

PRCT120240275 - Revision 2
Transfer Fan Between UPS
Room and Battery Room.
This set does not replace the
originally approved set.

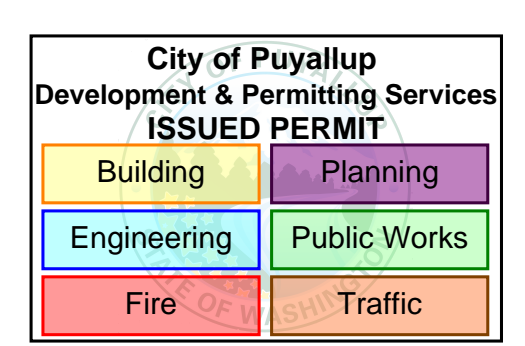


720 3rd Avenue Suite 1500
Seattle Washington 98104-1878
(206) 667-0555

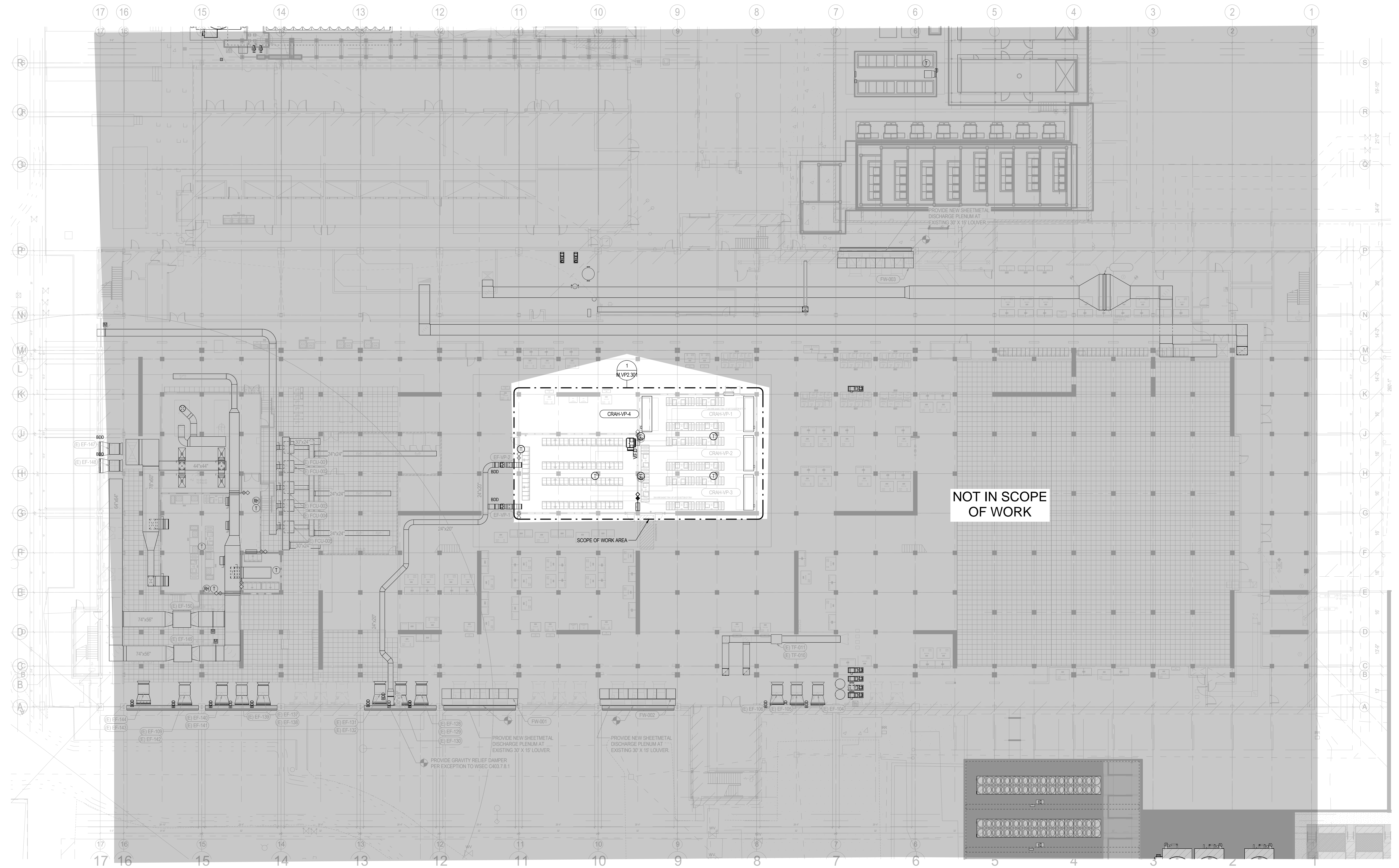
KEY NOTES

MECHANICAL DRAWINGS

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



