

			FIRE PROTECTION		PLUMBING SYSTEMS
	≕F(AF)─		- FIRE - ANTIFREEZE	2 1/2"	PIPE SIZE
	≕F(CA)−		FIRE - CLEAN AGENT	======:XX	PIPING ROUTED BELOW SLAB OR GRADE
	=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 PRESSURE)
	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	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
	- ○-		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
	∇ ¬DP		SIDEWALL SPRINKLER	LW	LABORATORY WASTE
	● DP		DRY PENDANT SPRINKLER	G	NATURAL GAS (LOW PRESSURE)
	∇		DRY SIDEWALL SPRINKLER	GD	GARAGE DRAINAGE
	FCP		FIRE ALARM CONTROL PANEL	GV———	NATURAL GAS VENT
	FVC		FIRE VALVE CABINET	MPG-	MEDIUM PRESSURE GAS
	SPCAB		SPRINKLER CABINET	NPCW———	NON-POTABLE COLD WATER
	ŀφ		FIRE HOSE VALVE ASSEMBLY	NPCW(S)	NON-POTABLE COLD WATER SOFTENED
	8		FIRE DAMPER	NPHW———	NON-POTABLE HOT WATER
	ଡ		SMOKE DAMPER	NPHW(S)	NON-POTABLE HOT WATER SOFTENED
	Ø		FIRE SMOKE DAMPER	PTS——	PNEUMATIC TRANSPORT
	ර	_	DUCT MOUNTED SMOKE SENSOR	PG	PROPANE GAS
<u> </u>	₽	⊢ ş	SUPERVISED BUTTERFLY VALVE	RO	REVERSE OSMOSIS
ē	F T	♂ ™	SUPERVISED BUTTERFLY VALVE NORMALLY CLOSED	ROR	REVERSE OSMOSIS RECIRCULATION
•	1	∏ 	SUPERVISED GATE VALVE	SL	SAMPLING LINE
•			SUPERVISED OUSIDE SCREW AND YORK (OS&Y) VALVE	SAN	SANITARY DRAIN
•	<u> </u>	8	SUPERVISED OS&Y VALVE	SAN(O)	SANITARY DRAIN (OIL)
中	T	8	SUPERVISED WATERFLOW SWITCH	SAN(P)	SANITARY PUMPED
		₿	SUPERVISED BACKFLOW PREVENTER	SAN(RAD)	SANITARY RADIOACTIVE
- <u>D</u>		b	WET ALARM CHECK VALVE WITH TRIMING	ST	STORM DRAIN
E				ST(0)	STORM DRAIN OVERFLOW
			DELUGE ALARM CHECK WITH TRIMING	ST(P)	STORM DRAIN PUMPED
	垂	4	AIR MENTENANCE DEVICE	VAC	VACUUM (AIR)
			FLOOR AIR COMPRESSOR TANK	VAC(EX)	VACUUM PUMP EXHAUST
L p	-1112	ſ _m	MOUNTED AIR COMPRESSOR ASSEMBLY	V	VENT
			DRY ALARM CHCEK VALVE WITH TRIMING	V(O)	VENT (OIL)
			PREACTION ALARM CHECK VALVE WITH TRIMING	V(SE)	VENT (SEWAGE EJECTOR)
<u>@</u>			BOSTER PUMP (ALBANY PUMP)	<u> </u>	PIPE INSULATION
(to	E.	ā	TEST AND DRAIN VALVE	\smile	FIXTURE TRAP
	A	rĈ	PRESSURE REDUCING VALVE	СВ 🔾	CATCH BASIN
04	ю	٥	1-1/2 FIRE CONNECTION ANGLE VALVE	MH 🔾	MAN HOLE
ОН	ю	0	2-1/2 FIRE CONNECTION ANGLE VALVE	RD ∅	ROOF DRAIN
Œ₽₽		*	FLOOR CONTROL VALVE ASSEMBLY	FD 🕖	FLOOR DRAIN
(8	ā	CHECK VALVE	FFD ∅	FUNNEL FLOOR DRAIN
Q.	8	\$	TREADED BALL VALVE		TRAP PRIMER
0⊒0		8	GROOVED BALL VALVE	•	HOSE BIBB
ø	Ţ	Ī	HYDRAULIC GONG		PLUMBING FIXTURES
0		-	ELECTRIC BELL		LAD O MEDICAL CAC
abla	₫	ⅎ	ELBOW WITH DRAIN 1 IN.		LAB & MEDICAL GAS
	Œ	Œ	GROOVE ELBOW	WAGD	ANESTHETIC EVACUATION
	88	₩O-	GROOVE TEE	CO2	CARBON DIOXIDE
	A	©	FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	DA	DENTAL COMPRESSED AIR
	0E[₿	SIAMESE PROJECTING CONNECTION «Y»	DV	DENTAL VACUUM
		③	SIAMESE CONNECTION «Y» FREE STANDING	He-	HELIUM
G	Ð	ΦÞ	BODY FOR FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	H2	HYDROGEN
щ	B ∎	•	CONCENTRIC GROOVED MECHANICAL REDUCER	IA	INSTRUMENT AIR
0	8	٠	GROOVED MECHANICAL TEE OR CAP	LCA	LABORATORY COMPRESSED AIR
0	В	•	REDUCING COUPLING	LVCA	LABORATORY VACUUM
0	8	•	THREADED MECHANICAL TEE OR CAP	MA	MEDICAL AIR
1	8	ф	THREADED MECHANICAL CROSS	MV	MEDICAL VACUUM
ا ڪر	•	ф 	THREADED MECHANICAL TEE	N2	NITROGEN
		- (HORIZONTAL SPLIT CASE FIRE PUMP	N2O	NITROUS OXIDE
			END SUCTION FIRE PUMP	02-	OXYGEN
				♠	MEDICAL AIR OUTLET
EQ1			VERTICAL INLINE FIRE PUMP	\Diamond	MEDICAL VACUUM OUTLET
$\{$	D ₁	acco	FIRE PUMP ANGLE BODY 4 WAY	⟨N⟩	MEDICAL NITROGEN OUTLET
				<no> √no> ◇ </no>	MEDICAL NITROUS OXIDE OUTLET
	H	0	JOCKEY PUMP	_	MEDICAL OXYGEN OUTLET
				(A)	LAB AIR SINGLE BENCH OUTLET
			PREACTION CABINET	(V) -	LAB VACUUM SINGLE BENCH OUTLET LAB NITROGEN SINGLE BENCH OUTLET
			FIRE HOSE RACK	(NO -	LAB NITROUS OXIDE SINGLE BENCH OUTLE LAB OXYGEN SINGLE BENCH OUTLET
		$\Box \Box$	SEISMIC EXPANSION LOOP	A	LAB DOUBLE 45 DEGREE BENCH OUTLET LAB DOUBLE BENCH OUTLET
				A	LAD OLLAD AS DECORES SEEDING
		®	WALL POST INDICATOR VALVE (PIV)	A	LAB QUAD 45 DEGREE BECNH OUTLET MEDICAL GAS MASTER ALARM PANEL MEDICAL GAS AREA ALARM PANEL
		(a)(b)(c)(d)	WALL POST INDICATOR VALVE (PIV) HANGER	A WZZZ	MEDICAL GAS MASTER ALARM PANEL MEDICAL GAS AREA ALARM PANEL
			WALL POST INDICATOR VALVE (PIV) HANGER HYDRANT VALVE CONTROL	12222 	MEDICAL GAS MASTER ALARM PANEL MEDICAL GAS AREA ALARM PANEL MEDICAL GAS ZONE VALVE
		(a)(b)(c)(d)	WALL POST INDICATOR VALVE (PIV) HANGER HYDRANT VALVE CONTROL WALL HYDRANT		MEDICAL GAS MASTER ALARM PANEL MEDICAL GAS AREA ALARM PANEL MEDICAL GAS ZONE VALVE BALL VALVE
			WALL POST INDICATOR VALVE (PIV) HANGER HYDRANT VALVE CONTROL	12222 	MEDICAL GAS MASTER ALARM PANEL MEDICAL GAS AREA ALARM PANEL MEDICAL GAS ZONE VALVE

