0	0	1.011
32.0	158.0	0	0	0	250000	12500	0.6328125			1491.166969	250000	250000	4.884330		771.72428		+		-	0	0	1.011
30.0	70.0	0	0	0	250000	12500	0.6328125			660.6435938	250000	250000	4.884330		341.90316		+		-	0	0	1.011
28.0	50.0	0	0	0	250000	12500	0.6328125			471.8882813	250000	250000	4.884330		244.21654		+			0	0	1.011
26.0	26.0	0	0	0	250000	12500	0.6328125			245.3819063	250000	250000	4.884330		126.99260					0	0	1.01
24.0	18.0	0	0	0	250000	12500	0.6328125			169.8797813	250000	250000	4.884330		87.91795	JU	+			0	0	1.011
22.0	6.0	0	0	0	250000	12500	0.6328125			56.62659375	250000	250000	4.884330		29.305985	43				0	0	1.011
20.0	0.0	0	0	0	250000	12500	0.6328125		9.437765		250000	250000	4.884330		49.3039634	т <u>Ј</u>				0	0	1.01

Load	50%	2,451.0	kW																			
	ASHRAE TMY Hours	Chiller Capacity (Tons)	Chiller Energy (kW)	Chiller Energy Usage (kWh)	Total Air Handler Fan Airflow (cfm)	Per Air Handler Fan Airflow	Per Air Handler Fan Brake Power (hp)	No. of Air Handlers	Air Handler Fan Energ (kW)	Air Handler Fan Energy y (kWh)	Total Heat Rejection Airflow (cfm)	Rejection Fan Airflow	Heat Rejection Fan Energy (kW)	No. Fans Operating	Heat Rejection Fan Energy (kWh)	Pump Flow (gpm)	Pump Brake Power (hp)	Pump Motor Efficiency (%)	No. of Pumps	Pump Energy (kW)	Pump Energy (kWh)	MLC
						(cfm)						(cfm)										
95.0	7.0	0	0	0	500000	25000	5.0625	20	75.502125	5 528.514875					0	157.5	2.5	78.4	8	14.914	104.398	1.0368
94.0	2.0	0	0	0	500000	25000		20	75.502125	151.00425					0	157.5	2.5		8	14.914	29.828	1.0368
92.0	6.0	0	0	0	500000	25000		20	75.502125	453.01275					0	157.5	2.5		8	14.914	89.484	1.0368
90.0	14.0	0	0	0	500000	25000		20	75.502125	1057.02975					0	157.5	2.5		8	14.914	208.796	1.0368.
88.0	25.0	0	0	0	500000	25000		20		1887.553125					0	157.5	2.5		8	14.914	372.85	1.0368.
86.0	25.0	0	0	0	500000	25000		20		1887.553125					0	157.5	2.5		8	14.914	372.85	1.0368.
84.0	36.0	0	0	0	500000	25000	5.0625	20		2718.0765					0	157.5	2.5		8	14.914	536.904	1.0368.
82.0	41.0	0	0	0	500000	25000		20		3095.587125					0	157.5	2.5		8	14.914	611.474	1.0368
80.0	62.0	0	0	0	500000	25000		20		4681.13175					0	157.5	2.5		8	14.914	924.668	1.0368
78.0	85.0	0	0	0	500000	25000		20		6417.680625					0	157.5	2.5		8	14.914	1267.69	1.0368
76.0	97.0	0	0	0	500000	25000		20		7323.706125					0	157.5	2.5		8	14.914	1446.658	1.0368
74.0	106.0	0	0	0	500000	25000		20		8003.22525					0	157.5	2.5		8	14.914	1580.884	1.0368
72.0	136.0	0	0	0	500000	25000		20		5 10268.289					0	157.5	2.5		8	14.914	2028.304	1.0368
70.0	161.0	0	0	0	500000	25000		20		5 12155.84213					0	157.5	2.5		8	14.914	2401.154	1.0368
68.0	187.0	0	0	0	500000	25000	5.0625	20		5 14118.89738	500000	500000	39.07464	1	7306.95903		2.3		0	0	0	1.0467
66.0	259.0	0	0	0	500000	25000	5.0625	20		5 19555.05038	500000	500000	39.07464	1	10120.3336					0	0	1.0467
64.0	282.0	0	0	0	500000	25000	5.0625	20		5 21291.59925	500000	500000	39.07464	1	110120.3330					0	0	1.0467
62.0	303.0	0	0	0	500000	25000	5.0625	20		5 22877.14388	500000	500000	39.07464	1	11839.6181					0	0	1.0467
60.0	355.0	0	0	0	500000	25000	5.0625	20		5 26803.25438	500000	500000	39.07464	1	13871.4997					0	0	1.0467
58.0	383.0	0	0	0	500000	25000	5.0625	20		5 28917.31388	500000	500000	39.07464	1	14965.58	· /				0	0	1.0467
56.0	436.0	0	0	0	500000							500000	39.07464	1	17036.54					0	0	1
54.0	380.0	0	0	0		25000		20		32918.9265	500000			1		<u> </u>				0	0	1.0467
52.0	445.0	0	0	0	500000	25000		20		28690.8075	500000	500000	39.07464	1	14848.3659					0	0	1.0467
50.0		0	0	0	500000	25000	5.0625	20		33598.44563	500000	500000	39.07464	1	17388.2180					0	0	1.0467
	542.0	0	0	0	500000	25000	5.0625	20		40922.15175	500000	500000	39.07464	1	21178.4588					0	0	1.0467
48.0	502.0	0	0	0	500000	25000	5.0625	20		37902.06675	500000	500000	39.07464	1	19615.4729					0	0	1.0467
46.0	439.0	0	0	0	500000	25000		20		33145.43288	500000	500000	39.07464	1	17153.7701					0	0	1.0467
44.0	590.0	0	0	0	500000	25000		20		44546.25375	500000	500000	39.07464	1	23054.0418					0	0	1.0467
42.0	656.0	0	0	0	500000	25000		20		49529.394	500000	500000	39.07464	1	25632.9685	, <u>9</u>				0	0	1.0467
40.0	709.0	0	0	0	500000	25000		20		5 53531.00663	500000	500000	39.07464	1	27703.92					0	0	1.0467
38.0	486.0	0	0	0	500000	25000		20		36694.03275	500000	500000	39.07464	1	18990.2785					0	0	1.0467
36.0	428.0	0	0	0	500000	25000		20		32314.9095	500000	500000	39.07464	1	16723.9490)2				0	0	1.0467
34.0	247.0	0	0	0	500000	25000		20		18649.02488	500000	500000	39.07464	1	9651.437		1			0	0	1.0467
32.0	158.0	0	0	0	500000	25000		20		11929.33575	500000	500000	39.07464		6173.79426					0	0	1.0467
30.0	70.0	0	0	0	500000	25000		20		5 5285.14875	500000	500000	39.07464		2735.22530		1	ļ		0	0	1.0467
28.0	50.0	0	0	0	500000	25000		20		3775.10625	500000	500000	39.07464		1953.73236					0	0	1.0467
26.0	26.0	0	0	0	500000	25000		20		1963.05525	500000	500000	39.07464		1015.94082					0	0	1.0467
24.0	18.0	0	0	0	500000	25000		20		1359.03825	500000	500000	39.07464		703.343650					0	0	1.0467
22.0	6.0	0	0	0	500000	25000		20		453.01275	500000	500000	39.07464		234.447883	35				0	0	1.0467
20.0	0.0	0	0	0	500000	25000	5.0625	20	75.502125	5 0	500000	500000	39.07464	. 1	0					0	0	1.0467

Load	75%	3,676.5	kW																			
mbient	ASHRAE	Chiller	Chiller	Chiller	Total Air	Per Air	Per Air	No. of Air	Air	Air Handler		Heat	Heat	No. Fans	Heat	Pump Flow	Pump	Pump	No. of	Pump	Pump	MI
emperature (°F)	TMY Hours	Capacity	Energy	Energy	Handler Fan		Handler	Handlers	Handler	Fan Energy	Rejection	Rejection	Rejection	Operating	Rejection		Brake	Motor	Pumps	Energy	Energy	
		(Tons)	(kW)	Usage	Airflow	Fan	Fan Brake		Fan Energy	(kWh)	Airflow	Fan	Fan Energy	7	Fan Energy	7	Power (hp)			(kW)	(kWh)	
				(kWh)	(cfm)	Airflow	Power (hp))	(kW)		(cfm)	Airflow	(kW)		(kWh)			(%)				
						(cfm)						(cfm)										
95.0	7.0	0	0	0	750000	37500	17.08593	. 20	254.8196	1783.737703					0	236.25	8.4375	78.4	8	50.33475	352.34325	$\sqrt{1}$
94.0	2.0	0	0	0	750000	37500	17.08593			509.6393438					0	236.25	8.4375		8	50.33475	100.6695	
92.0	6.0	0	0	0	750000	37500	17.08593	. 20	254.8196	1528.918031					0	236.25	8.4375		8	50.33475	302.0085	
90.0	14.0	0	0	0	750000	37500	17.08593	. 20	254.8196	3567.475406					0	236.25	8.4375		8	50.33475	704.6865	
88.0	25.0	0	0	0	750000	37500	17.08593	. 20		6370.491797					0		8.4375		8	50.33475	1258.368	
86.0	25.0	0	0	0	750000	37500		. 20		6370.491797					0		8.4375		8	50.33475	1258.368	
84.0	36.0	0	0	0	750000	37500	17.08593			9173.508188					0		8.4375		8	50.33475	1812.051	
82.0	41.0	0	0	0	750000	37500	17.08593			10447.60655					0		8.4375		8	50.33475	2063.724	
80.0	62.0	0	0	0	750000	37500	17.08593			15798.81966					0		8.4375		8	50.33475	3120.7545) [
78.0	85.0	0	0	0	750000	37500	17.08593	. 20		21659.67211					0		8.4375		8	50.33475	4278.453	
76.0	97.0	0	0	0	750000	37500	17.08593			24717.50817					0		8.4375		8	50.33475	4882.470	
74.0	106.0	0	0	0	750000	37500	17.08593	. 20		27010.88522					0		8.4375		8	50.33475	5335.4835	
72.0	136.0	0	0	0	750000	37500	17.08593			34655.47538					0		8.4375		8	50.33475	6845.526	
70.0	161.0	0	0	0	750000	37500	17.08593			41025.96717					0		8.4375		8	50.33475	8103.894	••
68.0	187.0	0	0	0	750000	37500	17.08593			47651.27864	750000	375000	16.48461	. 2	6165.2466					0	0	_
66.0	259.0	0	0	0	750000	37500	17.08593			65998.29502	750000	375000	16.48461	. 2	8539.03150					0	0	_
64.0 62.0	282.0 303.0	0	0	0	750000	37500	17.08593			71859.14747	750000	375000	16.48461	. 2	9297.3238					0	0	_
60.0	355.0	0	0	0	750000	37500	17.08593	. 20		77210.36058	750000	375000	16.48461	. 2	9989.67778					0	0	_
58.0	383.0	0	0	0	750000 750000	37500	17.08593	. 20		90460.98352 97595.93433	750000	375000 375000	16.48461	. 2	11704.0779					0	0	_
56.0	436.0	0	0	0		37500	17.08593	. 20			750000		16.48461	2	12627.2164					0	0	_
54.0	380.0	0	0	0	750000	37500				111101.3769	750000	375000	16.48461	2	14374.585					0	0	_
52.0	445.0	0	0	0	750000 750000	37500 37500	17.08593 17.08593			96831.47531	750000	375000 375000	16.48461 16.48461	2	12528.308° 14671.3089					0	0	_
50.0	542.0	0	0	0	750000	37500		. 20		138112.2622	750000 750000	375000	16.48461	. 2	17869.324					0	0	_
48.0	502.0	0	0	0	750000	37500		. 20		127919.4753	750000	375000	16.48461	. 2	16550.555					0	0	_
46.0	439.0	0	0	0	750000	37500	17.08593			111865.836	750000	375000	16.48461	2	14473.493					0	0	_
44.0	590.0	0	0	0	750000	37500	17.08593		254.8196		750000	375000	16.48461	2	19451.847					0	0	_
42.0	656.0	0	0	0	750000	37500		. 20		167161.7048	750000	375000		2	21627.817					0	0	_
40.0	709.0	0	0	0	750000	37500	17.08593			180667.1474	750000	375000	16.48461	2	23375.1860					0	0	-
38.0	486.0	0	0	0	750000	37500	17.08593			123842.3605	750000	375000	16.48461	2	16023.047					0	0	_
36.0	428.0	0	0	0	750000	37500	17.08593		254.8196		750000	375000	16.48461	2	14110.8319					0	0	_
34.0	247.0	0	0	0	750000	37500	17.08593			62940.45895	750000	375000	16.48461	2	8143.4007					0	0	-
32.0	158.0	0	0	0	750000	37500	17.08593			40261.50816	750000	375000	16.48461		5209.1389					0	0	_
30.0	70.0	0	0	0	750000	37500	17.08593			17837.37703	750000	375000	16.48461		2307.8463					0	0	_
28.0	50.0	0	0	0	750000	37500	17.08593			12740.98359	750000	375000	16.48461		1648.4616					0	0	_
26.0	26.0	0	0	0	750000	37500	17.08593			6625.311469	750000	375000	16.48461	2	857.2000					0	0	-
24.0	18.0	0	0	0	750000	37500	17.08593			4586.754094	750000	375000	16.48461	2	593.44620	51				0	0	_
22.0	6.0	0	0	0	750000	37500	17.08593			1528.918031	750000	375000	16.48461		197.81540					0	0	
20.0	0.0	0	0	0	750000	37500	17.08593		254.8196		750000	375000	16.48461	12	0	.,	+			0	0	