Revision No.	Description	Date
1	VOLTAGE PARK PHASE 2 - PERMIT	10/25/2024



NOT IN SCOPE
OF WORK

1 LEVEL 1 MECHANICAL PLAN
MVP2.102 1/16" = 1'-0"

Drawn By: DO Checked By: JL

MECHANICAL LEVEL
1 PLAN

Sheet **M.VP2.102**

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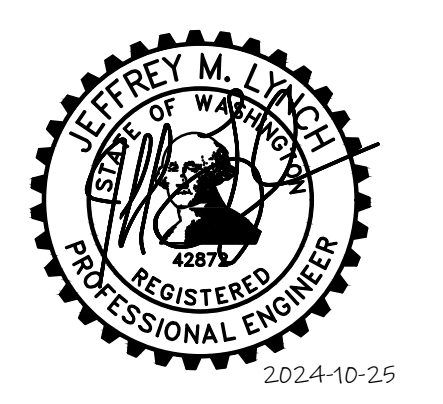
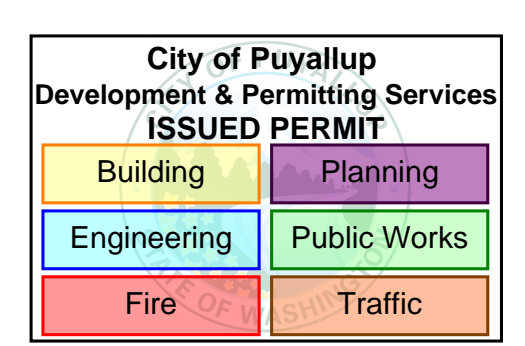