	PLUMBING STSTEMS					PIPING STSTEWS (RVAC)			WORK DEFINITION
	PIPE SIZE PIPING ROUTED BELOW SLAB OR GRADE			===2 1/ ====BB		- PIPE SIZE - BOILER BLOWDOWN			NEW WORK (N) EXISTING (E)
	ACID VENT			——bb ===BF\		- BOILER FEED WATER			REMOVE EXISTING (D)
	ACID WASTE			——BF		- BRINE RETURN			REMOVE EXISTING EQUIPMENT (D)
	BOILER BLOWDOWN			BS		- BRINE SUPPLY		— — — KZZZZZ	FUTURE
	COMPRESSED AIR (NOMINAL PRESSURE)			—CHV	VR	- CHILLED WATER RETURN			TEMPORARY, AS NOTED
	CONDENSATE DISCHARGE PUMPED			=CHWF	R(G)	CHILLED WATER RETURN - GLYCOL			RELOCATE (R)
	CONDENSATE DRAIN			=CHWI	R(P)	- CHILLED WATER RETURN - PROCESS		(###)	KEY NOTE
	DIONIZED WATER			<u></u> СНV	VS	- CHILLED WATER SUPPLY		###	EQUIPMENT IDENTIFICATION
	DIONIZED WATER RECIRCULATING			=CHW	S(G)	- CHILLED WATER SUPPLY - GLYCOL		lacktriangle	CONNECTION TO EXISTING
	DISTILLED WATER			_CHW	S(P)	- CHILLED WATER SUPPLY - PROCESS			DISCONNECT (CUT AND CAP)
	DOMESTIC COLD WATER			CW	/R	CONDENSER WATER RETURN			(HVAC)
	DOMESTIC COLD WATER SOFTENED			=CWR((CT)	CONDENSER WATER RETURN - COOLING TOWER			*NOTE: ALL DUCT SIZES ARE INTERIOR
	DOMESTIC HOT WATER			CS'		- CONDENSER WATER SUPPLY			ALWAYS WIDTH (HORIZONTAL DIM.)
	DOMESTIC HOT WATER RECIRCULATION			=CWS(. ,	- CONDENSER WATER SUPPLY - COOLING TOWER		, \	AID ELOW ADDOM
	DRAIN			DT		DUAL TEMPERATURE RETURN (HOT OR CHILLED)	10"v12"		AIR FLOW ARROW
	GREASE WASTE			DT		DUAL TEMPERATURE SUPPLY (HOT OR CHILLED)	18"x12" -		RECTANGULAR DUCT AND SIZE* ROUND DUCT AND SIZE*
	HUMIDIFICATION LABORATORY VENT					FLUID COOLER FILTRATION SUPPYFLUID COOLER FILTRATION RETURN	18"x12"ø		FLAT OVAL DUCT AND SIZE*
	LABORATORY WASTE			—FCF —FO		- FUEL OIL FILL	18"x12"	10 X12 0	EXTERIOR DUCT TREATMENT*
	NATURAL GAS (LOW PRESSURE)			—го —_F0		- FUEL OIL RETURN	18"x12"	—18"x12"——	RECTANGULAR DUCT WITH ACOUSTI
	GARAGE DRAINAGE			o F0		- FUEL OIL SUPPLY		- 30"x12"	DUCT SECTION, SUPPLY AIR. APPLIES
	NATURAL GAS VENT			F0		- FUEL OIL VENT			DUCT SECTION, OUTSIDE AIR. APPLIE
	MEDIUM PRESSURE GAS			HPV		- HEAT RECOVERY LOOP RETURN			DUCT SECTION, RETURN AIR. APPLIE
	NON-POTABLE COLD WATER			HPV	VS	- HEAT PUMP WATER SUPPLY			DUCT SECTION, EXHAUST AIR. APPLI
	NON-POTABLE COLD WATER SOFTENED			HR	R	- HEAT RECOVERY LOOP RETURN		11	FLEXIBLE DUCT
	NON-POTABLE HOT WATER			HR	s	HEAT RECOVERY LOOP SUPPLY	×		ELBOW TURN, SUPPLY DOWN. APPLIE
)———	NON-POTABLE HOT WATER SOFTENED			HW	/R	- HEATING WATER RETURN	×		DUCT SECTION, OUTSIDE AIR. APPLIE
	PNEUMATIC TRANSPORT			HWR	R(G)	HEATING WATER RETURN - GLYCOL			DUCT SECTION, OUTSIDE AIR. APPLIE
	PROPANE GAS			HW	/S	- HEATING WATER SUPPLY			DUCT SECTION, OUTSIDE AIR. APPLIE
	REVERSE OSMOSIS			=HWS	6(G)	HEATING WATER SUPPLY - GLYCOL	→ UP →		CHANGE IN DUCT ELEVATION RISING
	REVERSE OSMOSIS RECIRCULATION			G	 	- NATURAL GAS	₹ DN:		CHANGE IN DUCT ELEVATION DROPP
	SAMPLING LINE			G\	/	- NATURAL GAS VENT	_ 🗖		END CAP
	SANITARY DRAIN			===RA	D	- RADON GAS			ELBOW, RECTANGULAR, SMOOTH RA (0.25 R/W DEFAULT)
	SANITARY DRAIN (OIL)			=REF(HG)	- REFRIGERANT HOT GAS	_		,
	SANITARY PUMPED			=REF	(L)	- REFRIGERANT LIQUID			ELBOW, RECTANGULAR, SMOOTH RA (1.5 R/W DEFAULT)
)———	SANITARY RADIOACTIVE			=REF	(S)	REFRIGERANT SUCTION			FLDOW DOLIND CMOOTH DADING
	STORM DRAIN			=REF	(V)	REFRIGERANT VENT			ELBOW, ROUND, SMOOTH RADIUS (1.5 R/W DEFAULT)
	STORM DRAIN OVERFLOW			R\	/	- RELIEF VENT			
	STORM DRAIN PUMPED			S(#	#)	STEAM (NOMINAL PRESSURE)	<u>L</u>		MITERED ELBOW, RECTANGULAR, WI
	VACUUM (AIR)			CS(#	##)	STEAM - CLEAN (NOMINAL PRESSURE)			
	VACUUM PUMP EXHAUST			C(#	#)	STEAM CONDENSATE (NOMINAL PRESSURE)	120		MITERED ELBOW, RECTANGULAR, WI
	VENT			—PC(#	##)	STEAM PUMPED CONDENSATE (NOMINAL PRESSURE)			
	VENT (OIL)			====S\	/	- STEAM VENT			RECTANGULAR TO ROUND TRANSITION
	VENT (SEWAGE EJECTOR)		2	3	(©)	PIPE INSULATION			
©)	PIPE INSULATION	DE	AL OBJE	:СТ	SYMBOL	PIPING COMPONENTS	<u> </u>		DUCT ACCESS DOOR (TOP, SIDE, BO
_	FIXTURE TRAP		_	五					ELEVIDLE CONNECTION
	CATCH BASIN		A A		—⋈—	ISOLATION VALVE (GENERIC)		•	FLEXIBLE CONNECTION
	MAN HOLE		Ħ		→ ₩ -	GATE VALVE			DACKDDAET DAMBED
	ROOF DRAIN			Ö		GLOBE VALVE	BDD	•	BACKDRAFT DAMPER
	FLOOR DRAIN	<u>†</u>	₽	le I	—-	BUTTERFLY VALVE NPS 6 AND LESS			CABLE OPERATED DAMPER
→	FUNNEL FLOOR DRAIN	9	<u> </u>	Q	II	BUTTERFLY VALVE NPS 8 AND MORE	COD	•	CABLE OPERATED DAMPER
\rightarrow	TRAP PRIMER	es ·		•	 ф	BALL VALVE			MANUAL DAMPER
_	HOSE BIBB	- 11 -	딞	0		PLUG VALVE	1———		MANUAL DAMPER
	PLUMBING FIXTURES	ā	$\stackrel{ ightharpoond}{\square}$	5		NEEDLE VALVE (OFNERIO)			MOTORIZED DAMPER
	LAB & MEDICAL GAS				——————————————————————————————————————	CHECK VALVE (GENERIC)][M]		WOTONIZED DAWFER
		Her	- % -		—₩—	BALANCING VALVE			PRESSURE INDEPENDENT REGULATO
	ANESTHETIC EVACUATION	~ -	_ և	<u> </u>		FLOW LIMITING VALVE	CAR		TRESSORE INDEFENDENT REGULATO
	CARBON DIOXIDE	n⊚io 2-WAY ©⊐ Mest				PRESSURE REDUCING VALVE	\$ THE STATE OF THE		FIRE DAMPER
	DENTAL COMPRESSED AIR DENTAL VACUUM	2-WAY	ģ	+		2-WAY CONTROL VALVE (GENERIC)	<u> </u>		TINE DAWN EN
	HELIUM	Q 3-WAY □ I	\$ \$	7 A		TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE 3-WAY CONTROL VALVE (GENERIC)	<u> </u>		SMOKE DAMPER
	HYDROGEN	3-WAY			, , , , , , , , , , , , , , , , , , , 	THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE			
	INSTRUMENT AIR	o∍ a -⊤	2000年	₽	4 ————————————————————————————————————	SOLENOID 2-WAY CONTROL VALVE			SMOKE AND FIRE DAMPER
	LABORATORY COMPRESSED AIR				——————————————————————————————————————	SOLENOID 3-WAY CONTROL VALVE	¥		
	LABORATORY VACUUM				- _ф .	FLOAT OPERATED VALVE ACTUATOR			DUCT SILENCER/TRANSFER ELBOW
	MEDICAL AIR	Œ	₿.	8	₺—	SAFETY OR RELIEF VALVE	T		CONTROL DEVICE (REFER TO CONTR
	MEDICAL VACUUM				Д	ANGLE VALVE			AIR FLOW MEASURING STATION (REF
	NITROGEN				₽—	BOILER STOP AND CHECK VALVE	_	QUANTITY	
	NITROUS OXIDE					DOUBLE CHECK VALVE ASSEMBLY	<u>'</u>	TYPE	
	OXYGEN	Ø	逐	۵	$\longrightarrow\!$	MULTI-PURPOSE VALVE (SHUT-OFF, BALANCING AND CHEC	:к) <u> </u>	SIZE (IN.)	AIR OUTLET OR INLET TAG)REFER TO
	MEDICAL AIR OUTLET		古山古	₫	M T	REDUCE PRESSURE BACKFLOW PREVENTER		VOLUME (CFM	M)
	MEDICAL VACUUM OUTLET			®	—	SUCTION DIFFUSER		†	DECTANCIA AD DIEFLICED CLIDDLY
	MEDICAL NITROGEN OUTLET	KO		r∰a ≜	$-\!$	PUMP (GENERIC)		← X →	RECTANGULAR DIFFUSER, SUPPLY. OPTIONAL ARROWS SHOW THE FLOV
	MEDICAL NITROUS OXIDE OUTLET	$ arraycolumn{7}{c}$	\bowtie	@		Y-STRAINER (GENERIC)		\$	
	MEDICAL OXYGEN OUTLET	\otimes	Î		——⊗——	STEAM TRAP (GENERIC)			RECTANGULAR REGISTER OR GRILLE
-	LAB AIR SINGLE BENCH OUTLET	^	0	•		AUTOMATIC AIR VENT			
>	LAB VACUUM SINGLE BENCH OUTLET	Δ			<u>~~</u> }	MANUAL AIR VENT			RECTANGULAR REGISTER OR GRILLE
-	LAB NITROGEN SINGLE BENCH OUTLET	с П			<u> </u>	VACUUM BREAKER			
-	LAB NITROUS OXIDE SINGLE BENCH OUTLET	Д <u></u> П	F		<u> </u>	SHOCK ABSORBER	\bigotimes		ROUND DIFFUSER, SUPPLY
>	LAB OXYGEN SINGLE BENCH OUTLET	₩ <u>∅</u>	Ψ	-	<u>"</u> " Ф	TEMPERATURE GAUGE			LINEAR DIFFUSER
	LAB DOUBLE 45 DEGREE BENCH OUTLET	_ Ø	•	-		PRESSURE GAUGE			SIDEWALL REGISTER OR GRILLE, SUF
-	LAB DOUBLE BENCH OUTLET	7			- \frac{\frac}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}{\frac{\fin}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac}}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fra	TEMPERATURE AND PRESSURE TRAP	→ →		SIDEWALL GRILLE, RETURN OR EXHA
	LAB QUAD 45 DEGREE BECNH OUTLET	•	k -	_	<u> </u>	SIGHT FLOW GLASS	UC		UNDERCUT DOOR
	MEDICAL GAS MASTER ALARM PANEL	Ħ	Ħ	0	— ———	FLEXIBLE CONNECTOR			DOOR GRILLE OR LOUVER TRANSFER GRILLE OR LOUVER
	MEDICAL GAS AREA ALARM PANEL					EXPANSION JOINT			
ф	MEDICAL GAS ZONE VALVE				_=_	GUIDE			COIL (REFER TO CONTROLS LEGEND
_	BALL VALVE					ANCHOR ELOW ARROW	♥	QUANTITY TYPE	
	CHECK VALVE				1%	FLOW ARROW			RADIATION HEATING TAG (REFER TO
						PIPING SLOPE		CAPACITY (ME	•
						PIPE CAP		on non (IVII	-· · · _/
		 			——→ , γ	PIPE BREAK			
					├	PIPE CROSS			
		•			<u></u>	PIPING ELBOW UP PIPING ELBOW DOWN			
						PIPING ELBOW DOWN PIPING TEE UP			
					<u></u>	PIPING TEE UP PIPING TEE DOWN			
		,101				UNION CONNECTION			

