

F(A	Δ Ε)		FIRE PROTECTION FIRE - ANTIFREEZE	2 1/2"———	PLUMBING SYSTEMS PIPE SIZE
	•		FIRE - CLEAN AGENT	2 1/2	PIPING ROUTED BELOW SLAB OR GRADE
F(D	,		FIRE - DELUGE	AV	ACID VENT
F(I	(D)—		FIRE - DRAIN	AW	ACID WASTE
F(DI	RY)—		FIRE - DRY	BBD	BOILER BLOWDOWN
F(F	PA)—		FIRE - PRE-ACTION	CA(##)	COMPRESSED AIR (NOMINAL PRESSURE)
F	F——		FIRE - WET	CD(P)	CONDENSATE DISCHARGE PUMPED
/	`		SPRINKLER GUARD FOR UPTICHT, PENDANT OR SIDEWALL SPRINKLER	CD	CONDENSATE DRAIN
	۱ ۲		ABBREVIATION FOR ANTICORROSION		DIONIZED WATER DECIDENT ATING
H.	11 []		ABBREVIATION FOR HIGH TEMPERATURE SPARE CABINET FOR 12 SPRINKLERS	DIR	DIONIZED WATER RECIRCULATING DISTILLED WATER
SA			DRAINAGE PIPING	DCW	DOMESTIC COLD WATER
	• 4		FIRE EXTINGUISHER	DCW(S)	DOMESTIC COLD WATER SOFTENED
	-		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
	C		UPRIGHT SPRINKLER	H	HUMIDIFICATION
			PENDANT SPRINKLER	LV	LABORATORY VENT
	√ DP		SIDEWALL SPRINKLER	LW	LABORATORY WASTE
7	DP		DRY PENDANT SPRINKLER	G	NATURAL GAS (LOW PRESSURE) GARAGE DRAINAGE
	CP		DRY SIDEWALL SPRINKLER FIRE ALARM CONTROL PANEL	GD	NATURAL GAS VENT
	VC		FIRE VALVE CABINET	MPG	MEDIUM PRESSURE GAS
	CAB		SPRINKLER CABINET	NPCW———	NON-POTABLE COLD WATER
Εζ	Ф		FIRE HOSE VALVE ASSEMBLY	NPCW(S)	NON-POTABLE COLD WATER SOFTENED
	8		FIRE DAMPER	NPHW———	NON-POTABLE HOT WATER
	<u> </u>		SMOKE DAMPER	NPHW(S)	NON-POTABLE HOT WATER SOFTENED
Ç	න න		FIRE SMOKE DAMPER	PTS	PNEUMATIC TRANSPORT
6			DUCT MOUNTED SMOKE SENSOR	PG	PROPANE GAS
_	₽	F₹	SUPERVISED BUTTERFLY VALVE	RO	REVERSE OSMOSIS
Ī	<u>Ó</u> T		SUPERVISED BUTTERFLY VALVE NORMALLY CLOSED	ROR-	REVERSE OSMOSIS RECIRCULATION
et I		6 ₩ □	SUPERVISED GATE VALVE	SL	SAMPLING LINE
		₩ ₽	SUPERVISED OUSIDE SCREW AND YORK (OS&Y) VALVE	SAN(O)	SANITARY DRAIN (OIL)
	₩ 7	8	SUPERVISED OS&Y VALVE SUPERVISED WATERFLOW SWITCH	SAN(O)————————————————————————————————————	SANITARY DRAIN (OIL) SANITARY PUMPED
_		:	SUPERVISED WATERFLOW SWITCH SUPERVISED BACKFLOW PREVENTER	SAN(P)SAN(RAD)	SANITARY PUMPED SANITARY RADIOACTIVE
		\$	WET ALARM CHECK VALVE WITH TRIMING	=====ST-====	STORM DRAIN
-		-		ST(O)	STORM DRAIN OVERFLOW
			DELUGE ALARM CHECK WITH TRIMING	ST(P)	STORM DRAIN PUMPED
_	#	ŧ	AIR MENTENANCE DEVICE	VAC	VACUUM (AIR)
			FLOOR AIR COMPRESSOR TANK	VAC(EX)	VACUUM PUMP EXHAUST
	T.	ĺ⊞	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)
н	₽	A	BOSTER PUMP (ALBANY PUMP)	<u> </u>	PIPE INSULATION
		₽ IĈ	TEST AND DRAIN VALVE	СВ ()	FIXTURE TRAP
	⊢		PRESSURE REDUCING VALVE 1-1/2 FIRE CONNECTION ANGLE VALVE	WH \bigcirc	CATCH BASIN MAN HOLE
	-0	0	2-1/2 FIRE CONNECTION ANGLE VALVE	Mi⊓ ○ RD ∅	ROOF DRAIN
	<u>F</u>	#	FLOOR CONTROL VALVE ASSEMBLY	FD Ø	FLOOR DRAIN
=	5	ā	CHECK VALVE	FFD ∅	FUNNEL FLOOR DRAIN
8	윱	땅	TREADED BALL VALVE		TRAP PRIMER
ı s	ā.	8	GROOVED BALL VALVE	•	HOSE BIBB
Ī	Ī	Ī	HYDRAULIC GONG		PLUMBING FIXTURES
)			ELECTRIC BELL		LAB & MEDICAL GAS
	9∄	□	ELBOW WITH DRAIN 1 IN.		
	Œ	Œ	GROOVE ELBOW	WAGD-	ANESTHETIC EVACUATION
		₽	GROOVE TEE	CO2-	CARBON DIOXIDE
	B.	3 .>	FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	DA	DENTAL MACHINA
Œ.	mi	©	SIAMESE PROJECTING CONNECTION «Y» SIAMESE CONNECTION «Y» FREE STANDING	DV————————————————————————————————————	DENTAL VACUUM HELIUM
<u></u>		⊗	BODY FOR FIRE DEPARTMENT CONNECTION AND BACKFLOW PREVENTER	————He————————————————————————————————	HYDROGEN
	<u>.</u>	\$	CONCENTRIC GROOVED MECHANICAL REDUCER	IA	INSTRUMENT AIR
	8	•	GROOVED MECHANICAL TEE OR CAP	LCA——	LABORATORY COMPRESSED AIR
В		•	REDUCING COUPLING	LVCA——	LABORATORY VACUUM
8	8	٥	THREADED MECHANICAL TEE OR CAP	MA	MEDICAL AIR
•	•	ф	THREADED MECHANICAL CROSS	MV	MEDICAL VACUUM
	•	ф	THREADED MECHANICAL TEE	N2	NITROGEN
	Ž π	- (HORIZONTAL SPLIT CASE FIRE PUMP	N2O	NITROUS OXIDE
) · ·			END SUCTION FIRE PUMP	02	OXYGEN
_				A	MEDICAL AIR OUTLET
			VERTICAL INLINE FIRE PUMP	\Diamond	MEDICAL NUTROCEN CUTLET
Q	<u>-</u>	COOD	FIRE PUMP ANGLE BODY 4 WAY	⟨N⟩	MEDICAL NITROGEN OUTLET
ĺ		^		⟨ N ⟩ ⟨ N O⟩ ⟨ O ⟩	MEDICAL OXYCEN OUTLET
	-#	0	JOCKEY PUMP	_	MEDICAL OXYGEN OUTLET
			PREACTION CABINET	(A) → (V) →	LAB AIR SINGLE BENCH OUTLET LAB VACUUM SINGLE BENCH OUTLET
				N -	LAB NITROGEN SINGLE BENCH OUTLET
			FIRE HOSE RACK	(NO) -	LAB NITROUS OXIDE SINGLE BENCH OUTLET LAB OXYGEN SINGLE BENCH OUTLET
	<u>-</u>	Ü	SEISMIC EXPANSION LOOP	A A	LAB DOUBLE 45 DEGREE BENCH OUTLET LAB DOUBLE BENCH OUTLET
	1	8	WALL POST INDICATOR VALVE (PIV)	A	LAB QUAD 45 DEGREE BECNH OUTLET
B	Į		HANGER	12222	MEDICAL GAS MASTER ALARM PANEL
	_		HANGER HYDRANT VALVE CONTROL	<u>√</u> ∠∠∠∠ XXXX -	MEDICAL GAS AREA ALARM PANEL
	<u>.</u>		HYDRANT VALVE CONTROL WALL HYDRANT	——————————————————————————————————————	MEDICAL GAS ZONE VALVE
	<u>a.</u>		WALL HYDRANT WALL MOUNTED PORTABLE FIRE EXTINGUISHER	→ → →	BALL VALVE CHECK VALVE
- 0			SEMI RECESSED CABINET FOR PORTABLE EXTINGUISHER		OHEON VALVE
			SEMI NESESSED OUDINET FOULFUL EVENDER EVENDRISHER		

WORK DEFINITION PIPING SYSTEMS (HVAC) _____2 1/2"———— PIPE SIZE ----- NEW WORK (N) ——— EXISTING (E) BBD———BOILER BLOWDOWN ---- REMOVE EXISTING (D) BFW—BOILER FEED WATER REMOVE EXISTING EQUIPMENT (D) BR-BRINE RETURN BS—BRINE SUPPLY — — — FUTURE CHWR———— CHILLED WATER RETURN — - - — TEMPORARY, AS NOTED CHWR(G)——— CHILLED WATER RETURN - GLYCOL RELOCATE (R) CHWR(P)——— CHILLED WATER RETURN - PROCESS KEY NOTE (###) CHWS——— CHILLED WATER SUPPLY **EQUIPMENT IDENTIFICATION** CHWS(G) CHILLED WATER SUPPLY - GLYCOL CONNECTION TO EXISTING DISCONNECT (CUT AND CAP) CHWS(P)——— CHILLED WATER SUPPLY - PROCESS CWR——— CONDENSER WATER RETURN (HVAC) CWR(CT)———— CONDENSER WATER RETURN - COOLING TOWER *NOTE: ALL DUCT SIZES ARE INTERIOR, FREE DIMENSIONS CSW——— CONDENSER WATER SUPPLY ALWAYS WIDTH (HORIZONTAL DIM.) x HEIGHT (VERTICAL DIM.) CWS(CT)——— CONDENSER WATER SUPPLY - COOLING TOWER → AIR FLOW ARROW DUAL TEMPERATURE RETURN (HOT OR CHILLED) 18"x12"

→ 18"x12"

RECTANGULAR DUCT AND SIZE* DUAL TEMPERATURE SUPPLY (HOT OR CHILLED) \longrightarrow 18"ø \longrightarrow ROUND DUCT AND SIZE* FCFS—FLUID COOLER FILTRATION SUPPY FCFR—— FLUID COOLER FILTRATION RETURN 18"x12" EXTERIOR DUCT TREATMENT* FOF——— FUEL OIL FILL 18"x12" → 18"x12" → RECTANGULAR DUCT WITH ACOUSTIC LINING* FOR—FUEL OIL RETURN DUCT SECTION, SUPPLY AIR. APPLIES TO RECT., ROUND AND OVAL FOS—FUEL OIL SUPPLY DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL FOV——— FUEL OIL VENT DUCT SECTION, RETURN AIR. APPLIES TO RECT., ROUND AND OVAL HPWR—HEAT RECOVERY LOOP RETURN DUCT SECTION, EXHAUST AIR. APPLIES TO RECT., ROUND AND OVAL HPWS—— HEAT PUMP WATER SUPPLY FLEXIBLE DUCT HRR—HEAT RECOVERY LOOP RETURN ELBOW TURN, SUPPLY DOWN. APPLIES TO RECT., ROUND AND OVAL HRS—HEAT RECOVERY LOOP SUPPLY DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL HWR—HEATING WATER RETURN DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL HEATING WATER RETURN - GLYCOL DUCT SECTION, OUTSIDE AIR. APPLIES TO RECT., ROUND AND OVAL HEATING WATER SUPPLY - UP CHANGE IN DUCT ELEVATION RISING IN DIRECTION INDICATED HWS(G)—HEATING WATER SUPPLY - GLYCOL CHANGE IN DUCT ELEVATION DROPPING IN DIRECTION INDICATED G———— NATURAL GAS ── END CAP GV——— NATURAL GAS VENT ELBOW, RECTANGULAR, SMOOTH RADIUS WITH SPLITTER VANES RAD RADON GAS (0.25 R/W DEFAULT) REF(HG) REFRIGERANT HOT GAS ELBOW, RECTANGULAR, SMOOTH RADIUS WITHOUT VANES REF(L) REFRIGERANT LIQUID (1.5 R/W DEFAULT) REF(S) REFRIGERANT SUCTION ELBOW, ROUND, SMOOTH RADIUS REF(V)——— REFRIGERANT VENT (1.5 R/W DEFAULT) RV—RELIEF VENT MITERED ELBOW. RECTANGULAR. WITHOUT VANES S(##) STEAM (NOMINAL PRESSURE) CS(##) STEAM - CLEAN (NOMINAL PRESSURE) MITERED ELBOW, RECTANGULAR, WITH TURNING VANES C(##) STEAM CONDENSATE (NOMINAL PRESSURE) PC(##) STEAM PUMPED CONDENSATE (NOMINAL PRESSURE) RECTANGULAR TO ROUND TRANSITION SV—STEAM VENT PIPE INSULATION DUCT ACCESS DOOR (TOP, SIDE, BOTTOM) REAL OBJECT SYMBOL PIPING COMPONENTS FLEXIBLE CONNECTION ───── ISOLATION VALVE (GENERIC) — → GATE VALVE BACKDRAFT DAMPER — GLOBE VALVE The butterfly valve NPS 6 and less CABLE OPERATED DAMPER ───────── BUTTERFLY VALVE NPS 8 AND MORE r ⇒ 8 — Ф— BALL VALVE → □ PLUG VALVE MANUAL DAMPER —₩— NEEDLE VALVE Ö ☐ CHECK VALVE (GENERIC) MOTORIZED DAMPER I国 I出 BALANCING VALVE PRESSURE INDEPENDENT REGULATOR ® Ø Å ∄ ₽ PRESSURE REDUCING VALVE FIRE DAMPER TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE 3-WAY CONTROL VALVE (GENERIC) SMOKE DAMPER THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE SMOKE AND FIRE DAMPER SOLENOID 3-WAY CONTROL VALVE DUCT SILENCER/TRANSFER ELBOW FLOAT OPERATED VALVE ACTUATOR CONTROL DEVICE (REFER TO CONTROLS LEGEND) ■ B SAFETY OR RELIEF VALVE ∞ AIR FLOW MEASURING STATION (REFER TO CONTROLS LEGEND) △ ANGLE VALVE QUANTITY → BOILER STOP AND CHECK VALVE DOUBLE CHECK VALVE ASSEMBLY SIZE (IN.) AIR OUTLET OR INLET TAG)REFER TO SCHEDULE) VOLUME (CFM) © □ ▼ — SUCTION DIFFUSER RECTANGULAR DIFFUSER, SUPPLY. ₽UMP (GENERIC) OPTIONAL ARROWS SHOW THE FLOW DIRECTION. Y-STRAINER (GENERIC) RECTANGULAR REGISTER OR GRILLE, RETURN ☐ ——⊗—— STEAM TRAP (GENERIC) △ • • ✓ AUTOMATIC AIR VENT ——— MANUAL AIR VENT RECTANGULAR REGISTER OR GRILLE, EXHAUST ——

✓

VACUUM BREAKER —— SHOCK ABSORBER ROUND DIFFUSER, SUPPLY LINEAR DIFFUSER TEMPERATURE GAUGE • → — PRESSURE GAUGE SIDEWALL REGISTER OR GRILLE, SUPPLY SIDEWALL GRILLE, RETURN OR EXHAUST TEMPERATURE AND PRESSURE TRAP UNDERCUT DOOR —— SIGHT FLOW GLASS DOOR GRILLE OR LOUVER ☐ ☐ ○ ────── FLEXIBLE CONNECTOR TRANSFER GRILLE OR LOUVER EXPANSION JOINT COIL (REFER TO CONTROLS LEGEND) − GUIDE ----QUANTITY —×— ANCHOR → FLOW ARROW LENGTH (FT.) RADIATION HEATING TAG (REFER TO SCHEDULE) PIPING SLOPE ____ CAPACITY (MBH) 0 0 ———→ PIPE BREAK \Longrightarrow O——— PIPING ELBOW UP C PIPING ELBOW DOWN ——

PIPING TEE UP 7797 — 1 PIPING TEE DOWN • • ——|— UNION CONNECTION

Ф Ф © ———— FLANGED CONNECTION

□ □ □ CONCENTRIC REDUCER

□ □ ◎ ——□— ECCENTRIC REDUCER

 \longrightarrow O \longmapsto

——▼—

STANDARD CLEAN-OUT IN LINE END OF RUN

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

ABBREVIATIONS

ADJUSTABLE ACCESS PANEL BOD BOTTOM OF DUCT BOTTOM OF PIPE COMPLETE WITH

EQUIPMENT IDENTIFICATION

AB-# AIR BLENDER

AF-# AIR FILTER

B-# BOILER

CB-#

BT-# BATH TUB

CH-# CHILLER

CC-# COOLING COIL

CONV-# CONVECTOR

CT-# COOLING TOWER

CV-# CONTROL VALVE

DAC-# DOOR AIR CURTAIN

DF-# DRINKING FOUNTAIN

DU-# DEHUMIDIFICATION UNIT

ERC-# ENERGY RECOVERY COIL

ERU-# ENERGY RECOVERY UNIT

ETU-# EXHAUST TERMINAL UNIT

EWC-# ELECTRIC WATER COOLER

F(LE)-# FAN LABORATORY EXHAUST

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(K)-# HOOD (KITCHEN)

H(R)-# HOOD (RELIEF)

H(RH)-# HOOD (RANGE)

H-# HUMIDIFIER

HC-# HEATING COIL

HP-# HEAT PUMP

LAV-# LAVATORY

MSK-# MOP SINK

P-# PUMP

MV-# MIXING VALVE

RD-# ROOF DRAIN

RH-# RANGE HOOD

RP-# RADIANT PANEL

RTU-# ROOFTOP UNIT

SH-# SHOWER

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(I)-# HOOD (INTAKE)

FPTU-# FAN POWERED TERMINAL UNIT

GSG-# GAS-FIRED STEAM GENERATOR(*)

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

FD-# FLOOR DRAIN

FUR-# FURNACE

DWH-# DOMESTIC WATER HEATER

E-# EXHAUST GRILLE / REGISTER / DIFFUSER

DG-# DOOR GRILLE

DS-# DUCT SILENCER

EL-# EXPANSION LOOP

DC-# DUST COLLECTOR

CU-# CONDENSING UNIT

CUH-# CABINET UNIT HEATER

DCT-# DECONTAMINATION TANK

DCVA-# DOUBLE CHECK VALVE ASSEMBLY

AC-# AIR COMPRESSOR

AHU-# AIR HANDLING UNIT

ATU-# AIR TERMINAL UNIT

BCU-# BLOWER COIL UNIT

CHILLED BEAM

CRU-# CONDENSATE RETURN UNIT

AS-# AIR SEPARATOR

ACU-# AIR CONDITIONING UNIT

ADS-# AIR AND DIRT SEPARATOR

A/C AIR CONDITIONING UNIT AUTOMATIC AIR VENT AMERICANS WITH DISABILITIES ACT ABOVE FINISHED CEILING ABOVE FINISHED FLOOR ABOVE FINISHED GRADE ABOVE FINISH ROOF AUTHORITY HAVING JURISDICTION AIR PRESSURE DROP **BUILDING AUTOMATION SYSTEM** BACKDRAFT DAMPER BRAKE HORSEPOWER BUILDING MANAGEMENT SYSTEM BRITISH THERMAL UNIT BRITISH THERMAL UNIT PER HOUR CONSTANT AIR VOLUME CIRCUIT BALANCING VALVE **CUBIC FEET PER MINUTE** DRY BULB TEMEPRATURE DECIBEL(S) A-WEIGHTED DECIBLES DDC DIRECT DIGITAL CONTROL DEG DEGREE DIA./Ø DIAMETER DIFF DIFFERENTIAL DIV DIVISION DN DOWN 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 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 FPM FEET PER MINUTE FEET PER SECOND FPS FOOT/FEET GAUGE GAL GALLON (US) GENERAL CONTRACTOR GC GEO GEODETIC GPM GALLONS PER MINUTE

HIGH EFFICIENCY PARTICULATE AIF HORSEPOWER HOUR HEATING / VENTILATING / AIR CONDITIONING HERTZ INVERT ELEVATION

INTEGRATED ENERGY EFFECIENCY INCHES IN WG INCHES WATER GAUGE INTEGRATED PART LOAD VALUE KILOWATT KILOWATT HOUR kWh LEAVING AIR TEMPERATURE POUNDS LINEAR FEET LWT LEAVING WATER TEMPERATURE

METER

MAXIMUM

VALUES

MINIMUM

MANUFACTURER

PROTECTION

NOT APPLICABLE

NOISE CRITERIA

NORMALLY CLOSED

NOT IN CONTRACT

NOMINAL PIPE SIZE

OWNER FURNISHED, CONTRACTOR

OWNER FURNISHED EQUIPMENT

OWNER FURNISHED / OWNER

PROPYLENE GLYCOL

POINT OF ENTRANCE POINT OF SERVICE

PARTS PER MILLION

ABSOLUTE

RETURN AIR

RELA RELIEF AIR

REQD REQUIRED

POUNDS PER SQUARE INCH

POUNDS PER SQUARE INCH.

PNEUMATIC TUBE STATION

POLYVINYL CHLORIDE

RELATIVE HUMIDITY

RPM REVOLUTIONS PER MINUTE

SEER SEASONAL ENERGY EFFICIENCY

SP STAIR PRESSURIZATION AIR (*)

SUPPLY AIR

RATION

SRV SAFETY RELIEF VALVE

TSP TOTAL STATIC PRESSURE

UNDER CUT (DOOR)

VARIABLE AIR VOLUME

WET BULB TEMPERATURE

VARIABLE FREQUENCY DRIVE

UNDERGROUND

VERIFY IN FIELD

WITH

WITHOUT

WG WATER GAUGE

ZN-# ZONE

°C CELSIUS

°F FAHRENHEIT

VENT-THRU-ROOF

SP STATIC PRESSURE

TA TRANSFER AIR

TEMP TEMPERATURE

TSTAT THERMOSTAT

TYP TYPICAL

UC

VAV

VIF

VTR

W/O

WB

POUNDS PER SQUARE INCH, GAGE

NORMALLY OPEN

NOT TO SCALE

OUTSIDE AIR

INSTALLED

MWT MEAN WATER TEMPERATURE

THOUSAND OF BTUH

MINIMUM CIRCUIT AMPS

MAXIMUM OVERCURREN

MAX

MBH

NPS

SK-# SINK SPC-# SOLAR PANEL COLLECTOR SSF-# SIDE STREAM FILTER T(B)-# TANK (BUFFER TANK) T(E)-# TANK (EXPANSION TANK) T(H)-# TANK (HYDRO PNEUMATIC TANK) T(S)-# TANK (STORAGE TANK) MERV MINIMUM EFFECIENCY REPORTING T-# TRANSFER AIR GRILLE 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

City of Puyallup Building **REVIEWED FOR** COMPLIANCE BSnowden 07/03/2024 3:42:35 PM

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

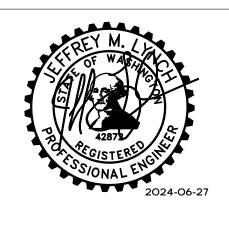
the permitee on site for inspection.

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable egulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

PRCTI20240275 centeris

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

> **MECHANICAL DRAWINGS**



Revision No. Description UPS YARD EQUIPMENT PERMIT SET 2/8/2024 DATA HALL PERMIT UPS & BATTERY ROOM INTERIORS 2/16/2024 UPS & BATTERY ROOM PERMIT 2/23/2024 UPS & BATTERY ROOM PERMIT R2 6/27/2024

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

MECHANICAL

LEGEND AND **ABBREVIATIONS**

M.VP.001

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



DEMO NOTES

- 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.
- 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.
- 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.
- 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.
- 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 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 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.
- 9. 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
- C. FUNCTIONAL TESTING SHALL BE COMPLETED FOR THE FOLLOWING SYSTEMS AND THEIR ASSOCIATED CONTROL SYSTEMS:
- a. MECHANICAL SYSTEMS

 b. SEDVICE WATER HEATING SYSTEMS
- b. SERVICE WATER HEATING SYSTEMSc. CONTROLLED RECEPTACLE AND LIGHTING SYSTEMSd. EQUIPMENT APPLIANCE AND SYSTEMS

COMMISSIONED.

- 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.