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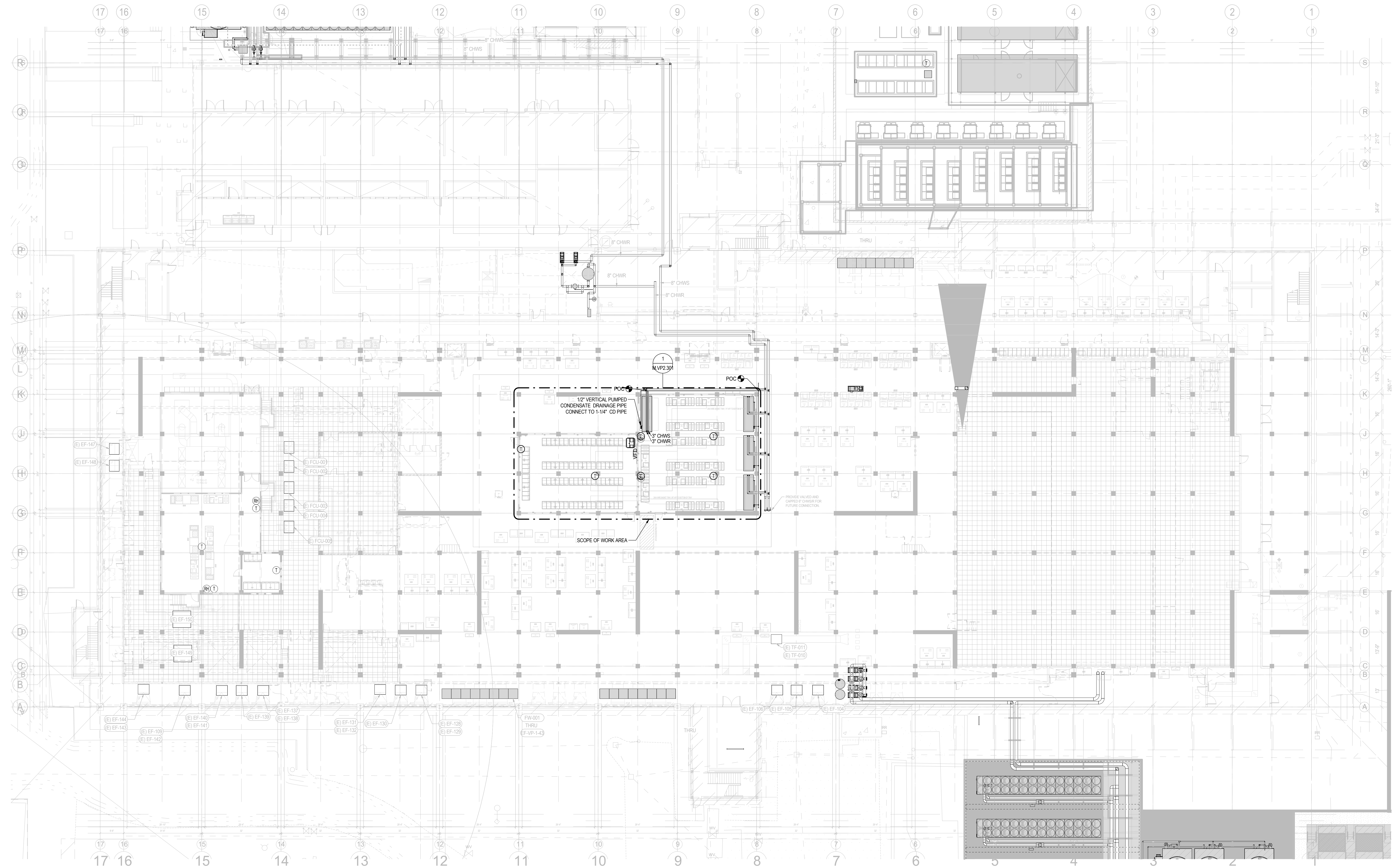
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 DRAWINGS

CENTERIS
 VOLTAGE PARK UPS
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Revision No. Description Date
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1 LEVEL 1 MECHANICAL PLAN
 MVP2.202 1/16" = 1'-0"