∘ • • —-| — UNION CONNECTION

Ф Ф ⊚ ——|— FLANGED CONNECTION

□ □ □ CONCENTRIC REDUCER

□ □ □ ■ ECCENTRIC REDUCER

——▼—

STANDARD CLEAN-OUT IN LINE END OF RUN

DIFFERENTIAL PRESSURE CONTROL VALVE

PRESSURE INDEPENDENT CONTROL VALVE

Y-PATTERN MANUAL BALANCING/SHUT-OFF VALVE

STANDARD CLEAN-OUT THROUGH FLOOR END OF RUN

PIPING SYSTEMS (HVAC)

ABBREVIATIONS A/C AIR CONDITIONING UNIT AUTOMATIC AIR VENT

EQUIPMENT IDENTIFICATION

AB-# AIR BLENDER

AF-# AIR FILTER

B-# BOILER

CB-#

BT-# BATH TUB

CC-# COOLING COIL

CONV-# CONVECTOR

CT-# COOLING TOWER

CU-# CONDENSING UNIT

CV-# CONTROL VALVE

DAC-# DOOR AIR CURTAIN

DC-# DUST COLLECTOR

DF-# DRINKING FOUNTAIN

DU-# DEHUMIDIFICATION UNIT

ERC-# ENERGY RECOVERY COIL

ERU-# ENERGY RECOVERY UNIT

ETU-# EXHAUST TERMINAL UNIT

EWS-# EYE WASH STATION

F(C)-# FAN CEILING

F(E)-# FAN EXHAUST

F(R)-# FAN RETURN

F(S)-# FAN SUPPLY

F-# FAN

FD-#

F(T)-# FAN TRANSFER

FCU-# FAN COIL UNIT

FUR-# FURNACE

FFU-# FAN FILTER UNIT

FLOOR DRAIN

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

P-# PUMP

RD-# ROOF DRAIN

RH-# RANGE HOOD

RP-# RADIANT PANEL

RTU-# ROOFTOP UNIT

SH-# SHOWER

SK-# SINK

MV-# MIXING VALVE

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

R-# RETURN AIR GRILLE / REGISTER / DIFFUSER

RPBP-# REDUCED PRESSURE BACKFLOW PREVENTER

S-# SUPPLY GRILLE / REGISTER / DIFFUSER

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)

EWC-# ELECTRIC WATER COOLER

F(LE)-# FAN LABORATORY EXHAUST

EMERGENCY SHOWER

DWH-# DOMESTIC WATER HEATER

E-# EXHAUST GRILLE / REGISTER / DIFFUSER

DG-# DOOR GRILLE

DS-# DUCT SILENCER

EL-# EXPANSION LOOP

DCT-# DECONTAMINATION TANK

DCVA-# DOUBLE CHECK VALVE ASSEMBLY

CUH-# CABINET UNIT HEATER

CH-# CHILLER

AC-# AIR COMPRESSOR

AHU-# AIR HANDLING UNIT AS-# AIR SEPARATOR

ATU-# AIR TERMINAL UNIT

BCU-# BLOWER COIL UNIT

CHILLED BEAM

CRU-# CONDENSATE RETURN UNIT

ACU-# AIR CONDITIONING UNIT

ADS-# AIR AND DIRT SEPARATOR

AVERGAGE

*NOTE: ALL DUCT SIZES ARE INTERIOR, FREE DIMENSIONS ALWAYS WIDTH (HORIZONTAL DIM.) x HEIGHT (VERTICAL DIM.)

B"ø——→ ROUND DUCT AND SIZE* 12"ø → FLAT OVAL DUCT AND SIZE* EXTERIOR DUCT TREATMENT* 12"—— RECTANGULAR DUCT WITH ACOUSTIC LINING* 'x12" DUCT SECTION, SUPPLY AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, RETURN AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, EXHAUST AIR. APPLIES TO RECT., ROUND AND OVAL FLEXIBLE DUCT ELBOW TURN, SUPPLY DOWN. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL CHANGE IN DUCT ELEVATION RISING IN DIRECTION INDICATED CHANGE IN DUCT ELEVATION DROPPING IN DIRECTION INDICATED

WORK DEFINITION

── END CAP ELBOW, RECTANGULAR, SMOOTH RADIUS WITH SPLITTER VANES (0.25 R/W DEFAULT) ELBOW, RECTANGULAR, SMOOTH RADIUS WITHOUT VANES (1.5 R/W DEFAULT) ELBOW, ROUND, SMOOTH RADIUS

(1.5 R/W DEFAULT) MITERED ELBOW, RECTANGULAR, WITHOUT VANES

MITERED ELBOW, RECTANGULAR, WITH TURNING VANES RECTANGULAR TO ROUND TRANSITION

DUCT ACCESS DOOR (TOP, SIDE, BOTTOM)

MOTORIZED DAMPER

PRESSURE INDEPENDENT REGULATOR

DUCT SILENCER/TRANSFER ELBOW CONTROL DEVICE (REFER TO CONTROLS LEGEND) AIR FLOW MEASURING STATION (REFER TO CONTROLS LEGEND)

IN.) AIR OUTLET OR INLET TAG)REFER TO SCHEDULE) ME (CFM) RECTANGULAR DIFFUSER, SUPPLY.

OPTIONAL ARROWS SHOW THE FLOW DIRECTION. RECTANGULAR REGISTER OR GRILLE, RETURN

RECTANGULAR REGISTER OR GRILLE, EXHAUST

ROUND DIFFUSER, SUPPLY LINEAR DIFFUSER SIDEWALL REGISTER OR GRILLE, SUPPLY

SIDEWALL GRILLE, RETURN OR EXHAUST UNDERCUT DOOR DOOR GRILLE OR LOUVER TRANSFER GRILLE OR LOUVER

COIL (REFER TO CONTROLS LEGEND)

TH (FT.) RADIATION HEATING TAG (REFER TO SCHEDULE) CITY (MBH)

AMERICANS WITH DISABILITIES ACT ADJUSTABLE ABOVE FINISHED CEILING ABOVE FINISHED FLOOR ABOVE FINISHED GRADE ABOVE FINISH ROOF AUTHORITY HAVING JURISDICTION ACCESS PANEL AIR PRESSURE DROP **BUILDING AUTOMATION SYSTEM** BACKDRAFT DAMPER BRAKE HORSEPOWER BUILDING MANAGEMENT SYSTEM BOD BOTTOM OF DUCT BOP BOTTOM OF PIPE BRITISH THERMAL UNIT BRITISH THERMAL UNIT PER HOUR C/W COMPLETE WITH CONSTANT AIR VOLUME CIRCUIT BALANCING VALVE CFM **CUBIC FEET PER MINUTE** DRY BULB TEMEPRATURE DECIBEL(S) dBA A-WEIGHTED DECIBLES DDC DIRECT DIGITAL CONTROL DEG DEGREE

DIA./Ø DIAMETER DIFF DIFFERENTIAL DIV DIVISION DOWN DN DWG DRAWING 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 EA (W) EXHAUST AIR, WASHROOM EAT ENTERING AIR TEMPERATURE EAV EXHAUST AIR VALVE ELECTRONICALLY COMMUNICATED ECM EXISTING TO BE DEMOLISHED

(DEMOLITION PLANS) ENERGY EFFICIENCY RATIO ETHELYENE GLYCOL EMCS ENERGY MANAGMENT CONTROL SYSTEM EXISTING RELOCATED (NEW CONSTRUCTION PLANS) EXISTING TO BE RELOCATED (DEMOLITION PLANS) EXTERNAL STATIC PRESSURE EWT ENTERING WATER TEMPERATURE EXIST / E EXISTING (DEMOLITION PLANS) FAIL CLOSED FULL LOAD AMPERAGE

FAIL OPEN FP FIRE PROTECTION FPS FEET PER SECOND FOOT/FEET GAUGE GAL GALLON (US) GC GENERAL CONTRACTOR GEO GEODETIC GPM GALLONS PER MINUTE HEPA HIGH EFFICIENCY PARTICULATE AIR

HORSEPOWER HOUR HEATING / VENTILATING / AIR CONDITIONING INVERT ELEVATION INTEGRATED ENERGY EFFECIENCY INCHES IN WG INCHES WATER GAUGE INTEGRATED PART LOAD VALUE

KILOWATT kWh KILOWATT HOUR LEAVING AIR TEMPERATURE POUNDS LINEAR FEET LEAVING WATER TEMPERATURE METER MAX MAXIMUM

VALUES

MANUFACTURER

PROTECTION

NOT APPLICABLE

NOISE CRITERIA

MWT MEAN WATER TEMPERATURE

NORMALLY CLOSED

NOT IN CONTRACT NORMALLY OPEN

NOMINAL PIPE SIZE

OWNER FURNISHED, CONTRACTOR

OWNER FURNISHED EQUIPMENT

OWNER FURNISHED / OWNER

POUNDS PER SQUARE INCH

PNEUMATIC TUBE STATION

POLYVINYL CHLORIDE

POUNDS PER SQUARE INCH, GAGE

NOT TO SCALE OUTSIDE AIR

INSTALLED

INSTALLED

PPM PARTS PER MILLION

PROPYLENE GLYCOL

POINT OF ENTRANCE POINT OF SERVICE

PSIA POUNDS PER SQUARE INCH,

ABSOLUTE

RETURN AIR

RH RELATIVE HUMIDITY

RATION SP STATIC PRESSURE

TA TRANSFER AIR

TEMP TEMPERATURE

TSTAT THERMOSTAT

TYP TYPICAL

UC

VAV

VIF

VTR

W/O

RPM REVOLUTIONS PER MINUTE

SEER SEASONAL ENERGY EFFICIENCY

SP STAIR PRESSURIZATION AIR (*) SRV SAFETY RELIEF VALVE

TSP TOTAL STATIC PRESSURE

UNDER CUT (DOOR)

VARIABLE AIR VOLUME

WET BULB TEMPERATURE

VARIABLE FREQUENCY DRIVE

UNDERGROUND

VERIFY IN FIELD

VENT-THRU-ROOF

WITH

WITHOUT

WG WATER GAUGE

ZN-# ZONE

°C CELSIUS °F FAHRENHEIT

RELA RELIEF AIR

REQD REQUIRED

MBH

MOP

NPS

OFCI

OFOI

POE

PTS

SPC-# SOLAR PANEL COLLECTOR SSF-# SIDE STREAM FILTER T(B)-# TANK (BUFFER TANK) T(E)-# TANK (EXPANSION TANK) THOUSAND OF BTUH T(H)-# TANK (HYDRO PNEUMATIC TANK) MINIMUM CIRCUIT AMPS T(S)-# TANK (STORAGE TANK) MERV MINIMUM EFFECIENCY REPORTING T-# TRANSFER AIR GRILLE UR-# URINAL MAXIMUM OVERCURRENT

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

City of Puyallup

ISSUED PERMIT

Engineering Public Works

Building

Fire

velopment & Permitting Services

Planning

Traffic

L-# LOUVER

City of Puyallup Building **REVIEWED FOR** COMPLIANCE BSnowden 07/02/2024 9:42:03 AM

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location. Full sized legible color plans are required to be provided by the permitee on site for inspection.