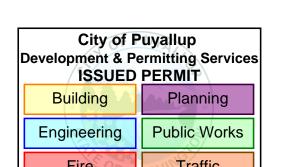
MECHANICAL DRAWINGS

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



Revision No. Description

PERMIT SET 2/2/2024
UPS YARD EQUIPMENT PERMIT SET 2/8/2024
DATA HALL PERMIT 2/16/2024
UPS & BATTERY ROOM INTERIORS 2/16/2024
UPS & BATTERY ROOM PERMIT 2/23/2024



Drawn By: Checked I

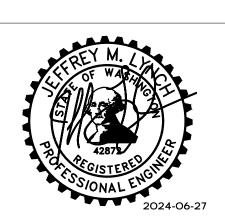
MECHANICAL

GENERAL NOTES

						H/	/AC CIRC	CULATION	N PUMP S	SCHEDUL	.E										
		UNIT IDENTIFICATION						F	PERFORMA	NCE				PUMP MOT	OR	ELEC.	TRICAL				
MARK	NUMBER	SYSTEM SERVED	REDUNDANT	PUMP TYPE	COUPLING TYPE	CONTROL	FLUID TYPE	FLUID TEMP (F)	FLOW (GPM)	PUMP HEAD (FT)	MIN EFFICIENCY (%)	PUMP MIN FLOW (GPM)	BHP	HP	SPEED (RPM)	VOLTS	PHASE	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
CHWP-VP	1	SECONDARY CHILLED WATER LOOP	N+1	END SUCTION	CLOSE	VFD	WATER	60	800.0	85	83	10	23.0	25	1,760	460	3	916	TACO	FI5011D-4P-PM	1,2
CHWP-VP	2	SECONDARY CHILLED WATER LOOP	N+1	END SUCTION	CLOSE	VFD	WATER	60	800.0	85	83	10	23.0	25	1,760	460	3	916	TACO	FI5011D-4P-PM	1,2
CHWP-VP	3	PRIMARY CHILLED WATER - CHILLER	N+1	IN-LINE	SPLIT	VFD	WATER	60	T,050.0	45	82	6.9	14.6	20	1,160	460	3	1140	TACO	KV 8013D	2
CHWP-VP	4	PRIMARY CHILLED WATER - CHILLER	N+1	IN-LINE	SPLIT	VFD	WATER	60	1,050.0	45	82	6.9	14.6	20	1,160	460	3	1140	TACO	KV 8013D	2
CHWP-VP	5	PRIMARY CHILLED WATER - FLUID COOLER	PER FLUID COOLER	IN-LINE	SPLIT	VFD	WATER	60	505.5	45	83	3.4	6.9	10	1,160	460	3	1140	TACO	KV 6011D	2
CHWP-VP	6	PRIMARY CHILLED WATER - FLUID COOLER	PER FLUID COOLER	IN-LINE	SPLIT	VFD	WATER	60	505.5	45	83	3.4	6.9	10	1,160	460	3	1140	TACO	kV 6011D	2
FP-VP	1	FLUID COOLER FILTER PUMP	N/A	SKID	CLOSE	VFD	WATER	60	220.0	10				7.5		460	3		PUROFLUX	PF-64-030-AP	1,2
NOTES: 1. PROVIDE WITH INERTI 2. PROVIDE WITH TEFC!																					

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

MECHANICAL



PRCTI20240275

DRAWINGS

Revision No. Description

UPS YARD EQUIPMENT PERMIT SET 2/8/2024 UPS & BATTERY ROOM INTERIORS 2/16/2024 UPS & BATTERY ROOM PERMIT 2/23/2024 UPS YARD EQUIPMENT PERMIT 3/27/2024

2 UPS & BATTERY ROOM PERMIT R2 6/27/2024

COMPUTER ROOM AIR CONDITIONING UNIT ELECTRICAL LENGTH (IN) OPERATING WEIGHT VOLTS PHASE (LBS.) FILTER PHYSICAL CHARACTERISTICS EFFICIENCY SIZE (MERV) (IN) WPD (FT) LWB (F) MANUFACTURER | MODEL NUMBER | NOTES MCA 23.7 PANEL
23.7 PANEL
23.7 PANEL
23.7 PANEL 1,2,3,4,5 1,078 CWG04C11 DOWNFLOW DOWNFLOW DOWNFLOW 1,2,3,4,5 1,2,3,4,5,6 SEMCO CWG04C11 CWG04C11 CWG04C11 SEMCO SEMCO

FAN MOTOR

ELECTRICAL

. ELECTRONICALLY COMMUNICATED MOTORS ARE PROVIDED WITH 4-20mA CONTROL INPOUT, SPEED STATUS FEEDBACK, ALARM OUTPUT, AND SAFETY CIRCUIT AS HARDWIRED CONNECTIONS. BAS SHALL CONNECT TO MODBUS RTU VIA RS485 CONNECTION. 2. SINGLE POINT ELECTRICAL CONNECTION. DISCONNECT SWITCH AND OVER CURRENT PROTECTION DEVICE SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR (EC).

3. DUCT SMOKE DETECTOR SHALL BE FURNISHED AND WIRED BY THE EC AND INSTALLED/MOUNTED BY THE MC. DUCT SMOKE DETECTOR POWER AND INTERLOCK WIRING/CIRCUITS TO THE BUILDING FIRE ALARM SYSTEM SHALL BE PROVIDED BY THE EC.

4. PROVIDE CONDENSATE DRAIN PUMP SIZED TO REMOVE 2 GPM AND 25 FEET OF HEAD PER CRAH. EC TO PROVIDE SEPARATE 120V POWER CONNECTION ON STANDBY.

5. MECHANICAL CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINT FOR EQUIPMENT PER JURISDICTION AND CONTRACT DOCUMENTS.

TOTAL SENSIBLE CAPACITY GPM ROWS (MBH)

FAN

HP

2.5-3.9 KW

6. FOR FUTURE.

NOMINAL CAPACITY AIRFLOW ESP

																AIR CC	OOLED CHII	LLER SC	CHEDULE														
	UNIT IDENTI	FICATION		CAPACITY	AND PERF	FORMANCE	1			EVAPOR	RATOR				COMP	RESSOR				CONDEN	ISERS			ELECTI	RICAL		PH'	YSICAL CHA	RACTERIS	STICS	1		
			UNIT			DEEDIO	REFRIG	FLLID	FLLUD	EVA/E		MANAMOD	FOLLING		NO OF	NOOF	NO OF	NO OF	AIRFLOW	LID DED	AMBIENT	MIN AMBIENT					OPERATING	ز	DIMENSIC	SNC	MANUICACTUDED	MODEL NUMBER	NOTES
MARK	K NUMBER	AREA/UNIT SERVED	CAPACITY	EER	IPLV	REFRIG TYPE	CHARGE	TYPE	FLUID (GPM)	EWI	LVVI · (E)	MAX WPD	FOULING FACTOR	TYPE	NO OF COMP	NO OF	NO OF S STAGES	NO OF FANS	PER FAN	HP PER FAN	DESIGN TEMP	TEMP		PHASE	MCA	MOP	WEIGHT	HEIGHT	WIDTH	I LENGTH	MANUFACTURER	MODEL NUMBER	NOTES
	ļ	SLITVLD	(TONS)			''''	(LBS)		(OI IVI)	(1)	(')	(1 1)	TACTOR		COIVII	Circoiro	JOIAGES	I ANO	(CFM)	IAN	(F)	(F)		1	1		(LBS)	(IN)	(IN)	(IN)	ĺ		
ACC-VF	, 1	CHILLED WATER	337.0	11.2	20.44	R-513A	353	WATER	806.6	54.0	44.0	10.1	0.0001	SCREW	2	2		13			95		460	3	872.0	1,200	30,547	94	90	600	YORK	YVAA0523JPK46BHVTXX	ζ
ACC-VF	, 2	CHILLED WATER	337.0	11.2	20.44	R-513A	353	WATER	806.6	54.0	44.0	10.1	0.0001	SCREW	2	2		13			95	1	460	3	872.0	1,200	30,547	94	90	600	YORK	YVAA0523JPK46BHVTXX	(
NOTES:	ORMANCE BASED O																																
2. PROV	DE SINGLE POINT F	ON WATER. ELECTRICAL CONNECTION	N.																														

CHILLED WATER COOLING COIL

EDB (F)

UNIT IDENTIFICATION

EWB (F)

63.3 63.3

LDB

CLOSED CIRCUIT FLUID COOLERS SCHEDULE
 SPRAY
 EVAP.
 OPER WEIGHT (LBS)

 PRESS.
 RATE (GPM) (LBS)

 2.7
 4.04
 44,310

 2.7
 4.04
 44,310
 FAN MOTOR **HEATERS** MANUFA CTURER MODEL NUMBER CAPACIT FLOW (GPM) NOTES EWT LWT (°F) FLOW WB (°F) FLOW (GPM) V/Ø/HZ QTY KW HEIGHT WIDTH LENGTH

. PROVIDE FLUID COOLER WITH STAINLESS STEEL BASIN, SUMP SWEEPER PIPING, AND 5-PROBE WATER LEVEL CONTRL. FANS SHALL BE PROVIDED WITH VFD AND A NEMA 3R ENCLOSURE. MANUFACTURER SHALL FURNISH THE FOLLOWING ACCESSORIES: BASIN IMMERSION HEATER COMPONENTS & CONTROLS; BASIN WATER LEVEL COMPONENTS & CONTROLS; VIBRATION CUT-OUT SWITCH; VFD'S; MAKE-UP WATER SOLENOID VALVES. B. INSTALLATION OF CONDUIT & WIRING OF THE FOLLOWING ACCESSORIES FROM THE CONTROL ENCOSURE SHALL BE PROVIDED BY THE EC: (2) BASIN IMMERSION HEATERS, (2) PUMPS, (1) FAN.

FLUID COOLERS SHALL COMPLY WITH 2018 WSEC TABLE C403.3.2(8) FOR REQUIRED COOLING TOWER INSTITUTE (CTI ATC-105 AND CTI STD-201 RS) RATING CONDITIONS.

3. COLOR TO BE SELECTED BY ARCHITECT FROM STANDARD COLORS.

MARK	NUMBER	UNIT/AREA SERVED	MAX AIRFLOW (CFM)	MIN AIRFLOW (CFM)	ESP (IN-WG)	CONTROL	TYPE	SPEED (RPM)	MIN WHEEL DIA (IN)	BHP	HP	SPEED (RPM)	DRIVE TYPE	VOLTS	PHASE	OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
EF-VP	1	VOLTAGE PARK BATTERY ROOM	4,400	4,400	1.3	VFD	INLINE	1,725	20	1.4	1.5		BELT	460	3	284	COOK	150QMX	1,2,3,4
EF-VP	2	VOLTAGE PARK BATTERY ROOM	4,400	4,400	1.3	VFD	INLINE	1,725	20	1.4	1.5		BELT	460	3	284	COOK	150QMX	1,2,3,4
2. PROVIDE FAN WITH	H EZ OUT BELT DRI	WIRED AND INSTALLED BY ELECTRICATIVE COVER AND ACCESSORIES. CIENCY GRADE (FEG) OF 67% PER C40			LUDE LOCKING	G DISCONNECT.													

NEW EXHAUST FAN SCHEDULE

FAN WHEEL

				AIR AN	D DIRT SE	PARATO	R SCHED	ULE				
	UNIT IDEN	TIFICATION		CONNECTION								
MARK	NUMBER	SYSTEM SERVED	TYPE	CONNECTION SIZE (IN)	DIAMETER (IN)	HEIGHT (IN)	WEIGHT (LBS)	FLOW (GPM)	MAX WPD (FT)	MANUFACTURER	MODEL NUMBER	NOTES
AS-VP	1	CHILLED WATER	IN-LINE	8	16	52	440	940.0	2.7	SPIROTHERM	VDT800FA	
NOTES:												

UNIT IDENTIFICATION

ROOM SERVED

VOLTAGE PARK UPS ROOM

							HVAC	EXPANS	SION TANK	K SCHEDULE								
	UNIT IDE	NTIFICATION			T	ANK						SYS	STEM					
				AOME	TANKAYOLUME	ACCEPTANCE		LIFIGUE	WEIGHT	ESTIMATED		OPERATING T	EMPERATURE	OPERATING	G PRESSURE	MANUICACTUDED	MODEL NUMBER	NOTES
MARK	NUMBER	SYSTEM SERVED	TYPE	ASME CONSTRUCTION	, ,	VOLUME (GAL)	DIAMETER (IN)	(IN)	WEIGHT (LBS)	SYSTEM VOLUME	FLUID TYPE	MIN TEMP (F)	MAX TEMP (F)	MIN PRESS (PSIG)	MAX PRESS (PSIG)	MANUFACTURER	MODEL NUMBER	NOTES
ET-VP	1	CHILLED WATER	BLADDER	STEEL	92.0	19.5	_ 24	62	500	5,980	WATER	40	85	5.0	125.0	TACO	CBX350-125	1
2 NOT USE	D		^		·		2\											

						BUFFER	TANK SCHEDU	JLE					
	UNIT IDEN	TIFICATION											
MARK	NUMBER	SYSTEM SERVED	VOLUME (GAL)	ASME CONST	DIAMETER (IN)	HEIGHT (IN)	ARRANGEMENT	SYSTEM FLUID	SYSTEM TEMP (F)	WEIGHT (LBS)	MANUFACTURER	MODEL NUMBER	NOTES
BT-VP	1	CHILLED WATER	1,500	YES	60	148	FLANGED	WATER	44.0	2,740	TACO	BTS1500F08-125GA	
	[INTERIOR], [EXT LL BE FACTORY	FERIOR] TANK COATING. INSULATED.											

					FIF	RE SMOKE I	DAMPERS SCH	EDULE					
	UNIT IDENTII	FICATION	TYPE	MAX APD	FIRE RATING	LEAKAGE	BLADE TYPE	SIZE (")	FAIL POSITION	V/PH	MANUFACTURER	MODEL NUMBER	NOTES
MARK	NUMBER	SYSTEM SERVED	ITPE	("W.C.)	(HR)	CLASS	BLADE ITPE	SIZE ()	FAIL POSITION	V/PП	WANUFACTURER	WODEL NOWBER	NOTES
FSD	VP-1	VP UPS BATTERY	FIRE/SMOKE	4	1-1/2	1	STEEL	24"X20"	CLOSED	120/1	RUSKIN	FSD-60	1
FSD	VP-2	VP UPS BATTERY	FIRE/SMOKE	4	1-1/2	I	STEEL	24"X20"	CLOSED	120/1	RUSKIN	FSD-60	1
FSD	VP-3	VP UPS BATTERY	FIRE/SMOKE	4	1-1/2	I	STEEL	24"X24"	CLOSED	120/1	RUSKIN	FSD-60	1
FSD	VP-4	VP UPS BATTERY	FIRE/SMOKE	4	1-1/2	I	STEEL	24"X24"	CLOSED	120/1	RUSKIN	FSD-60	1

S BATTERY 65 DEG F STANDAI	FIRE/SMOKE RD.	4	1-1/2	1 1	STEEL	24"X24"	CLOSED	120/1	RUSKIN	FSD-60	1

MARK	NUMBER	FACE SIZE (IN)	RANGE (CFM)	NECK SIZE (IN)	TYPE	MATERIAL	MANUFACTURER	NUMBER	NOTES
S	1	SEE PLANS	SEE PLANS	SEE PLANS	DUCT	STEEL	PRICE	30	ALL
NOTES:									
1. REFER TO	REFLECTED C	EILING PLANS EXA	ACT LOCATION. F	ROVIDE ALL FRAI	MES AND ACCESS	ORIES AS REQUIF	RED FOR PROPER INSTALLA	TION.	l
2. FLEXIBLE [DUCTWORK SH	ALL BE THE SAME	SIZE AS THE DIF	FUSER NECK OR	AN EQUIVALENT F	ROUND DUCT. FL	EXIBLE DUCTWORK SHALL E	BE SUPPORTED TO PR	REVENT
KINKS OR BEN	NDS.								ŀ

S	YSTEM	PIPE SIZE (IN)	MAX VELOCITY (FPS)	MAX FRICTION (FT/100') OPERATING TEMP (F)	MIN WORKING PRESSURE (PSIG)	MIN TEMP RATING (F)	TEST PRESSURE (PSIG)	TES DURATION (HRS)	LOCATION A	COPPER LIFE A		A33 B3 EKW 30H 40	A33 DS ERV	SCH 10 TYPE 316 STAINLESS STEEL SCH 10 TYPE 304 STAINLESS STEEL	HDPE	PEX-A	SOLDERED	BRAZED	THREADED	WELDED	PRESSURE FITTINGS	GROOVED	QUANTITY OF WIRES	MIN WATTS PER LINEAR FT	MINERAL FIBER, PREFORMEI	FLEXIBLE ELASTOMERIC	THICKNESS (IN)	ASJ	ASJ-SS	FSK	VINYL	PVC - ALL	PVC - FITTINGS	PVC - TO 10 FEET AFF	ALUMINUM	STAINLESS STEEL	NOTES
									CONCEALED	Х							X	X								Х	1		Х				Х				1
								1	EXPOSED	X							Х	Х								Х	1		Χ				Х	Х			1
		2 AND LESS	4	4.0 44-56	125	200	125	2.5	MECHANICAL ROOM	Х							Х	Х								Х	1		Х				Х	Х			1
								_	OUTDOOR	Х							Х	Х					1	5		Х	1		Х						Х		1,2
									UNDERGROUND	X		_					Х	Х								Х	1		X							Х	1
									CONCEALED			X				-				X						X	1		X				X	V			1
		2-1/2 - 8	0	4.0 44-56	125	200	125	. ⊢	EXPOSED MECHANICAL ROOM			X X								X						X	1		X				X	X			1
		2-1/2 - 0	0	4.0 44-50	125	200	125	l ⊢	OUTDOOR			<u>^</u>								X			1	8		X	1		X				^	^	Х		1,2
FLUID C	D WATER & OOLER BASIN							I —	UNDERGROUND			X								X			'			X	1		X							Х	1,2
SWEE	PER WATER								CONCEALED			x								Х						Х	1		Х				Х				1
								[EXPOSED)	X								Х						Х	1		Х				Х	Х			1
		9 - 10	8	4.0 44-56	125	200	125		MECHANICAL ROOM			X								Χ						Χ	1		Х				Χ	Х			1
									OUTDOOR			X								Х			1	10		Х	1		Х						Х		1,2
									UNDERGROUND			X								Х						Х	1		Х							Х	1
								_	CONCEALED			X								Х						Х	1		Х				Х				1
								_	EXPOSED			X								Х						Х	1		Х				Х	Х			1
		12 - 16	8	4.0 44-56	125	200	125	_	MECHANICAL ROOM			X								Х			_			Х	1		Х				Х	Х			1
								ı <u> </u>	OUTDOOR			X								X			2	5		X	1		X						Х		1,2
1							1		UNDERGROUND		/	X								Χ						Χ	1		Χ		- 1					X	1

PIPING SYSTEM APPLICATION SCHEDULE

									DUC	T SYST	EM AP	PLICAT	TON SO	CHEDL	JLE																	
			DESIGN C	CRITERIA	CONSTRU	JCTION	PF	RODUCT		M	ATERIAL				LIN	ΞR					NSULA	TION			F/	ACTORY	'JACKET		FIEL	D JACK	ET	NOTES
SYSTEM	APPLICATION	LOCATION	MAX VELOCITY (FPM)	MAX FRICTION (IN-WG/100')	DESIGN SYSTEM PRESSURE (IN-WG) SEAL CLASS	(AGE	SINGLE WALL	DOUBLE WALL SOLID LINER DOUBLE WALL PERF LINER	G90 GALV SHEET STEEL G90 PVC COATED GALV SHEET STEEL		ALUMINUM	316 STAINLESS STEEL	FABRIC	FIBERGLASS	FLEXIBLE ELASTOMERIC NATI IRAI FIRFR	ļ I йі́		FIBERGLASS BLANKET	FIBERGLASS BOARD	FLEXIBLE ELASTOMERIC	FIRE RATED WRAP	FIRE RATED BOARD	MINIMUM R-VALUE	3 9		ASJ-SS	FSK	CIOCAL	PVC	ALUMINUM	STAINLESS STEEL SELF ADHESIVE	
		CONCEALED	1,000	0.10	2 A	6	Х		Х									Х				F	R-3.3 1.	5 1.5			Х					1
SUPPLY AIR	ALL	EXPOSED	1,000	0.10	2 A	6	Х		Х										Х			F	₹-3.3	2.25			Х					1
		MECHANICAL ROOM	1,200	0.10	6 A	6	Х		X										Х			F	R-3.3	2.25			Х					1
RETURN AND		CONCEALED	1,000	0.10	2 A	6	X		X																		Х					1
TRANSFER AIR	ALL	EXPOSED	1,000	0.10	2 A	6	X		X																		Х					1
		MECHANICAL ROOM	1,200	0.10	6 A	6	X		X										Х				R-8 2	2.25			X					1
OFNEDAL		CONCEALED	1,000	0.10	2 A	6	X		X																		X					1
GENERAL EXHAUST	ALL	EXPOSED LOUVER CAN	1,000 1,200	0.10 0.10	2 A	6	X		X										Y				R-16 5	2.25			X					1
2/(1//001		MECHANICAL ROOM	1,200	0.10	6 A	6	X		X										X		+		R-8 2	2.25		+ +	X					1
		LOUVER CAN	1,200	0.10	6 A	6	X		X										X				R-16 5	2.25			X					$+\frac{1}{1}$
OUTSIDE AIR	ALL	MECHANICAL ROOM	1,200	0.10	6 A	6	X		X										X				R-8 2	2.25			X					1
NOTES: 1. DUCT INSULATION TI	HICKNESS BASED ON 2018 WSEC										'		•		,	·	,	•				·	'	,	•		,	·		'	,	·

Development & Permitting Services

MECHANICAL Title SCHEDULES

ch_Energy2	25% Calculation																														
oad	25%	296.1	kW							1			,									ı						_			
pient	Ambient	ASHRAE	Chiller	Chiller	Chiller		luid Cooler Flu												Total Air	Heat Number		Primary	Pump Motor Pump Driv			Pump Energy		Pump	Secondary Pu		Pun
perature WB	Temperature DB	TMY Hours		Energy	Energy		perating Fa	n (hp)	Fan Energy	Fan (kWh)	Pump (hp)	Pump Water			Total (kWh)			r Chilled Water Chilled Water			Capacity (%) Pump Flov	v Efficiency Efficiency	Variable	(kW)	(kWh)	pumps	Capacity (%)	Pump Flow Va		
	(°F)		(Tons)	(kW)	Usage (kV	Vh) Fluid Coolers Ca	apacity (%)		(kW)			flow (gpm)	Pumps per			Primary	Primary		Energy (kW)	Fan Energy		(gpm)	(%)	Speed Drive					(gpm) Sp		(kW
													Fluid Coole	er		Pumps (gpr	n) Pumps (hp)	Pumps (kW) Pumps (kWh)		(kvvn)				Efficiency					Dri		
																								(%)					EII	ciency	
																													(70		
74.0	82.2	1.0	84.25	61.85	61.85														30.375	1	25%	262.5			0.2330	0.23	1	60%	660	4.0267	78
72.0	89.6	27.0	84.25	71.5	1930.5														30.375	1	25%	262.5			0.2330	6.29	1	60%	660	4.0267	
70.0	84.6	41.0	84.25	64.08	2627.28														30.375	1	25%	262.5			0.2330	9.55	1	60%	660	4.0267	
68.0	81.9	105.0	84.25	61.85	6494.25														30.375	1	25%	262.5			0.2330	24.47	1	60%	660	4.0267	
66.0	78.2	148.0	84.25	57.73	8544.04														30.375	1	25%	262.5			0.2330	34.49	1	60%	660	4.0267	
64.0	74.7	191.0	84.25	54.04	10321.6														30.375	1	25%	262.5			0.2330	44.51	1	60%	660	4.0267	
62.0	71.9	256.0	84.25	52.32	13393.9														30.375	1	25%	262.5			0.2330	59.66	1	60%	660	4.0267	
60.0	67.8	293.0	84.25	47.77	13996.6														30.375	1	25%	262.5			0.2330	68.28	1	60%	660	4.0267	
58.0	65.4 62.4	426.0	84.25	46.14	19655.6														30.375	1 1	25%	262.5			0.2330	99.27	11	60%	660	4.0267	
54.0	60.6	440.0 588.0	84.25	43.11	18968.4 24519.6														30.375	1 1	25%	262.5			0.2330	102.53	11	60%	660	4.0267	
52.0	57.4	530.0	84.25		24519.0	1	F00/	C OF	4 CC0C0E	2470 12125	E	FOE	2	7.457	2052.24	100 275	0.50724275	0.202240224 200 4472242	30.375	I	25%	262.5			0.2330	137.02	<u> </u>	60%	660	4.0267	
50.0	54.7	498.0	84.25 84.25	40.36 49.92		1	50% 50%	6.25 6.25		2470.13125 2320.99125	<u> </u>	505 505	2	7.457 7.457	3952.21 3713.586			0.393240234 208.4173242 0.393240234 195.8336367							0	0	<u> </u>	60% 60%	660 660	4.0267 4.0267	
48.0	52.3	517.0	84.25	49.86		1	50%	6.25		2409.543125	5	505	2	7.457	3855.269			0.393240234 193.0330307							0	0	<u> </u> 1	60%	660	4.0267	
46.0	50.3	557.0	84.25	49.82		1	50%	6.25		2595.968125	5	505	2	7.457	4153.549			0.393240234 219.0348105							0	0	1	60%	660	4.0267	
44.0	48.1	468.0	84.25	49.78		1	50%	6.25		2181.1725	5	505	2	7.457	3489.876			0.393240234 219.0340103 0.393240234 184.0364297							0	0	1	60%	660	4.0267	
42.0	45.7	698.0	84.25	49.75		1	50%	6.25		3253.11625	5	505	2	7.457	5204.986			0.393240234 274.4816836							0	0	1	60%	660	4.0267	
40.0	43.3	771.0	84.25	49.73		1	50%	6.25		3593.341875	5	505	2	7.457	5749.347			0.393240234 303.1882207							0	0	1	60%	660	4.0267	
38.0	41.2	674.0	84.25	49.71		1	50%	6.25		3141.26125	5	505	2	7.457	5026.018			0.393240234 265.043918							0	0		60%	660	4.0267	
36.0	39.3	518.0	84.25	49.69		1	50%	6.25		2414.20375	5	505	2	7.457	3862.726			0.393240234 203.6984414							0	0	1	60%	660	4.0267	
34.0	37.2	465.0	84.25	49.67		1	50%	6.25		2167.190625	5	505	2	7.457	3467.505			0.393240234 182.856709							0	0	1	60%	660	4.0267	
32.0	35.3	228.0	84.25	49.67		1	50%	6.25	4.660625	1062.6225	5	505	2	7.457	1700.196			0.393240234 89.65877344							0	0	1	60%	660	4.0267	
30.0	33.3	118.0	84.25	49.66		1	50%	6.25		549.95375	5	505	2	7.457	879.926			0.393240234 46.40234766							0	0	1	60%	660	4.0267	
28.0	31.6	99.0	84.25	49.65		1	50%	6.25		461.401875	5	505	2	7.457	738.243			0.393240234 38.9307832	30.375						0	0	1	60%	660	4.0267	
26.0	29.4	46.0	84.25	49.65		1	50%	6.25		214.38875	5	505	2	7.457	343.022			0.393240234 18.08905078							0	0	1	60%	660	4.0267	
24.0	27.6	29.0	84.25	49.65		1	50%	6.25		135.158125	5	505	2	7.457	216.253			0.393240234 11.4039668							0	0	1	60%	660	4.0267	
22.0	25.9	13.0	84.25	49.65		1	50%	6.25	4.660625	60.588125	5	505	2	7.457	96.941	189.375	0.52734375	0.393240234 5.112123047	30.375						0	0	1	60%	660	4.0267	
20.0	24.2	15.0	84.25	49.65		1	50%	6.25	4.660625	69.909375	5	505	2	7.457	111.855			0.393240234 5.898603516							0	0	1	60%	660	4.0267	78