Drawn By: DO Checked By: JL

MECHANICAL LEVEL
 1 PIPING PLAN

Sheet **M.VP2.202**

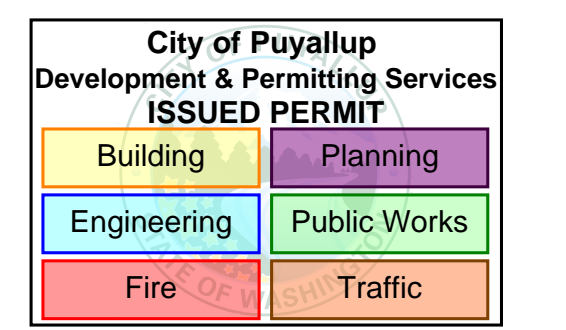
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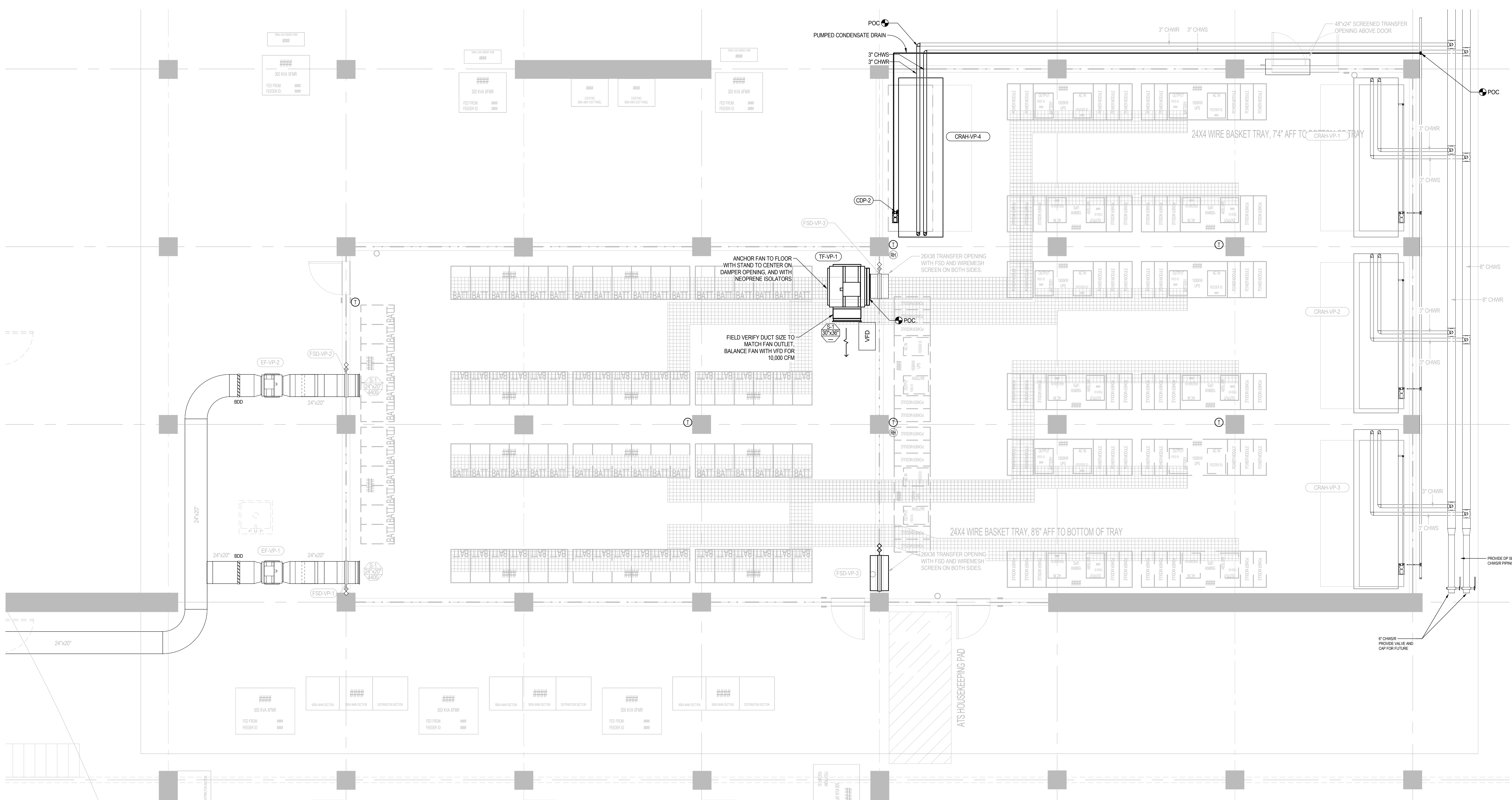
KEY NOTES