Mech_Energ T Load	100%	4,902.0	kW																			
mbient emperature (°F)	ASHRAE TMY Hours	Chiller Capacity (Tons)	Chiller Energy (kW)	Chiller Energy Usage (kWh)	Total Air Handler Fan Airflow (cfm)	Fan Airflow		No. of Air Handlers	Handler	Total Air Handler Fan Energy (kWh)	Total Heat Rejection Airflow (cfm)	Rejection Fan Airflow	Heat Rejection Fan Energy (kW)	Operating	Heat Rejection Fan Energ (kWh)		Pump Brake Power (bhp)	Pump Motor Efficiency (%)	No. of Pumps	Pump Energy (kW)	Pump Energy (kWh)	MLC
05.0	7.0				100000	(cfm)	10.5		604.04=	1000 110		(cfm)				0.1.5		-0.4		110.010	027.101	
95.0	7.0	0	0	0	1000000	50000		20	604.017	4228.119		-			0	315	20	78.4	8	119.312	835.184	1.1475
94.0	2.0	0	0	0	1000000	50000		20	604.017	1208.034					0	315	20		8	119.312	238.624	1.1475.
92.0	6.0	0	0	0	1000000	50000		20	604.017	3624.102	-	1			0	315	20		8	119.312	715.872	1.1475.
90.0	14.0 25.0	0	0	0	1000000	50000		20	604.017	8456.238					0	315	20		8	119.312	1670.368	1.1475.
86.0	25.0	0	0	0	1000000	50000		20	604.017	15100.425					0	315	20		8	119.312	2982.8	1.1475.
84.0	36.0	0	0	0	1000000	50000		20	604.017	15100.425					0	315	20		8	119.312	2982.8	1.1475.
82.0	41.0	0	0	0	1000000	50000		20	604.017	21744.612					0	315	20		8	119.312	4295.232	1.1475
80.0	62.0	0	0	0	1000000	50000		20	604.017	24764.697					0	315	20		8	119.312	4891.792	1.1475.
78.0	85.0	0	0	0	1000000	50000		20	604.017	37449.054		+			0	315	20		8	119.312	7397.344	1.1475.
76.0	97.0	0	0	0	1000000	50000		20	604.017	51341.445					0	315	20		8	119.312	10141.52	1.1475.
74.0	106.0	0	0	0	1000000	50000		20	604.017	58589.649	-	+			0	315	20		8	119.312	11573.264	
72.0	136.0	0	0	0	1000000	50000	40.5	20	604.017	64025.802					0	315	20		8	119.312	12647.072	
70.0	161.0	0	0	0	1000000	50000		20	604.017	82146.312		+			0	315	20		8	119.312	16226.432	
68.0	187.0	0	0	0	1000000	50000		20	604.017	97246.737	1000000	500000	20.07464		14612.01	315	20		8	119.312	19209.232	
66.0	259.0	0	0	0	1000000	50000		20	604.017	112951.179	1000000	500000	39.07464	. 2	14613.91					0	0	1.1311.
64.0	282.0	0	0	0	1000000	50000		20	604.017	156440.403	1000000	500000	39.07464		20240.66					0	0	1.1311.
		0	0	0	1000000	50000		20	604.017	170332.794	1000000	500000	39.07464	. 2	22038.10					0	0	1.1311.
62.0	303.0	0	0	0	1000000	50000		20	604.017	183017.151	1000000	500000	39.07464	. 2	23679.23					0	0	1.1311.
60.0	355.0	0	0	0	1000000	50000		20	604.017	214426.035	1000000	500000	39.07464	. 2	27742.99					0	0	1.1311.
58.0 56.0	383.0 436.0	0	0	0	1000000	50000		20	604.017	231338.511	1000000	500000	39.07464	. 2	29931.17					0	0	1.1311.
54.0	380.0	0	0	0	1000000	50000		20	604.017	263351.412	1000000	500000	39.07464	. 2	34073.09					0	0	1.1311.
52.0	445.0	0	0	0	1000000	50000		20	604.017	229526.46	1000000	500000	39.07464		29696.73					0	0	1.1311.
50.0	542.0	0	0	0	1000000	50000		20	604.017	268787.565	1000000	500000	39.07464		34776.43					0	0	1.1311.
48.0	502.0	0	0	0	1000000	50000		20	604.017	327377.214	1000000	500000	39.07464		42356.91					0	0	1.1311.
46.0	439.0	0	0	0	1000000	50000		20	604.017	303216.534	1000000	500000	39.07464		39230.94					0	0	1.1311.
44.0	590.0	0	0	0	1000000	50000		20	604.017	265163.463	1000000	500000	39.07464		34307.54					0	0	1.1311.
42.0	656.0	0	0	0	1000000	50000		20	604.017	356370.03	1000000	500000	39.07464		46108.08					0	0	1.1311.
40.0	709.0	0	0	0	1000000	50000		20	604.017	396235.152	1000000	500000	39.07464		51265.93					0	0	1.1311
38.0	486.0	0	0	0	1000000	50000		20	604.017	428248.053	1000000	500000	39.07464		55407.84					0	0	1.1311.
36.0	428.0	0	0	0	1000000	50000		20	604.017	293552.262	1000000	500000	39.07464		37980.55					0	0	1.1311.
34.0	247.0	0	0	0	1000000	50000		20	604.017	258519.276	1000000	500000	39.07464		33447.89					0	0	1.1311.
32.0	158.0	0	0	0	1000000	50000		20	604.017	149192.199	1000000	500000	39.07464		19302.87					0	0	1.1311.
30.0	70.0	0	0	0	1000000	50000		20	604.017	95434.686	1000000	500000	39.07464		12347.58					0	0	1.1311.
28.0	50.0	0	0	0	1000000	50000		20	604.017	42281.19	1000000	500000	39.07464		5470.450					0	0	1.1311.
26.0	_	0	0	0	1000000	50000		20	604.017	30200.85	1000000	500000	39.07464		3907.464					0	0	1.1311.
24.0	26.0	0	0	0	1000000	50000		20	604.017	15704.442	1000000	500000	39.07464		2031.881					0	0	1.1311.
	18.0	0	0	0	1000000	50000		20	604.017	10872.306	1000000	500000	39.07464		1406.687					0	0	1.1311.
22.0	6.0	10	10	<u> U</u>	1000000	50000	40.5	20	604.017	3624.102	1000000	500000	39.07464	. 2	468.8957		1	1		10	10	1.131