Mech_Energy5)% Calculation	n																						-	-					-				
IT Load	50%	592.3	kW																															1
Ambient	Ambient	ASHRAE	Chiller	Chiller	Chiller	Number of	Fluid Cooler I	Fluid Cooler	Number of	Fluid Cooler To	otal Air	Heat	Number of	Pump	Primary	Pump Motor P	Pump Drive F	Pump F	Pump Energy	Pump Energ	y Number of	Pump	Secondary	Pump F	Pump Pump									
Temperature WB	Temperature Di		Capacity	Energy	Energy			Fan (hp)				Pump Water							Chilled Water Ha	andler Fan	Rejection	pumps		Pump Flow					(kWh)	pumps	Capacity (%)	,		Energy Energy
(°F)	(°F)		(Tons)	(kW)) Fluid Coolers		(1 /		, ,		flow (gpm)		,	, ,	Primary	Primary	Primary	Primary Er	nergy (kW)	Fan Energy		' ' ' '	(gpm)	,	,	Speed Drive	,	,	'				(kW) (kWh)
,			,	, ,		<u> </u>	' ' '					(5)	•			Pumps (gpm		Pumps (kW)		37 ()	(kWh)			(31)		,	fficiency					(01)	Drive	, , ,
																					, ,					(%)						Efficiency	,
																																	(%)	
74.0	82.2	1.0	168.5	121.9	121.9															30.375		2	29%	304.5				0.7275	0.73	1	60%	660		4.02678 4.02678
72.0	89.6	27.0	168.5	141.3	3815.1															30.375		2	29%	304.5				0.7275	19.64	1	60%	660		4.02678 108.72306
70.0	84.6	41.0	168.5	126.3	5178.3															30.375		2	29%	304.5				0.7275	29.83	1	60%	660		4.02678 165.09798
68.0	81.9	105.0	168.5	121.9	12799.5															30.375		2	29%	304.5				0.7275	76.38	1	60%	660		4.02678 422.8119
66.0	78.2	148.0	168.5	113.6	16812.8															30.375		2	29%	304.5				0.7275	107.67	1	60%	660		4.02678 595.96344
64.0	74.7	191.0	168.5	106.2	20284.2															30.375		2	29%	304.5				0.7275	138.95	1	60%	660		4.02678 769.11498
62.0	71.9	256.0	168.5	102.8	26316.8															30.375		2	29%	304.5				0.7275	186.23	1	60%	660		4.02678 1030.85568
60.0	67.8	293.0	168.5	93.11	27281.23															30.375		2	29%	304.5				0.7275	213.15	1	60%	660		4.02678 1179.84654
58.0	65.4	426.0	168.5	89.71	38216.46															30.375		2	29%	304.5				0.7275	309.90	1	60%	660		4.02678 1715.40828
56.0	62.4	440.0	168.5	83.39	36691.6															30.375		2	29%	304.5				0.7275	320.09	1	60%	660		4.02678 1771.7832
54.0	60.6	588.0	168.5	80.46	47310.48															30.375		2	29%	304.5				0.7275	427.76	1	60%	660		4.02678 2367.74664
52.0	57.4	530.0	168.5	77.68		2	50%	6.25	9.32125	4940.2625	5	505	2	14.914	7904.42	252.5	1.25	1.86425	988.0525	30.375								0	0	1	60%	660		4.02678 2134.1934
50.0	54.7	498.0	168.5	97.6		2	50%	6.25	9.32125	4641.9825	5	505	2	14.914	7427.172	252.5	1.25	1.86425	928.3965	30.375								0	0	1	60%	660		4.02678 2005.33644
48.0	52.3	517.0	168.5	97.49		2	50%	6.25	9.32125	4819.08625	5 5	505	2	14.914	7710.538	252.5	1.25	1.86425		30.375								0	0	1	60%	660		4.02678 2081.84526
46.0	50.3	557.0	168.5	97.42		2	50%	6.25	9.32125	5191.93625	5 5	505	2	14.914	8307.098	252.5	1.25	1.86425	1038.38725	30.375								0	0	1	60%	660		4.02678 2242.91646
44.0	48.1	468.0	168.5	97.36		2	50%	6.25	9.32125	4362.345	5	505	2	14.914	6979.752	252.5	1.25	1.86425	872.469	30.375								0	0	1	60%	660		4.02678 1884.53304
42.0	45.7	698.0	168.5	97.29		2	50%	6.25	9.32125	6506.2325	5	505	2	14.914	10409.972	252.5	1.25	1.86425	1301.2465	30.375								0	0	1	60%	660		4.02678 2810.69244
40.0	43.3	771.0	168.5	97.25		2	50%	6.25				505	2	14.914	11498.694	252.5	1.25			30.375								0	0	1	60%	660		4.02678 3104.64738
38.0	41.2	674.0	168.5	97.22		2	50%	6.25		6282.5225		505	2	14.914	10052.036	252.5	1.25	1.86425		30.375								0	0	1	60%	660		4.02678 2714.04972
36.0	39.3	518.0	168.5	97.19		2	50%	6.25		4828.4075		505	2	14.914	7725.452	252.5	1.25	1.86425		30.375								0	0	1	60%	660		4.02678 2085.87204
34.0	37.2	465.0	168.5	97.17		2	50%	6.25	9.32125	4334.38125	5 5	505	2	14.914	6935.01	252.5	1.25	1.86425	866.87625	30.375								0	0	1	60%	660		4.02678 1872.4527
32.0	35.3	228.0	168.5	97.15		2	50%	6.25		2125.245	5	505	2	14.914	3400.392	252.5	1.25	1.86425	425.049	30.375								0	0	1	60%	660		4.02678 918.10584
30.0	33.3	118.0	168.5	97.14		2	50%	6.25	9.32125	1099.9075	5	505	2	14.914	1759.852	252.5	1.25	1.86425		30.375								0	0	1	60%	660		4.02678 475.16004
28.0	31.6	99.0	168.5	97.13		2	50%	6.25	9.32125	922.80375	5	505	2	14.914	1476.486	252.5	1.25	1.86425	184.56075	30.375								0	0	1	60%	660		4.02678 398.65122
26.0	29.4	46.0	168.5	97.13		2	50%	6.25	9.32125	428.7775	5	505	2	14.914	686.044	252.5	1.25	1.86425	85.7555	30.375								0	0	1	60%	660		4.02678 185.23188
24.0	27.6	29.0	168.5	97.13		2	50%	6.25	9.32125	270.31625	5	505	2	14.914	432.506	252.5	1.25	1.86425		30.375								0	0	1	60%	660		4.02678 116.77662
22.0	25.9	13.0	168.5	97.13		2	50%	6.25	9.32125	121.17625	5	505	2	14.914	193.882	252.5	1.25	1.86425	24.23525	30.375								0	0	1	60%	660		4.02678 52.34814
20.0	24.2	15.0	168.5	97.12		2	50%	6.25	9.32125		5	505	2	14.914	223.71	252.5	1.25		27.96375									0	0	11	60%	660		4.02678 60.4017

	Mech E	nergy Sun	nmary		
	Cooling	Air-Handler	Heat	Pump Energy	Total (kWh)
	Energy (kWh)		Rejection Fan		
		(kWh)	Energy (kWh)		
25% ITE Load Mech Energy	196176.2	266085.0	0.0	38316.3	500577.5
50% ITE Load Mech Energy	386153.3	266085.0	0.0	48745.3	700983.6
75% ITE Load Mech Energy	667844.3	266085.0	0.0	171788.2	1105717.5
100% ITE Load Mech Energy	1028394.8	354780.0	0.0	233661.1	1616836.0
				Total:	3924114.5

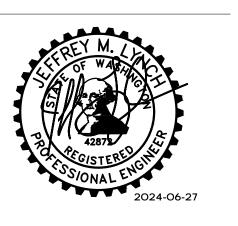
MLC	Check 100	% = Full Cap	acity	
ITE load (%)	ITE load (kW)	Annualized ITE Load (kWh)	Project Annualized MLC	2018 WSEC Max Allowabl Annualized MLC
25%	296.1	2594130.1		
50%	592.3	5188260.1		
75%	888.4	7782390.2		
100%	1184.5	10376520.2		
Totals:		25941300.5	0.1512690	0.18





MECHANICAL DRAWINGS

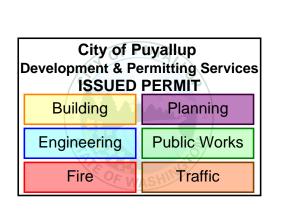
CENTERIS VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374



 Revision No.
 Description
 Date

 UPS & BATTERY ROOM PERMIT
 2/23/2024

 1
 UPS & BATTERY ROOM PERMIT R2
 6/27/2024



Drawn By: Checked By:

JLV BO

MECHANICAL

Title CALCULATIONS

Mech_Energy7	5% Calculatio																																
T Load	75%	888.4	kW	OL III	01.31	f FI : 10 1	FI : I O I	FI : I O I	FI : 10 1	FL:10 1	FI : 10 1	N I C	FI : I O I	FI : 10			FI : I O I	TEL : 1.0. 1	T			I D	D:	D M (D D:		D	ъ -	N I C	Ь	0 1 0	l _D	- In
Ambient	Ambient	ASHRAE	Chiller	Chiller	Chiller Number			er Fluid Cooler						er Fluid Coo	oler Fluid Co	oler Fluid Coole	r Fluid Coole	Fluid Cooler	Total Air	Heat I		Pump	Primary	Pump Motor			Pump Energy (kW)	Pump Energ	•	Pump	Secondary Pur		Pump
emperature WB	remperature L	OB TMY Hours		Energy (kW)	Energy Operating Usage (kWh) Fluid Coo		Fan (hp)	Fan (kW)	Fan (kWh)	Pump (hp)			er Total (kW)	Total (kW	′	Vater Chilled Wat Primary	Primary				oumps	Capacity (%)	1, ',	Efficiency (%)	Efficiency		(KVV)	(KVVN)	pumps	Capacity (%	· ·	iable Energy	Energy (kWh)
Γ)	()		(Tons)	(KVV)	Usage (KWII) Fluid Cod	Diers Capacity (7	0)				flow (gpm)	Pullip S			Primary	gpm) Pumps (hp)		Primary	Energy (kW)	(kWh)			(gpm)	(70)	(70)	Speed Drive Efficiency					(gpm) Spo	' '	(KVVII)
															i unips (gpini) i unips (np)	i unips (kvi	i unips (kvvn)		(KVVII)						(%)					Dri	ciency	
																										(70)					(%)	Sicrioy	
74.0	82.2	1.0	252.8	192.5	192.5														30.375		2	43%	451.5				2.3715	2.37	1	60%	660	4 026	78 4.02
72.0	89.6	27.0	252.8	224.9	6072.3														30.375		2		451.5				2.3715	64.03	1	60%	660		
70.0	84.6	41.0	252.8	199.1	8163.1														30.375		2	43% 43%	451.5				2.3715	97.23	1	60%	660		78 108. 78 165.0
68.0	81.9	105.0	252.8	199.1	20212.5														30.375		2	43%	451.5				2.3715	249.01	1	60%	660		78 422
66.0	78.2	148.0	252.8	180.2	26669.6														30.375		2	43%	451.5				2.3715	350.99	1	60%	660	4.026	
64.0	74.7	191.0	252.8	168.3	32145.3														30.375		2	43%	451.5				2.3715	452.96	1	60%	660		78 769
62.0	71.9	256.0	252.8	162.7	41651.2														30.375		2	43%	451.5				2.3715	607.11	1	60%	660	4.026	
60.0	67.8	293.0	252.8	152.2	44594.6														30.375		2	43%	451.5				2.3715	694.86	1	60%	660		78 117
58.0	65.4	426.0	252.8	147.4															30.375		2	43%	451.5				2.3715	1010.27	1	60%	660		78 171
56.0	62.4	440.0	252.8	134.5	59180														30.375		2	43%	451.5				2.3715	1043.48	1	60%	660		78 177
54.0	60.6	588.0	252.8	130.3	76616.4														30.375		2	43%	451.5				2.3715	1394.46	1	60%	660		78 236
52.0	57.4	530.0	252.8	126.2	2	75%	21.0937	5 31.45921875	16673.38594	5	505	2	14.914	7904.4	12 378.7	5 4.21875	3.14592187	5 3334.677188	30.375								0	0	1	100%	1100	18.642	25 98
50.0	54.7	498.0	252.8	138.4	2	75%	21.0937	5 31.45921875	15666.69094	5	505	2	14.914	7427.17	72 378.7	5 4.21875	3.14592187	5 3133.338188	30.375								0	0	1	100%	1100	18.642	25 928
48.0	52.3	517.0	252.8	138	2	75%		5 31.45921875		5	505	2	14.914			5 4.21875	3.14592187	5 3252.883219	30.375								0	0	1	100%	1100	18.642	25 963
46.0	50.3	557.0	252.8	137.8	2	75%		5 31.45921875		5	505	2	14.914	8307.09	98 378.7	5 4.21875		5 3504.556969	30.375								0	0	1	100%	1100		25 1038
44.0	48.1	468.0	252.8	137.5	2	75%		5 31.45921875		5	505	2	14.914		52 378.7			5 2944.582875	30.375								0	0	1	100%	1100		25 87
42.0	45.7	698.0	252.8	137.3	2	75%		5 31.45921875		5	505	2	14.914		972 378.7	5 4.21875		5 4391.706938									0	0	1	100%	1100		25 130
40.0	43.3	771.0	252.8	137.2	2	75%		5 31.45921875		5	505	2	14.914					5 4851.011531	30.375								0	0	1	100%	1100		25 1437
38.0	41.2	674.0	252.8	137	2	75%		5 31.45921875		5	505	2	14.914					5 4240.702688									0	0	1 1	100%	1100		25 1250
30.0	39.3	518.0	252.8	136.9	2	75%		5 31.45921875		5	505	2	14.914					5 3259.175063									0	0	1 1	100%	1100		25 965
34.0 32.0	37.2 35.3	465.0	252.8	136.7	2	75%		5 31.45921875		5	505	2	14.914					5 2925.707344									<u> </u>	0	1	100%	1100		25 866
	00.0	228.0	252.8	136.6	2	75%		5 31.45921875		5	505	2	14.914		92 378.7			5 1434.540375									<u>U</u>	0	1	100%	1100		25 42
30.0 28.0	33.3	99.0	252.8	136.5	2	75%		5 31.45921875		5	505	2	14.914		52 3/8./	5 4.21875 5 4.21875											0	0	1 1	100%	1100		25 219
26.0	29.4	46.0	252.8	136.4	2	75%		5 31.45921875		5	505	2	14.914		00 3/8./	5 4.21875 5 4.21875		5 622.8925313	30.375								0	0	1	100%	1100	18.642	
24.0	27.6	29.0	252.8	136.4 136.3	2	75%		5 31.45921875 5 31.45921875) 	505	2	14.914		14 3/8./	5 4.21875 5 4.21875		5 289.4248125								+	<u> </u>	0	1	100%	1100		25 85
22.0	25.9	13.0	252.8	136.3	2	75%		5 31.45921875 5 31.45921875		5	505 505	2	14.914 14.914			5 4.21875 5 4.21875		5 182.4634688 5 81.79396875									<u> </u>	0	1	100%	1100		25 540
20.0	24.2	15.0	252.8 252.8		2	75%		5 31.45921875 5 31.45921875		5	505 505	<u> </u>	14.914		378.7 1 378.7			5 94.37765625				-					0	0	1 4	100%	1100		25 242. 25 279.

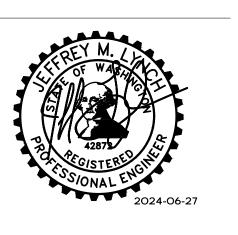
	0% Calculation																															
Load	100%		kW	01.111	01.111	\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	EL . L O .	EL . L O .	EL LLO	TEL 110 1	FI			F1 1 1 0 1	EL : 1.0 .		<u> </u>	EL . I.O	<u></u>	-	N	15	ъ.	D M (D = :		<u> </u>	· -		Ь			15
bient mperature WB)		ASHRAE TMY Hours	Chiller Capacity (Tons)	Chiller Energy (kW)	Chiller Energy Usage (kWh	Operating		Fan (hp)	Fan (kW)			Fluid Cooler Pump Water flow (gpm)	Fluid Cooler		Total (kWh)	Chilled Water	Chilled Water Primary	Chilled Water Primary	Chilled Water Frimary	Heat Handler Fan Energy (kW) Kejection Fan Energy (kWh)	Number of pumps	Pump Capacity (%)	Primary Pump Flow (gpm)	Pump Motor Efficiency (%) Pump Driv Efficiency (%)		Pump Energy (kW) (,	number of pumps	Pump Capacity (%)	Secondary Pump Flow (gpm)	Pump Pum Variable Ener Speed (kW) Drive Efficiency	rgy Ener
																									(70)						(%)	
74.0	82.2	1.0	337	243.8	243.8															40.5	2	57%	600			5.5656	5.57	1	60%	660	4.0)2678 4.
72.0	89.6	27.0	337	282.6	7630.2															40.5	2	57%	600			5.5656	150.27	1	60%	660	4.0	02678 10
70.0	84.6	41.0	337	252.6	10356.6															40.5	2	57%	600			5.5656	228.19	1	60%	660	4.0)2678 16
68.0	81.9	105.0	337	243.8	25599															40.5	2	57%	600			5.5656	584.39	1	60%	660	4.0	02678 42
66.0	78.2	148.0	337	227.2	33625.6															40.5	2	57%	600			5.5656	823.71	1	60%	660		02678 59
64.0	74.7	191.0	337	212.4	40568.4															40.5	2	57%	600			5.5656	1063.02	1	60%	660		02678 76
62.0	71.9	256.0	337	205.6	52633.6															40.5	2	57%	600			5.5656	1424.79	1	60%	660	4.0	02678 10
60.0	67.8	293.0	337	186.22	54562.46															40.5	2	57%	600			5.5656	1630.71	1	60%	660		02678 117
58.0	65.4	426.0	337	179.42	76432.92															40.5	2	57%	600			5.5656	2370.93	1	60%	660	4.0	02678 17
56.0	62.4	440.0	337	166.78	73383.2															40.5	2	57%	600			5.5656	2448.85	1	60%	660	4.0	02678 17
54.0	60.6	588.0	337	160.92	94620.96															40.5	2	57%	600			5.5656	3272.56	1	60%	660	4.0	2678 23
52.0	57.4	530.0	337	155.36		2	100%	50	74.57	39522.1	5	505	2	14.914	7904.42	505	10	7.457	7904.42	40.5						0	0	1	100%	1100	18.	.6425 98
50.0	54.7	498.0	337	195.2		2	100%	50	74.57	37135.86	5	505	2	14.914	7427.172	505	10	7.457	7427.172	40.5						0	0	1	100%	1100	18.	.6425 92
48.0	52.3	517.0	337	194.98		2	100%	50	74.57	38552.69	5	505	2	14.914	7710.538	505	10	7.457	7710.538	40.5						0	0	1	100%	1100	18.	.6425 96
46.0	50.3	557.0	337	194.84		2	100%	50	74.57	41535.49	5	505	2	14.914	8307.098	505	10	7.457	8307.098	40.5						0	0	1	100%	1100	18	.6425 103
44.0	48.1	468.0	337	194.72		2	100%	50	74.57	34898.76	5	505	2	14.914	6979.752	505	10	7.457	6979.752	40.5						0	0	1	100%	1100	18.	.6425 8
42.0	45.7	698.0	337	194.58		2	100%	50	74.57	52049.86	5	505	2	14.914	10409.972	505	10	7.457	10409.972	40.5						0	0	1	100%	1100	18	.6425 13
40.0	43.3	771.0	337	194.5		2	100%	50	74.57	57493.47	5	505	2	14.914	11498.694	505	10	7.457	11498.694	40.5						0	0	1	100%	1100	18	.6425 143
38.0	41.2	674.0	337	194.44		2	100%	50	74.57	50260.18	5	505	2	14.914	10052.036	505	10	7.457	10052.036	40.5						0	0	1	100%	1100		.6425 12
36.0	39.3	518.0	337	194.38		2	100%	50	74.57	38627.26	5	505	2	14.914	7725.452	505	10	7.457	7725.452	40.5						0	0	1	100%	1100		.6425 96
34.0	37.2	465.0	337	194.34		2	100%	50	74.57	34675.05	5	505	2	14.914	6935.01	505	10	7.457	6935.01	40.5						0	0	1	100%	1100	18	.6425 86
32.0	35.3	228.0	337	194.3		2	100%	50	74.57	17001.96	5	505	2	14.914	3400.392	505	10	7.457	3400.392	40.5						0	0	1	100%	1100		.6425 42
30.0	33.3	118.0	337	194.28		2	100%	50	74.57	8799.26	5	505	2	14.914	1759.852	505	10	7.457	1759.852	40.5						0	0	1	100%	1100	18	.6425 21
28.0	31.6	99.0	337	194.26		2	100%	50	74.57	7382.43	5	505	2	14.914	1476.486	505	10	7.457	1476.486	40.5						0	0	1	100%	1100		.6425 18
26.0	29.4	46.0	337	194.26		2	100%	50	74.57	3430.22	5	505	2	14.914	686.044	505	10	7.457	686.044	40.5						0	0	1	100%	1100	18	.6425 8
24.0	27.6	29.0	337	194.26		2	100%	50	74.57	2162.53	5	505	2	14.914	432.506	505	10	7.457	432.506	40.5						0	0	1	100%	1100		.6425 54
22.0	25.9	13.0	337	194.26		2	100%	50	74.57	969.41	5	505	2	14.914	193.882	505	10	7.457	193.882	40.5						0	0	1	100%	1100	18	.6425 24
20.0	24.2	15.0	337	194.24		2	100%	50	74.57	1118.55	5	505	2	14.914	223.71	505	10	7 457	223.71	40.5						0	0	1	100%	1100		.6425 27





MECHANICAL DRAWINGS

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



Revision No. Description Date

UPS & BATTERY ROOM PERMIT 2/23/2024

UPS & BATTERY ROOM PERMIT R2 6/27/2024

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

rawn By: Checked By:

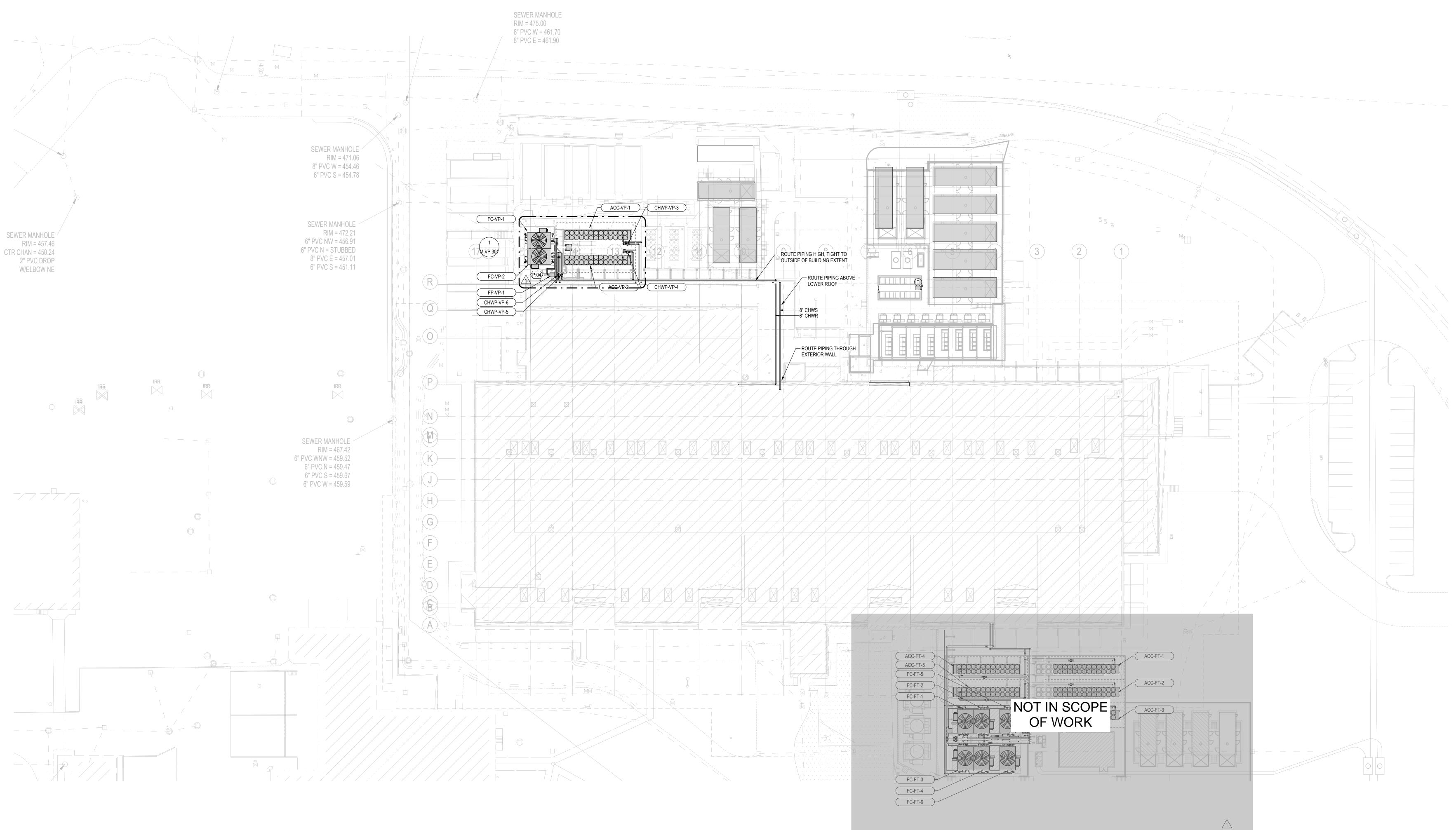
MECHANICAL

Title CALCULATIONS



PRIOR TO CONSTRUCTION.