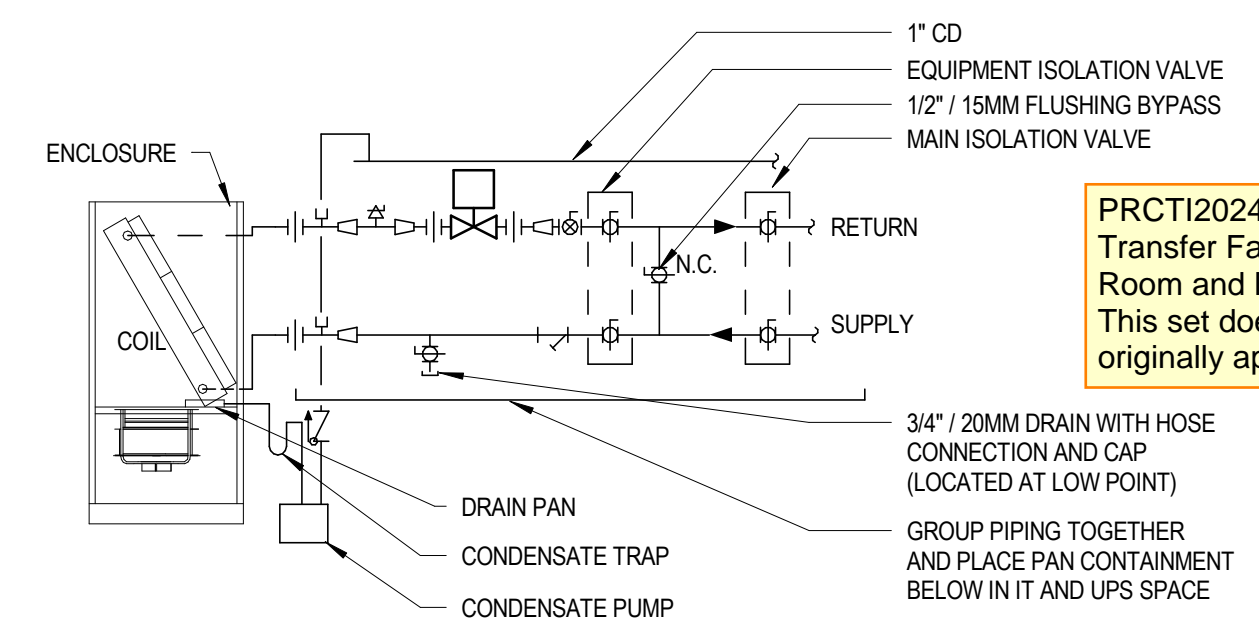
MECHANICAL
 DRAWINGS

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



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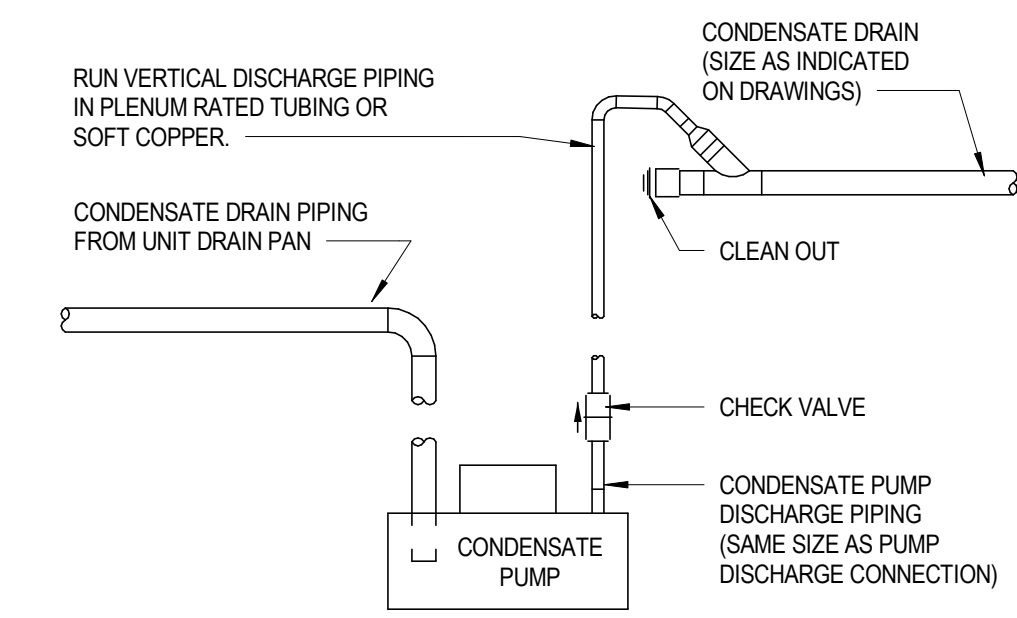