CENTERIS LEVEL 2 EVAPORATIVE COOLING ANAL			T
EXISTING OPERATIONAL RAU		UNITS	LEAD LAC ON OPERATION
RAU DEDICATED FOR L1 UPS		UNITS	LEAD-LAG 2N OPERATION
EXISTING RAU WITH FILTER/EVAP		UNITS	INCLUDES (1) UNIT THAT DOES NOT HAVE FLOOR OPENING
NEWLY ASSEMBLED RAU		UNITS	
NEW RAUS	4	UNITS	
RAU AIRFLOW	48,000	CENA	
RAU EVAP GPM	•	GPM	CONTROL VALVE FLOW, WATER USAGE BASED ON 50,000 CFM DESIGN
RAU EVAP GPIVI		DEG F	CONTROL VALVE FLOW, WATER USAGE BASED ON 30,000 CFW DESIGN
RAU EVAP EAT WB		DEG F	
RAU EVAP LAT DB		DEG F	
RAU EVAP LAT DB		DEG F	
DATA HALL TEMPERATURE RISE		DEG F	
DATA HALL TEIVIPERATURE RISE	20	DEG F	
EXISTING L2 CAPACITY			
RAU QUANTITY	34	UNITS	
GPS GROUPS		GROUPS	
REDUNDANT RAU		UNITS	ASSUMED (1) REDUNDANT RAU PER GPS GROUP
CRITICAL CAPACITY QUANTITY		UNITS	
CRITICAL COOLING AIRFLOW	1,488,000		
CRITICAL COOLING CAPACITY	32,140,800		
CRITICAL COOLING CAPACITY		TONS	
CRITICAL COOLING CAPACITY	9,414.4		
CRITICAL EVAPORATIVE WATER SUPPLY	496.0		
NEW TOTAL L2 CAPACITY			
RAU QUANTITY	54	UNITS	INCLUDES (1) UNIT THAT DOES NOT HAVE FLOOR OPENING
GPS GROUPS	3	GROUPS	
REDUNDANT RAU	3	UNITS	ASSUMED (1) REDUNDANT RAU PER GPS GROUP
CRITICAL CAPACITY QUANTITY	51	UNITS	
CRITICAL COOLING AIRFLOW	2,448,000	CFM	
CRITICAL COOLING CAPACITY	52,876,800	втин	
CRITICAL COOLING CAPACITY	4,406	TONS	
CRITICAL COOLING CAPACITY	15,488.2	KW	
CRITICAL EVAPORATIVE WATER SUPPLY	816.0	GPM	
MAX COOLING CAPACITY	16,399.3	KW	FOR REFERENCE, ASSUMES NO REDUNDANCY
OVERALL LOAD ASSUMPTIONS			
OVERALL L2 WHITE SPACE	60000	SF	MAY REDUCE IF PORTION OF FLOOR PARTITIONED FOR FUTURE WATER-COOLED
ORIGINAL DENSITY REQUIREMENT	230	W/SF	PER 2010 PHASE III DOCUMENTATION
IT COMMITTED LOAD CAPACITY	12,581.0	KW	PER 2024/1/2 MEETING FOR VOLTAGE PARK, SONY, POD 10 (240W/SF), POD 12
MISC. HEAT LOAD ASSUMPTION	10	W/SF	LIGHTING, DISTRIBUTION LOSSES, ENVELOPE HEAT GAIN, ETC.
MISC. HEAT LOAD ASSUMPTION	600.0	KW	LIGHTING, DISTRIBUTION LOSSES, ENVELOPE HEAT GAIN, ETC.
OVERALL HEAT LOAD	13,181.0	KW	
OVERALL HEAT LOAD	44,999,934	BTUH	
OVERALL HEAT LOAD	3,750.0	TONS	
ADDITIONAL AVAILABLE RAU COOLING CAPACITY	2,307.2	KW	

	Cooling Energy (kWh)	Air-Handler Fan Energy (kWh)	Heat Rejection Fan Energy (kWh)	Pump Energy (kWh)	Total (k
Mech Energy25	0.0	82,674.8	155,458.5	1,730.0	239,863
Mech Energy50	0.0	661,398.6	310,917.0	11,975.9	984,291
Mech Energy75		2,232,220.3	466,375.5	40,418.8	2,739,01
Mech Energy10	0.0	5,291,188.9	621,833.9	95,807.5	6,008,83
			•	Total	9.971.99

IT capacity	kW	IT capacity	Project	Max
(tons)		(kWh)	Annualized	
			MLC	Annalized MLC
25%	1,225.5	10,735,294.1		
50%	2,451.0	21,470,588.2		
75%	3,676.5	32,205,882.4		
100%	4,902.0	42,941,176.5		
Totals:		107,352,941.2	0.092889	0.18

MLC Load Summary											
		Total New	% Total IT	Total IT							
Prescribed	Quantity of	RAU	Load for	Load for							
Overall IT	RAU for		new RAU	new RAU							
Load	Total Load			(MW)							
12.5	51	20	0.392156	4.901960							
	•	•	•								



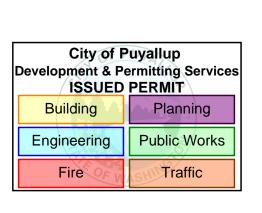


MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 9837

PRMH20240272





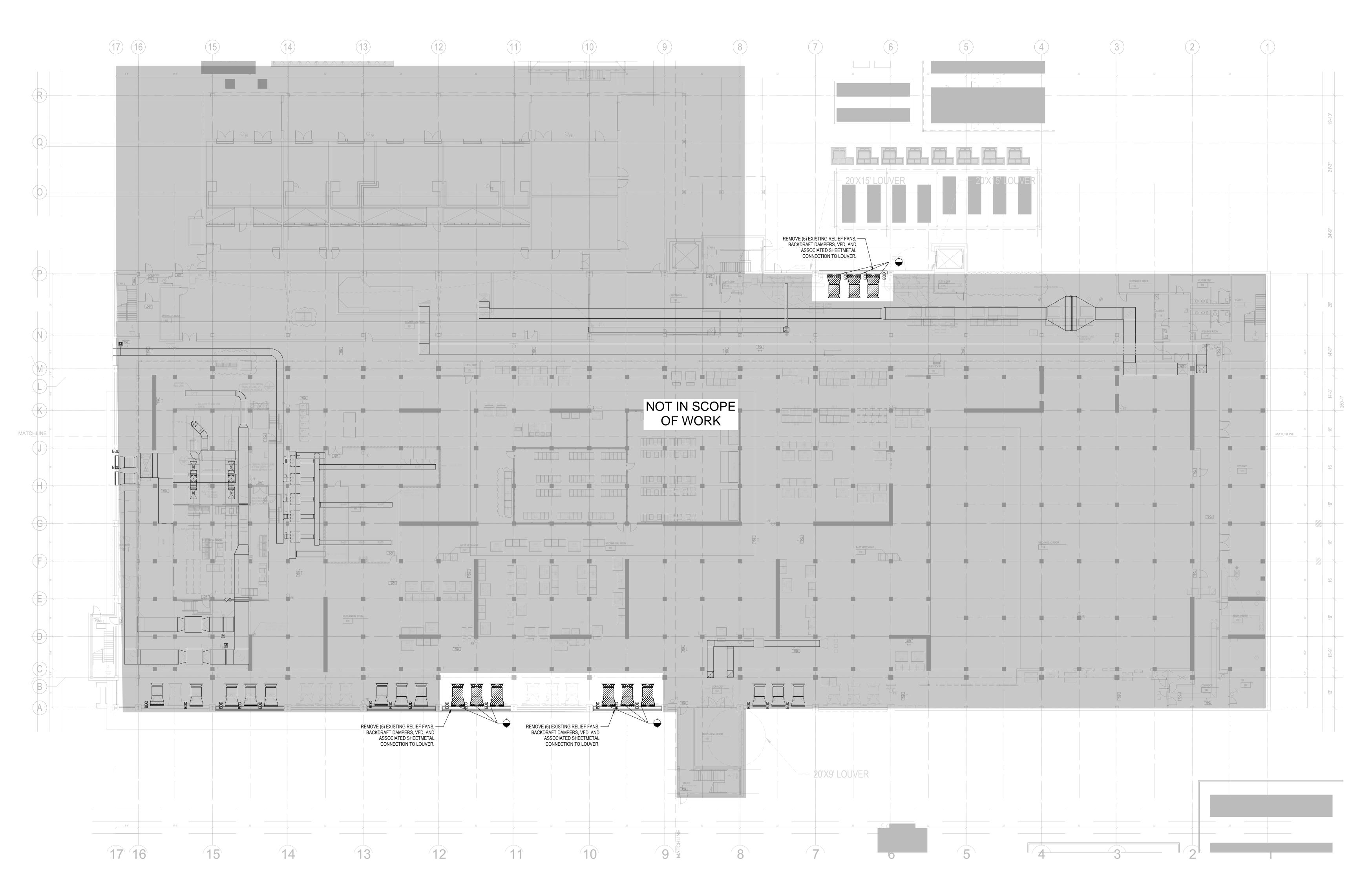
Drawn By: Checked By:

JLV BO

WSEC

Title CALCULATIONS

KEY NOTES



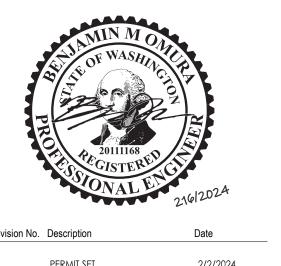




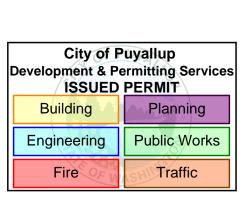
MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374

PRMH20240272



DATA HALL PERMIT



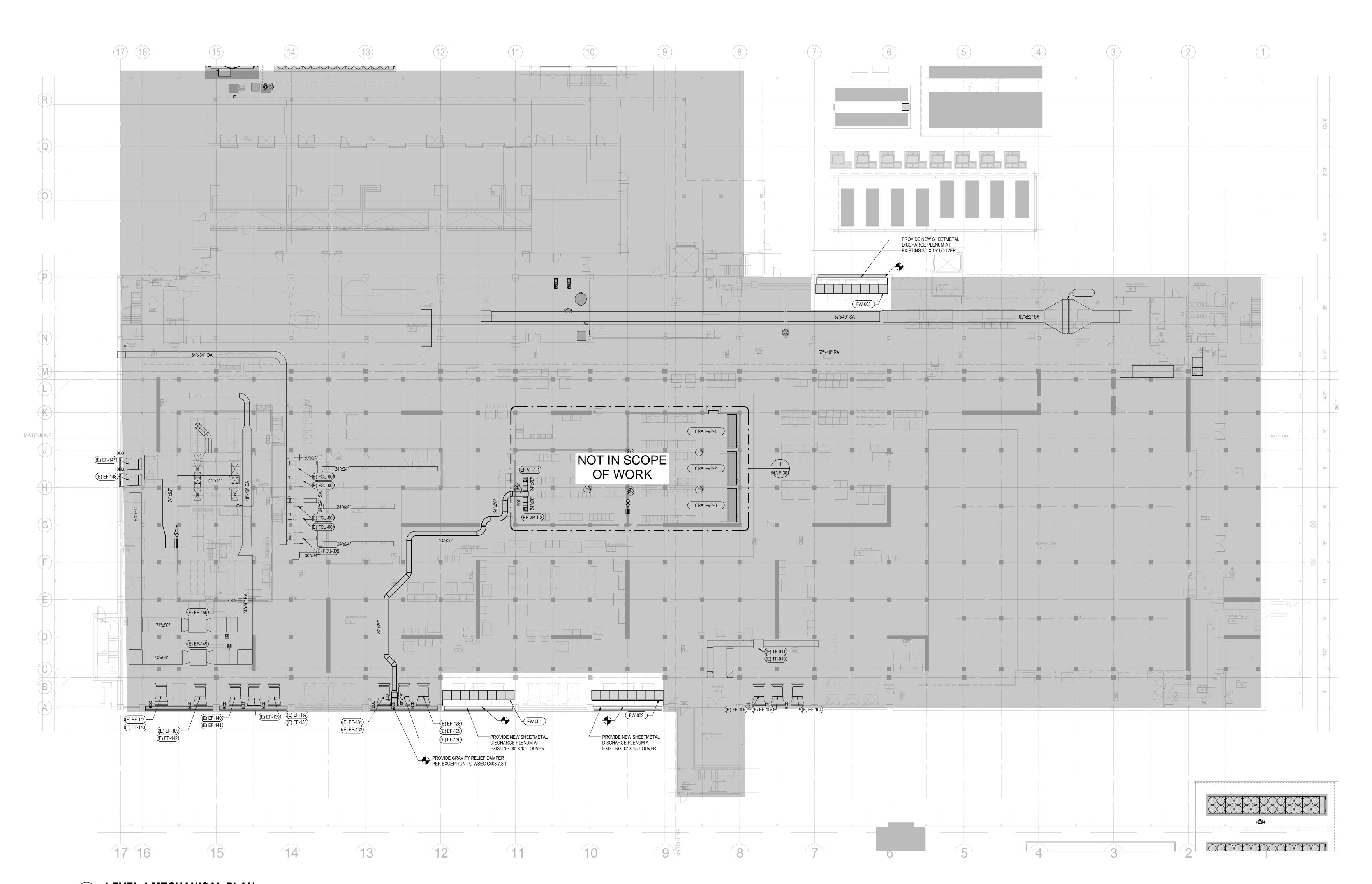
Drawn By: Checked By:
JLV BO

MECHANICAL LEVEL
1 DEMO PLAN

MD.VP.102

LEVEL 1 MECHANICAL PLAN
MD.VP.102 1/16" = 1'-0"