P:04 PRIOR TO CONSTRUCTION, THE GENERAL CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF ALL EXISTING UTILITIES, INCLUDING STORM DRAINAGE, SEWER LINES, WATER LINES, AND ELECTRICAL CONDUIT IN THE VICINITY OF THE PROJECT FOOTPRINT. THE GENERAL CONTRACTOR/CIVIL CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING OR RELOCATING THE STORM DRAIN AS NECESSARY AND AS DESIGNED UNDER THE APPROVED CIVIL PLANS FILED UNDER PERMIT PRCCP20240183 AND SHALL MAINTAIN UTILITY SEPARATION FROM ALL OTHER EXISTING AND PROPOSED UTILITIES PRIOR TO POURING FOUNDATIONS AND EQUIPMENT PADS AND PRIOR TO INSTALLATION OF FLUID COOLERS OR OTHER MECHANICAL EQUIPMENT. ANY CONFLICTS BETWEEN THE PROPOSED PLANS AND THE APPROVED CIVIL PLANS MUST BE COORDINATED AND MITIGATED AS NECESSARY



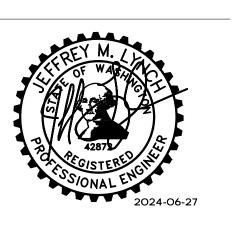




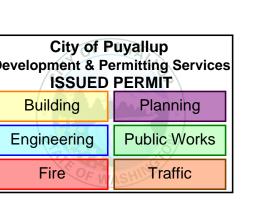


MECHANICAL DRAWINGS

VOLTAGE PARK UPS 019 39th AVENUE SE 0VALLUP, WA 98374



UPS YARD EQUIPMENT PERMIT SET 2/8/2024
UPS & BATTERY ROOM PERMIT 2/23/2024
UPS YARD EQUIPMENT PERMIT 3/27/2024
REV1

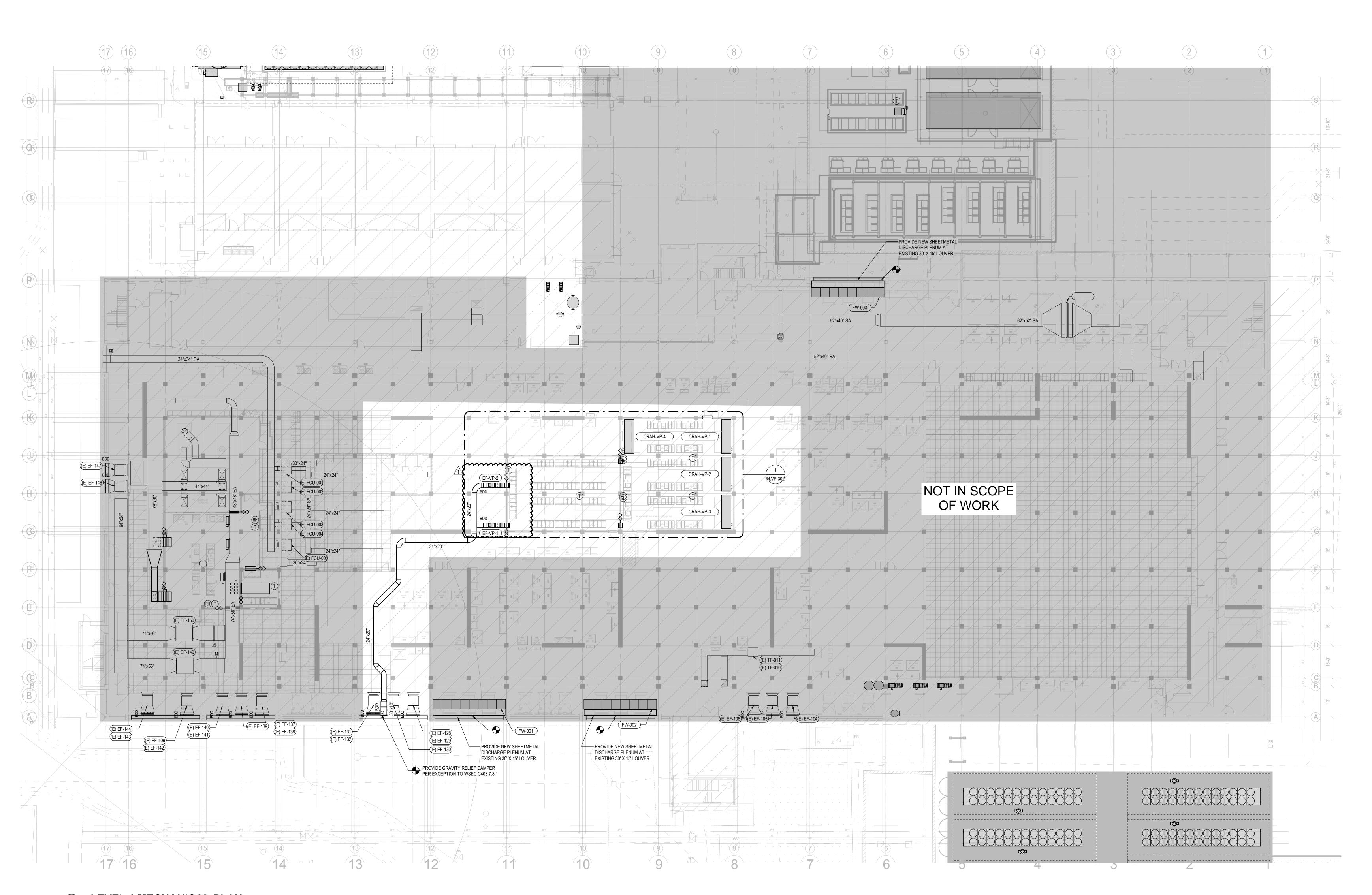


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MECHANICAL SITE PLAN

KEY NOTES

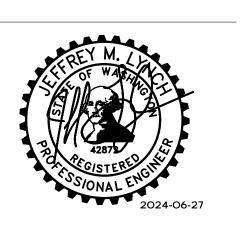






MECHANICAL DRAWINGS

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



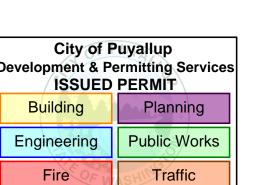
PERMIT SET 2/2/2024

DATA HALL PERMIT 2/16/2024

UPS & BATTERY ROOM INTERIORS 2/16/2024

UPS & BATTERY ROOM PERMIT 2/23/2024

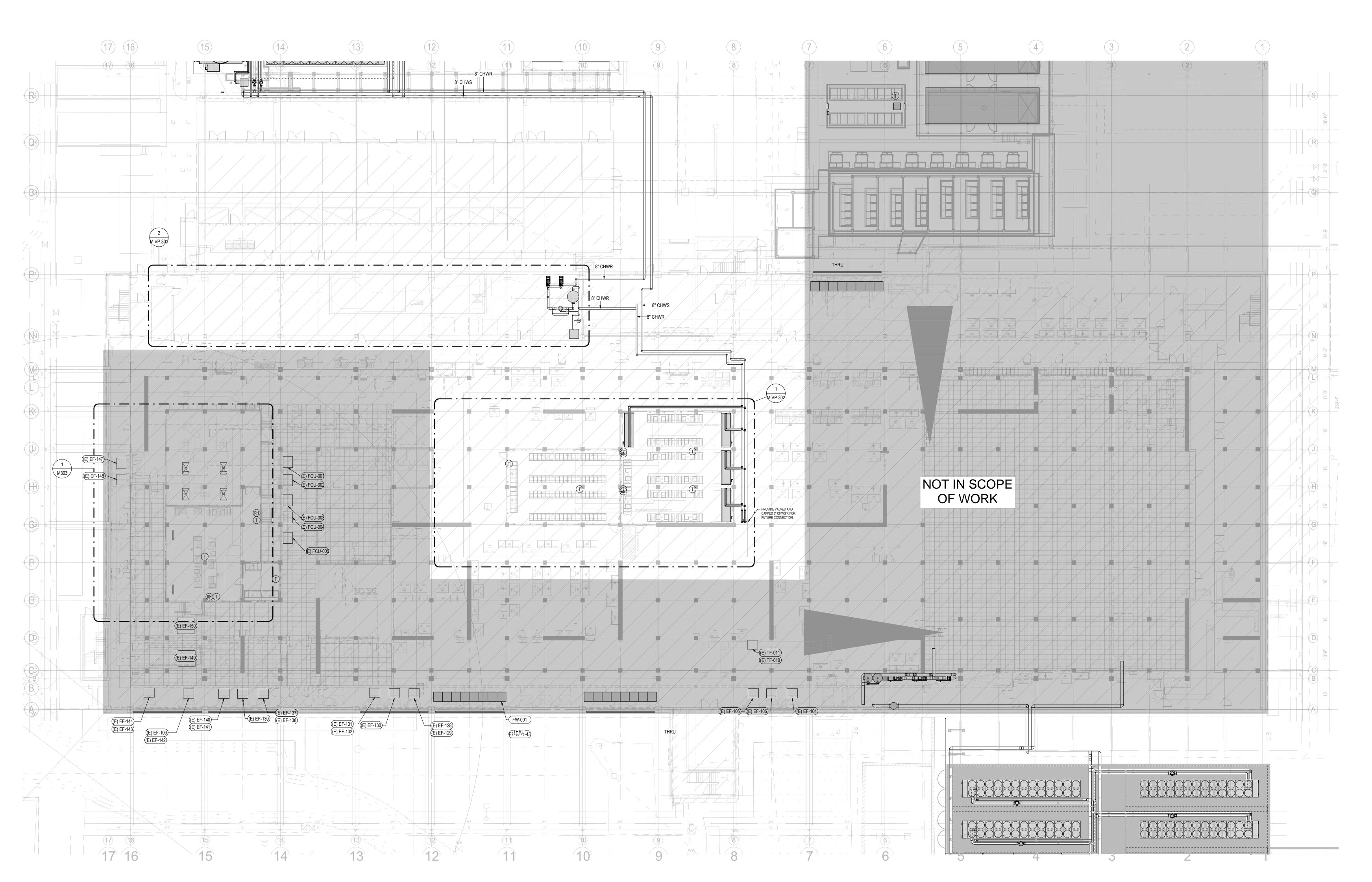
1 UPS & BATTERY ROOM PERMIT R2 6/27/2024



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MECHANICAL LEVEL
1 PLAN

<u>KEY NOTES</u>

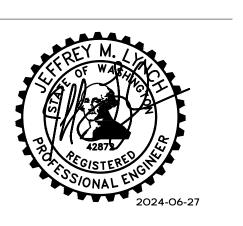






MECHANICAL DRAWINGS

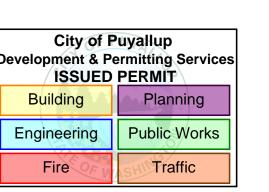
VOLTAGE PARK UPS 1019 39th AVENUE SE PUYALLUP, WA 98374



 No.
 Description
 Date

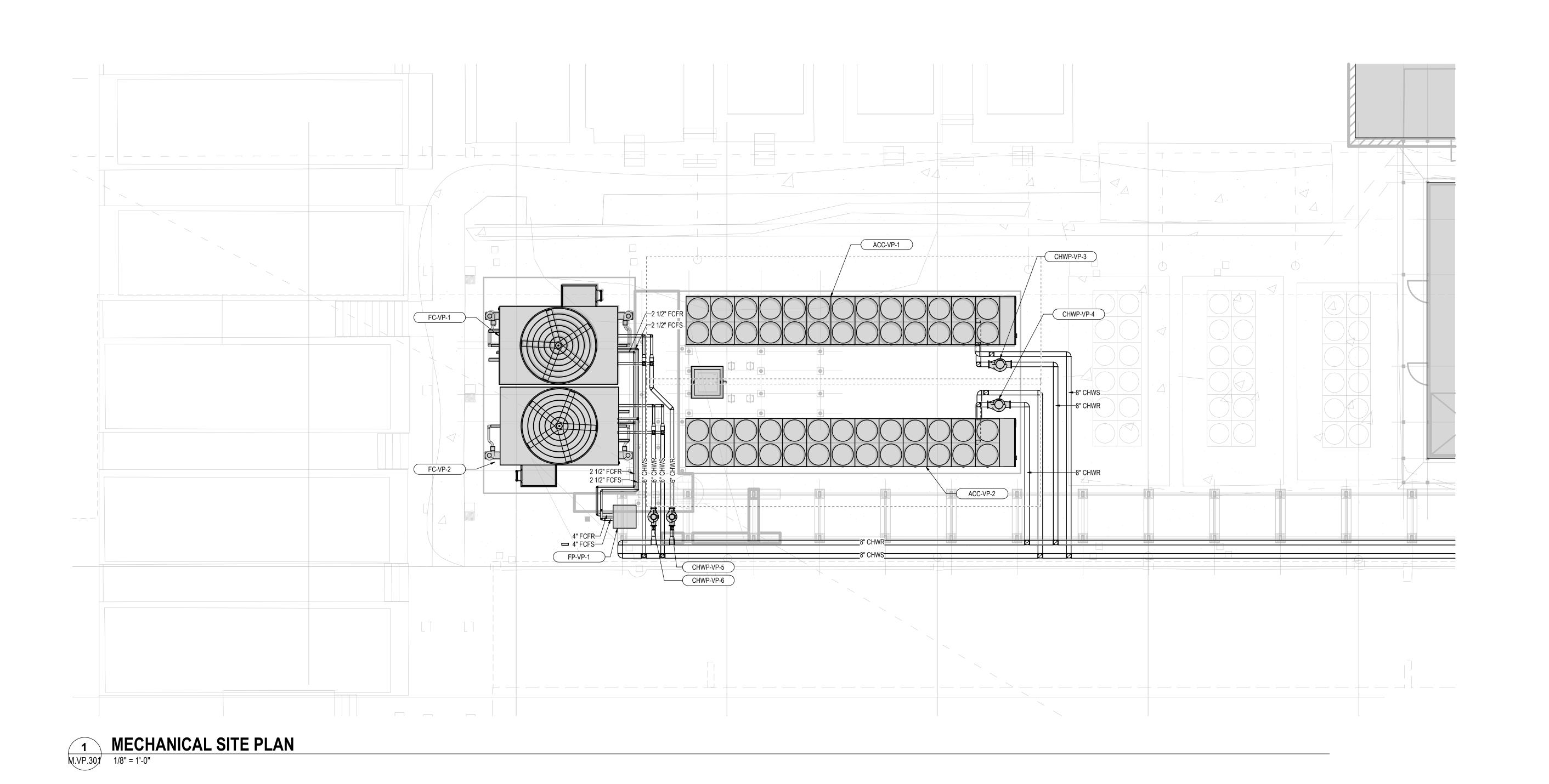
 UPS & BATTERY ROOM INTERIORS
 2/16/2024

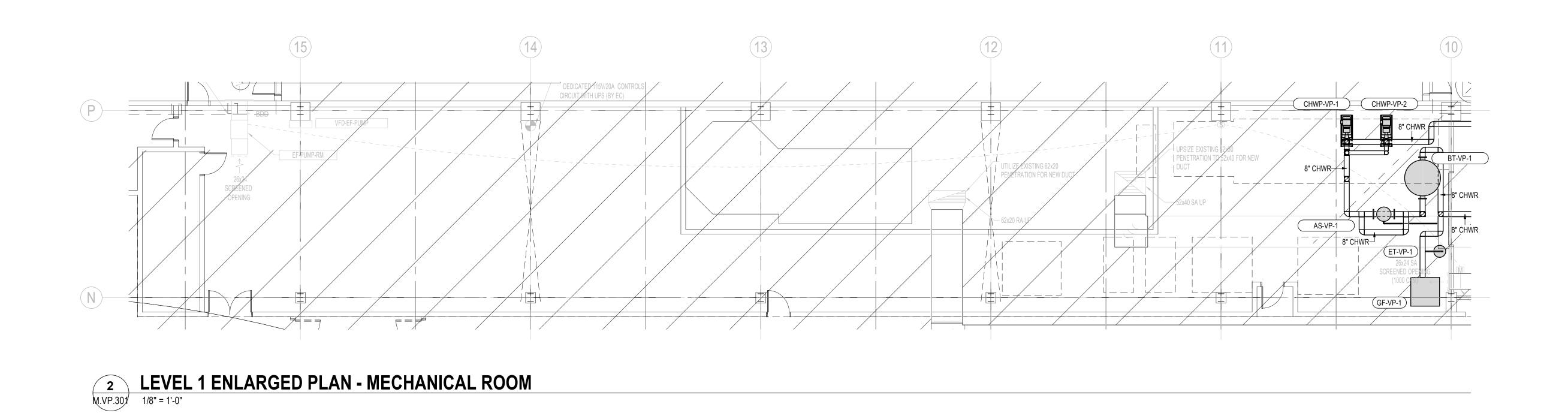
 UPS & BATTERY ROOM PERMIT
 2/23/2024



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MECHANICAL LEVEL
1 PIPING PLAN









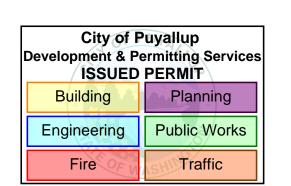
KEY NOTES

MECHANICAL DRAWINGS

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



UPS YARD EQUIPMENT PERMIT SET 2/8/2024
UPS & BATTERY ROOM PERMIT 2/23/2024

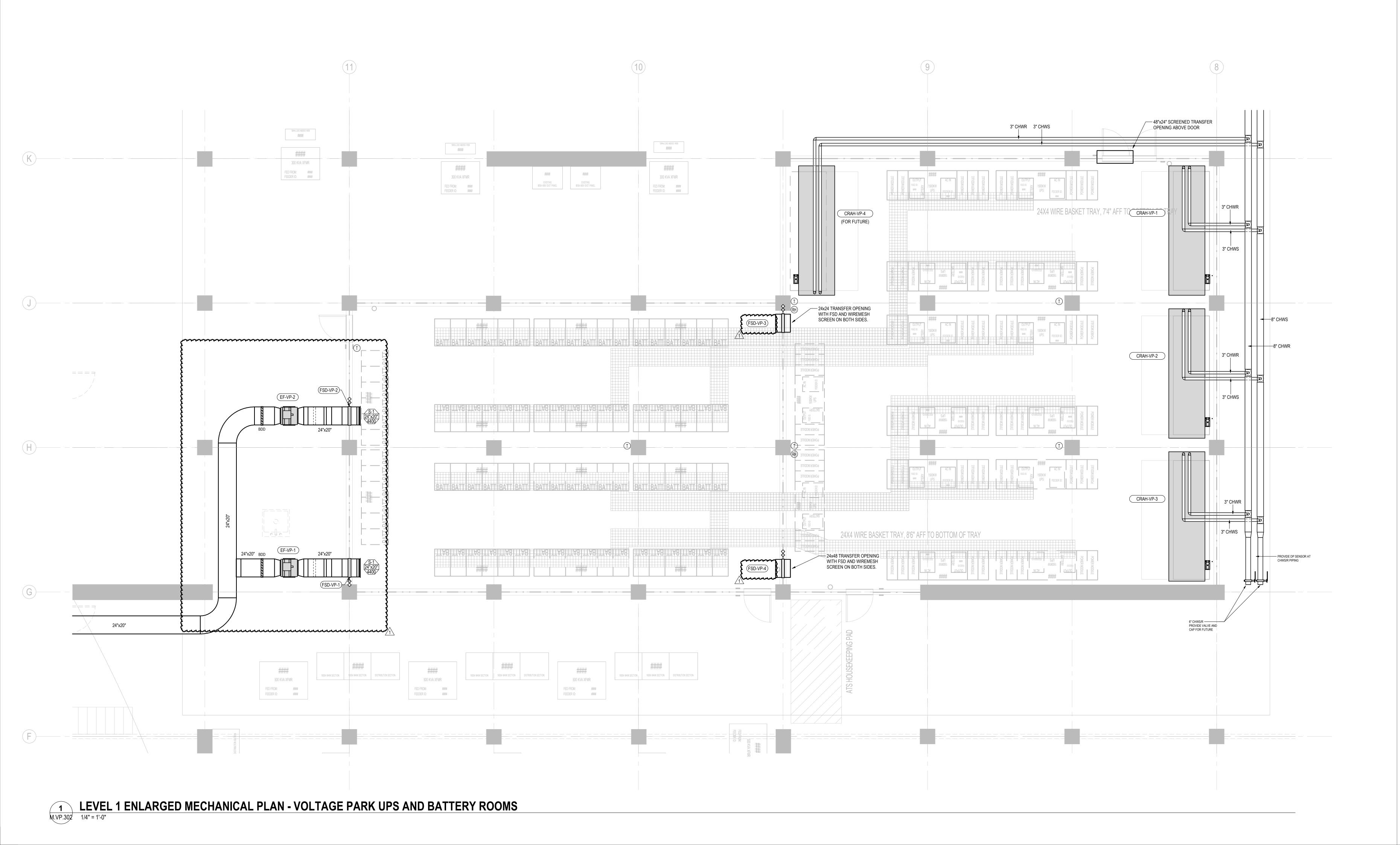


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LEVEL 1
MECHANICAL
Title ENLARGED PLANS

KEY NOTES





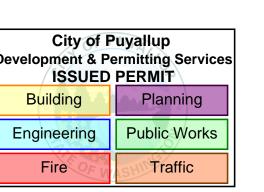


MECHANICAL DRAWINGS

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/OLTAGE PARK UPS
019 39th AVENUE SE

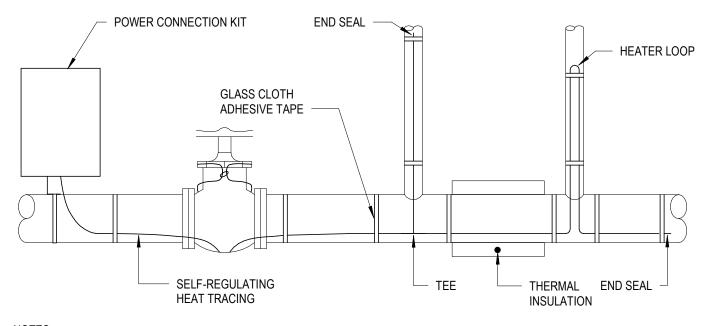


UPS & BATTERY ROOM INTERIORS 2/16/2024
UPS & BATTERY ROOM PERMIT 2/23/2024
UPS & BATTERY ROOM PERMIT R2 6/27/2024



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LEVEL 1
MECHANICAL
Title ENLARGED PLANS