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- NOTES:**
- INSULATE THE HEATING COIL TO PREVENT HEAT LOSS / CONDENSATION.
 - THE EQUIPMENT DRAIN IS SEPARATE FROM THE BLOW DOWN STRAINER DRAIN.
 - PIPE TAPS FROM THE MAIN SHALL BE OFF OF THE TOP OF THE MAIN EXCEPT WHERE NOTED OTHERWISE.
 - THE EQUIPMENT 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.
 - ALL CONTROL VALVES SHALL BE 2-WAY VALVES EXCEPT THOSE NOTED IN THE CONTRACT DOCUMENTS TO BE 3-WAY VALVES.
 - 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).
 - ISOLATION VALVES ARE SHOWN AS BALL VALVES, REFER TO THE CONTRACT DOCUMENTS FOR THE SPECIFIC VALVE TYPE BASED ON THE PIPE SIZE AND APPLICATION.
 - SHUT OFF VALVES AND ACCESSORIES SHALL BE THE SAME SIZE AS THE SYSTEM PIPING. TRANSITION TO THE COIL CONNECTION SIZE AT THE COIL.
 - ALL STRAINERS SHALL BE BLOW DOWN TYPE WITH AN ISOLATION VALVE AND CAP.
 - PROVIDE A HIGH LIMIT DRAIN PAN SENSOR AND HARD WIRE TO THE FAN / CONTROLLER TO SHUT OFF THE UNIT BASED ON A HIGH LEVEL LIMIT.
 - FOR 4-PIPE UNITS, THE ASSEMBLY FOR THE SECOND SET IS THE SAME AS THE SINGLE ASSEMBLY SHOWN IN THE DETAIL.

1 CRAH PIPING DETAIL

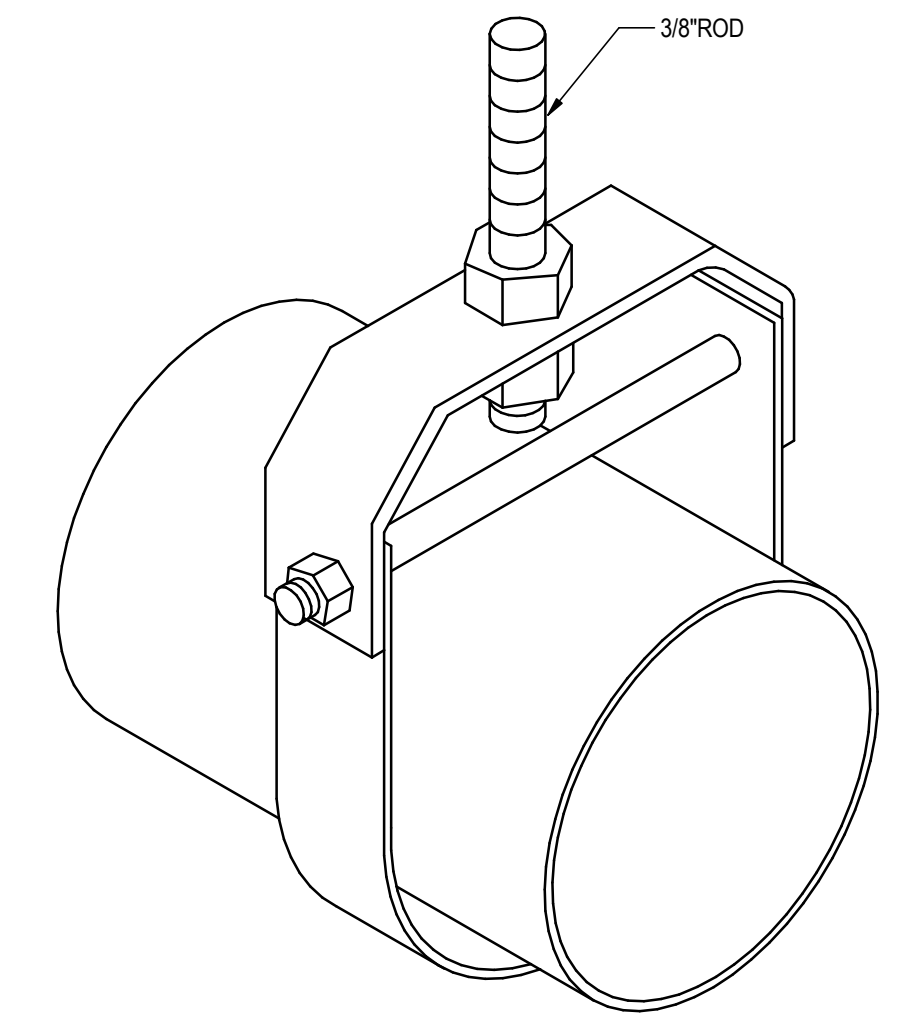
MVP2.501 NTS



- NOTES:**
- PROVIDE MOUNTING BRACKET FOR ABOVE CEILING APPLICATIONS.
 - PUMP SHALL BE PLENUM RATED WHEN INSTALLED IN A RETURN PLENUM.
 - PROVIDE PUMPS WHERE GRAVITY CONDENSATE PIPING CAN NOT BE USED.