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible

for making sure that the building complies with all applicable

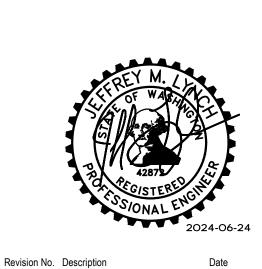
codes and regulations of the local government.

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

PRCTI20240784

centeris

MECHANICAL DRAWINGS



SM UPS BATTERY ROOM PERMIT 5/10/2024

MECHANICAL LEGEND AND **ABBREVIATIONS**

M.SM.001

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

M.SM.001 MECHANICAL LEGEND AND ABBREVIATIONS

MECHANICAL CALCULATIONS

MECHANICAL CALCULATIONS

M.SM.601 MECHANICAL SEQUENCE OF OPERATIONS

M.SM.002 MECHANICAL GENERAL NOTES

M.SM.010 MECHANICAL SCHEDULES

M.SM.102 MECHANICAL LEVEL 1 PLAN

M.SM.011



DEMO NOTES

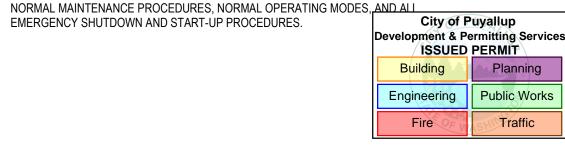
- 1. NOT ALL EXISTING CONDITIONS HAVE BEEN SHOWN. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO DEMO.
- 2. CONTRACTOR SHALL PROTECT ALL WORK AND EXISTING CONDITIONS ASSOCIATED WITH THIS CONTRACT FROM DAMAGE, COVER ENDS OF PIPING AND DUCTWORK NOT ACTIVELY BEING WORKED ON. IT IS THE CONTRACTOR 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

OBSERVATIONS.

- 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
- 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
- 4. COORDINATE PIPE ROUTING WITH DUCTWORK, SPRINKLER PIPING AND ELECTRICAL POWER/LIGHTING CIRCUITING AND STRUCTURAL MEMBERS PRIOR TO
- 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 2021 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 2021 WSEC SECTION C403.2.4 VARIABLE FLOW CAPACITY: FOR FAN AND PUMP MOTORS 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 MUNICIPAL SERVICENCY REQUIREMENTS OF TABLES C403.3.2(1) THROUGH C403.3.2(16) WHEN TESTED AND RATED IN ACCORDANCE WITH THE APPLICABLE TEST RROCEDY
- 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 PARTITIIONS, 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 STANDARDS.
- 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 2021 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
- 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. 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.
- 31. A BUILDING COMMISSIONING PROCESS AND FUNCTIONAL TESTING OF MECHANICAL SYSTEMS SHALL BE CARRIED OUT BY A CERTIFIED COMMISSIONING PROFESSIONAL IN ACCORDANCE WITH 2021 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.
- 32. SYSTEMS ADHERE TO 2021 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 FOLLOWING:
- 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
- c. FUNCTIONAL PERFORMANCE TEST PROCEDURES.
- d. COMMISSIONING PLAN. e. TAB REPORT. 33. TESTING AND BALANCING: ALL HVAC SYSTEMS SHALL BE BALANCED BY A
- STANDARDS AND SPECIFICATIONS PRIOR TO COMMISSIONING. 34. 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

LICENSED CONTRACTOR IN ACCORDANCE WITH ACCEPTED ENGINEERING







MECHANICAL



Revision No. Description SM UPS BATTERY ROOM PERMIT 5/10/2024

SM UPS BATTERY ROOM PERMIT 6/18/2024

MECHANICAL GENERAL NOTES

												REC	IRCULATION AIR UI	NIT SCH	EDULE													
TAC #	SCODE OF MODK	MANUF.	AREA SERVED	SENSIBLE			SUPPLY FAN	l				Е	LECTRICAL			UNIT SIZ	E	FIL	TERS.			EVAP	ORATIVE COOLI	NG MEDIA - DESIGN	I TO SLIDE INTO EXISTING	AHU CABINET		
TAG#	SCOPE OF WORK	IVIAINOF.	AREA SERVED	CAPACITY (MBH)	SUPPLY FAN TYPE/QUANTITY	SUPPLY CFM	MIN. OSA CFM	SUPPLY E.S.P.	SUPPLY BHP	SUPPLY HP	VFD	GPS GROUP	VOLTAGE PHASE	HEIGHT	WIDTH	LENGTH	TOTAL WEIGHT (LBS)	PRE - FILTER EFF.	FINAL - FILTER EFF.	MEDIA AREA	MEDIA DEPTH	I EAT (DB/WB) LAT (DB/WB)	EFFECTIVENESS	AIR PRESSURE DROP	WATER EVAP	DRAIN PAN	DRAIN SIZE NOTES
RAU-01	EXISTING TO REMAIN	PACE CLEAFI—PAK	UPS/BATTERY RM	1432.2	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-02	EXISTING TO REMAIN	PACE CLEAFI—PAK	UPS/BATTERY RM	1432.2	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"

1. EVAPORATIVE SECTION WILL NEED TO BE FIT COMPLETELY WITHIN THE EXISTING AHU CABINET (THE UNIT DRAIN PAN IS NOT REQUIRED FOR OPERATION OF EVAPORATIVE SECTION). MC TO SEAL ALL NEW UNIT PENETRATIONS AIRTIGHT.

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 SINDER OF A SYSTEM OF COMMON SHAPE OF A SYSTEM O

5. PROVIDE NEW 60 HP VFD FOR ÈXISTING EQUIPMENT. INSTALLATION AND WIRING BY EC. 6. 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.

NOTE USE OF ONBOARD CONTROL TRANSFORMER MAY BYPASS SAFETIES IF DISCONNECT IS USED TO REMOVE POWER. CONTROL SYSTEM SAFETIES TO REMAIN CONTINUOUSLY AVAILABLE.

7. UNIT SHALL HAVE FIELD-INSTALLED MAGNEHELIC FILTER GAUGES ACROSS EACH FILTER RACK.
8. PROVIDE WITH OSHA MOTOR AND FAN GUARD, INTELOCK OPERATION WITH DOORS AS REQUIRED. EVALUATE DOOR SAFETY SHUTDOWN OPTIONS WITH MC.
8. ALL RAU'S HAVE A AMCA 205 FAN EFFICIENCY GRADE (FEG) OF 85% EXCEEDING THE MINIMUM REQUIREMENT OF 67% PER C403.8.3.

										DUCT SYST	EM APP	LICATIC	N SCH	EDULE																
			DESIGN	CRITERIA	COI	NSTRUC [*]	ΓΙΟΝ	PRODUC	CT I	MATERIAL				LIN	IER				IN	SULATION	١			FACT	ΓORY JA	CKET		FIEL	LD JACKET	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 LINER	DOUBLE WALL PERF LINER G90 GALV SHEET STEEL G90 PVC COATED GALV SHEET STEEL	ALUMINUM 304 STAINLESS STEEL	16 STAINLESS ST	FABRIC	FIBERGLASS	FLEXIBLE ELASTOMERIC	A I UKAL FIR	THICKNESS (IN)	RGLASS E	FIBERGLASS BOARD	FLEXIBLE ELASTOMERIC	FIRE RATED BOARD	INSULATION MINIMUM R-VALUE	THICKNESS (IN)	DENSITY (LB/FT³)	· Ω -	AsJ-ss	VINYL	FABRIC	PVC	ALUMINUM STAINLESS STEEL	SELF ADHESIVE
		CONCEALED	1,000	0.10	2	А	6	Х	X								Х				R-3.3	1.5	1.5			Х				1
SUPPLY AIR	ALL	EXPOSED	1,000	0.10	2	А	6	Х	X									Х			R-3.3	1	2.25			Х				1
		MECHANICAL ROOM	1,200	0.10	6	А	6	Х	X									Х			R-3.3	1	2.25			X				1
DETUDNI AND		CONCEALED	1,000	0.10	2	А	6	X	X																	Х				1
RETURN AND TRANSFER AIR	ALL	EXPOSED	1,000	0.10	2	Α	6	Х	X																	X				1
TIVANOI LIX AIIX		MECHANICAL ROOM	1,200	0.10	6	Α	6	Х	X									Х			R-8	2	2.25			X				1
		CONCEALED	1,000	0.10	2	Α	6	Х	X																	X				1
GENERAL EXHAUST	ALL	EXPOSED	1,000	0.10	2	А	6	Χ	X																	X				1
EXHAUST	ALL	LOUVER CAN	1,200	0.10	6	Α	6	X	X									X			R-16	5	2.25			X				1
		MECHANICAL ROOM	1,200	0.10	6	Α	6	X	X									X			R-8	2	2.25			X				1
OUTSIDE AIR	ALL	LOUVER CAN	1,200	0.10	6	А	6	X	X									X			R-16	5	2.25			X				1
OUTSIDE AIN	ALL	MECHANICAL ROOM	1,200	0.10	6	Α	G C	v										V	1 1		R-8	2	2.25			v				1

							EXIS	TING EXH	HAUST FA	AN SCHE	DULE							
UI	VIT IDENTIFICA	ATION					FAN V	VHEEL		FAN I	MOTOR		ELECT	TRICAL				
MARK	NUMBER	UNIT/AREA SERVED	STATUS	MAX AIRFLOW (CFM)	ESP (IN-WG)	CONTROL	TYPE	SPEED (RPM)	BHP	HP	SPEED (RPM)	DRIVE TYPE	VOLTS	PHASE	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTE
(E) EF	149	L1 SM BATTER & UPS	ONLINE	56,000	1.25	VFD	MIXED FLOW	554	18.9	20	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	
(E) EF	150	L1 SM BATTER & UPS	ONLINE	56,000	1.25	VFD	MIXED FLOW	554	18.9	20	1725	BELT	460	3	2,900	GREENHECK	QEI-54-I	

TAG	MANUFACTURER	MODEL NUMBER	SIZE W" X H" / Ø"	SERVICE	FIRE RATING	LEAKAGE CLASS	BLADE TYPE	CONTROL	V/Ø	EMERGENCY POWER?	NOTES
FSD-SM-1	RUSKIN	FSD60	48 X 30	OUTSIDE AIR SUPPLY	1.5 HR	I	AIRFOIL	NONE	120/1	NO	1,2,3,4
FSD-SM-2	RUSKIN	FSD60	48 X 30	OUTSIDE AIR SUPPLY	1.5 HR		AIRFOIL	NONE	120/1	NO	1,2,3,4
FSD-SM-3	RUSKIN	FSD60	48 X 48	EXHAUST AIR	1.5 HR		AIRFOIL	NONE	120/1	NO	1,2,3,4
FSD-SM-4	RUSKIN	FSD35G	54 X 48	TRANSFER AIR	1.5 HR		AIRFOIL	NONE	120/1	NO	1,2,3,4
FSD-SM-5	RUSKIN	FSD60	54 X 20	EXHAUST AIR	1.5 HR	I	AIRFOIL	NONE	120/1	NO	1,2,3,4

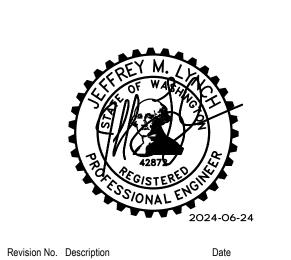
2. SIZE TO BE VERIFIED BASED ON ASSOCIATED GRILLE AND DUCTWORK ON FLOOR PLANS. POWERED OPEN NORMALLY, FAIL CLOSED UPON LOSS OF POWER.
 PROVIDE WITH BELIMO ACTUATOR FS_F120-S.