KEY NOTES





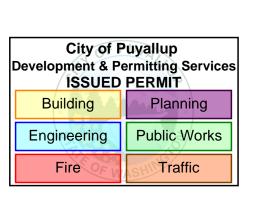


MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374

PRMH20240272



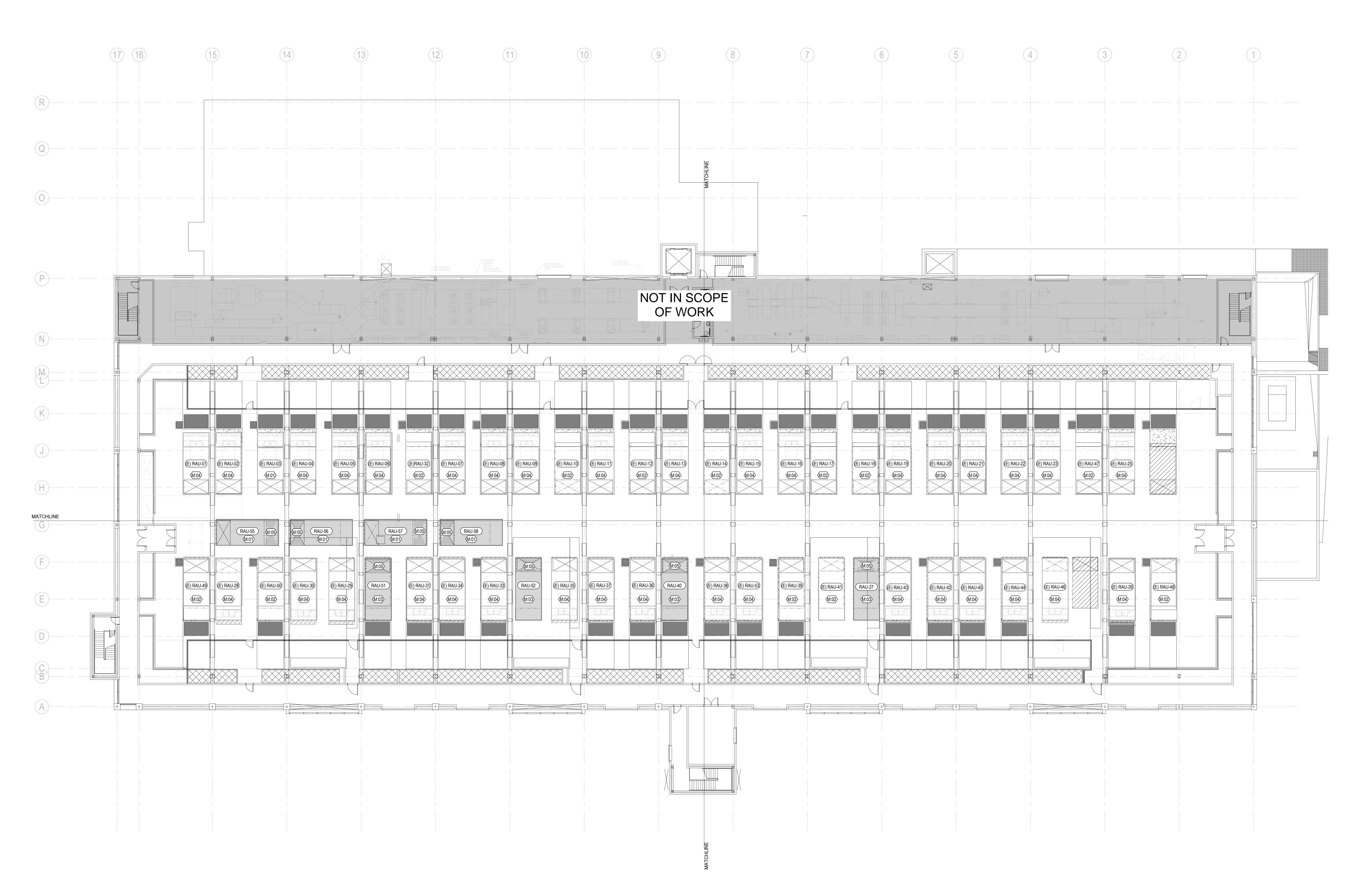


Drawn By: Checked By:
JLV BO

MECHANICAL LEVEL
1 PLAN

KEY NOTES

- M:01 NEW UNIT. REFER TO RAU SCHEDULE ON SHEET M.VP.011.M:02 EXISTING UNIT WITH NEW EVAP/FILTER. REFER TO RAU SCHEDULE ON SHEET M.VP.011.
- M:03 EXISTING UNIT TO BE ASSEMBLED. REFER TO RAU SCHEDULE ON SHEET M.VP011.
- M:04 EXISTING UNIT. REFER TO RAU SCHEDULE ON SHEET M.VP.011.
- M:05 PROVIDE DIFFUSION PLATE FOR AIR DISTRIBUTION BELOW SIMILAR TO EXISTING.







MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374

PRMH20240272



 Description
 Date

 PERMIT SET
 2/2/2024

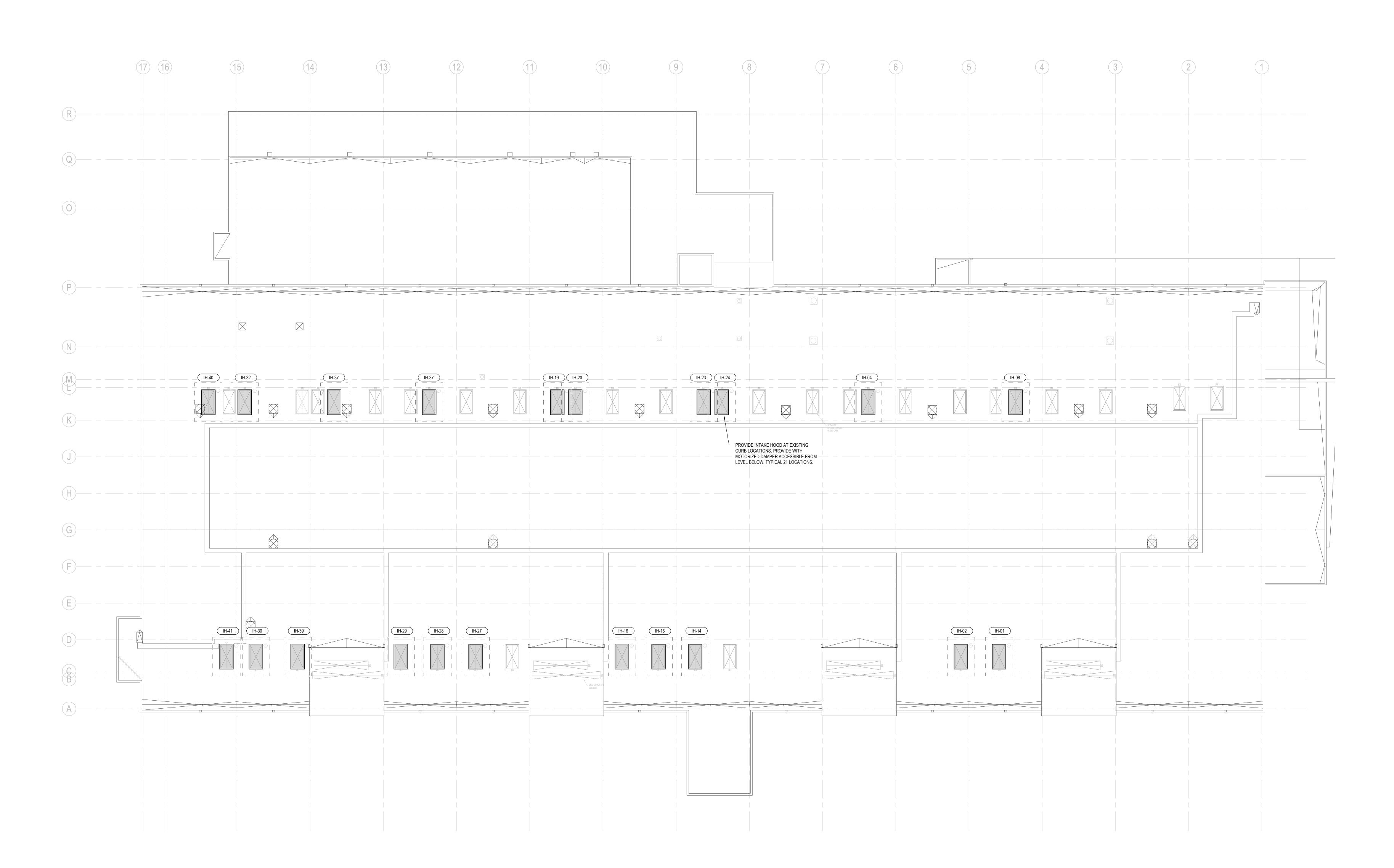
 DATA HALL PERMIT
 2/16/2024

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works

Drawn By: Checked By:

MECHANICAL LEVEL 3 PLAN

<u># KEY NOTES</u>



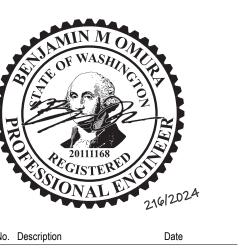




MECHANICAL DRAWINGS

CENTERIS /OLTAGE PARK UPS 019 39th AVENUE SE /UYALLUP, WA 98374

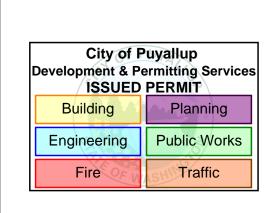
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Description Date