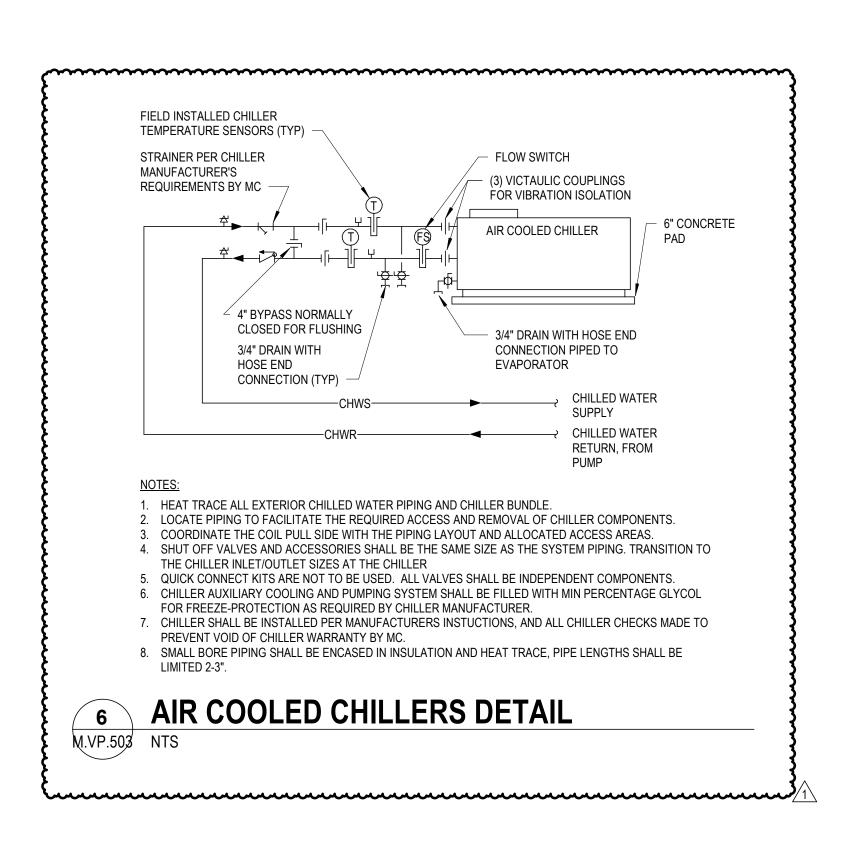


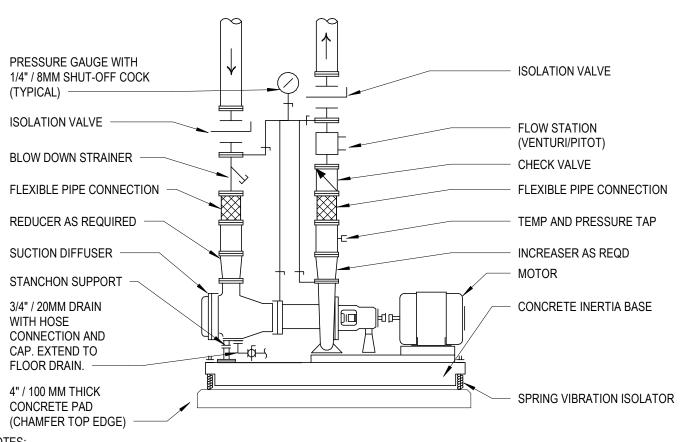
1. PROVIDE HEAT TRACE FOR ALL WATER PIPING LOCATED OUTDOORS

. 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

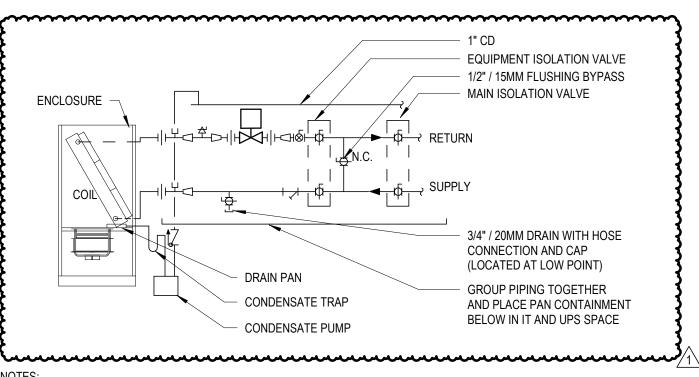
3 HE M.VP.503 NTS





- 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. AFTER START-UP AND THE COMPLETION OF THE SYSTEM FLUSHING, REMOVE THE START-UP STRAINER FROM THE SUCTION
- 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.

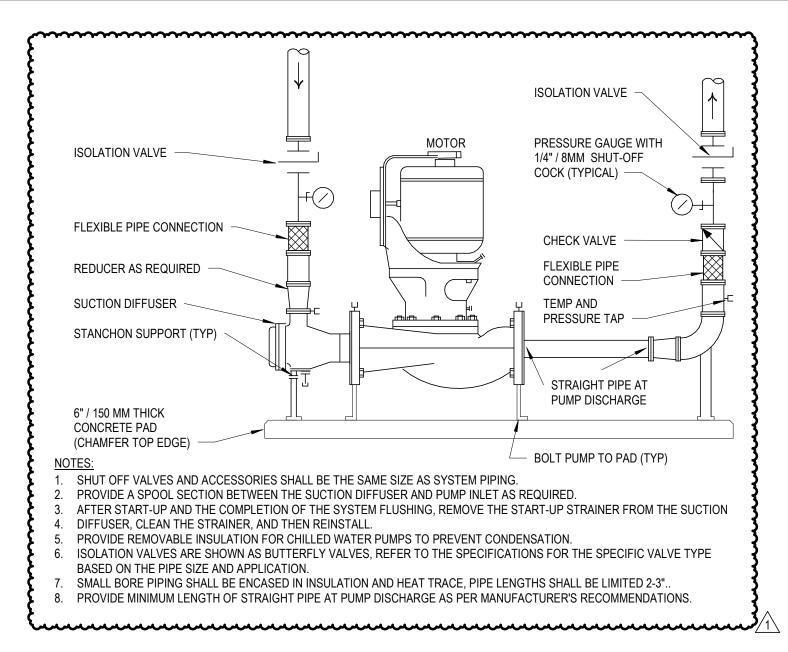
BASE MOUNT PUMP DETAIL - VARIABLE SPEED



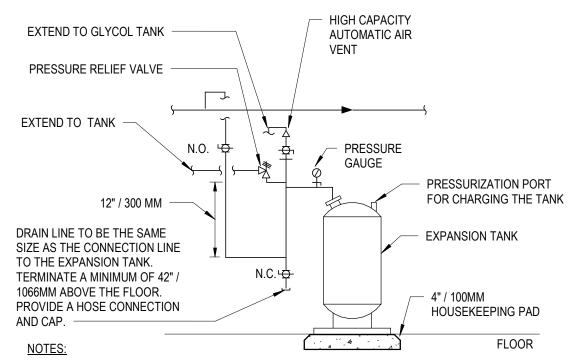
- . INSULATE THE HEATING COIL TO PREVENT HEAT LOSS / CONDENSATION.
- THE EQUIPMENT DRAIN IS SEPARATE FROM THE BLOW DOWN STRAINER DRAIN. 3. PIPE TAPS FROM THE MAIN SHALL BE OFF OF THE TOP OF THE MAIN EXCEPT WHERE NOTED OTHERWISE. 4. THE EQUIPMENT ISOLATION VALVES SHALL BE CLOSED WHEN INSTALLED AND THE 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.



DIFFUSER.



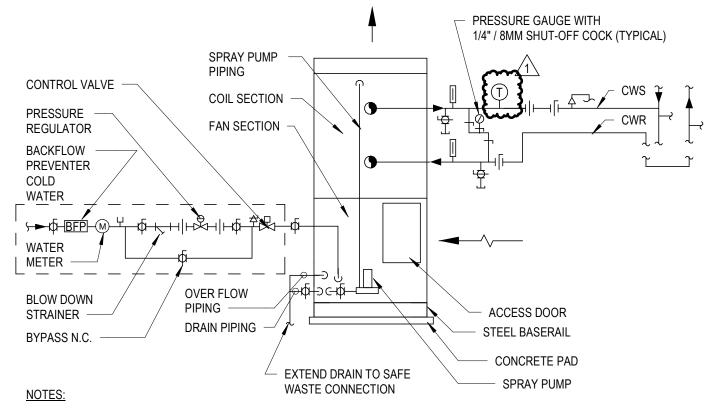
LARGE INLINE PUMP DETAIL - VARIABLE SPEED M.VP.503 NTS



- 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.

EXPANSION TANK W/ FILL

M.VP.503 NTS



- 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



PRCTI20240275

MECHANICAL DRAWINGS

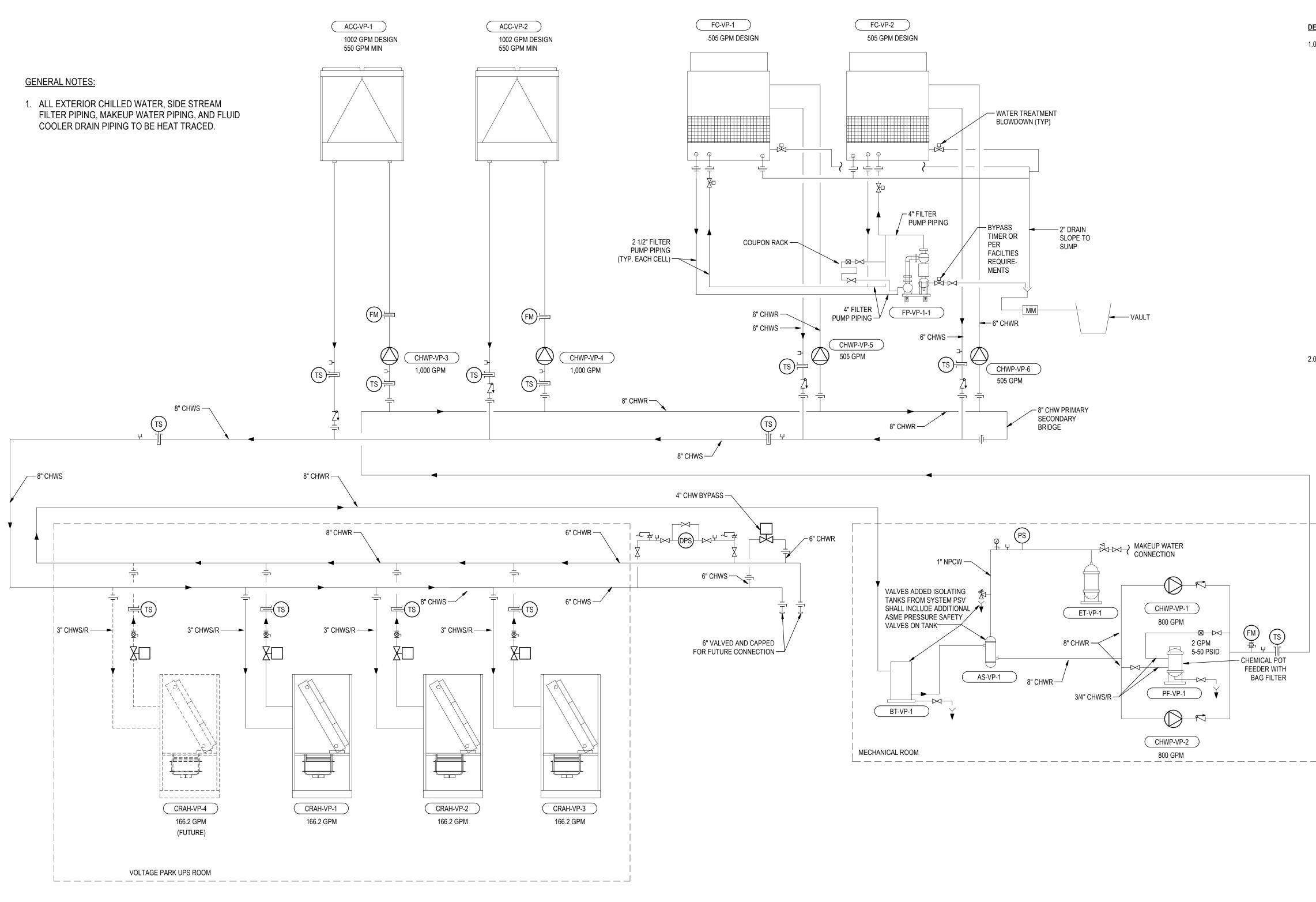
(206) 667-0555



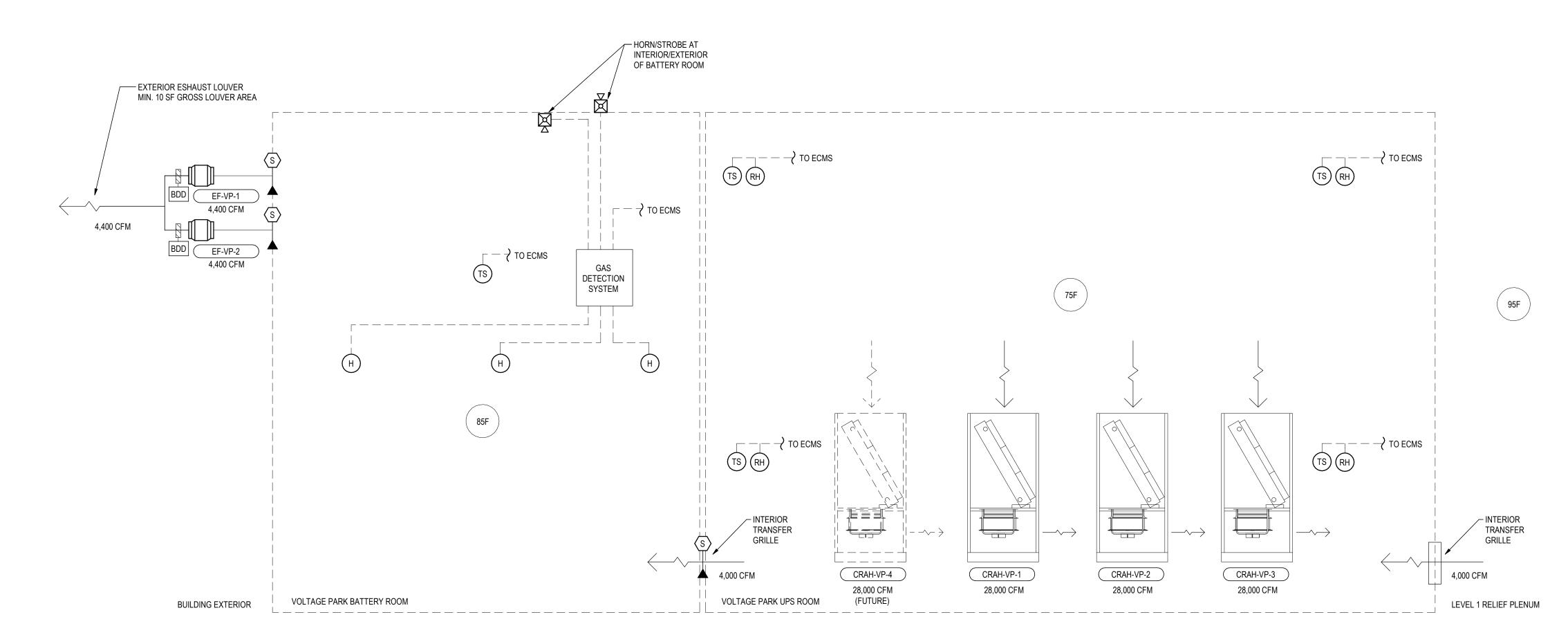
Revision No. Description UPS YARD EQUIPMENT PERMIT SET 2/8/2024 DATA HALL PERMIT 2/16/2024 UPS & BATTERY ROOM INTERIORS 2/16/2024 UPS & BATTERY ROOM PERMIT 2/23/2024 UPS & BATTERY ROOM PERMIT R2 6/27/2024

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

MECHANICAL Title DETAILS



UPS AIR-COOLED CHILLER PIPING DIAGRAM



VOLTAGE PARK UPS AND BATTERY ROOM CONTROL DIAGRAM

DESCRIPTION OF OPERATIONS

1.0 CONTROLS GENERAL THIS SEQUENCE OF OPERATION IS WRITTEN FOR CONTROLLING THE CENTERIS FUTURE TENANT HEATING VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS ON THE BUILDING EXTERIOR AT 1019 39TH AVE, PUYALLUP, WA. 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,

- 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 STANDALONE OPERATION SHALL BE ESTABLISHED WITH ETH OWNER.
- E. THE CONTROL SYSTEM SHALL EXECUTE CONTROL FUNCTIONS OVER THE FOLLOWING NEW SYSTEMS: a. FLUID COOLER / CHILLED WATER PRODUCTION AND DISTRIBUTION.
- b. FLUID COOLERS (FC-VP).
- AIR-COOLED CHILLERS (ACC-VP). d. PRIMARY CHILLED WATER PRODUCTION PUMPS.

RECIRCULATION AIR UNITS (RAU).

- e. SECONDARY CHILLED WATER DISTRIBUTION PUMPS. f. COMPUTER ROOM AIR HANDLING UNITS (CRAH).
- BATTERY ROOM EXHAUST FANS (EF-VP). h. FLUID COOLER FILTER PUMP (FP-VP-1).
- F. THE CONTROL SYSTEM SHALL EXECUTE EXISTING CONTROL FUNCTIONS OVER THE FOLLOWING NEW SYSTEMS THAT ARE REPLACING EXISTING SYSTEMS:
- FAN WALL SYSTEMS (FW).
- G. OTHER POINTS MONITORED a. AMBIENT DRY BULB AND WET BULB TEMPERATURES.
- b. HEAT TRACE STATUS.
- BATTERY ROOM HYDROGEN GAS DETECTION. d. UNIT SMOKE DETECTOR STATUS.
- e. STANDBY POWER STATUS f. NORMAL POWER STATUS.
- g. FIRE ALARM STATUS.

2.0 CHILLED WATER SYSTEM (VOLTAGE PARK)

- a. THE CHILLED WATER SYSTEM FOR VOLTAGE PARK INCLUDES (2) 337 TON AIR COOLED CHILLERS, PROVIDING N+1 COOLING, (2) FLUID COOLERS PROVIDING N COOLING, WATER SIDE ECONOMIZER OPERATION. ASSOCIATED PUMPS INCLUDE (2) SECONDARY DISTRIBUTION PUMPS PROVIDING N+1, AND (1) PUMP FOR EACH CHILLER AND
- b. THE CHILLED WATER SYSTEM IS INTENDED TO MATCH OTHER CHILLED WATER SYSTEMS FOR THE FACILITY, AND USE WATER AS THE HEAT TRANSFER MEDIUM. PROVISIONS TO PROVIDE FREEZE PROTECTION SHALL BE INCORPORATED BY THE DESIGN, CONTRACTING AND CONTROLS TEAMS. SEE FREEZE PROTECTION SEQUENCES
- B. CHILLED WATER DISTRIBUTION SYSTEM
- a. THE CHILLED WATER PRODUCED IS DISTRIBUTED TO THE UPS ROOM CRAH'S. CHILLED WATER DISTRIBUTION PUMPS (CHWP-VP-1-1 AND CHWP-VP-1-2) ARE PIPED IN A PARALLEL ARANGEMENT. EACH MAIN DISTRIBUTION PUMP HAS THE SAME FLOW CAPACITY, AND THE ARRANGEMENT IS DESIGNED TO PROVIDE MAXIMUM FLOW CAPACITY TO THE BUILDING WITH ONE DISTRIBUTION PUMP OPERATING IN A LEAD-STANDBY SEQUENCE. AT
- LEAST ONE PUMP SHALL OPERATE CONTINOUSLY. A BUFFER TANK SEPARATES THE CHILLED WATER PRIMARY LOOP FROM THE CHILLED WATER SECONDARY DISTRIBUTION SYSTEM. THE SECONDARY DISTRIBUTION PUMPS ARE CONTROLLED BY THE BACS. THE BACS MODULATES THE SPEED OF THE LEAD SECONDARY PUMP TO MAINTAIN A CONSTANT DIFFERENTIAL PRESSURE SETPOINT INITIALLY 15 PSI (ADJ) ACROSS THE CHILLED WATER LOOP OR OPERATES AT MINIMUM SPEED PER BELOW.
- 1. THE DIFFERENTIAL PRESSURE SETPOINT SHALL BE ADJUSTABLE AND DETERMINED BY THE TEST AND BALANCE TECHNICIAN WITH A FULL FLOW TEST, AND THE BYPASS FULLY CLOSED. IF ONE SECONDARY DISTRIBUTION PUMP IS AT MINIMUM SPEED (30HZ) 50% FULL SPEED. THE BAS MODULATES THE BYPASS TO MAINTAIN THE PRIMARY DIFFERENTIAL PRESSURE SETPOINT ACROSS THE CHILLED WATER
- THE MINIMIM PUMP SPEED SETPOINT SHALL BE DETERMINED BY THE TEST AND BALANCE TECHNICIAN BY CLOSING ALL SYSTEM VALVES AND OPERATING THE BYPASS VALVE TO MAINTAIN THE DIFFERENTIAL DETERMINED ABOVE. THE MINIMUM PUMP SPEED SETPOINT SHALL BE THE SPEED AT WHICH (1) PUMP MAINTAINS THE SCHEDULED MINIMUM PUMP FLOW AS TESTED IN THIS CONDITION.
- IF THE LEAD PUMP FAILS THE BACS WILL ENABLE THE LAG PUMP AS THE LEAD PUMP. PUMP FAILURE SHALL BE DETERMINED BY THROUGH THE PARAMETERS AND SIGNALS ON THE VFD, OR IF THE COMMANDED ON CONDITION DOES NOT MATCH STATUS. AN IN-HAND ALARM SHALL BE GENERATED IF NOT IN AUTO.
- THE BYPASS VALVE SHALL OPEN BY AN INCREMENT OF 5% IF THE ENTERING WATER TEMPERATURE ON THE OPERATING CHILLER IS LESS THAN 5 °F (ADJ) FOR 5 MINUTES (ADJ) ABOVE THE SUPPLY CHILLED WATER
- THE BYPASS VALVE SHALL CLOSE BY AN INCREMENT OF 5% IF THE SUPPLY CHILLED WATER IS MORE THAN 2°F (ADJ) ABOVE SETPOINT OR IF THE OPERATING CHILLER HAS AN ENTERING WATER TEMPERATURE OF GREATER THAN 8°F ABOVE THE SUPPLY CHILLED WATER TEMPERATURE SETPOINT. SECONDARY WATER FLOW METER IS FOR MONITORING ONLY.
- CHILLERS (ACC-VP-1-1 & ACC-VP-1-2) a. THE TWO CHILLERS SHALL OPERATE IN LEAD STANDBY OPERATION. b. START PUMP ASSOCIATED WITH EACH CHILLER 5 MINUTES (ADJ) PRIOR TO OPERATING CHILLER, AND FOR 5
- MINUTES (ADJ) AFTER DISABLING THE CHILLER. THE BAS SHALL START THE LEAD CHILLER IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MIINUTES (ADJ): 1. IF THE SECONDARY CHILLED WATER TEMPERATURE DOWNSTREAM OF THE FLUID COOLERS IS GREATER
- THAN 47°F (ADJ). AND BOTH FLUID COOLER FANS ARE ABOVE 90% (ADJ).
- 2. IF THE MEASURED AMBIENT WET BULB TEMPERATURE IS GREATER THAN 53°F (ADJ). 3. IF AN ALARM HAS OCCURRED WITH THE FLUID COOLERS.
- d. THE BAS SHALL STOP THE LEAD CHILLER AFTER A 15 MINUTE DELAY IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MINUTES (ADJ): 1. THE CHILLER HAS NOT OPERATED ANY COMPRESSORS FOR 30 MINUTES, AND THE CHILLED WATER SUPPLY TEMPERATURE IS WITHIN 1 °F OF SETPOINT.
- 2. IF THE MEASURED AMBIENT WET BULB TEMPERATURE IS BELOW THAN 50°F (ADJ), AND THERE IS NO ACTIVE FLUID COOLER ALARM. e. THE BAS SHALL MAKE THE STANDBY CHILLER THE LEAD CHILLER IF AN ALARM IS ACTIVE WITH THE LEAD CHILLER OR IT'S ASSOCIATED PUMP.
- f. THE BAS SHALL OPERATE CHILLERS TO MAINTAIN THE SUPPLY WATER SETPOINT AT A CONSTANT CHILLED WATER TEMPERATURE OF 44°F.
- THE BAS SHALL COMMUNICATE WITH EACH CHILLER, WITH AN BACNET MSTP CONNECTION. D. FLUID COOLER (FC-VP-1-1 & FC-VP-1-2)
- THE FLUID COOLER SHALL HAVE STANDALONE CONTROLS THAT MONITOR WATER LEVEL AND FILL THE SYSTEM, AND ALSO OPEN A DRAIN VALVE UPON HIGH CONDUCTIVITY LEVEL. THIS SYSTEM SHALL BE COORDINATED WITH THE CHEMICAL TREATMENT SYSTEM PROVIDED WITH THE FLUID COOLERS TO OPERATE WITHOUT BAS.
- b. THE BAS SHALL OPERATE THE TWO FLUID COOLERS IN LEAD LAG OPERATION, AND TO START/STOP BASIN PUMPS AND MODULATE FLUID COOLER FAN SPEED. c. START AND STOP EACH PRIMARY PUMP ASSOCIATED WITH EACH FLUID COOLER SIMULTANEOUSLY WITH
- ENABLING THE FLUID COOLER FAN(S), AND BASIN PUMP. PRIMARY PUMPS OPERATE AT A CONSTANT SPEED.
- d. THE BAS SHALL START THE BASIN PUMP AND MODULATE THE FLUID COOLER FAN SPEED. e. THE BAS SHALL MONITOR LEAVING CHILLED WATER TEMPERATURE, AND BASIN WATER LEVEL ON EACH FLUID
- f. THE BAS SHALL START THE LEAD FLUID COOLER IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MINUTES (ADJ): 1. IF THE SECONDARY CHILLED WATER TEMPERATURE UPSTREAM OF THE FLUID COOLERS IS 5 °F (ADJ) GREATER THAN AMBIENT WETBULB TEMPERATURE. 2. IF THE MEASURED AMBIENT WET BULB TEMPERATURE IS LESS THAN 53°F (ADJ).
- 3. IF AN ALARM HAS OCCURRED WITH BOTH CHILLERS. g. THE BAS SHALL START THE LAG FLUID COOLER AND ASSOCIATED PUMP IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MIINUTES (ADJ):
- 1. IF THE SECONDARY CHILLED WATER TEMPERATURE UPSTREAM OF THE FLUID COOLERS IS ABOVE 45 OF (ADJ) AND THE LEAD FLUID COOLER FAN IS ABOVE 90% FULL SPEED.
- h. THE BAS SHALL STOP THE LAG FLUID COOLER AND ITS ASSOCUIATED PUMP AFTER A 15 MINUTE DELAY IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MINUTES (ADJ): 1. THE FAN SPEED OF FLUID COOLERS IS LESS THAN 40%(ADJ), AND THE CHILLED WATER SUPPLY TEMPERATURE IS LESS THAN 46 °F.
- THE BAS SHALL STOP THE LEAD FLUID COOLER AFTER A 15 MINUTE DELAY IF ANY OF THE FOLLOWING ARE TRUE FOR 15 MINUTES (ADJ):
- 1. IF THE MEASURED AMBIENT WET BULB TEMPERATURE IS ABOVE THAN 53°F (ADJ), AND BOTH CHILLERS DO NOT HAVE AN ACTIVE ALARM. j. THE BAS SHALL MAKE THE STANDBY FLUID COOLER THE LEAD FLUID COOLER IF AN ALARM IS ACTIVE WITH THE LEAD FLUID COOLER OR IT'S ASSOCIATED PUMP.
- k. THE BAS SHALL OPERATE THE LEAD AND THE LAG FLUID COOLER USING EQUIVALENT SIGNALS TO MAINTAIN THE SECONDARY SUPPLY WATER SETPOINT DOWNSTREAM OF THE FLUID COOLERS AT A CONSTANT CHILLED WATER TEMPERATURE OF 44°F (ADJ) USING THE FOLLOWING STAGES: 1. ENABLE THE BASIN WATER PUMP.
- 3. UTILIZE A PI LOOP TO FURTHER RAMP UP FANS WITH A CONTINUED RISE IN SUPPLY SECONDARY CHILLED