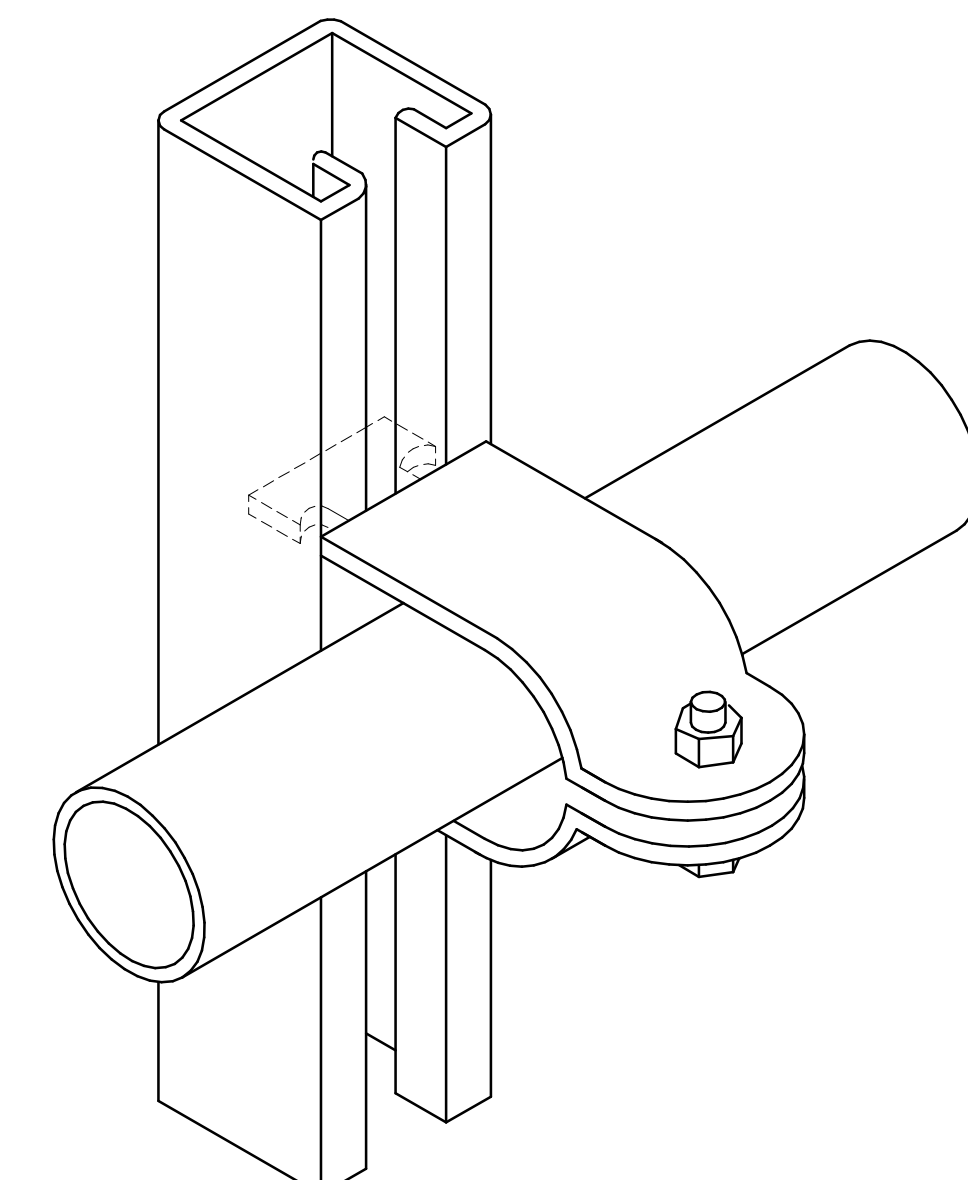
2 CONDENSATE PUMP PIPING DETAIL

MVP2.501 12" = 1'-0"