PERMIT SET 2/2/2024

DATA HALL PERMIT 2/16/2024



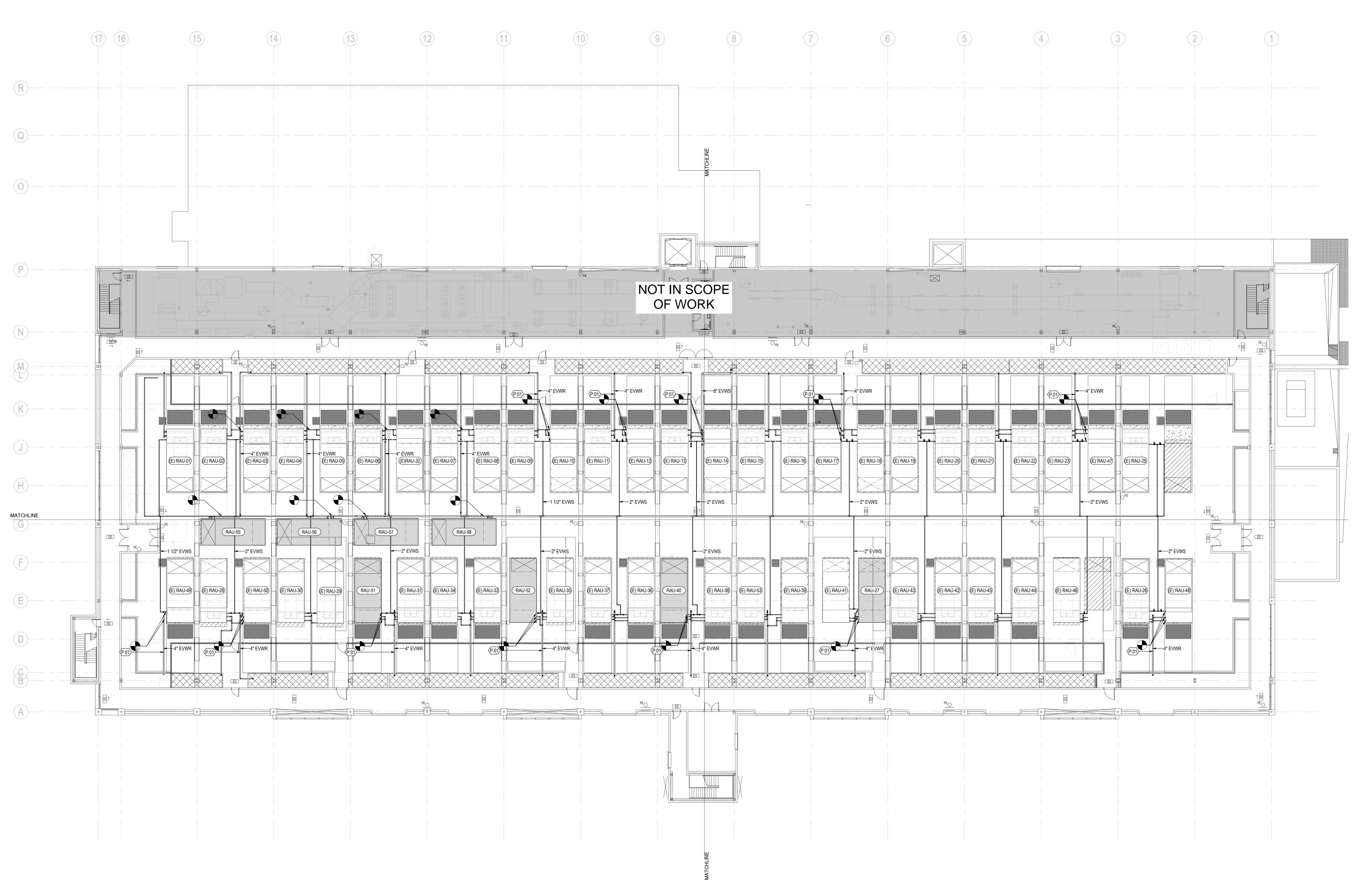
Drawn By: Checked By:

JLV BO

MECHANICAL ROOF
Title PLAN

KEY NOTES

P:01 CONNECT TO 1-1/2" EVWS, 1-1/2" EVWR AND 3" DRAIN CONNECTIONS PREVIOUSLY CAPPED FOR FUTURE.







MECHANICAL DRAWINGS

VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374

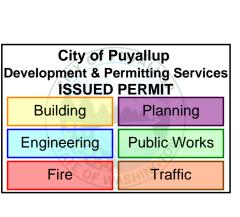
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 Description
 Date

 PERMIT SET
 2/2/2024

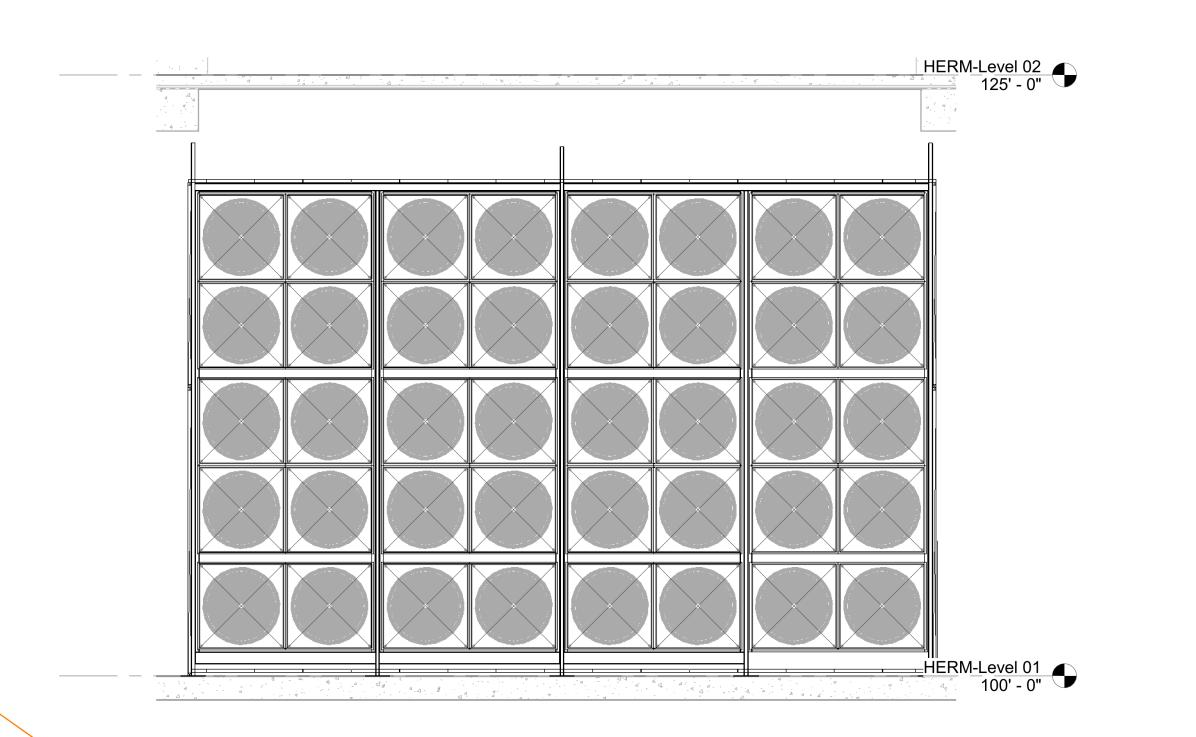
 DATA HALL PERMIT
 2/16/2024



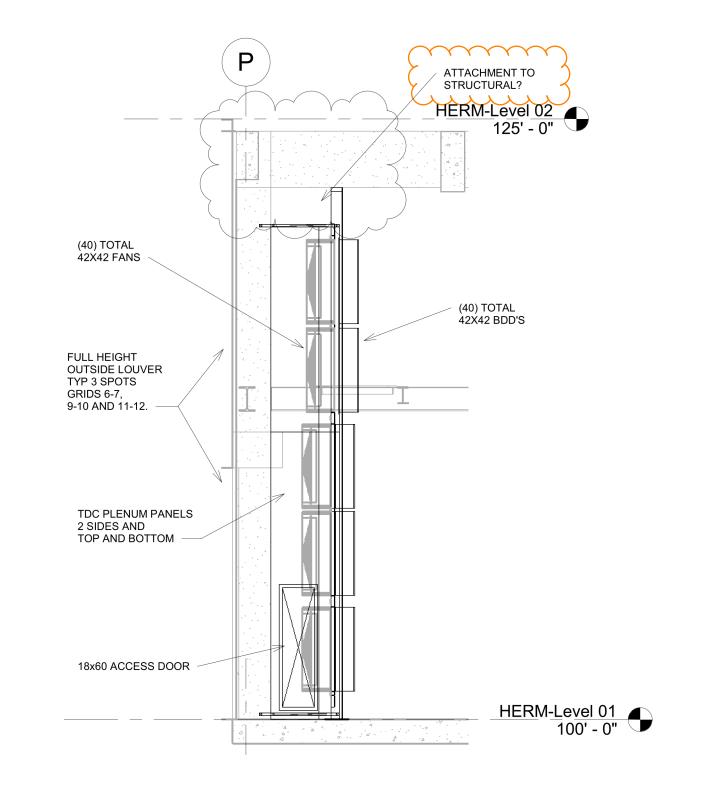
 Drawn By:
 Checked By:

 JLV
 BO

MECHANICAL LEVEL 3 PIPING PLAN

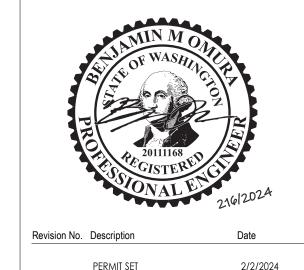


3 FANWALL DETAIL
M.VP.501 NTS



FANWALL SECTION
M.VP.501 NTS

SEE REVISION DELTA 3/5/2024



PRMH20240272

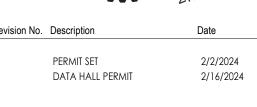
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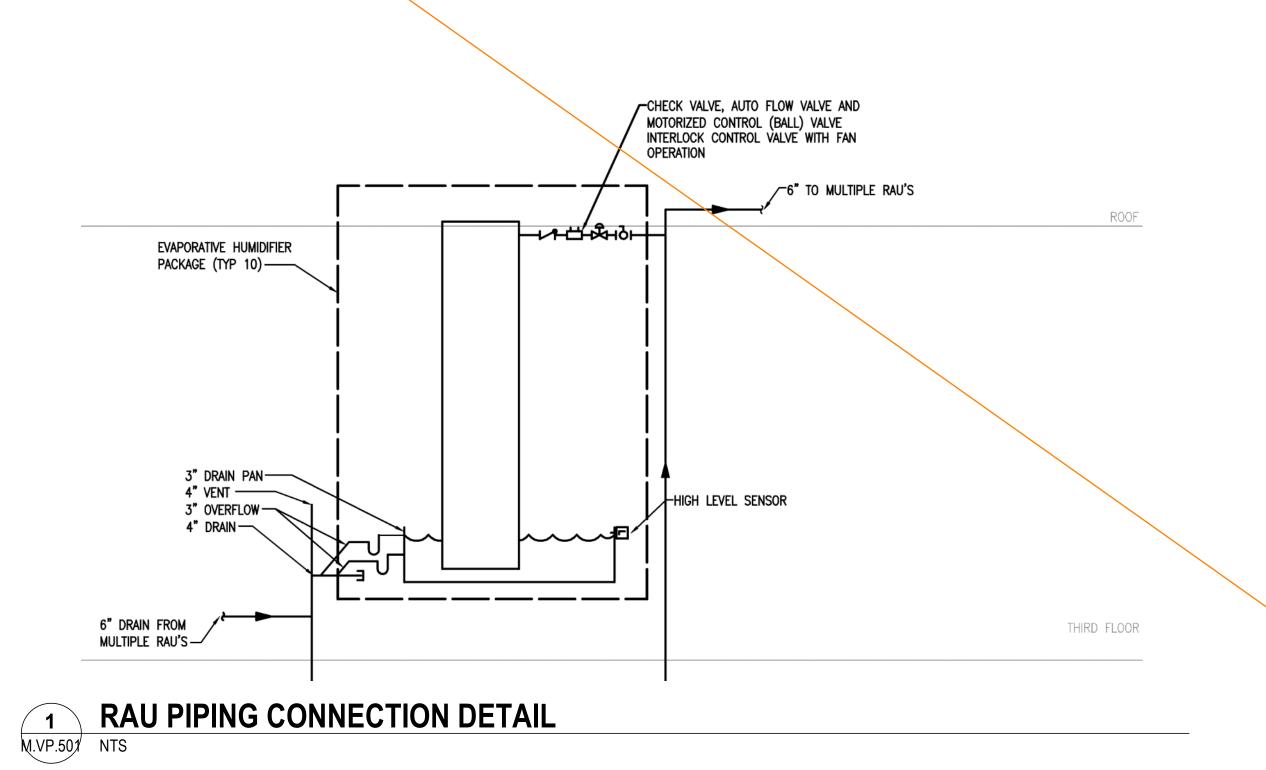
Stantec

720 3rd Avenue Suite 1500 Seattle Washington 98104-1878 (206) 667-0555

MECHANICAL

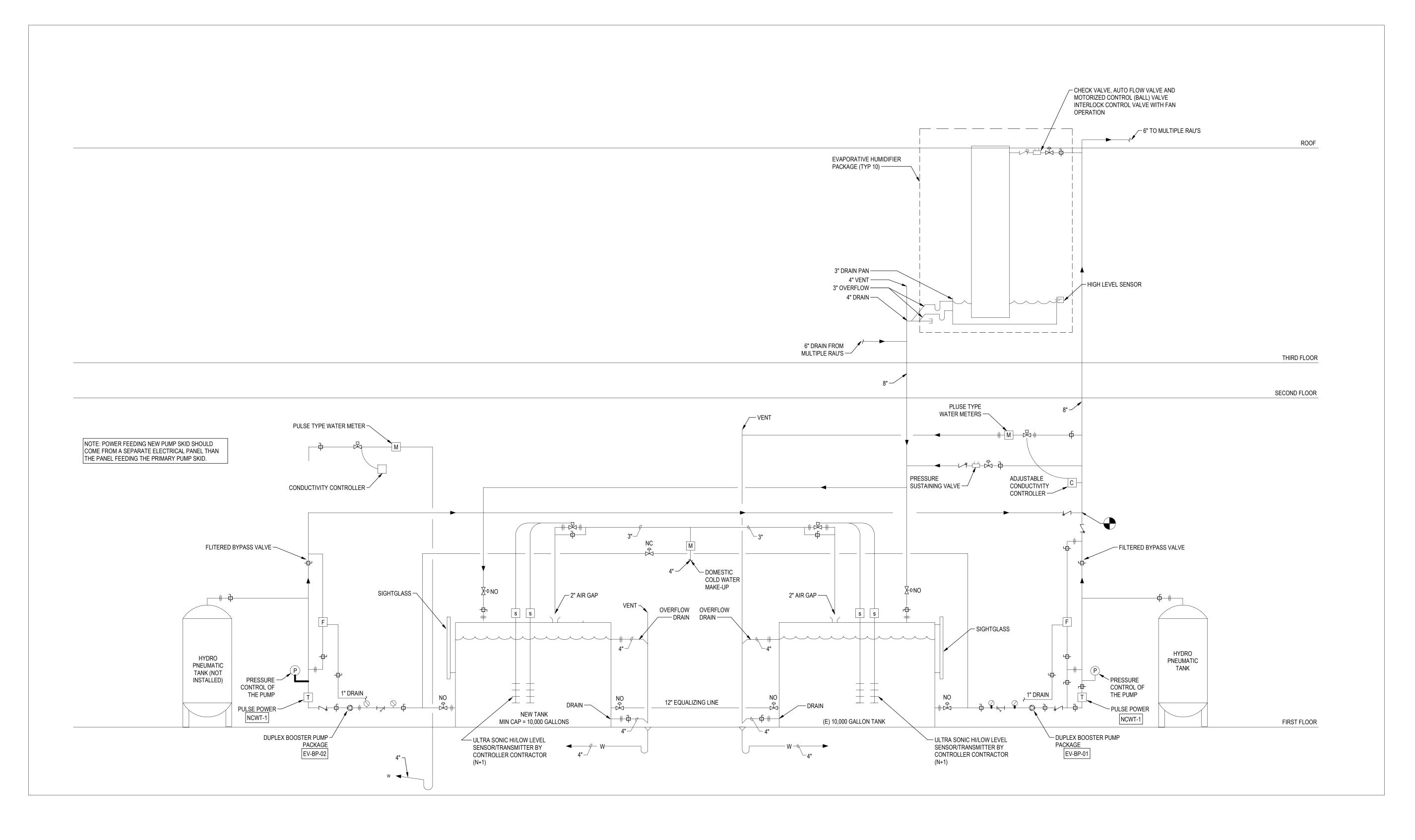
DRAWINGS





City of Puyallup
Development & Permitting Services
ISSUED PERMIT Engineering Public Works Fire Traffic

> MECHANICAL Title DETAILS







MECHANICAL DRAWINGS

CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374

PRMH20240272



 PERMIT SET
 2/2/2024

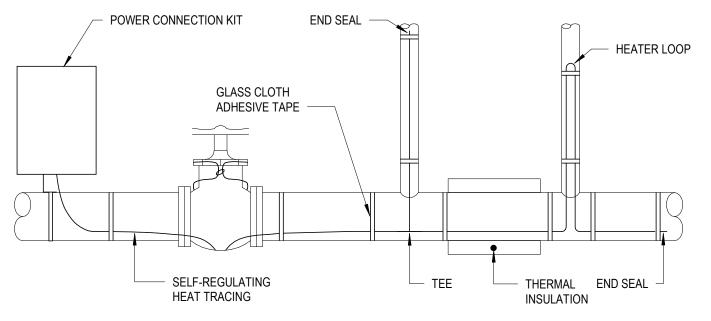
 DATA HALL PERMIT
 2/16/2024

 UPS & BATTERY ROOM INTERIORS
 2/16/2024

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Drawn By: Checked By:

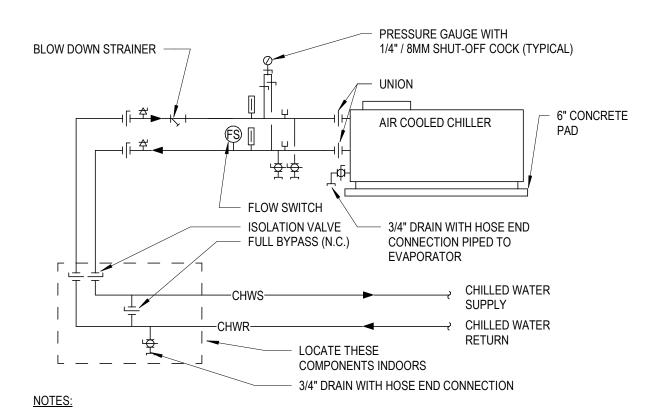
MECHANICAL Title DETAILS



1. PROVIDE HEAT TRACE FOR ALL WATER PIPING LOCATED OUTDOORS

2. INSULATE THE PIPING. 3. REFER TO THE CONTRACT DOCUMENTS FOR PIPE MATERIAL AND INSULATION REQUIREMENTS. 4. FOLLOW MFRS INSTALLATION DETAILS FOR THE REQUIRED CABLE COVERAGE TO FULLY PROTECT THE SYSTEM.

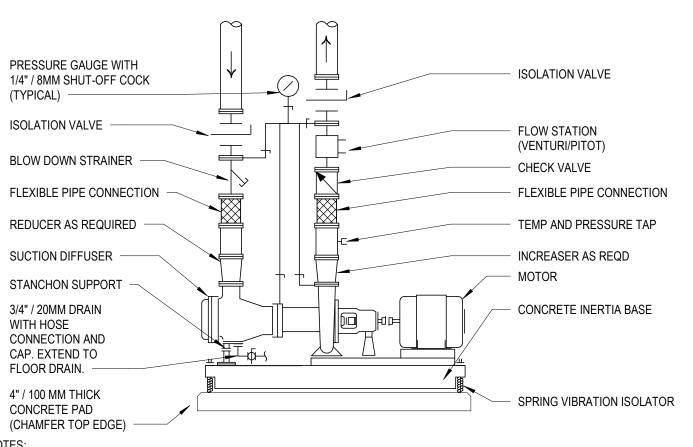
HEAT TRACE DETAIL 3 M.VP.503 NTS



1. HEAT TRACE ALL EXTERIOR CHILLED WATER PIPING AND CHILLER BUNDLE.

- 2. LOCATE PIPING TO FACILITATE THE REQUIRED ACCESS AND REMOVAL OF CHILLER COMPONENTS. . COORDINATE THE COIL PULL SIDE WITH THE PIPING LAYOUT AND ALLOCATED ACCESS AREAS.
- 4. PIPE MULTIPLE CHILLERS IN REVERSE RETURN SO THAT THE FLOW SELF BALANCES 5. SHUT OFF VALVES AND ACCESSORIES SHALL BE THE SAME SIZE AS THE SYSTEM PIPING. TRANSITION TO THE CHILLER INLET/OUTLET SIZES AT THE CHILLER
- 6. ISOLATION VALVES ARE SHOWN AS BUTTERFLY VALVES, REFER TO THE SPECIFICATIONS FOR THE
- SPECIFIC VALVE TYPE BASED ON THE PIPE SIZE AND APPLICATION. 7. QUICK CONNECT KITS ARE NOT TO BE USED. ALL VALVES SHALL BE INDEPENDENT COMPONENTS.