2. AFTER 5 MINUTE DELAY AND A CONTINUED RISE IN CHILLED WATER TEMPERATURE START FLUID COOLER

WATER TEMPERATURE. 4. IF THE PI LOOP HAS THE FLUID COOLER FAN AT 6 HZ FOR 15 MINUTES, DISABLE FAN.

I. THE BAS SHALL COMMUNICATE WITH EACH FLUID COOLER'S VFD OVER AN RS485 BACNET CONNECTION.

- E. THE BAS MONITORS SYSTEM PRESSURE. IF SYSTEM PRESSURE FALLS BELOW 10 PSI (ADJ) OR IS ABOVE 20 PSI (ADJ), THE BAS ACTIVATES A LOW OR HIGH LOOP PRESSURE ALARM. F. THE OPERATION OF THE SIDE STREAM FILTER PUMP AND PUMP SHALL OPERATE ON A TIMER. THE SYSTEM THAT
- WOULD OPEN THE DRAIN VALVE ON THE ASSOCIATED FILTER ASSEMBLY SHALL BE MANUAL. G. FREEZE PROTECTION SEQUENCE a. IF THE OUTSIDE AIR TEMPERATURE IS BELOW 32°F (ADJ) OR IF THE CHILLER INITIATES A PUMP RUN LOW
- EVAPORATOR TEMPERATURE SEQUENCE, THE BAS SHALL OPERATE ALL PUMPS EXCEPT FLUID COOLER SPRAY PUMPS THAT WERE TO BE CONTROLLED OFF PER ABOVE AT 30 HZ/50% (ADJ) FULL SPEED. ENABLE FILTER FEEDER PUMPS AT FULL SPEED.
- b. THE FLUID COOLER SHALL HAVE STANDALONE CONTROLS THAT MONITOR BASIN WATER TEMPERATURE, AND CONTROL THE STAGES AND SAFETIES ON THE ELECTRIC BASIN HEATERS. THIS SYSTEM SHALL OPERATE c. EACH HEAT TRACE SYSTEM CIRCUIT SHALL BE PROVIDED WITH A FAULT DETECTION MONITOR. IF A CURRENT SENSOR IS USED, IT SHALL BE CALIBRATED FOR A LINEAR RESPONSE IF ALSO AUTOREGULATING HEAT TRACE IS
- USED. AN ALARM AT LOW CURRENT SIGNAL SHALL BE GENERATED AT 32°F (ADJ) AT LOW SIGNAL AND AT A HIGHER LOW CURRENT SIGNAL AT 20°F (ADJ) AMBIENT FOR EACH CIRCUIT.
- H. CHILLED WATER SYSTEM ALARM LIST HIGH SUPPLY CHILLED WATER TEMPERATURE
- LOW FLUID COOLER BASIN TEMPERATURE HIGH CHILLED WATER FILL PRESSURE
- d. LOW CHILLED WATER FILL PRESSURE HIGH FLUID COOLER BASIN WATER LEVEL LOW FLUID COOLER BASIN WATER LEVEL
- HEAT TRACE FAILURE ALARM. PUMP FAILURE ALARM.
- CHILLER FAILURE ALARM.
- CHILLER COMPRESSOR FAILURE ALARM. CHILLER LOW FLOW ALARM.
- CHILLER CONDENSER FAN FAILURE ALARM.
- m. FLUID COOLER FAN ALARM. n. LOOP DIFFERENTIAL PRESSURE OUT OF RANGE ALARM. CHILLER FLOW OUT OF RANGE ALARM.

3.0 COMPUTER ROOM AIR HANDLING UNIT (CRAH-VP-1-1 THRU CRAH-VP-1-3)

- a. THE THREE (3) NEW COMPUTER ROOM AIR HANDLING UNITS SERVE THE UPS SPACE FOR VOLTAGE PARK. UNITS ARE SIZED FOR N+1 CAPACITY. COMPUTER ROOM AIR HANDING UNITS ARE VERTICAL DOWNFLOW UNITS WITH A DIAGONAL CHILLED WATER COIL IN DRAW-THRU CONFIGURATION. THE BAS SHALL INCLUDE NEW CONTROLS FOR THE VOLTAGE PARK COOLING SYSTEMS THAT INCLUDE TRANSFER AIR TO THE
- BATTERY ROOM THROUGH THE UPS SPACE. COMPUTER ROOM AIR HANDLING UNIT FANS SHALL BE COMMANDED ON BY THE BAS CONTINUOUSLY. WHEN UNITS ARE SHUTDOWN FANS ARE OFF AND VALVES ARE CLOSED. CONDENSATE PUMPS AND CONDENSATE DETECTION SYSTEMS SHALL NOT BE DISABLED. SHUTDOWN CAN OCCUR FOR ANY OF THE FOLLOWING, AND GENERATES AN ALARM:
- a. MANUAL SHUTDOWN OF AN INDIVIDUAL UNIT. b. SCHEDULED MAINTENANCE. C. UPON ENABLING A CRAH UNIT THE FAN MINIMUM SPEED SHALL BE 67% (ADJ) TO PROVIDE 2/3rds OF THE PEAK
- UNIT AIRFLOW, OR 25,000 CFM EACH. FAN MINIMUM SPEED WITH THE VFD'S SHALL BE 12% (ADJ) OF FULL FLOW THE BAS SHALL DEVELOP A COOLING DEMAND SIGNAL USED TO EQUALLY MODULATE THE CHILLED WATER VALVE ON ALL OPERATING CRAH UNITS TO MAINTAIN THE TEMPERATURE OF THE SPACE HIGHEST ABOVE SETPOINT AT 75°F (OR AS INDIVIDUALLY SET AT THE BAS, ADJ) IN THE UPS ROOM AND 85°F (ADJ) IN THE BATTERY
- a. EACH OF THE 5 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. IF THE CHILLED WATER VALVE SETPOINT IS ABOVE 67% (ADJ) FULL OPEN FOR MORE THAN 10 MINUTES, THEN THE CRAH UNIT FANS SHALL MODULATE IN UNISON BETWEEN 67% AND 100%, 37,000 CFM, IN UNISON WITH THE
- REDUNDANT UNIT OPERATION ALARM. F. HUMIDITY SENSORS ARE FOR MONITORING ONLY. G. DISCHARGE AIR TEMPERATURE IS FOR MONITORING ONLY.
- H. LEAVING WATER TEMPERATURE IS FOR MONITORING ONLY. I. THE BAS SHALL CLOSE THE CHILLED WATER CONTROL VALVE IF A DRAIN PAN OVERFLOW ALARM IS GENERATED

VALVE COMMAND INCREASES. THIS CONDITION SHALL GENERATE A UPS ROOM UNABLE TO MAINTAIN

- ON THE SINGLE CRAH UNIT, AND RAISE THE SPEED OF OPERATING CRAH TO 100%. THE BAS SHALL PROVE A LEAK DETECTION CABLE AROUND THE PERIMETER OF EACH CRAH UNIT.
- K. THE BAS SHALL CONNECT TO EACH CRAH WITH A RS485 MODBUS RTU CONNECTION. L. COMPUTER ROOM AIR HANDLING UNIT ALARM LIST
- a. HIGH UPS TEMPERATURE ALARM, ABOVE 80°F (ADJ).
- b. LOW UPS TEMPERATURE ALARM, BELOW 68°F (ADJ).
- c. HIGH BATTERY ROOM TEMPERATURE ALARM, ABOVE 90°F (ADJ). d. LOW BATTERY ROOM TEMPERATURE ALARM, BELOW 72°F (ADJ).
- e. HIGH ZONE HUMIDITY RATIO, 69°F DEW POINT (ADJ).
- f. LOW ZONE HUMIDITY RATIO, 28°F DEW POINT (ADJ). TEMPERATURE SENSOR FAILURE.
- HUMIDITY SENSOR FAILURE. SUPPLY FAN FAILURE. SUPPLY FAN IN-HAND.
- SUPPLY FAN VOLTAGE OUT OF RANGE. I. SUPPLY FAN PHASE LOSS.
- m. CHILLED WATER VALVE FAILURE. n. REDUNDANT UNIT OPERATION ALARM.
- LOSS OF COMMUNICATIONS. p. DRAIN PAN OVERFLOW. g. RH SENSOR OUT OF RANGE.
- r. FILTER CHANGE REQUIRED. s. HIGH ZONE HUMIDITY, ABOVE 70% (ADJ). t. LOW ZONE HUMIDITY, BELOW 17% (ADJ).
- 4.0 BATTERY ROOM EXHAUST FAN (EF-VP-1-1 & EF-VP-1-2)

u. LEAK DETECTION ALARM.

- a. TWO (2) EXHAUST FANS SERVE THE BATTERY ROOM SPACE FOR VOLTAGE PARK. FANS ARE SIZED FOR N+1
- INCLUDE NEW CONTROLS FOR THE VOLTAGE PARK EXHUAST SYSTEMS THAT INCLUDE TRANSFER AIR TO THE BATTERY ROOM THROUGH THE UPS SPACE. ONE EXHAUST FAN SHALL BE COMMANDED ON CONTINUOUSLY BY THE BAS. SHUTDOWN CAN OCCUR FOR ANY OF

CAPACITY. FANS ARE INLINE BELT DRIVEN AXIAL FANS WITH VFD'S FOR SPEED CONTROL. THE BAS SHALL

- THE FOLLOWING: a. MANUAL SHUTDOWN b. SCHEDULED LEAD-LAG ROTATION.
- TEMPERATURE CONTROL. IF BATTERY ROOM TEMPERATURE IS ABOVE 90 °F, HIGH ZONE TEMPERATURE, THEN
- OPERATE BOTH FANS AT 100% UNTIL ZONE TEMPERATURE IS 5 °F BELOW HIGH TEMP SETPOINT (85 °F). WHEN ONE FAN IS SHUTDOWN THE BAS SHALL START OTHER FAN FIRST, AND RAMP IT UP TO FULL SPEED AS THE OTHER FAN IS RAMPED DOWN. BE DONE IN UNISON FANS ARE OFF AND VALVES ARE CLOSED. AFTER CHANGE OVER
- FANS SHALL BE COMMANDED TO PROVIDE CONSTANT AIRFLOW 100% (ADJ). THE BAS SHALL PROVIDE AND CONNECT TO A HYDROGEN GAS DETECTION SYSTEM. THE HYDROGEN GAS DETECTION SYSTEM SHALL HAVE SENSORS WITHIN 12 INCHES OF THE CEILING AT A MINIMUM OF FOUR (4).
- "APPROVED" LOCATIONS. AN HIGH HYDROGEN GAS ALARM SHALL BE GENERATED IF HYDROGEN GAS IS DETECTED ABOVE 1% OF THE LOWER EXPOSIVITY LEVEL (LEL).
- HORN STROBES SHALL BE PROVIDED AT EACH BATTERY ROOM ENTRANCE AND AT A VISIBLE ELEVATION WITHIN THE BATTERY ROOM. HORN STROBES SHALL ACTIVATE UPON A HIGH HYDROGEN GAS ALARM. . THE BAS SHALL CONNECT TO EACH VFD WITH A RS485 BACNET CONNECTION. THE BAS SHALL CONNECT TO THE
- HYDROGEN GAS DETECTION SYSTEM WITH A RS485 BACNET CONNECTION, OR A HARDWIRED CONNECTION THAT INCLUDES HIGH GAS DETECTION AND SYSTEM FAILURE ALARM AS AN INPUT TO THE BAS.
- H. BATTERY ROOM ALARM LIST a. HIGH ZONE TEMPERATURE ALARM, ABOVE 90°F (ADJ).

f. LOSS OF COMMUNICATIONS WITH VFD.

- b. LOW ZONE TEMPERATURE ALARM, BELOW 72°F (ADJ).
- c. TEMPERATURE SENSOR FAILURE. d. EXHAUST FAN FAILURE. e. EXHAUST FAN IN-HAND.
- g. HIGH HYDROGEN GAS, ABOVE 1% LEL. h. HYDROGEN GAS SYSTEM DETECTION FAILURE.

VOLTAGE PARK UPS ROOM

UPS, 1500 kVA

Transformer/PDU:

Stat Transfer Switch

Partition Heat Gain

Sensible Gain Total (Btuh)

Sensible Gain Total (kW)

ensible Gain Total (tons)

Qty Loading Btuh ea Btuh total

158000

76815

85%

60%

100%

1,611,60

1.699.69

Revision No. Description

UPS YARD EQUIPMENT PERMIT SET 2/8/2024 UPS & BATTERY ROOM INTERIORS 2/16/2024 UPS & BATTERY ROOM PERMIT 2/23/2024

UPS & BATTERY ROOM PERMIT R2 6/27/2024

PRCTI20240275

centeris

720 3rd Avenue Suite 1500

Seattle Washington 98104-1878

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MECHANICAL



MECHANICAL DIAGRAMS



GENERAL NOTES

- THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2018 WASHINGTON STATE FIRE CODE, 2018 UNIFORM PLUMBING CODE, 2018 WASHINGTON STATE BUILDING CODE AND ALL OTHER APPLICABLE CODES & REGULATIONS.
- 2. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL EQUIPMENT AND PLUMBING

3. COORDINATE ALL LOCATIONS, SIZES AND ELEVATIONS OF ALL SLEEVES THROUGH STRUCTURES WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.

- 4. COORDINATE AND VERIFY EXACT LOCATION, SIZE, POINT OF CONNECTIONS AND ELEVATIONS OF
- UTILITY SERVICE PIPING BEFORE TRENCHING OR INSTALLATION. 5. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR WALL AND PARTITION CONSTRUCTION AND THICKNESS WHERE PLUMBING PIPING, VALVES OR EQUIPMENT ARE INDICATED.
- 6. ALL VALVES SHALL BE LOCATED TO BE READILY ACCESSIBLE. ACCESS PANELS SHALL BE INSTALLED
- WHERE VALVES ARE INSTALLED WITHIN OR BEHIND WALLS OR NON-REMOVABLE CEILINGS. 7. COORDINATE ALL PIPING AND EQUIPMENT LOCATIONS WITH OTHER TRADES.
- 8. OFFSET ALL VERTICAL PIPES TO AVOID BEAMS & ANY OTHER STRUCTURAL OBSTRUCTIONS NOT
- 9. BECAUSE OF THE SMALL SCALE OF THE DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS FITTINGS, AND ACCESSORIES THAT MAY BE REQUIRED FOR A COMPLETE PLUMBING SYSTEM. THE CONTRACTOR WILL CAREFULLY INVESTIGATE THE STRUCTURAL, FINISH CONDITIONS, AS WELL AS WORKS OF OTHER SERVICES THAT AFFECTS ALL HIS WORK AND WILL COORDINATE AND ARRANGE SUCH WORK ACCORDINGLY, FURNISHING REQUIRED FITTINGS, TRAPS, VALVES AND ACCESSORIES TO MEET SUCH CONDITIONS THAT MAYBE REQUIRED FOR A COMPLETE PLUMBING SYSTEM.
- 10. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE OF WORK AND TO INDICATE GENERAL ARRANGEMENT. THEY ARE NOT INTENDED TO SHOW EVERY DETAIL INCLUDING OFFSET OR FITTING OR EVERY STRUCTURAL DIFFICULTY THAT MAY BE ENCOUNTERED DURING THE WORK. EXCEPT AS OTHERWISE INDICATED, LOCATIONS OF ITEMS ARE APPROXIMATE ONLY. EXACT LOCATIONS NECESSARY TO SECURE PROPER CONDITIONS AND RESULTS MUST BE DETERMINED AT PROJECT SITE AND MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE.
- 11. EXCEPT AS OTHERWISE INDICATED, MAKE REASONABLE MODIFICATIONS IN LAYOUT AS NEEDED TO PREVENT CONFLICT WITH OTHER WORK OR FOR PROPER EXECUTION OF WORK.
- 12. INCLUDE WORK NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER INSTALLATION AND OPERATION OF A SYSTEM OR PIECE OF EQUIPMENT IN WORK.
- 13. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS AND INFORMATION.
- 14. REFER TO CIVIL DRAWINGS FOR ADDITIONAL SITE UTILITY INFORMATION AND DETAILS.
- 15. CONTRACTOR SHALL OBTAIN APPROVAL FROM STRUCTURAL ENGINEER FOR PENETRATIONS THROUGH STRUCTURAL ELEMENTS PRIOR TO START OF WORK. INSTALL SLEEVES FOR ALL PIPES PENETRATING THROUGH STRUCTURAL ELEMENTS.
- 16. ALL HORIZONTAL WASTE PIPING SHALL SLOPE AT 2% MINIMUM.
- 17. ALL SANITARY SEWER VENTS TERMINATING THROUGH THE ROOF SHALL BE INSULATED TO PREVENT CONDENSATION FROM FORMING AND SHALL INCLUDE A VAPOR BARRIER JACKET ON THIS INSULATION. ALL COLD WATER AND STORM WATER PIPING EXPOSED IN PLENUMS OR ABOVE CEILINGS SHALL BE INSULATED TO PREVENT CONDENSATIONS.
- 18. WATER HAMMER ARRESTORS SHALL BE PROVIDED AT EVERY BRANCH TO MULTIPLE FIXTURES AND ON EVERY FLOOR FOR BOTH HOT AND COLD WATER.
- 19. PROVIDE TRAP PRIMERS TO ALL FLOOR SINK AND FLOOR DRAINS IN THE BUILDING INCLUDING SHOWER DRAINS. CONCEALED TRAP PRIMER VALVES SHALL BE PROVIDED WITH ACCESS PANELS. COORDINATE LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
- 20. RAINWATER DRAINAGE SYSTEMS PIPE SIZING IS BASED ON 2.0 INCH RAINFALL PER HOUR AND 100 YEARS RETURN.
- 21. PROVIDE CONDENSATE DRAIN PIPING TO ALL FAN COIL UNITS AND MECHANICAL EQUIPMENT W/ TRAP, UNIONS & FLEXIBLE CONNECTIONS AND SPILL TO APPROVED RECEPTACLE OR CONNECT TO LAVATORY/SINK TAILPIECE, PROVIDE OVERFLOW CONDENSATE DRAIN AND TERMINATE AT FLOOR SINK OR OTHER APPROVED VISIBLE LOCATION. INSULATE ALL CONDENSATE AND OVERFLOW DRAIN PIPING INSIDE THE BUILDING. SLOPE ALL CONDENSATE DRAIN PIPING @ 1/8" PER FOOT.
- 22. SANITARY VENTS THRU ROOFS SHALL TERMINATE AT LEAST 10' AWAY FROM, OR 3' ABOVE ANY OPERABLE WINDOW AND 25' AWAY FROM COMBUSTION AIR OPENINGS AND FRESH AIR INTAKES. PROVIDE VENTS WITH VANDAL PROOF VENT CAPS.
- 23. COMPLIANCE TO ASSEMBLY BILL 1953 AND SECTION 116875 OF THE HEALTH & SAFETY CODE FOR a. ALL PLUMBING PIPES, FITTINGS, FIXTURES, VALVES, SOLDER, FLUX OR INSTALLATION SHALL BE FURNISHED LEAD FREE. b. ALL PLUMBING SUBMITTALS SHALL HAVE DOCUMENTATION INDICATING LEAD FREE MANUFACTURING
- 23. CONTRACTOR TO IMPLEMENT PRACTICES AND PROCEDURES TO MEET THE PROJECT'S ENVIRONMENTAL PERFORMANCE GOALS, WHICH INCLUDE ACHIEVING LEED SILVER CERTIFICATION. THE CONTRACTOR SHALL ENSURE THAT THE REQUIREMENTS RELATED TO WATER EFFICIENCY THROUGH WATER USE REDUCTION ARE IMPLEMENTED TO THE FULLEST EXTENT. SUBSTITUTIONS, OR OTHER CHANGES TO THE WORK OR MATERIAL PROPOSED BY THE CONTRACTOR OR THEIR SUBCONTRACTORS. SHALL NOT BE ALLOWED IF SUCH CHANGES COMPROMISE THE STATED LEED PERFORMANCE REQUIREMENT. MAXIMUM FLOW/FLUSH RATES FOR PLUMBING FIXTURES ARE LISTED BELOW:
- a. WATER CLOSET: 1.28 GALLONS PER FLUSH b. URINAL: 0.125 GALLONS PER FLUSH
- c. LAVATORY: 0.5 GALLONS PER MINUTE OR 0.20 GALLONS PER CYCLE d. SHOWER: 1.75 GALLONS PER MINUTE e. SINKS: 1.5 GALLONS PER MINUTE
- 24. NOT USED.
- 25. NO SHARP OR ABRASIVE SURFACE ALLOWED UNDER LAVATORIES.
- 26. ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHOULD BE LISTED.
- 27. ALL FAUCETS IN THE PUBLIC RESTROOMS SHALL BE SELF CLOSING OR SELF CLOSING METERING
- 28. PUBLIC LAVATORIES SHALL HAVE CONTROLS TO LIMIT THE WATER TEMPERATURE TO 110°F.
- 29. PLUMBING PIPES INSTALLED IN THE EXTERIOR WALLS, ATTIC, CRAWL SPACES OR OUTSIDE OF THE BUILDING SHALL BE PROTECTED FROM FREEZING.
- 30. SUSPENDED PIPING SHALL BE SUPPORTED AT INTERVALS NOT TO EXCEED THOSE SHOWN IN TABLE 308.5 2018 UPC WITH WASHINGTON STATE AMENDMENTS.
- 31. PRIOR TO UTILIZATION OF NEWLY CONSTRUCTED POTABLE WATER PIPING SYSTEMS, ALL AFFECTED POTABLE WATER PIPING SHALL BE DISINFECTED USING PROCEDURE PRESCRIBED IN 2018 UPC WITH WASHINGTON STATE AMENDMENTS SECTIONS 610.0(1) THROUGH 610.1(4).
- $\stackrel{\frown}{}$ 32. PLUMBING FIXTURES SERVED FROM RECYCLED WATER SYSTEM SHALL HAVE A SIGNAGE THAT INDICATED THAT THE SYSTEM SERVING THE FIXTURE IS RECYCLED WATER SYSTEM.