			(GRILLE, REGI	STER, DIFFUSE	R SCHEDUI	LE			
UNIT IDENT	TFICATION	DIFFUSER	FLOW	DIFFUSER	FLOW PATTERN	MOUNTING	MATERIAL	MANUFACTURE	MODEL	NOTES
MARK	NUMBER	FACE SIZE (IN)	RANGE	NECK SIZE (IN)	ILOWIAIILM	TYPE		R	NUMBER	INOTEO
CD	1	48"x48"	SEE PLAN	SEE PLAN	DUAL DEFLECTION	DUCT	STEEL	TITUS	272RL	-
NOTES:										•
1										





MECHANICAL DRAWINGS



SM UPS BATTERY ROOM PERMIT 5/10/2024 SM UPS BATTERY ROOM PERMIT 6/18/2024

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

MECHANICAL Title SCHEDULES

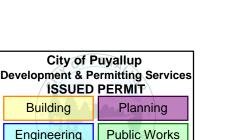
Mech_Energy	25% Calcul	ation																				
IT Load	25%	1,225.5	kW																			
Ambient Temperature (°F)	ASHRAE TMY Hours	Chiller Capacity (Tons)	Chiller Energy (kW)	Chiller Energy Usage (kWh)	Total Air Handler Fan Airflow (cfm)	Per Air Handler Fan Airflow (cfm)	Per Air Handler Fan Brake Power (hp)	No. of Air Handlers		Air Handler Fan Energy (kWh)	Total Heat Rejection Airflow (cfm)	Heat Rejection Fan Airflow (cfm)		Operating	Heat Rejection Fan Energy (kWh)	Primary Pump Flor (gpm)	Pump Brake Power (hp)	Pump Motor Efficiency (%)	No. of Pumps	Pump Energy (kW)	Pump Energy (kWh)	MLC
						, ,						,										
95	7	0	0	0	250000	12500	0.6328	20	9.438	66.06					0	78.75	0.3125	78.4	8	1.864	13.05	1.0092
94	2	0	0	0	250000	12500	0.6328	20	9.438	18.88					0	78.75	0.3125		8	1.864	3.73	1.0092
92	6	0	0	0	250000	12500	0.6328	20	9.438	56.63					0	78.75	0.3125		8	1.864	11.19	1.0092
90	14	0	0	0	250000	12500	0.6328	20	9.438	132.13					0	78.75	0.3125		8	1.864	26.10	1.0092
88	25	0	0	0	250000	12500	0.6328	20	9.438	235.94					0	78.75	0.3125		8	1.864	46.61	1.0092
86	25	0	0	0	250000	12500	0.6328	20	9.438	235.94					0	78.75	0.3125		8	1.864	46.61	1.0092
84	36	0	0	0	250000	12500	0.6328	20	9.438	339.76					0	78.75	0.3125		8	1.864	67.11	1.0092
82	41	0	0	0	250000	12500	0.6328	20	9.438	386.95					0	78.75	0.3125		8	1.864	76.43	1.0092
80	62	0	0	0	250000	12500	0.6328	20	9.438	585.14					0	78.75	0.3125		8	1.864	158.46	
78	85	0	0	0	250000	12500	0.6328	20	9.438	802.21					0	78.75	0.3125		8	1.864	180.83	1.0092
76	97	0	0	0	250000	12500	0.6328	20	9.438	915.46					0	78.75	0.3125		8	1.864	197.61	1.0092
74	106	0	0	0	250000	12500	0.6328	20	9.438	1000.40					0	78.75	0.3125		8	1.864	253.54	1.0092
72	136	0	0	0	250000	12500	0.6328	20	9.438	1283.54					0	78.75	0.3125		8	1.864	300.14	1.0092
70	161	0	0	0	250000	12500	0.6328	20	9.438	1519.48					0	78.75	0.3125		8	1.864	348.61	1.0092
68	187	0	0	0	250000	12500	0.6328	20	9.438	1764.86	250000	250000	4.884	1	913.37					0	0	1.0117
66	259	0	0	0	250000	12500	0.6328	20	9.438	2444.38	250000	250000	4.884	1	1265.04					0	0	1.0117
64	282	0	0	0	250000	12500	0.6328	20	9.438	2661.45	250000	250000	4.884	1	1377.38					0	0	1.0117
62	303	0	0	0	250000	12500	0.6328	20	9.438	2859.64	250000	250000	4.884	1	1479.95					0	0	1.0117
60	355	0	0	0	250000	12500	0.6328	20	9.438	3350.41	250000	250000	4.884	1	1733.94					0	0	1.0117
58	383	0	0	0	250000	12500	0.6328	20	9.438	3614.66	250000	250000	4.884	1	1870.70					0	0	1.0117
56	436	0	0	0	250000	12500	0.6328	20	9.438	4114.87	250000	250000	4.884	1	2129.57					0	0	1.0117
54	380	0	0	0	250000	12500	0.6328	20	9.438	3586.35	250000	250000	4.884	1	1856.05					0	0	1.0117
52	445	0	0	0	250000	12500	0.6328	20	9.438	4199.81	250000	250000	4.884	1	2173.53					0	0	1.0117
50	542	0	0	0	250000	12500	0.6328	20	9.438	5115.27	250000	250000	4.884	1	2647.31					0	0	1.0117
48	502	0	0	0	250000	12500	0.6328	20	9.438	4737.76	250000	250000	4.884	1	2451.93					0	0	1.0117
46	439	0	0	0	250000	12500	0.6328	20	9.438	4143.18	250000	250000	4.884	1	2144.22					0	0	1.0117
44	590	0	0	0	250000	12500	0.6328	20	9.438	5568.28	250000	250000	4.884	1	2881.76					0	0	1.0117
42	656	0	0	0	250000	12500	0.6328	20	9.438	6191.17	250000	250000	4.884	1	3204.12					0	0	1.0117
40	709	0	0	0	250000	12500	0.6328	20	9.438	6691.38	250000	250000	4.884	1	3462.99					0	0	1.0117
38	486	0	0	0	250000	12500	0.6328	20	9.438	4586.75	250000	250000	4.884	1	2373.78					0	0	1.0117
36	428	0	0	0	250000	12500	0.6328	20	9.438	4039.36	250000	250000	4.884	1	2090.49					0	0	1.0117
34	247	0	0	0	250000	12500	0.6328	20	9.438	2331.13	250000	250000	4.884	1	1206.43					0	0	1.0117
32	158	0	0	0	250000	12500	0.6328	20	9.438	1491.17	250000	250000	4.884	1	771.72					0	0	1.0117
30	70	0	0	0	250000	12500	0.6328	20	9.438	660.64	250000	250000	4.884	1	341.90					0	0	1.0117
28	50	0	0	0	250000	12500	0.6328	20	9.438	471.89	250000	250000	4.884	1	244.22					0	0	1.0117
26	26	0	0	0	250000	12500	0.6328	20	9.438	245.38	250000	250000	4.884	1	126.99					0	0	1.0117
24	18	0	0	0	250000	12500	0.6328	20	9.438	169.88	250000	250000	4.884	1	87.92					0	0	1.0117
22	6	0	0	0	250000	12500	0.6328	20	9.438	56.63	250000	250000	4.884	1	29.31				1	0	0	1.0117
20	0	0	0	0	250000	12500	0.6328	20	9.438	0.00	250000	250000	4.884	1	0					0	0	1.0117