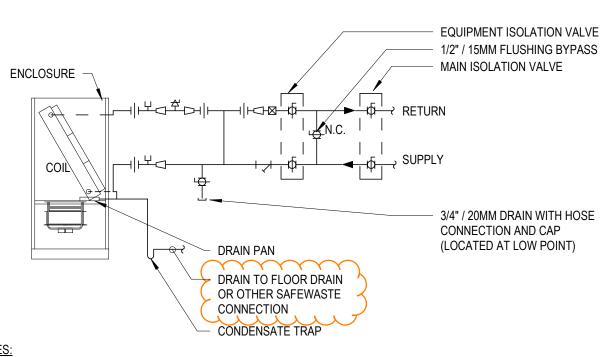


NOTES: 1. SHUT OFF VALVES AND ACCESSORIES SHALL BE THE SAME SIZE AS SYSTEM PIPING. PROVIDE A SPOOL SECTION BETWEEN THE SUCTION DIFFUSER AND PUMP INLET AS REQUIRED. 3. AFTER START-UP AND THE COMPLETION OF THE SYSTEM FLUSHING, REMOVE THE START-UP STRAINER FROM THE SUCTION

DIFFUSER. 4. PROVIDE REMOVABLE INSULATION FOR CHILLED WATER PUMPS TO PREVENT CONDENSATION. 5. ISOLATION VALVES ARE SHOWN AS BUTTERFLY VALVES, REFER TO THE SPECIFICATIONS FOR THE SPECIFIC VALVE TYPE

BASED ON THE PIPE SIZE AND APPLICATION. 6. PIPING ASSOCIATED WITH THE PRESSURE GAUGES SHALL BE RUN SO AS TO NOT BLOCK THE REMOVAL OF THE PUMP OR BLOCK ACCESS TO ANY COMPONENT. PROVIDE ADDITIONAL SHUT OFF VALVES AS REQUIRED TO FACILITATE THE REMOVAL AND RE-INSTALLATION OF THE SENSING LINES AS NEEDED.

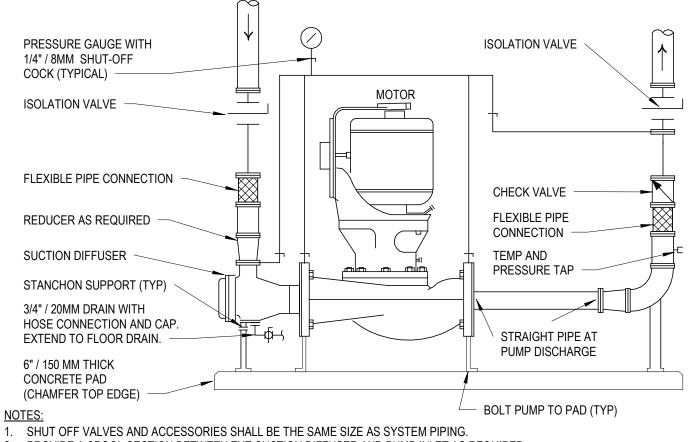
BASE MOUNT PUMP DETAIL - VARIABLE SPEED M.VP.503 NTS



. INSULATE THE HEATING COIL TO PREVENT HEAT LOSS / CONDENSATION. THE EQUIPMENT DRAIN IS SEPARATE FROM THE BLOW DOWN STRAINER DRAIN.

- PIPE TAPS FROM THE MAIN SHALL BE OFF OF THE TOP OF THE MAIN EXCEPT WHERE NOTED OTHERWISE. 4. THE EQUIPMENT ISOLATION VALVES SHALL BE CLOSED WHEN INSTALLED AND THE FLUSHING BYPASS VALVE SHALL BE OPEN. AFTER THE INITIAL FLUSHING, THE FLUSHING BYPASS VALVE SHALL BE CLOSED AND THE HANDLE REMOVED. THE EQUIPMENT ISOLATION VALVES SHALL BE OPENED.
- 5. ALL CONTROL VALVES SHALL BE 2-WAY VALVES EXCEPT THOSE NOTED IN THE CONTRACT DOCUMENTS TO BE 3-WAY VALVES. 6. IF THE MECHANICAL CONTRACTOR USES QUICK CONNECT KITS, WHERE THE EQUIPMENT ISOLATION VALVE IS PART OF
- ANOTHER COMPONENT, THEN PROVIDE THE MAIN ISOLATION VALVES (OTHERWISE THEY ARE NOT REQUIRED).
- 7. ISOLATION VALVES ARE SHOWN AS BALL VALVES, REFER TO THE CONTRACT DOCUMENTS FOR THE SPECIFIC VALVE TYPE BASED ON THE PIPE SIZE AND APPLICATION.
- 8. SHUT OFF VALVES AND ACCESSORIES SHALL BE THE SAME SIZE AS THE SYSTEM PIPING. TRANSITION TO THE COIL CONNECTION SIZE AT THE COIL.
- 9. ALL STRAINERS SHALL BE BLOW DOWN TYPE WITH AN ISOLATION VALVE AND CAP. 10. PROVIDE A HIGH LIMIT DRAIN PAN SENSOR AND HARD WIRE TO THE FAN / CONTROLLER TO SHUT OFF THE UNIT BASED ON A 11. FOR 4-PIPE UNITS, THE ASSEMBLY FOR THE SECOND SET IS THE SAME AS THE SINGLE ASSEMBLY SHOWN IN THE DETAIL.

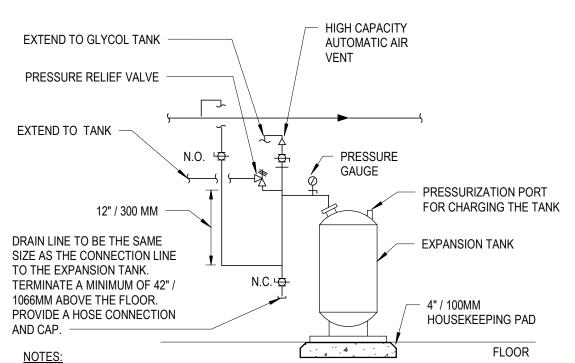




PROVIDE A SPOOL SECTION BETWEEN THE SUCTION DIFFUSER AND PUMP INLET AS REQUIRED.

- AFTER START-UP AND THE COMPLETION OF THE SYSTEM FLUSHING, REMOVE THE START-UP STRAINER FROM THE SUCTION 4. DIFFUSER, CLEAN THE STRAINER, AND THEN REINSTALL. PROVIDE REMOVABLE INSULATION FOR CHILLED WATER PUMPS TO PREVENT CONDENSATION.
- ISOLATION VALVES ARE SHOWN AS BUTTERFLY VALVES, REFER TO THE SPECIFICATIONS FOR THE SPECIFIC VALVE TYPE BASED ON THE PIPE SIZE AND APPLICATION. 7. PIPING ASSOCIATED WITH THE PRESSURE GAUGES SHALL BE RUN SO AS TO NOT BLOCK THE REMOVAL OF THE PUMP OR
- BLOCK ACCESS TO ANY COMPONENT. PROVIDE ADDITIONAL SHUT OFF VALVES AS REQUIRED TO FACILITATE THE REMOVAL AND RE-INSTALLATION OF THE SENSING LINES AS NEEDED. 8. PROVIDE MINIMUM LENGTH OF STRAIGHT PIPE AT PUMP DISCHARGE AS PER MANUFACTURER'S RECOMMENDATIONS.

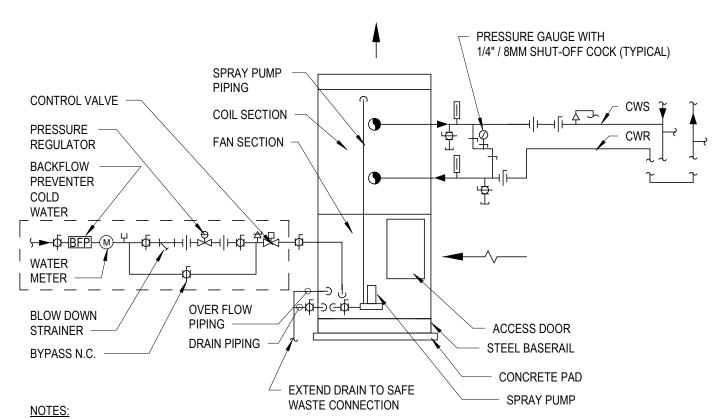
LARGE INLINE PUMP DETAIL - VARIABLE SPEED



M.VP.503 NTS

- 1. PITCH ALL PIPING FOR PROPER DRAINAGE. 2. ISOLATION VALVES ARE SHOWN AS BALL VALVES, REFER TO THE SPECIFICATIONS FOR THE SPECIFIC VALVE TYPE BASED ON THE PIPE SIZE AND APPLICATION.
- 3. PROVIDE INSULATION FOR EXPANSION TANK FOR CHILLED WATER APPLICATIONS TO PREVENT CONDENSATION. 4. PROVIDE A 55 GALLON DRUM AND LOCATE UNDER THE DRAIN LINE. PROVIDE A SHORT
- HOSE TO EXTEND FROM THE HOSE CONNECTION TO THE DRUM. 5. IF IT IS NOT POSSIBLE TO EXTEND THE PRESSURE RELIEF PIPING TO THE GLYCOL FILL
- STATION, EXTEND IT TO THE DRAIN DRUM. 6. THE PIPING TO THE EXPANSION TANK SHALL BE A MINIMUM OF 1" / 25MM, REFER TO
- THE PIPE SIZE SHOWN IN THE CONTRACT DOCUMENTS. 7. PROVIDE A STAND FOR THE EXPANSION TANK AS REQUIRED TO ACHIEVE THE REQUIRED ELEVATIONS.
- 8. THE CONTRACTOR SHALL LEAVE (1) EMPTY 55 GALLON GLYCOL CONTAINER IN THE MECHANICAL ROOM TO USE TO CONTAIN ANY DRAINED GLYCOL SOLUTION.





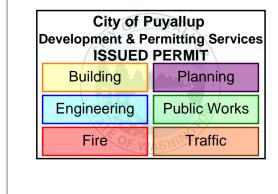
1. PROVIDE HEAT TRACE ON ALL OUTDOOR PIPING AS SPECIFIED, INCLUDING COLD WATER MAKE-UP, SPRAY PUMP AND SPRAY PIPING AND CONDENSER WATER PIPING.

2. LOCATE PIPING TO FACILITATE THE REQUIRED ACCESS AND REMOVAL OF COMPONENTS. 3. SHUT OFF VALVES AND ACCESSORIES SHALL BE THE SAME SIZE AS THE SYSTEM PIPING. TRANSITION TO THE COOLER INLET/OUTLET SIZES AT THE EQUIPMENT CONNECTION

4. ISOLATION VALVES ARE SHOWN AS BUTTERFLY VALVES, REFER TO THE SPECIFICATIONS FOR THE SPECIFIC VALVE TYPE

- BASED ON THE PIPE SIZE AND APPLICATION. 5. LOCATE THE COLD WATER MAKE-UP ASSEMBLY IN A HEATED SPACE UNLESS SHOWN OTHERWISE ON THE CONTRACT
- 6. PIPE MULTIPLE UNITS IN REVERSE RETURN FOR SELF BALANCING. REFER TO THE CONTRACT DOCUMENTS FOR THE QUANTITY OF UNITS.
- 7. QUICK CONNECT KITS ARE NOT TO BE USED. ALL VALVES SHALL BE INDEPENDENT COMPONENTS.