SEISMIC NOTES

- 1. CONTRACTOR SHALL PROVIDE COMPLETE SEISMIC ANCHORAGE AND BRACING FOR ALL PLUMBING EQUIPMENT AND REQUIRED PIPING. 2. ALL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE
- HORIZONTAL AND VERTICAL FORCES PRESCRIBED IN WASHINGTON STATE MECHANICAL AND BUILDING CODES, MEETING ASCE 7 REQUIREMENTS AS REFERENCED BY THE BUILDING CODE.
- A. THE ATTACHMENT OF THE FOLLOWING ITEMS SHALL BE DESIGNED $^{\perp}$ TO RESIST THE FORCES PRESCRIBED ABOVE, BUT NEED NOT BE DETAILED ON THE PLANS.
- A.1. EQUIPMENT WEIGHING LESS THAN 400 POUNDS SUPPORTED DIRECTLY ON A FLOOR OR ROOF.
- A.2. EQUIPMENT WEIGHING LESS THAN 20 POUNDS AND SUSPENDED FROM A ROOF, CEILING OR HUNG FROM A WALL.
- A.3. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUPPORTED BY VIRBRATION ISOLATORS.
- A.4. TEMPORARY OR MOVEABLE EQUIPMENT THAT IS NOT HARDWIRED OR PLUMBED TO THE BUILDING.
- A.5. THE CONTRACTOR SHALL SUBMIT THE ANCHORAGE DETAILS AND CALCULATIONS FOR ITEMS NOT SHOWN ON THE DRAWINGS AND FOR ALL SUBSTITUTED EQUIPMENT THAT IS GREATER IN WEIGHT OR VARIES MORE THAN 10% IN LENGTH, HEIGHT OR WIDTH FROM THE APPROVED DETAILS TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW (ALLOW 4-WEEK REVIEW PERIOD). FOLLOWING THE REVIEW BY THE STRUCTURAL ENGINEER OF RECORD, THE CONTRACTOR SHALL SUBMIT THE ANCHORAGE DETAILS AND CALCULATIONS TO THE ARCHITECT (THIS SHALL BE DONE AT LEAST 12 WEEKS PRIOR TO THE SCHEDULED EQUIPMENT INSTALLATION). THE CONTRACTOR'S STRUCTURAL ENGINEER SHALL PARTICIPATE IN ALL BACK CHECKING PROCEDURES.
- PIPING SYSTEMS SHALL BE BRACED PER ASCE 7 REQUIREMENTS AS REFERENCED BY THE WASHINGTON STATE BUILDING CODE.
- A. THE BRACING AND ATTACHMENT TO STRUCTURE SHALL COMPLY WITH ONE OF THE OSHPD PRE-APPROVALS WITH AN OPA NUMBER SUCH AS MASON INDUSTRIES (OPA 349) OR ISAT (OPA 485) AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318, APPENDIX D.
- B. COPIES OF THE MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING HANGING AND BRACING PIPING SYSTEMS.
- C. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE
- 4. THE CALCULATIONS AND DETAILS SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD SHALL BE SEALED AND SIGNED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON. THE CALCULATIONS SHALL DEMONSTRATE THE FOLLOWING:
- A. THE ADEQUACY OF ANCHORAGE UNDER ALL APPLICABLE LOAD CONDITIONS PRESCRIBED BY THE WASHINGTON STATE BUILDING CODE.
- B. THE STRUCTURAL ELEMENTS, WHICH ARE RESISTING THE ANCHORAGE LOADS; SUCH AS CONCRETE FILL ON METAL DECK AND STEEL BEAMS, ARE NOT STRESSED BEYOND ITS ACCEPTABLE VALUE
- 5. FOR ALL VIBRATION ISOLATORS AND THEIR ANCHORAGES, THE CONTRACTOR SHALL PROVIDE CALCULATIONS, DETAILS AND TEST DATA TO SUBSTANTIATE THE ISOLATOR'S CAPACITY FOR VERTICAL AND LATERAL LOADS. CALCULATIONS MUST ALSO BE SUBMITTED TO SUBSTANTIATE THE SIZE, QUANTITY, LOCATION AND CONNECTION TO STRUCTURE. THE DRAWINGS MUST BE MADE CONSISTENT WITH THE CALCULATIONS. THE MANUFACTURER, EQUIPMENT AND STRUCTURAL ATTACHMENT PROCEDURE MUST BE CLEARLY SPECIFIED. ISOLATORS WHICH SUPPORT A COMPONENT INSIDE THE ACTUAL UNIT WILL NOT BE
- WHERE CONCRETE AND MASONRY EXPANSION OR ADHESIVE TYPE ANCHORS ARE USED, THE ANCHORAGE DETAILS AND CALCULATIONS SHALL INDICATE MANUFACTURER, ICBO REPORT NO., TYPE, DIAMETER, MINIMUM EMBEDMENT, CONCRETE TYPE AND STRENGTH.
- 7. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. LOCATE REINFORCEMENT BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE REINFORCEMENT AND THE DRILLED-IN ANCHOR AND/OR
- 8. NO POWDER DRIVEN FASTENERS AND/OR SHOT PINS ARE ALLOWED FOR HANGING PLUMBING SYSTEMS.
- 9. ALL EXPANSION ANCHORS SHALL HAVE 50% OF THE BOLTS TESTED. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL 20 CONSECUTIVE PASS, THEN RESUME THE INITIAL TESTING FREQUENCY. TESTING SHALL OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS, IN ACCORDANCE WITH IR19-1.
- 10. SEE STRUCTURAL DRAWINGS FOR CONCRETE EXPANSION ANCHOR

APPROVED.

MATERIAL AND TESTING REQUIREMENTS. 11. WHERE PLUMBING PIPING CROSSES BUILDING SEISMIC JOINTS. PROVIDE FLEXIBLE SEISMIC JOINT WITH A HORIZONTAL/VERTICAL MOVEMENT CAPACITY AS SPECIFIED BY THE STRUCTURAL ENGINEER. SUPPORT FLEXIBLE SEISMIC JOINT ASSEMBLY ON BUILDING STRUCTURE AT EACH END OF THE ASSEMBLY USING HANGERS WITH SEISMIC BRACING. GAS PIPING EXPANSION SEISMIC JOINT SHALL BE AGA

BELOW FINISHED FLOOR BRITISH THERMAL UNIT BELOW FINISHED GRADE CONDENSATE DRAIN CONDENSATE PUMP **CUBIC FEET PER HOUR** CAST IRON CEILING

ACCESSIBLE ABOVE CEILING

ACCESS DOOR

ACCESS PANEL

ARCHITECTURAL

ABOVE FINISHED FLOOR

ABOVE FINISHED GRADE

ABOVE FINISHED ROOF

ABOVE

ABBREVIATIONS

GENERAL SYMBOLS

CAP OFF EXISTING

- DETAIL NUMBER

- SHEET ON WHICH

DETAIL IS SHOWN

— ELEVATION NUMBER

SHFFT ON WHICH

ELEVATION IS SHOWN

- ELEVATION NUMBER

- SHEET ON WHICH

- SECTION NUMBER

- SHEET ON WHICH

- SECTION NUMBER

- SHEET ON WHICH

FLOOR FLOOR OR ROOF LEVEL NAME

NORTH ARROW

ELEVATION

ROOM TAG

KEY NOTE TAG

SLOPE ARROW

CIRCULAR BREAK SYMBOL

CIRCLE BREAK SYMBOL

REFERENCE SYMBOL - DIAMOND

REFERENCE SYMBOL - HEXAGON

REFERENCE SYMBOL - TRIANGLE

REFERENCE SYMBOL - CIRCLE

CENTER LINE

GRID BUBBLE AND LINE

REFERENCE SYMBOL - ROTATED HEXAGON

ELEVATION - CEILING

DATUM ELEVATION

-0000

0000

SLOPE

ELEVATION

TOP OF

DRAWING REVISION

GRAPHIC SCALES - ENGINEERING

_____V------ VENT

CB 🔾

RD ⊘

FFD 🕢

←HB

QUANTITY

PIPE INSULATION

FIXTURE TRAP

CATCH BASIN

MANHOLE

ROOF DRAIN

FLOOR DRAIN

TRAP PRIMER

HOSE BIBB

FUNNEL FLOOR DRAIN

PLUMBING FIXTURES

PLUMBING FIXTURE TAG

(REFER TO SCHEDULE)

0'-0" VERTICAL ELEVATION

SECTION IS SHOWN

SECTION IS SHOWN

WALL SECTIONS

ELEVATION IS SHOWN

BUILDING SECTIONS

EXTERIOR ELEVATIONS

INTERIOR ELEVATIONS

DETAIL CALLOUTS

POINT OF CONNECTION OF NEW TO EXISTING

POINT OF DISCONNECTION OF DEMOLITION FROM

4///// DEMOLITION

----- EXISTING

NEW WORK

CI FANOUT CONNECT (CONNECTION) CONTINUATION CWD(R) COLD WATER DROP (RISER) DRINKING FOUNTAIN DIAMETER DWGS

ARCH'L

DRAWINGS ELECTRICAL CONTRACTOR **EFFICIENCY** ELEVATION ELECTRIC WATER COOLER EXISTING FCO FLOOR CLEANOUT

FLOOR DRAIN FINISHED FLOOR FIRE PROTECTION SYSTEM FIRE SPRINKLER (RISER) FLOOR SINK FIXTURE UNITS FUTURE GAUGE OR GAGE

GRADE CLEANOUT GALVANIZED IRON GALLONS PER FLUSH GALLONS PER MINUTE GATE VALVE GAS WATER HEATER HOSE BIBB HORSEPOWER HWD(R) HOT WATER DROP (RISER)

INVERT ELEVATION ICE MAKER BOX KILOWATT LAVATORY LIQUIFIED PETROLUM GAS MAX MAXIMUM THOUSANDS BTU's PER HR MECHANICAL MFGR MANUFACTURER

MINIMUM'

MIN

NOT IN (PLUMBING) CONTRACT **OVERHEAD** ON CENTER OVERFLOW DRAIN POC POINT OF CONNECTION POUNDS SQUARE INCH PRESSURE AND TEMPERATURE

RISER RFMOVF ROOF-CEPTOR ROOF DRAIN RELOCATE REQMTS REQUIREMENTS RPBP REDUCED PRESSURE BACKFLOW PREVENTER RAIN WATER LEADER SANITARY SEWER

SERVICE BOX SECONDARY CONDENSATE DRAIN SHOWER SHUT OFF VALVE STAINLESS STEEL STRUCT STRUCTURAL TOS TOP OF SLAB TOTAL TRAP PRIMER TEMPERING VALVE TEMPERED WATER DROP (RISER)

UNDER SLAB VENT/VOLTS VAC BRKR VACUUM BREAKER VALVE BOX VENT HEADER VENT RISER VENT THRU ROOF WASTE WITH WALL BOX WATER CLOSET (WATER COLUMN) WCO WALL CLEANOUT

WASTE DROP

WATER FIXTURE UNITS WATER HAMMER ARRESTOR

TYPICAL

UNDER FLOOR

UNDERGROUND

UNLESS NOTED OTHERWISE

PLUMBING

PIPING COMPONENTS REAL OBJECT ______2 1/2"——— PIPE SIZE ISOLATION VALVE (GENERIC) PIPING ROUTED BELOW SLAB OR GRADE AV———— ACID VENT ACID WASTE ABOVE GRADE OR FLOOR BBD———— BOILER BLOWDOWN BUTTERFLY VALVE NPS 8 AND MORE CA(##)———— COMPRESSED AIR (NOMINAL PRESSURE) CD(P)——— CONDENSATE DISCHARGE PUMPED ——I□ PLUG VALVE CONDENSATE DRAIN — NEEDLE VALVE DIONIZED WATER CHECK VALVE (GENERIC) DIR—DIR—DIONIZED WATER RECIRCULATING BALANCING VALVE DISTILLED WATER ——⊠—— FLOW LIMITING VALVE DCW——— DOMESTIC COLD WATER PRESSURE REDUCING VALVE DOMESTIC COLD WATER SOFTENED 2-WAY CONTROL VALVE (GENERIC) DHW——— DOMESTIC HOT WATER TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE DOMESTIC HOT WATER RECIRCULATION 3-WAY CONTROL VALVE (GENERIC) THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE GREASE WASTE SOLENOID 2-WAY CONTROL VALVE H——— HUMIDIFICATION SOLENOID 3-WAY CONTROL VALVE LABORATORY VENT FLOAT OPERATED VALVE ACTUATOR LABORATORY WASTE SAFETY OR RELIEF VALVE G———— NATURAL GAS ANGLE VALVE GV——— NATURAL GAS VENT BOILER STOP AND CHECK VALVE NPCW—NON-POTABLE COLD WATER BACKFLOW PREVENTER (GENERIC) NPCW(S)——— NON-POTABLE COLD WATER SOFTENED MULTI-PURPOSE VALVE (SHUTOFF, BALANCING AND CHECK) NPHW——— NON-POTABLE HOT WATER SUCTION DIFFUSER NPHW(S)——— NON-POTABLE HOT WATER SOFTENED PUMP (GENERIC) PTS———PNEUMATIC TRANSPORT Y STRAINER (GENERIC) PROPANE GAS ───────── STEAM TRAP (GENERIC) RECYCLED WATER AUTOMATIC AIR VENT RO——— REVERSE OSMOSIS MANUAL AIR VENT ROR—REVERSE OSMOSIS RECIRCULATING VACUUM BREAKER SAMPLING LINE SHOCK ABSORBER SAN—SANITARY DRAIN TEMPERATURE GAUGE SAN(O)———— SANITARY DRAIN (OIL) PRESSURE GAUGE SAN(P)———— SANITARY PUMPED TEMPERATURE AND PRESSURE TAP SAN(RAD)———— SANITARY RADIOACTIVE SIGHT FLOW GLASS ST———STORM DRAIN ST(O)———— STORM OVERFLOW EXPANSION JOINT ST(P)——— STORM PUMPED ——— GUIDE TP—TRAP PRIMER → → ANCHOR VAC— VACUUM (AIR) — ► FLOW ARROW VAC(EX)——— VACUUM PUMP EXHAUST PIPING SLOPE VENT (OIL) — PIPE BREAK V(SE) VENT (SEWAGE EJECTOR) $\subseteq || \preceq$ → PIPE CROSS

O PIPING ELBOW UP

——— PIPING TEE UP

— ÷ PIPING TEE DOWN

— I UNION CONNECTION

——— FLANGED CONNECTION

── CONCENTRIC REDUCER

STANDARD CLEAN-OUT IN LINE END OF RUN

──O CO STANDARD CLEAN-OUT THROUGH FLOOR END OF RUN

CO STANDARD CLEAN-OUT THROUGH FLOOR IN LINE

ECCENTRIC REDUCER

7

C PIPING ELBOW DOWN

PLUMBING SHEET LIST

PLUMBING LEGEND, GENERAL NOTES AND ABBREVIATION P.VP.010 PLUMBING SCHEDULES P.VP.101 PLUMBING SITE PLAN P.VP.102 PLUMBING LEVEL 1 PLAN P.VP.501 PLUMBING DETAILS

(mmmmmmmmmm)





MECHANICAL



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

UPS YARD EQUIPMENT PERMIT 3/27/2024 UPS & BATTERY ROOM PERMIT R2 6/27/2024

UPS & BATTERY ROOM INTERIORS 2/16/2024

UPS & BATTERY ROOM PERMIT 2/23/2024

Development & Permitting Services ISSUED PERMIT

Public Works

Traffic

Engineering

Fire

PLUMBING LEGEND, GENERAL NOTES AND Title ABBREVIATION

P.VP.001

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

								SUN	MP PUMP SCI	HEDULE							
UNI	T IDENTIFIC	CATION			PUM	Р							ELECT	TRICAL		MODEL	
MARK	NUMBER	LOCATION	TYPE	QUANTITY	FLOW (GPM)	HEAD (FT)	HP	SPEED (RPM)	DISCHARGE PIPE (IN)	WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)	VOLTS	PHASE	MANUFACTURER	MODEL NUMBER	NOTES
SP	1	NORTH YARD	DUPLEX	1	20	30	1.5	1750	3	48"	48"	48"	460	3	WEIL	2526	1
NOTES																	

1. PROVIDED WITH AIR FILLED EXPLOSION PROOF MOTORS, MOISTURE SENSING AND TEMPERATURE LIMITER PROBES, 25 FT. POWER/SENSOR CALBES, 20 FT. STAINLESS STEEL LIFTING CABLE, MODEL 2613-2" DUPLEX BCB REMOVAL SYSTEM WITH DISCHARGE FLOOR ELBOWS, BRONZE SLIDING BRACKET AND BCB DUPLEX GUIDE BRACKET, MODEL 2613K501 SUB BASE FOR DUPLEX INSTALLATION, MODEL 2613K801 LEVEL CONTROL LIFTING ASSEMBLY, MODEL 8234-AS INTRINSICALLY SAFE FLOAT SWITCHES WITH 20 FT. CORD LENGHT, MODEL 8165 NEMA 4 CONTROL PANEL, UL LISTED, DOUBLE DOOR DEAD FRONT, LOCKABLE DISCONNECTS, MAG CONTACTORS, OVERLOAD PROTECTION, T-O-A SWITCHES, TRANSFORMER, PILOT LIGHTS, HOUR METERS, TEMPERATURE LIMITER CIRCUIT, INTRINSICALLY SAFE MOISTURE SENSOR RELAY FLOAT CIRCUITRY, HWA HORN/LIGHT AND ISLOLATED CONTACTS, INCLUDES NECESSARY INLET/OUTLET CONNECTIONS.

				PLUMBING	MATERIAL STANDARDS MATRIX		
SERVICE ID	SERVICE DESCRIPTION	DESIGN	SIZE	MATERIAL	JOINTS & FITTINGS	LOCATION FOR USE	REMARKS
DOMESTIC WATER - BELO	W GRADE					·	
		125	2-1/2" AND SMALLER	HIGH DENSITY POLYETHYLINE (HDPE)	HEAT WELD	NO RESTRICTION	
DCW	DOMESTIC COLD WATER UNDERGROUND	125	2-1/2 AND SMALLER	SOLID WALL SCH. 80 PVC SCH 80CPVC	SOLVENT WELD	NO RESTRICTION	5,6,12
		125	2-1/2" AND LARGER	DUCTILE IRON	MECHANICAL ANSI/AWWA C110/A21.51	NO RESTRICTION	
OMESTIC WATER- ABOVE	GRADE						
				COPPER TUBING - TYPE L	SOLDERED, 95-5 SOLDER, LEAD-FREE OR COPPER SWEAT, COPPER PRO PRESS	NO RESTRICTION	
			2" AND SMALLER	COPPER TUBING - TYPE L	PRESS-CONNECT JOINING, OR COPPER SWEAT, COPPER PRO PRESS	NO RESTRICTION	
		125		PEX TUBING ASTM F876 - ASTM F877	PIPE INSERT & EXPANSION COLLAR ASTM F1807,ASTM F1960	RUNOUT FROM MANIFOLD IN RESIDENCE	
		125		COPPER TUBING - TYPE L	GROOVED OR COPPER VICTAULIC	NO RESTRICTION	
DCW	DOMESTIC COLD WATER		2 1/2" AND LARGER	COPPER TUBING - TYPE L	PRESS-CONNECT JOINING OR COPPER VICTAULIC	NO RESTRICTION	1, 3, 5, 6, 7, 8, 9, 10
				STAINLESS STEEL	GROOVED OR VICTAULIC FITTING	NO RESTRICTION	
				COPPER TUBING - TYPE L	SOLDERED, 95-5 SOLDER, LEAD-FREE OR COPPER SWEAT, COPPER PRO PRESS	NO RESTRICTION	
		250	ALL	COPPER TUBING - TYPE L	PRESS-CONNECT JOINING, OR COPPER SWEAT, COPPER PRO PRESS	NO RESTRICTION	
				STAINLESS STEEL	GROOVED OR VICTAULIC FITTING	NO RESTRICTION	
ANITARY WASTE & VENT	- ABOVE GRADE						
SAN	SANITARY WASTE	5	ALL	CAST IRON NO HUB	NHCI FITTINGS	WASTE RISERS, FLOOR MOUNT FIXTURE TRAP ARMS & CLOSET BENDS, ABOVE UNIT CBUNGS, IN PLENUMS IN ALL COMMON AREAS	4, 5, 6, 7, 8
SV	SANITARY VENT	5	ALL	CAST IRON NO HUB (OFFICE ONLY)	NHCI FITTINGS	NO RESTRICTION	
P-SAN (PUMPED)	PUMPED WASTE	120	ALL	SCH 40 STEEL	VICTAULIC	NO RESTRICTION	
ANITARY WASTE & VENT-	BELOW GRADE						
SAN	SANITARY WASTE	5	ALL	CAST IRON NO HUB/SOLID CORE PVC	NHCI FITTINGS	NO RESTRICTION	4, 5, 6, 7, 8, 12
SV	SANITARY VENT	5	ALL	CAST IRON NO HUB	NHCI FITTINGS	NO RESTRICTION	4, 3, 0, 7, 0, 12
P-SAN (PUMPED)	PUMPED WASTE	120	ALL	SCH 40 STEEL	VICTAULIC	NOT ALLOWED IN PLENUMS	

REMARKS

1. PER 2018 UPC WITH WASHINGTON AMENDMENTS, PEX TUBING SHALL NOT BE INSTALLED WITHIN THE FIRST 18 INCHES OF PIPING CONNECTED TO A WATER HEATER.
2. NOT USED.

NOT USED.
 DOMESTIC COLD WATER SUPPLY PIPING SHALL NOT EXCEED 8 FPS. DOMESTIC HOT WATER PIPING SHALL NOT EXCEED 5 FPS.
 ALL WASTE PIPES ARE TO BE ISOLATED FROM BUILDING STRUCTURE USING A CLOSED-CELL NEOPRENE SLEEVE.
 EXPANSION COMPENSATION FOR PVC IS REQUIRED PER UPC 314
 CAST IRON OR PLENUM-RATED CPVC PIPE IS REQUIRED IN ALL RETURN AIR PLENUMS. PVC & ABS ARE NOT ALLOWED IN RETURN AIR PLENUMS.
 CEILING CAVITIES SURROUNDING WASTE PIPES OR ROOF DRAIN LINES ARE TO BE FILLED WITH BATT INSULATION.

8. FLOOR PENETRATIONS ARE TO BE PACKED WITH ROCK WOOL OR FIBERGLASS INSULATION AND SEALED WITH A RESILENT FIRE CAULK. PIPING SHALL BE PREVENTED FROM MAKING RIGID CONTACT WITH THE STRUCTURE AT THESE PENETRATIONS.

. INSULATE ALL METALLIC COLD WATER LINES WITH 1/2" FIBERGLASS WRAP OR EQUIVALENT. 0. PIPE SHALL BE INSULATED PER WASHINGTON STATE ENERGY CODE 2018 REQUIREMENTS EXCEPT WHERE NOTED OTHERWISE. SEE INSULATION SCHEDULE.

11. NOT USED.

12. ALL BURIED PLASTIC PIPING INCLUDING PVC AND CPVC SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 02321 AND ASTM F 1668 STANDARDS.

14. 8" AND LARGER NATURAL GAS PIPING: STANDARD WEIGHT PIPE SCH 40 ASTM A53 B AND BUTT WELD FITTINGS ALLOWED. 15. SOCKET WELD FOR IN SHAFT OR ENCLOSURES.

16. PEX PIPE ALLOWED FOR IN-WALL APPLICATIONS (EXCLUDES RISERS SPANNING MORE THAN ONE LEVEL).

			BACKF	LOW PREVENTION	N		
TAG	NUMBER	SERVICE	SIZE	ACCESSORIES	MANUFACTURER	MODEL NUMBER	NOTES
RPBP	1	MAKE-UP WATER	1-1/2"	AIR GAP FITTING	WATTS	LF009-FS	1,2,3,4

1. PROVIDE WITH AIRGAP FITTING. 2. ROUTE AIRGAP DRAIN FULL LINE SIZE TO NEAREST INDIRECT RECEPTOR.
3. PROVIDE FLOOD PROTECTION BACKFLOW SYSTEM PVS-7000. 4. PRODUCT SHALL BE LEAD FREE.