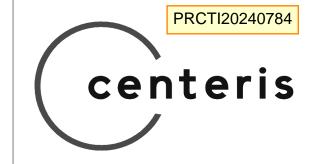
Iech_Energy	50% Calcul	lation																				
Load	50%	2,451.0	kW	C1.:11	T-4-1 A	D 4 ·	D 4 '	NI. CA	Α :	A : TT 11	T.4.111 /	114	II4	N. F	TT4	D E1	D	D	NI. C	D	D	МС
mbient	ASHRAE	Chiller	Chiller	Chiller	Total Air Handler Fan	Per Air Handler	Per Air Handler	No. of Air Handlers	Aır Handler	Air Handler	Total Heat		Heat Rejection	No. Fans	Heat Rejection	Pump Flov	Pump Brake	Pump Motor	No. of	Pump	Pump	MLC
emperature (°F)	1 WIT HOURS	Capacity (Tons)	Energy (kW)	Energy Usage	Airflow	Fan Fan	Fan Brake	randiers	Fan Energ	Fan Energy	Rejection Airflow	Rejection Fan	Fan Energy	Operating	Fan Energy	(gpm)		Efficiency	Pumps	Energy (kW)	Energy (kWh)	
		(Tolls)	(KW)	(kWh)	(cfm)	Airflow	Power (hp)		(kW)	y (KWII)	(cfm)	Airflow	(kW)		(kWh)		Fower (np)	(%)		(KW)	(KWII)	
				(K WII)	(CIIII)	(cfm)	rower (np)		(KW)		(CIIII)	(cfm)	(KW)		(KWII)			(70)				
						(CIIII)						(CIII)										
95	7	0	0	0	500000	25000	5.063	20	75.50	528.51					0	157.5	2.5	78.4	8	14.91	104.40	1.0369
94	2	0	0	0	500000	25000	5.063	20	75.50	151.00					0	157.5	2.5	70.4	8	14.91	29.83	1.0369
92	6	0	0	0	500000	25000	5.063	20	75.50	453.01					0	157.5	2.5		8	14.91	89.48	1.0369
90	14	0	0	0	500000	25000	5.063	20	75.50	1057.03					0	157.5	2.5		8	14.91	208.80	1.0369
88	25	0	0	0	500000	25000	5.063	20	75.50	1887.55					0	157.5	2.5		8	14.91	372.85	1.0369
86	25	0	0	0	500000	25000	5.063	20	75.50	1887.55					0	157.5	2.5		8	14.91	372.85	1.0369
84	36	0	0	0	500000	25000	5.063	20	75.50	2718.08					0	157.5	2.5		8	14.91	536.90	1.0369
82	41	0	0	0	500000	25000	5.063	20	75.50	3095.59					0	157.5	2.5		8	14.91	611.47	1.0369
80	62	0	0	0	500000	25000	5.063	20	75.50	4681.13					0	157.5	2.5		8	14.91	924.67	1.0369
78	85	0	0	0	500000	25000	5.063	20	75.50	6417.68					0	157.5	2.5		8	14.91	1267.69	1.0369
76	97	0	0	0	500000	25000	5.063	20	75.50	7323.71					0	157.5	2.5		8	14.91	1446.66	1.0369
74	106	0	0	0	500000	25000	5.063	20	75.50	8003.23					0	157.5	2.5		8	14.91	1580.88	1.0369
72	136	0	0	0	500000	25000	5.063	20	75.50	10268.29					0	157.5	2.5		8	14.91	2028.30	1.0369
70	161	0	0	0	500000	25000	5.063	20	75.50	12155.84					0	157.5	2.5		8	14.91	2401.15	1.0369
68	187	0	0	0	500000	25000	5.063	20	75.50	14118.90	500000	500000	39.075	1	7306.96		1			0	0	1.0467
66	259	0	0	0	500000	25000	5.063	20	75.50	19555.05	500000	500000	39.075	1	10120.33					0	0	1.0467
64	282	0	0	0	500000	25000	5.063	20	75.50	21291.60	500000	500000	39.075	1	11019.05					0	0	1.0467
62	303	0	0	0	500000	25000	5.063	20	75.50	22877.14	500000	500000	39.075	1	11839.62					0	0	1.0467
60	355	0	0	0	500000	25000	5.063	20	75.50	26803.25	500000	500000	39.075	1	13871.50					0	0	1.0467
58	383	0	0	0	500000	25000	5.063	20	75.50	28917.31	500000	500000	39.075	1	14965.59		-			0	0	1.0467
56	436	0	0	0	500000	25000	5.063	20	75.50	32918.93	500000	500000	39.075	1	17036.55					0	0	1.0467
54	380	0	0	$\frac{0}{0}$	500000	25000	5.063	20	75.50	28690.81	500000	500000	39.075	1 1	14848.37		+			0	0	1.0467
52 50	445 542	0	0	0	500000 500000	25000 25000	5.063 5.063	20 20	75.50 75.50	33598.45 40922.15	500000 500000	500000	39.075 39.075	1	17388.22 21178.46					0	0	1.0467 1.0467
48	502	0	0	0	500000	25000	5.063	20	75.50	37902.07	500000	500000	39.075	1	19615.47		+			0	0	1.0467
46	439	0	0	0	500000	25000	5.063	20	75.50	33145.43	500000	500000	39.075	1	17153.77		+		1	0	0	1.0467
44	590	0	$\frac{0}{0}$	0	500000	25000	5.063	20	75.50	44546.25	500000	500000	39.075	1	23054.04		+			0	0	1.0467
42	656	0	0	0	500000	25000	5.063	20	75.50	49529.39	500000	500000		1	25632.97					0	0	1.0467
40	709	0	0	0	500000	25000	5.063	20	75.50	53531.01	500000	500000	39.075	1	27703.92					0	0	1.0467
38	486	0	0	0	500000	25000	5.063	20	75.50	36694.03	500000	500000	39.075	1	18990.28					0	0	1.0467
36	428	0	0	0	500000	25000	5.063	20	75.50	32314.91	500000	500000	39.075	1	16723.95					0	0	1.0467
34	247	0	0	0	500000	25000	5.063	20	75.50	18649.02	500000	500000	39.075	1	9651.44					0	0	1.0467
32	158	0	0	0	500000	25000	5.063	20	75.50	11929.34	500000	500000	39.075	1	6173.79					0	0	1.0467
30	70	0	0	0	500000	25000	5.063	20	75.50	5285.15	500000	500000	39.075	1	2735.23					0	0	1.0467
28	50	0	0	0	500000	25000	5.063	20	75.50	3775.11	500000	500000	39.075	1	1953.73					0	0	1.0467
26	26	0	0	0	500000	25000	5.063	20	75.50	1963.06	500000	500000	39.075	1	1015.94					0	0	1.0467
24	18	0	0	0	500000	25000	5.063	20	75.50	1359.04	500000	500000	39.075	1	703.34					0	0	1.0467
22	6	0	0	0	500000	25000	5.063	20	75.50	453.01	500000	500000	39.075	1	234.45					0	0	1.0467
20	0	0	0	0	500000	25000	5.062	20	75.50	0.00	500000	500000	20.075	1	0					0		1.0467

Mech Energy S	ummary				
	Cooling	Air-Handler	Heat	Pump	Total (kWh)
	Energy (kWh)	Fan Energy	Rejection	Energy	
		(kWh)	Fan Energy	(kWh)	
			(kWh)		
Mech Energy25%	0.0	556.3	9,598.5	16.6	10,171.5
Mech Energy50%	0.0	4,450.5	19,197.1	115.2	23,762.8
Mech Energy75%	0.0	15,020.6	28,795.6	388.6	44,204.8
Mech Energy100%	0.0	35,604.4	38,394.1	921.2	74,919.7
				Total	153,058.8

		Full Capacity	D:	11
IT capacity	KW	IT capacity	Project	Max
(tons)		(kWh)	Annualized	
			MLC	Annalized
				MLC
25%	52.3	457,710.0		
50%	104.5	915,420.0		
75%	156.8	1,373,130.0		
100%	209.0	1,830,840.0		
Totals:		4.577.100.0	0.033	0.14

Total	I Summary Total	Total RAU	% Total IT	Total IT
Prescribed	Quantity of		Load for	Load for
Overall IT	RAU for		new RAU	new RAU
Load	Total Load			(MW)
0.209	1	1	100%	0.209

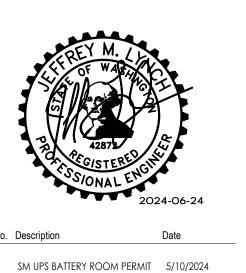






MECHANICAL DRAWINGS

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



Drawn By: Checked By:

MECHANICAL

Title CALCULATIONS

Mech_Energy	75% Calcul	ation																				
	75%	3,676.5	kW																			
Ambient	ASHRAE	Chiller	Chiller	Chiller	Total Air	Per Air	Per Air	No. of Air	Air	Air Handler	Total Heat	Heat	Heat	No. Fans	Heat	Pump Flov	v Pump	Pump	No. of	Pump	Pump	MLC
Temperature (°F)	TMY Hours	Capacity	Energy	Energy	Handler Fan	Handler	Handler	Handlers	Handler	Fan Energy	Rejection	Rejection	Rejection	Operating	Rejection	(gpm)	Brake	Motor	Pumps	Energy	Energy	
		(Tons)	(kW)	Usage	Airflow	Fan	Fan Brake		Fan Energy	(kWh)	Airflow	Fan	Fan Energ	y	Fan Energy	,	Power (hp) Efficiency		(kW)	(kWh)	
				(kWh)	(cfm)	Airflow	Power (hp)		(kW)		(cfm)	Airflow	(kW)		(kWh)			(%)				
						(cfm)						(cfm)										
95	7	0	0	0	750000	37500	17.09	20	254.8	1783.7					0	236.3	8.438	78.4	8	50.33	352.3	1.0830
94	2	0	0	0	750000	37500	17.09	20	254.8	509.6					0	236.3	8.438		8	50.33	100.7	1.0830
92	6	0	0	0	750000	37500	17.09	20	254.8	1528.9					0	236.3	8.438		8	50.33	302.0	1.0830
90	14	0	0	0	750000	37500	17.09	20	254.8	3567.5					0	236.3	8.438		8	50.33	704.7	1.0830
88	25	0	0	0	750000	37500	17.09	20	254.8	6370.5					0	236.3	8.438		8	50.33	1258.4	1.0830
86	25	0	0	0	750000	37500	17.09	20	254.8	6370.5					0	236.3	8.438		8	50.33	1258.4	1.0830
84	36	0	0	0	750000	37500	17.09	20	254.8	9173.5					0	236.3	8.438		8	50.33	1812.1	1.0830
82	41	0	0	0	750000	37500	17.09	20	254.8	10447.6					0	236.3	8.438		8	50.33	2063.7	1.0830
80	62	0	0	0	750000	37500	17.09	20	254.8	15798.8					0	236.3	8.438		8	50.33	3120.8	1.0830
78	85	0	0	0	750000	37500	17.09	20	254.8	21659.7					0	236.3	8.438		8	50.33	4278.5	1.0830
76	97	0	0	0	750000	37500	17.09	20	254.8	24717.5					0	236.3	8.438		8	50.33	4882.5	1.0830
74	106	0	0	0	750000	37500	17.09	20	254.8	27010.9					0	236.3	8.438		8	50.33	5335.5	1.0830
72	136	0	0	0	750000	37500	17.09	20	254.8	34655.5					0	236.3	8.438		8	50.33	6845.5	1.0830
70	161	0	0	0	750000	37500	17.09	20	254.8	41026.0					0	236.3	8.438		8	50.33	8103.9	1.0830
68	187	0	0	0	750000	37500	17.09	20	254.8	47651.3	750000	375000	16.48	2	6165.2					0	0	1.0738
66	259	0	0	0	750000	37500	17.09	20	254.8	65998.3	750000	375000	16.48	2	8539.0					0	0	1.0738
64	282	0	0	0	750000	37500	17.09	20	254.8	71859.1	750000	375000	16.48	2	9297.3					0	0	1.0738
62	303	0	0	0	750000	37500	17.09	20	254.8	77210.4	750000	375000	16.48	2	9989.7					0	0	1.0738
60	355	0	0	0	750000	37500	17.09	20	254.8	90461.0	750000	375000	16.48	2	11704.1					0	0	1.0738
58	383	0	0	0	750000	37500	17.09	20	254.8	97595.9	750000	375000	16.48	2	12627.2					0	0	1.0738
56	436	0	0	0	750000	37500	17.09	20	254.8	111101.4	750000	375000	16.48	2	14374.6					0	0	1.0738
54	380	0	0	0	750000	37500	17.09	20	254.8	96831.5	750000	375000	16.48	2	12528.3					0	0	1.0738
52	445	0	0	0	750000	37500	17.09	20	254.8	113394.8	750000	375000	16.48	2	14671.3					0	0	1.0738
50	542	0	0	0	750000	37500	17.09	20	254.8	138112.3	750000	375000	16.48	2	17869.3					0	0	1.0738
48	502	0	0	0	750000	37500	17.09	20	254.8	127919.5	750000	375000	16.48	2	16550.6					0	0	1.0738
46	439	0	0	0	750000	37500	17.09	20	254.8	111865.8	750000	375000	16.48	2	14473.5					0	$\frac{1}{2}$	1.0738
44	590	0	0	0	750000	37500	17.09	20	254.8	150343.6	750000	375000	16.48	2	19451.8					0	$\frac{1}{2}$	1.0738
42	656	0	0	0	750000	37500	17.09	20	254.8	167161.7	750000	375000	16.48	$\frac{2}{2}$	21627.8		-			0	$\frac{1}{0}$	1.0738
40	709	0	0	0	750000	37500	17.09	20	254.8	180667.1	750000	375000	16.48	$\frac{2}{2}$	23375.2					0	$\frac{1}{0}$	1.0738
38	486	0	0	0	750000	37500	17.09	20	254.8	123842.4	750000	375000	16.48	2	16023.0					0	0	1.0738
36	428	0	0	0	750000	37500	17.09	20	254.8	109062.8	750000	375000	16.48	2	14110.8					0	0	1.0738
34	247	0	0	0	750000	37500	17.09	20	254.8	62940.5	750000	375000	16.48	2	8143.4					0	0	1.0738
32	158	0	0	0	750000	37500	17.09	20	254.8	40261.5	750000	375000	16.48	2	5209.1					0	$\frac{1}{2}$	1.0738
30	70	0	0	0	750000	37500	17.09	20	254.8	17837.4	750000	375000	16.48	2	2307.8					0	$+\frac{0}{2}$	1.0738
28	50	0	0	0	750000	37500	17.09	20	254.8	12741.0	750000	375000	16.48	2	1648.5					0	$\frac{1}{0}$	1.0738
26	26	0	0	0	750000	37500	17.09	20	254.8	6625.3	750000	375000	16.48	2	857.2					0	+ 0	1.0738
24	18	0	0	0	750000	37500	17.09	20	254.8	4586.8	750000	375000	16.48	2	593.4					0	0	1.0738
22	6	0	0	0	750000	37500	17.09	20	254.8	1528.9	750000	375000	16.48	2	197.8					0	+ 0	1.0738
20	0	1 0	1 0	0	750000	37500	17.09	20	254.8	0.0	750000	375000	16.48	\perp 2	\perp 0					0	1 0	1.0738