CLOSED CIRCUIT EVAPORATIVE COOLER DETAIL M.VP.503 NTS



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MECHANICAL

DRAWINGS

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Revision No. Description

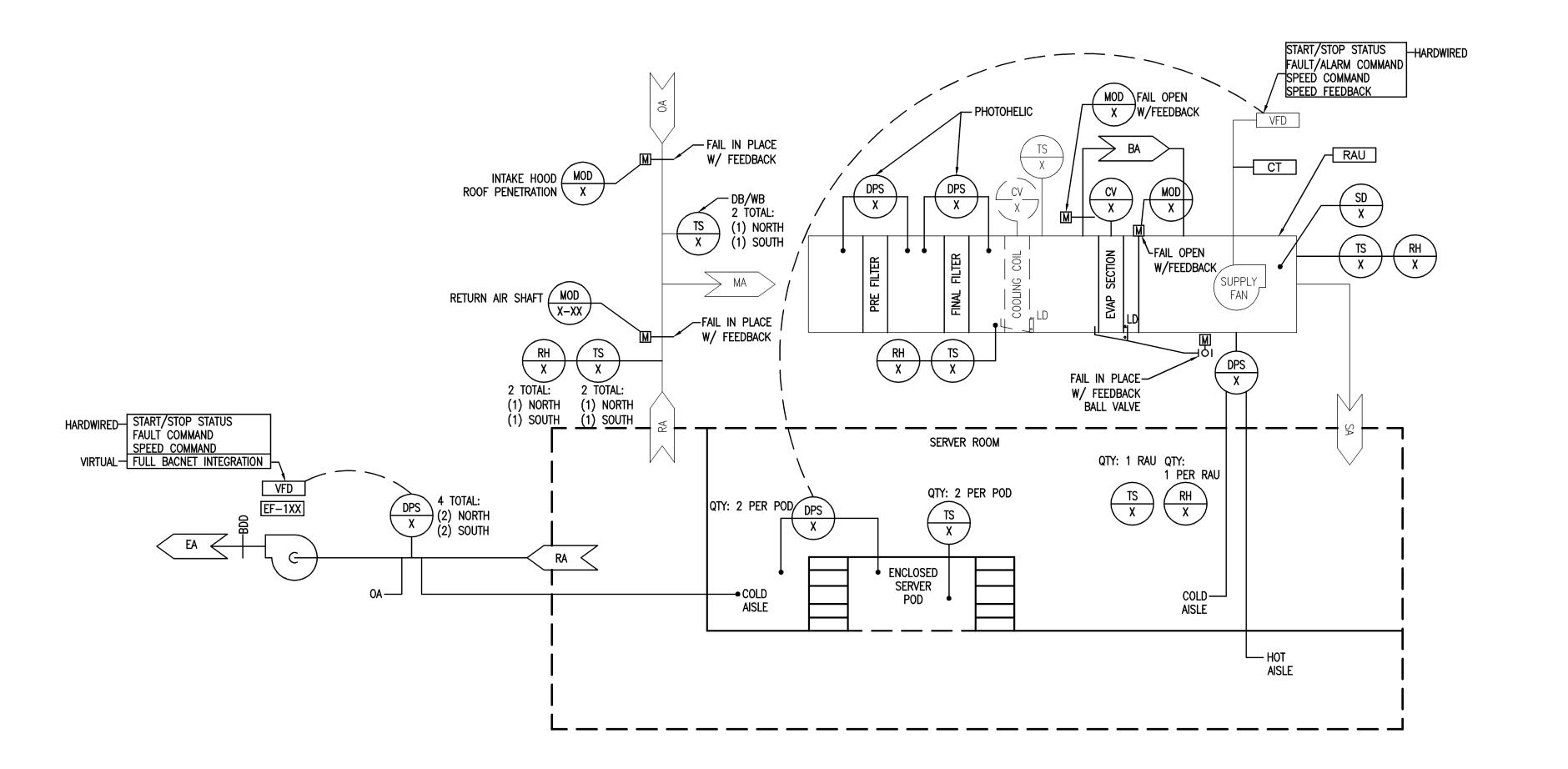
UPS YARD EQUIPMENT PERMIT SET 2/8/2024

UPS & BATTERY ROOM INTERIORS 2/16/2024

2/16/2024

DATA HALL PERMIT

MECHANICAL Title DETAILS



RAU CONTROL DIAGRAM (EXISTING FOR REFERENCE)

DESCRIPTION OF OPERATIONS:

1.0 RECIRCULATION AIR HANDLING UNIT (RAU)

A. GENERAL a. THE FOUR (4) NEW RECIRCULATION UNITS ADDED FOR THE VOLTAGE PARK PROJECT SHALL HAVE NEW CONTROLS PROVIDED TO MATCH EXISTING CONTROLS FOR RECIRCULATION UNITS. NEW RECIRCULATION UNITS SHALL BE ADDED TO EXISTING GROUPINGS AND STAGED PER THE EXISTING SEQUENCE USING EQUIVALENT SIGNALS AS DETAILED THERE-IN. CONTROL CONTRACTOR SHALL ADD POINTS AND MODULES AS REQUIRED TO THE GLOBAL CONTROLLER AND ALL ASSOCIATED LOCAL CONTROL COMPOINENTS TO PROVIDE THE ALARM POINTS BELOW MATCHING THE EXISTING RECIRCULATION AIR HANDLING UNIT INSTALLATION.

B. RECIRCULATION AIR HANDLING UNIT ALARM LIST a. HIGH ZONE TEMPERATURE ALARM

b. LOW ZONE TEMPERATURE ALARM

c. HIGH ZONE HUMIDITY RATIO d. LOW ZONE HUMIDITY RATIO e. TEMPERATURE SENSOR FAILURE

f. HUMIDITY SENSOR FAILURE g. OUTSIDE AIR DAMPER FAILURE

h. OUTSIDE AIR DAMPER IN-HAND i. SUPPLY FAN FAILURE

SUPPLY FAN IN-HAND k. SUPPLY FAN RUNTIME EXCEEDED I. PRESSURE SENOR FAILURE

m. LOSS OF COMMUNICATIONS n. PRESSURE OUT OF RANGE o. MOTORIZED EVAPORATIVE COOLING VALVE FAILURE

p. DRAIN PAN OVERFLOW

q. RH SENSOR OUT OF RANGE r. FACE AND BYPASS DAMPER FAILURE s. FILTER CHANGE REQUIRED

u. HIGH DISCHARGE AIR TEMPERATURE, ABOVE 85°F (ADJ) v. LOW DISCHARGE AIR TEMPERATURE, BELOW 40°F (ADJ)

w. HIGH ZONE HUMIDITY, ABOVE 85% (ADJ) x. LOW ZONE HUMIDITY, BELOW 25% (ADJ)

2.0 FAN WALL ASSEMBLY (FW-001, FW-002, & FW-003) A. GE<mark>NERAL</mark>

y. SMOKE DETECTION

t. MEDIA CHANGE REQUIRED

a. THREE (3) NEW FAN WALL ASSEMBLIES REPLACE (18) RELIEF EXHAUST FANS. FAN WALL ASSEMBLIES RELIEVE THE BUILDING OF AIR FROM RECIRCULATION UNITS DURING MINIMIM OUTSIDE AIR CONDITIONS AND FOR FULL ECONOMIZER RELIEF. IN GENERAL NEW CONTROLS PROVIDED WILL MATCH EXISTING CONTROLS FOR RELIEF EXHAUST FANS. NEW FAN WALL ASSEMBLIES SHALL BE ADDED TO THE EXISTING SEQUENCE USING EQUIVALENT SIGNALS AS DETAILED THERE-IN. CONTROL CONTRACTOR SHALL ADD POINTS AND MODULES AS REQUIRED TO THE GLOBAL CONTROLLER AND ALL ASSOCIATED LOCAL CONTROL COMPOINENTS TO PROVIDE THE ALARM POINTS BELOW MATCHING THE EXISTING RELIEF EXHAUST FAN SYSTEM INSTALLATION.

b. EACH FAN WALL ASSEMBLY IS ENABLED STARTING AT 50% (ADJ) AT THE SAME TIME AS THE GROUP OF RECIRCULATION AIR HANDLING UNITS TO WHICH IT IS ASSIGNED TO. ADJUST RAMP SPEED AS REQUIRED TO MATCH RECIRCULATION UNIT AIR HANDLING UNITS RAMP SEQUENCES, AND STAGING. ENSURE BUILDING IS CONTINUOUSLY KEPT AT SAFE PRESSURES DURING START-UP, AND AS GROUPINGS ARE ADDED OR SUBTRACTED, AS WELL AS DURING NORMAL OPERATION. c. THE CONTROL CONTRACTOR SHALL PROVIDE ADDITIONAL HARDWARE AS REQUIRED TO MODULATE THE FAN WALL ASSEMBLY DOWN

TO A MINIMUM SPEED OF 7% OF FULL SPEED CORRESPONDING TO 3.5 VDC, AND MODULATE UP TO 100% AT 50 VDC. d. FAN WALL ASSEMBLIES SHALL BE THE FIRST STAGE OF BUILDING RELIEF AND SHALL FINE TUNE THE BUILDING PRESSURE TO REMAIN e. IF THE FAN WALL ASSEMBLY SPEED IS ABOVE 90% (ADJ), THEN EXHAUST RELIEF FAN SHALL BE STAGED ON IN AN ORDER AS

DETERMINED IN COMMISSIONING. ADDITIONAL FANS SHALL BE STAGED ON A WITH A RESET SCHEDULE UPON AN INCREASE OF 5% (ADJ), AND OFF ON A RESET SCHEDULE OF MINUS 5% (ADJ)THEREAFTER, THERE SHALL BE A DELAY TO START A AND A DELAY TO STOP TO PREVENT SHORT-CYCLING OF THE RELIEF EXHAUST FANS.

f. THE BAS SHALL CONNECT TO EACH FAN WALL ASSEMBLY WITH A RS485 MODBUS RTU CONNECTION. B. FAN WALL ASSEMBLY ALARM LIST a. HIGH BUILDING PRESSURE ALARM

b. LOW BUILDING PRESSURE ALARM

c. BUILDING PRESSURE SENSOR FAILURE

d. EXHAUST FAN FAILURE e. EXHAUST FAN IN-HAND f. EXHAUST FAN VOLTAGE/FREQUENCY OUT OF RANGE

g. PRESSURE SENOR FAILURE h. FAN WALL ASSEMBLY LOSS OF COMMUNICATIONS

i. PRESSURE OUT OF RANGE

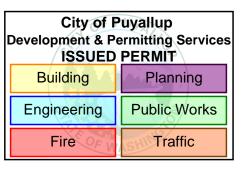




MECHANICAL

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MECHANICAL DIAGRAMS - DATA Title HALL