					TRAP PRIM	IER SCH	EDULE				
UNI	T IDENTIFIC	ATION				E	ELECTRICA	L		MODEL	
MARK	NUMBER	LOCATION	TYPE	QUANTITY	CW PIPE (IN)	VOLTS	WATTS	PHASE	MANUFACTURER	MODEL NUMBER	NOTES
TP	1	NORTH YARD	ELECTRIC	1	1/2	115	16	1	PPC INC	MP-500	1
NOTES 1. INSTALL E			VIDE DISTRIBUTION	N UNIT WHERE N	1/2 ULTIPLE TRAPS AR			1 NS SERVED.	PPC INC	MP-500	1

			DRAI	N TYPE: FLOOR	SINK			
UNIT	ВО	DY	STRAIN	NER	VADIATIONIC	MODEL	MANUICACTUDED	NOTEC
DENTIFICATION	MATERIAL	STYLE	MATERIAL	STYLE	VARIATIONS	MODEL	MANUFACTURER	NOTES
FS-1	-	-	-	-	TRAP PRIMER	2390	WADE	1,2

							PUIVIP	SCHEDULE							
UNIT IDENTIFICATION					PUMP					TOR	ELECTRICAL				
MARK	NUMBER	LOCATION	SYSTEM SERVED	TYPE	COUPLING TYPE	FLOW (GPH)	HEAD (FT)	SHUT-OFF (FT)	HP	SPEED (RPM)	VOLTS	PHASE	MANUFACTURER	MODEL NUMBER	NOTES
CDP	1		MECHANICAL CONDENSATE	BASE MOUNT	-	200	30	-	1/5	2200	115	1	LITTLE GIANT	VCL-45ULS	1
CDP	2		MECHANICAL CONDENSATE	BASE MOUNT	-	200	30	-	1/5	2200	115	1	LITTLE GIANT	VCL-45ULS	1
CDP	3		MECHANICAL CONDENSATE	BASE MOUNT	-	200	30	-	1/5	2200	115	1	LITTLE GIANT	VCL-45ULS	1



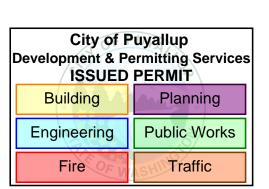


MECHANICAL

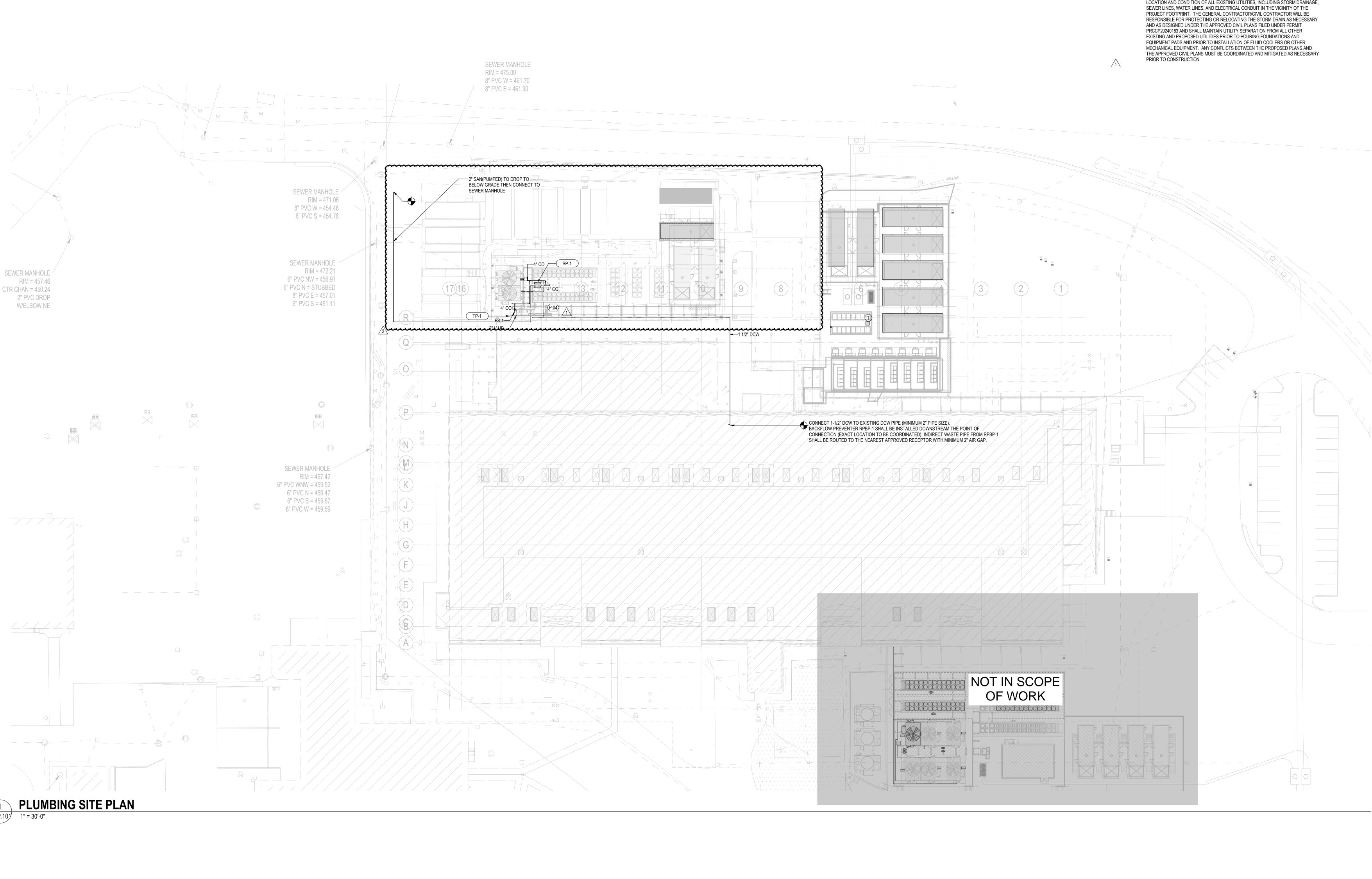


Revision No. Description

UPS YARD EQUIPMENT PERMIT SET 2/8/2024 UPS & BATTERY ROOM INTERIORS 2/16/2024 UPS & BATTERY ROOM PERMIT 2/23/2024 UPS YARD EQUIPMENT PERMIT 3/27/2024



PLUMBING Title SCHEDULES





P:04 PRIOR TO CONSTRUCTION, THE GENERAL CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF ALL EXISTING UTILITIES, INCLUDING STORM DRAINAGE,

KEY NOTES



PRCTI20240275

centeris

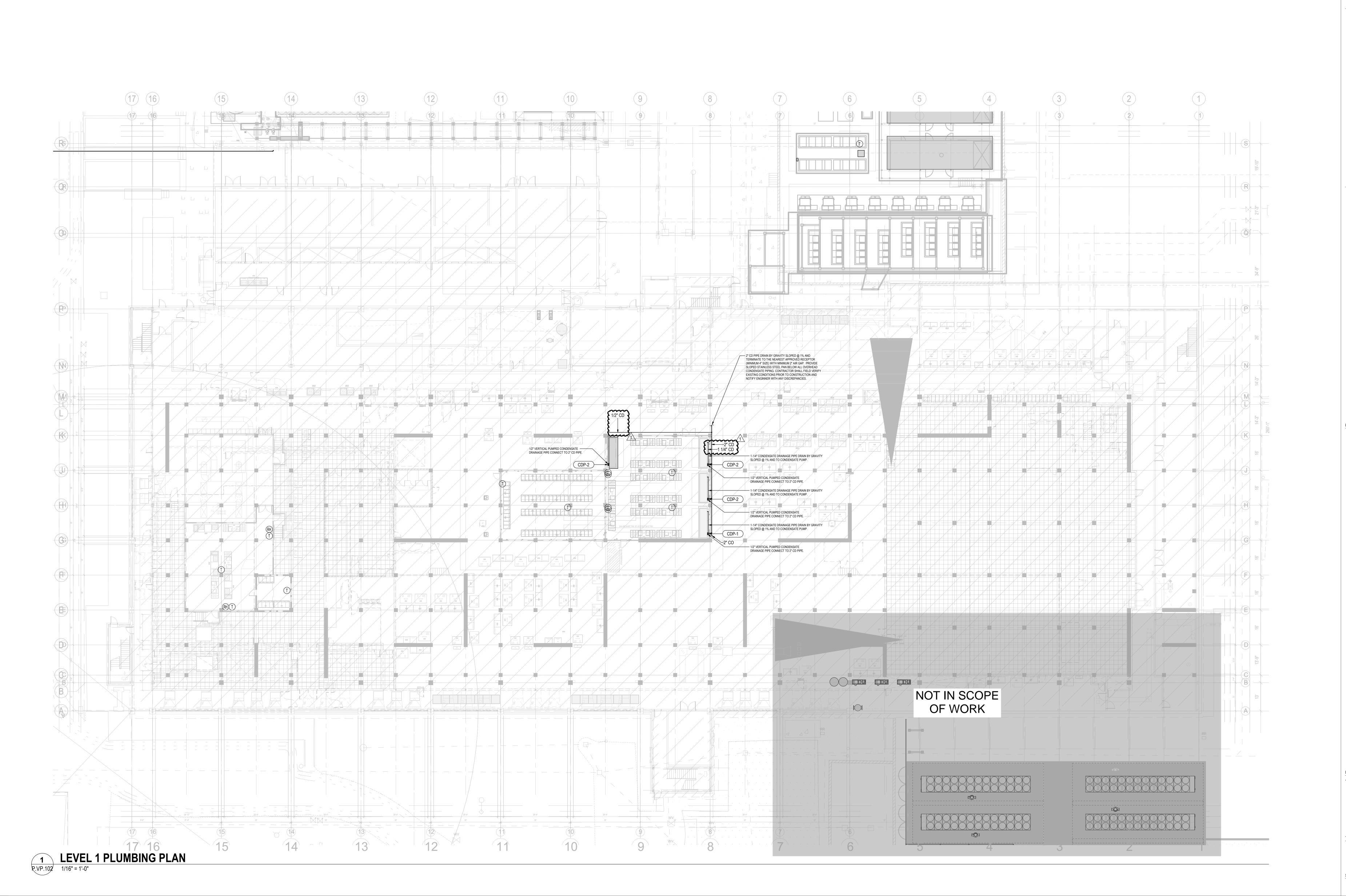
MECHANICAL DRAWINGS

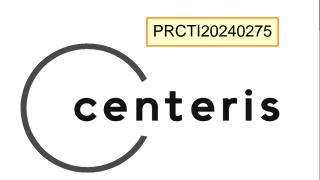


UPS YARD EQUIPMENT PERMIT SET 2/8/2024 UPS YARD EQUIPMENT PERMIT 3/27/2024 UPS & BATTERY ROOM PERMIT R2 6/27/2024

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Title PLUMBING SITE PLAN

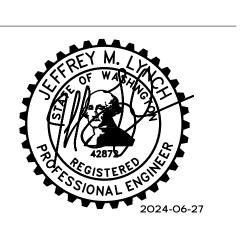






MECHANICAL DRAWINGS

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



 No.
 Description
 Date

 UPS & BATTERY ROOM INTERIORS
 2/16/2024

 UPS & BATTERY ROOM PERMIT
 2/23/2024

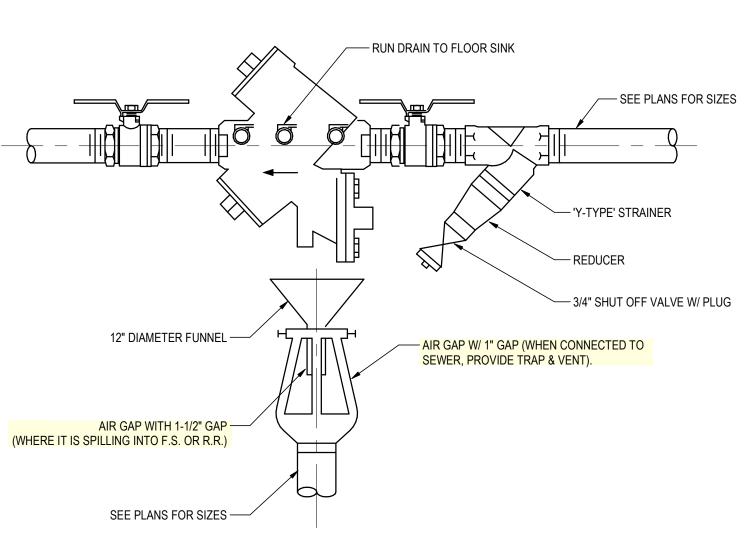
 UPS & BATTERY ROOM PERMIT R2
 6/27/2024

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

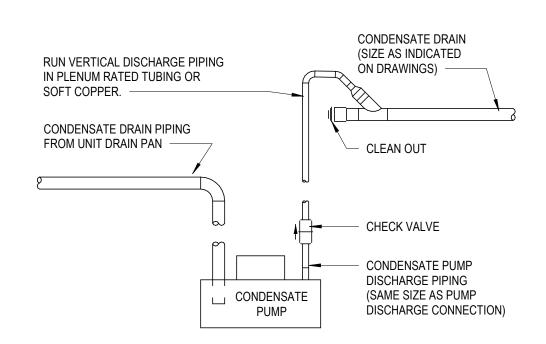
Drawn By: Checked By:

JLV BO

PLUMBING LEVEL 1
Title PLAN



9 BACKFLOW PREVENTER DRAIN P.VP.501 NOT TO SCALE



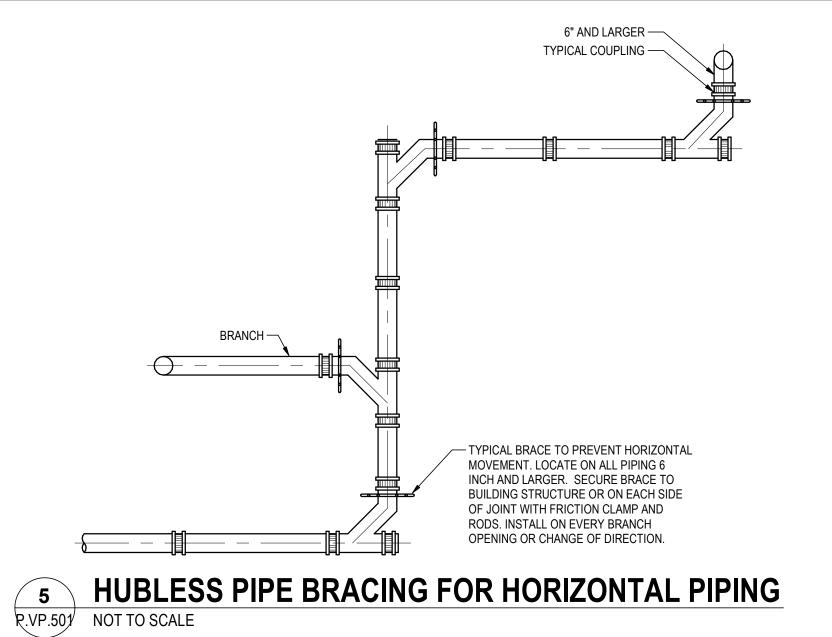
NOTES:

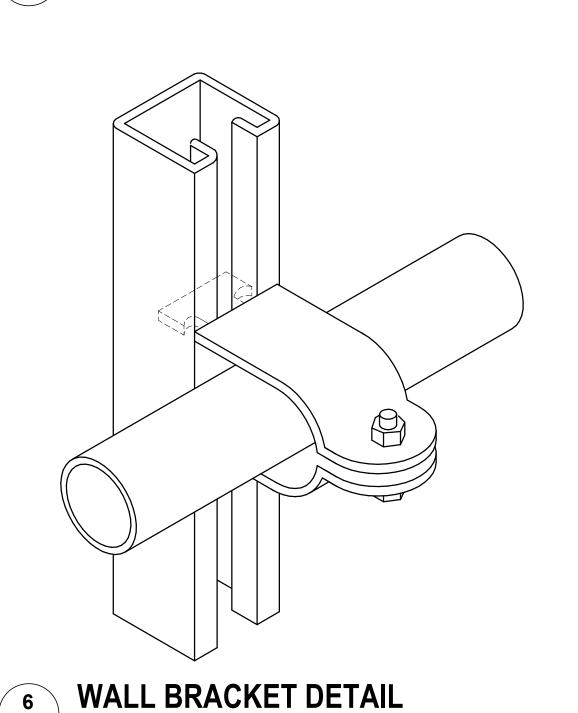
1. PROVIDE MOUNTING BRACKET FOR ABOVE CEILING APPLICATIONS.

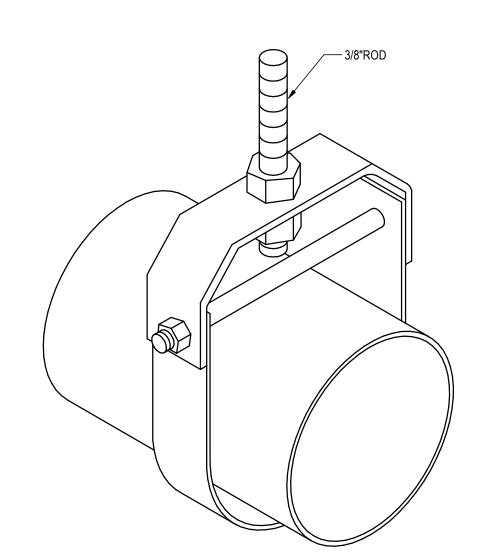
2. PUMP SHALL BE PLENUM RATED WHEN INSTALLED IN A RETURN PLENUM

3. PROVIDE PUMPS WHERE GRAVITY CONDENSATE PIPING CAN NOT BE USED.

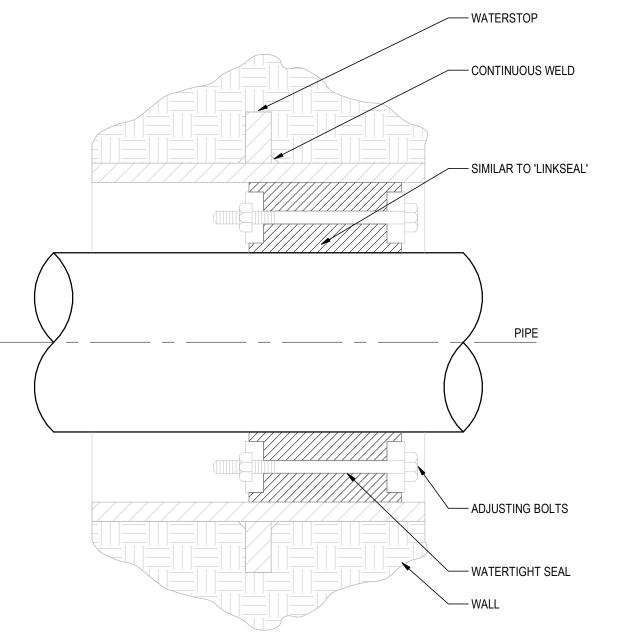
CONDENSATE PUMP PIPING DETAIL P.VP.501 12" = 1'-0"



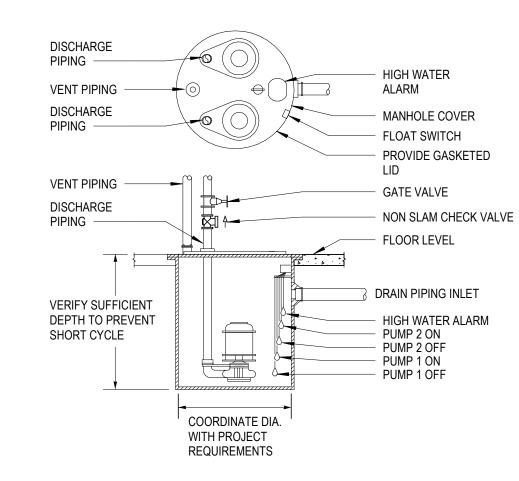




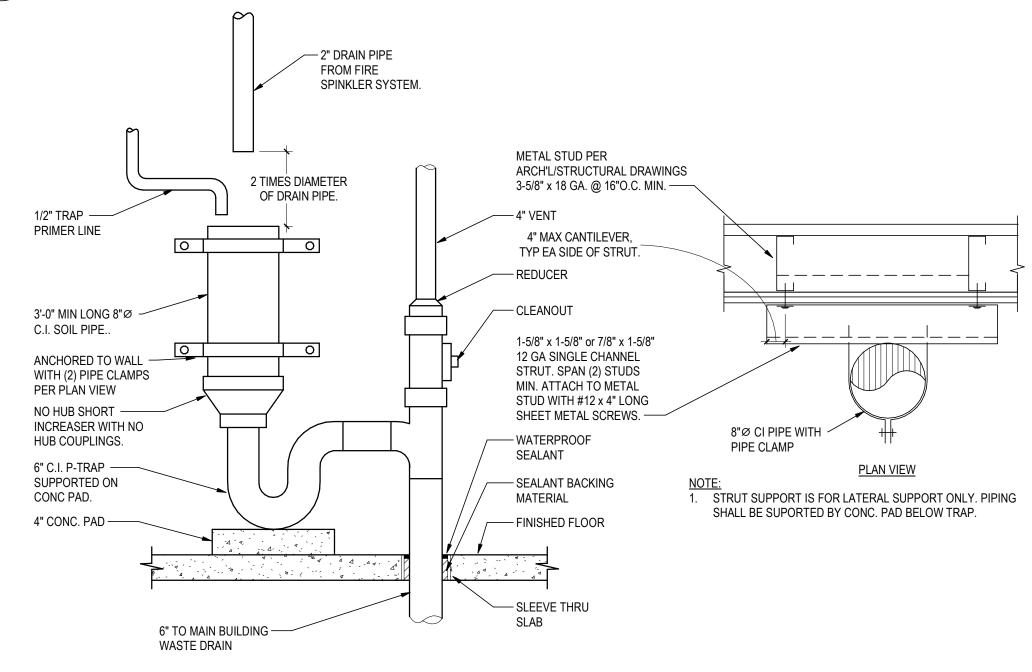
7 CEILING HANGER DETAIL
R.VP.501 NOT TO SCALE



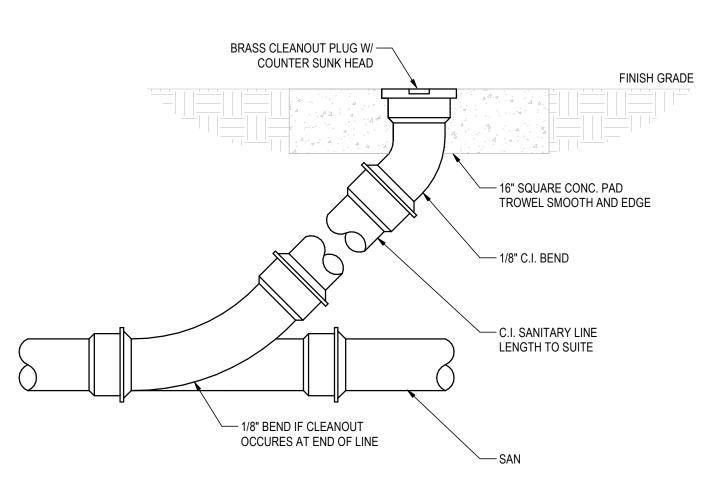




SUBMERSIBLE DUPLEX SUMP PUMP P.VP.501 1/8" = 1'-0"

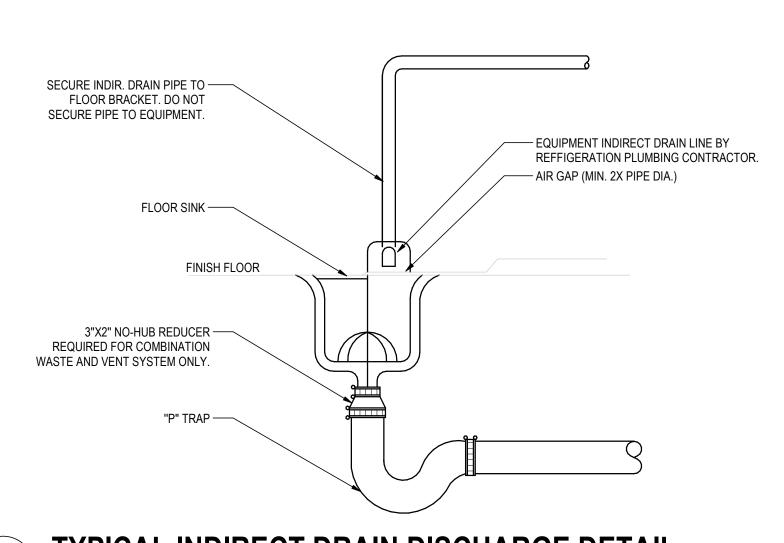






3 CLEANOUT TO GRADE

P.VP.501 NOT TO SCALE



TYPICAL INDIRECT DRAIN DISCHARGE DETAIL

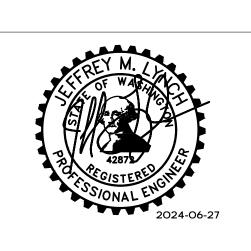
P.VP.501 NOT TO SCALE





MECHANICAL DRAWINGS

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



Revision No. Description Date

UPS YARD EQUIPMENT PERMIT SET 2/8/2024
UPS & BATTERY ROOM INTERIORS 2/16/2024
UPS & BATTERY ROOM PERMIT 2/23/2024

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

vn By: Checked By:

Title PLUMBING DETAILS