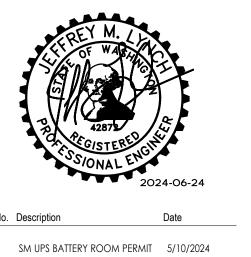
Mech_Energy	100% Calcu	ulation																				
IT Load Ambient	ASHRAE	4,902.0 Chiller	kW Chiller	Chiller	Total Air	Per Air	Per Air	No. of Air		Total Air		Heat	Heat	No. Fans	Heat	Per Pump	Pump	Pump	No. of	Pump	Pump	MLC
Temperature (°F)	TMY Hours	Capacity (Tons)	Energy (kW)	Energy Usage (kWh)	Handler Fan Airflow (cfm)	Handler Fan Airflow	Handler Fan Brake Power (hp)	Handlers		Handler Fan Energy (kWh)	Rejection Airflow (cfm)	Rejection Fan Airflow	Rejection Fan Energy (kW)	Operating	Rejection Fan Energy (kWh)	Flow (gpm)	Brake Power (bhp)	Motor Efficiency (%)	Pumps	Energy (kW)	Energy (kWh)	
						(cfm)						(cfm)										
95	7	0	0	0	1000000	50000	40.5	20	604.0	4228.1					0	315	20	78.4	8	119.3	835.2	1.1476
94	2	0	0	0	1000000	50000	40.5	20	604.0	1208.0					0	315	20		8	119.3	238.6	1.1476
92 90	6	0	0	0	1000000	50000	40.5	20	604.0	3624.1					0	315	20		8	119.3	715.9	1.1476
90 88	14 25	0	0	0	1000000	50000 50000	40.5	20 20	604.0	8456.2 15100.4					0	315 315	20 20		8	119.3 119.3	1670.4 2982.8	1.1476 1.1476
86	25	0	0	0	1000000	50000	40.5	20	604.0	15100.4					0	315	20		8	119.3	2982.8	1.1476
84	36	0	0	$\frac{0}{0}$	1000000	50000	40.5	20	604.0	21744.6					0	315	20		8	119.3	4295.2	1.1476
82	41	0	0	0	1000000	50000	40.5	20	604.0	24764.7					0	315	20		8	119.3	4891.8	1.1476
80	62	0	0	0	1000000	50000	40.5	20	604.0	37449.1					0	315	20		8	119.3	7397.3	1.1476
78	85	0	0	0	1000000	50000	40.5	20	604.0	51341.4					0	315	20		8	119.3	10141.5	1.1476
76	97	0	0	0	1000000	50000	40.5	20	604.0	58589.6					0	315	20		8	119.3	11573.3	1.1476
74	106	0	0	0	1000000	50000	40.5	20	604.0	64025.8					0	315	20		8	119.3	12647.1	1.1476
72 70	136 161	0	0	0	1000000 1000000	50000 50000	40.5	20 20	604.0 604.0	82146.3 97246.7					0	315 315	20 20		8	119.3 119.3	16226.4 19209.2	1.1476 1.1476
68	187	0	0	0	1000000	50000	40.5	20	604.0	112951.2	1000000	500000	39.07	2	14613.9	313	20		0	0	19209.2	1.1470
66	259	0	0	0	1000000	50000	40.5	20	604.0	156440.4	1000000	500000	39.07	2	20240.7					0	0	1.1312
64	282	0	0	0	1000000	50000	40.5	20	604.0	170332.8	1000000	500000	39.07	2	22038.1					0	0	1.1312
62	303	0	0	0	1000000	50000	40.5	20	604.0	183017.2	1000000	500000	39.07	2	23679.2					0	0	1.1312
60	355	0	0	0	1000000	50000	40.5	20	604.0	214426.0	1000000	500000	39.07	2	27743.0					0	0	1.1312
58	383	0	0	0	1000000	50000	40.5	20	604.0	231338.5	1000000	500000	39.07	2	29931.2					0	0	1.1312
56	436	0	0	0	1000000	50000	40.5	20	604.0	263351.4	1000000	500000	39.07	2	34073.1					0	0	1.1312
54	380	0	0	0	1000000	50000	40.5	20	604.0	229526.5	1000000	500000	39.07	2	29696.7					0	0	1.1312
52 50	445 542	0	0	0	1000000	50000 50000	40.5	20 20	604.0	268787.6 327377.2	1000000	500000 500000	39.07 39.07	2	34776.4 42356.9					0	0	1.1312
48	502	0	0	0	1000000	50000	40.5	20	604.0	303216.5	1000000	500000	39.07	2	39230.9					0	0	1.1312 1.1312
46	439	0	0	0	1000000	50000	40.5	20	604.0	265163.5	1000000	500000	39.07	2	34307.5					0	0	1.1312
44	590	0	0	0	1000000	50000	40.5	20	604.0	356370.0	1000000	500000	39.07	2	46108.1					0	0	1.1312
42	656	0	0	0	1000000	50000	40.5	20	604.0	396235.2	1000000		39.07	2	51265.9					0	0	1.1312
40	709	0	0	0	1000000	50000	40.5	20	604.0	428248.1	1000000	500000	39.07	2	55407.8					0	0	1.1312
38	486	0	0	0	1000000	50000	40.5	20	604.0	293552.3	1000000	500000	39.07	2	37980.6					0	0	1.1312
36	428	0	0	0	1000000	50000	40.5	20	604.0	258519.3	1000000	500000	39.07	2	33447.9					0	0	1.1312
34	247	0	0	0	1000000	50000	40.5	20	604.0	149192.2	1000000	500000	39.07	2	19302.9					0	0	1.1312
32	158	0	0	0	1000000	50000	40.5	20	604.0	95434.7	1000000	500000	39.07	2	12347.6					0	0	1.1312
30 28	70 50	0	0	0	1000000	50000 50000	40.5	20 20	604.0	42281.2 30200.9	1000000	500000 500000	39.07 39.07	2 2	5470.5 3907.5					0	0 0	1.1312 1.1312
<u> </u>	26	0	0	0	1000000	50000	40.5	20	604.0	15704.4	1000000	500000	39.07	$\frac{2}{2}$	2031.9					0	0	1.1312
24	18	0	0	0	1000000	50000	40.5	20	604.0	10872.3	1000000	500000	39.07	2	1406.7					0	0	1.1312
22	6	0	0	$\frac{0}{0}$	1000000	50000	40.5	20	604.0	3624.1	1000000	500000	39.07	2	468.9					0	0	1.1312
20	0	0	0_	0	1000000	50000	40.5	20	604.0	0.0	1000000	500000	39.07	2	0						00	1.1312

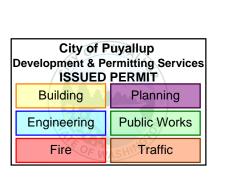




MECHANICAL DRAWINGS

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



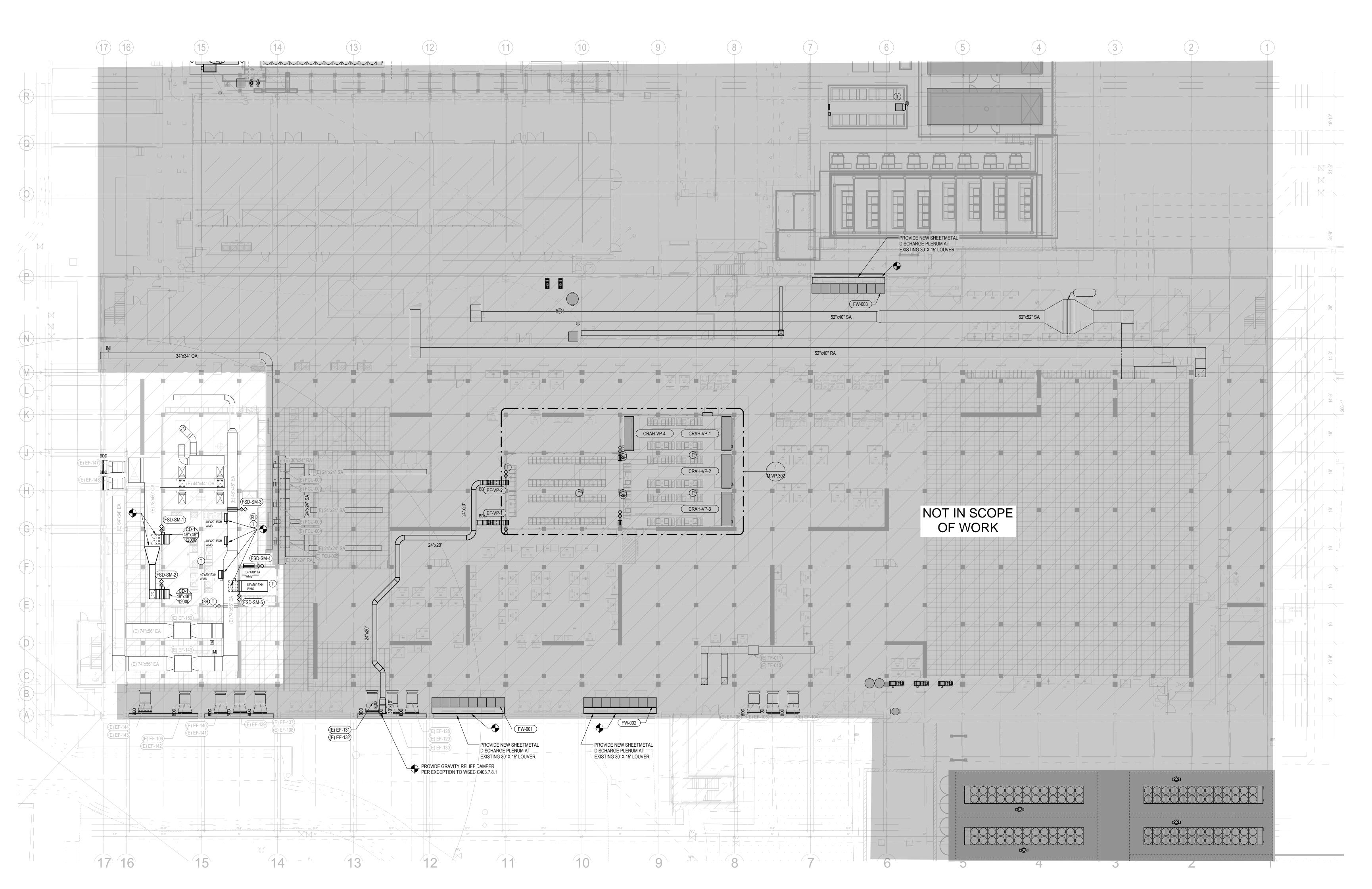


Drawn By: Checked By:

MECHANICAL

Title CALCULATIONS

KEY NOTES







MECHANICAL DRAWINGS

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



SM UPS BATTERY ROOM PERMIT 5/10/2024

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

Orawn By: Checked By:

JLV BO

MECHANICAL LEVEL
1 PLAN



DESCRIPTION OF OPERATIONS

1.0 CONTROLS GENERAL

THIS SEQUENCE OF OPERATION IS WRITTEN FOR CONTROLLING THE CENTERIS SCALE MATRIX HEATING VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS ON THE BUILDING EXTERIOR AT 1019 39TH AVE, PUYALLUP, WA. INCLUDE A SHOP DRAWING SUBMITTAL FOR THE SYSTEM.

- A. THE EXISTING ALERTON BUILDING AUTOMATION SYSTEM (BAS) AS PROVIDED BY ATS SHALL BE EXPANDED UPON FOR THE EXTERIOR FUTURE TENANT HVAC SYSTEMS. THE CONTROL SYSTEM IS PROGRAMMED TO SEQUENCE THE OPERATION DESCRIBED WITHIN THE CONTRACT DOCUMENTS. ATS SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING, BUT NOT LIMITED TO SENSORS, RELAYS, GATEWAYS, COMMUNICATION WIRING AND CONDUIT, AND ALL NECESSARY ELECTRICAL DEVICES, WIRING, AND CONDUIT.
- B. ALL POINTS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS WILL BE DISPLAYED ON THE USER'S GRAPHIC INTERFACE. ALARMS AND OTHER SYSTEM NOTIFICATIONS REPORT TO SYSTEM USERS.
- C. THE ARCHITECTURE OF THE BAS SHALL BE SO THAT COMMUNICATION FAILURE WITH AN INDIVIDUAL EQUIPMENT CONTROLLER SHALL NOT DISABLE EQUIPMENT FROM BEING ABLE TO OPERATE ON THE LOCAL CONTROLLER SETPOINTS FOR STANALONE OPERATION SHALL BE ESTABLISHED WITH ETH OWNER. D. SYSTEMS CONTROLLED
- a. THE CONTROL SYSTEM SHALL EXECUTE CONTROL FUNCTIONS OVER THE FOLLOWING NEW SYSTEMS: i. NONE
- b. THE CONTROL SYSTEM SHALL EXECUTE EXISTING CONTROL FUNCTIONS OVER THE FOLLOWING EXISTING SYSTEMS i. (E) RAU-01 & RAU-02. ii. (E) EF-149 & EF-150
- c. NEW POINTS MONITORED
- i. BATTERY ROOM TEMPERATURE.

2.0 RECIRCULATING AIR UNIT (RAU-01 & RAU-02) A. GENERAL

- a. THE TWO (2) RAU'S SERVE THE UPS SPACE FOR SCALE MATRIX. UNITS ARE SIZED FOR N+1 CAPACITY. THE RAU'S DRAW 100% OF THE AIR FROM LEVEL THREE, AND THEREFORE PROVIDE AIR BETWEEN 66 °F AND 75 °F WITH OCCASIONAL DAYS CAUSING THE LEVEL 3 TO GET UP TO 89°F (OR AMBIENT PLUS FAN HEAT). THIS SYSTEM SHALL BE PERMITTED TO OPERATE AT LOWER TEMP AND HIGHER HUMIDITY.
- B. THE BASE DISCHARGE AIR TEMPERATURE (DAT) SETPOINT COMES FROM ONE SPOT IN THE GLOBAL BCM1 CONTROLLER, AND IS ADJUSTABLE BY THE OPERATOR. THE DAT GLOBAL SETPOINT IS CURRENTLY LIMITED TO BETWEEN 71°F (ADJ) AND 75°F (ADJ).
- C. EACH OF THE TWO RAU'S HAVE AN INTEGRATOR SEQUENCE TO OFFSET THE DAT SETPOINT, EITHER COLDER BASED ON THE HIGHEST DEVIATION FROM SETPOINT OF ALL SPACE TEMP SENSORS, OR WARMER BASED ON THE HIGH LIMIT DAH DEVIATION FROM SETPOINT. THE INDIVIDUAL RAU SETPOINT IS DETERMINED BY THE FOLLOWING:

UPS ROOM SETPOINT + DAH OFFSET – SPACE TEMP OFFSET.

THIS IS CALCULATED LOCALLY TO THE RAU SO EACH UNIT WILL SETTLE ON ITS OWN OFFSET, AND CONTROL TO IT, BUT THE BAS SHALL CONTROL THESE TWO RAUS SEPARATELY FROM THE GLOBAL REQUESTS, AND BASE THEIR CONTROL ON THE HIGHEST MEASURED TEMPERATURE DEVIATION FROM SETPOINT. THE DAT UPS ROOM SETPOINT IS CURRENTLY LIMITED TO BETWEEN 71°F (ADJ) AND 75°F (ADJ). INDIVIDUAL RAU'S HAVE A DAH OFFSET AND A SPACE TEMP OFFSET (PER THE FORMULA ABOVE). DAH OFFSET AND SPACE TEMP OFFSET ARE EACH LIMITED BETWEEN 0 AND 5°F (ADJ), THEREFORE THE

- FINAL DAT SETPOINT MAY VARY BETWEEN 80°F AND 66 °F. D. THE DAH PORTION OF THE OFFSET CALCULATION VARIES BETWEEN 0°F AND 5°F HIGHER BASED ON A 75% SETPOINT (ADJ) RH SETPOINT. CURRENTLY THE MAXIMUM RH SETPOINT IS MANUALLY ENTERED AS DAH MAX FOR EACH RAU (45-65% RH) FOR THE DATA HALL UNITS. THESE UNITS SHALL BE CONTROLLED DIFFERENTLY TO ALLOW FOR HIGHER HUMIDITY AND LOWER TEMPERATURE, WHICH IS REQUIRED
- WHERE THERE IS NO COLD AISLE HOT AISLE SEPARATION. E. SPACE TEMP OFFSET IS BASED ON THE MEASURED SPACE TEMPERATURE AND INCREASED TO MAINTAIN A 2°F (ADJ) LESS OFFSET FROM HIGHEST SPACE TEMP MEASURED IN ALL SPACES. IT IS BEING INTEGRATED TO REDUCE THE DAT SETPOINT FROM 0 AND 5 °F LESS THAN THE UPS ROOM SETPOINT. GENERATE AN ALARM IF SPACE TEMPERATURE IS ABOVE SETPOINT BY 5 °F (ADJ).
- F. DAH OFFSET IS BASED ON THE MEASURED DAH AND THE OFFSET FROM MAXIMUM, IF IN EVAPORATIVE COOLING MODE, THEN THE OFFSET FROM MAXIMUM IS 5 °F BELOW SETPOINT FOR THE RAU, AND THE DAH CAN BE FROM 0 TO 5°F HIGHER.
- G. CLOSE THE EVAP COOLING VALVE AND GENERATE A HIGH HUMIDITY ALARM IF CAH IS ABOVE 95% (ADJ).
- H. ONE (1) RAU OPERATES CONTINUOUSLY, AND THE OTHER SHALL BE CYCLED ON AS BACKUP USING THE EXISTING LEAD LAG SEQUENCE. AND THE NEW TEMPERATURE SENSOR IN THE BATTERY ROOM SHALL
- BE ADDED SIMILAR TO THE EXISTING SPACE TEMP SENSORS. I. THE UPS ROOM SETPOINT IS 75°F (OR AS INDIVIDUALLY SET AT THE
- BAS, ADJ) AND 82°F (ADJ) IN THE BATTERY ROOM. a. EACH OF THE 3 TEMPERATURE SENSORS SHALL BE PROVDIED WITH AN INDIVIDUALLY ADJUSTABLE SETPOINT AT THE BAS. SENSORS THAT HAVE FAILED OR ARE 15°F (ADJ) ABOVE OR BELOW THE AVERAGE IN THE UPS ROOM WILL NOT BE USED FOR CONTROL AND SHALL GENERATE AN ALARM.
- J. NEW SYSTEM ALARM LIST a. HIGH BATTERY ROOM TEMPERATURE ALARM, ABOVE 87°F (ADJ).

b. TEMPERATURE SENSOR FAILURE. 3.0 SCALE MATRIX UPS AND BATTERY ROOM EXHAUST FAN (EF-149 &150)

PRESSURE MONITORING.

A. GENERAL B. TWO (2) EXHAUST FANS SERVE THE BATTERY ROOM SPACE FOR SCALE MATRIX. FANS ARE SIZED FOR N+1 CAPACITY. FANS ARE INLINE BELT DRIVEN AXIAL FANS WITH VFD'S FOR SPEED CONTROL. THE BAS SHALL USE EXISTING SEQUENCE TO CONTROL THE EXHAUST FANS FOR THE SCALE MATRIX EXHAUST SYSTEMS THAT INCLUDE TRANSFER AIR TO THE BATTERY ROOM THROUGH THE UPS SPACE. AS-BUILT EXISTING SEQUENCE CONFIRMING IF BOTH OPERATRE AT 50% AND ONE RAMPING UP, IF THE OTHER FAILS, OR IF ONE OPERATES AT 100% AND THE OTHER STARTS UPON FAILURE. CONFIRM IF THERE IS ROOM





MECHANICAL DRAWINGS



Revision No. Description

SM UPS BATTERY ROOM PERMIT 5/10/2024

City of Puyallup Development & Permitting Services

MECHANICAL SEQUENCE OF Title OPERATIONS