3 CEILING HANGER DETAIL

MVP2.501 NOT TO SCALE

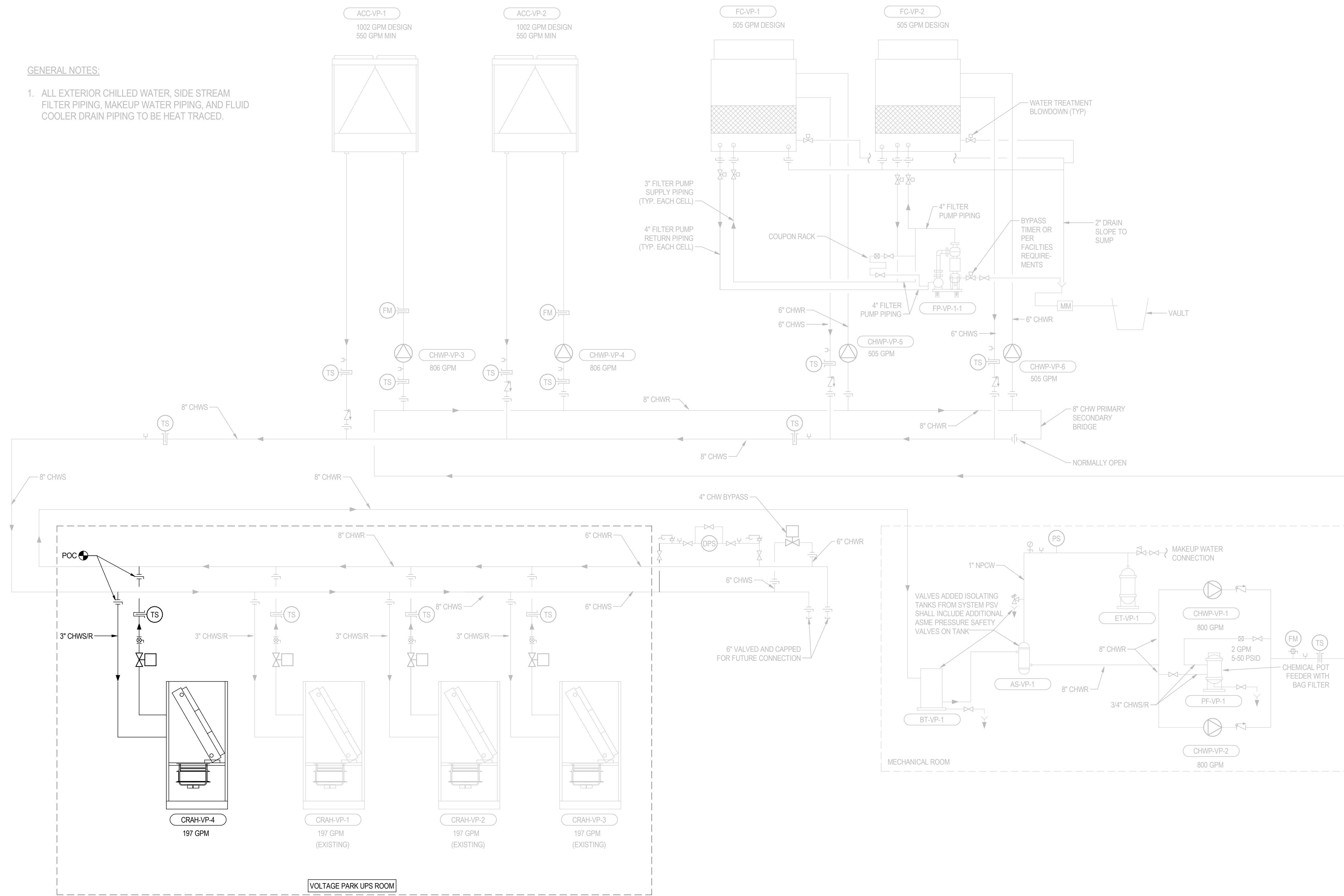


4 WALL BRACKET DETAIL

MVP2.501 NOT TO SCALE

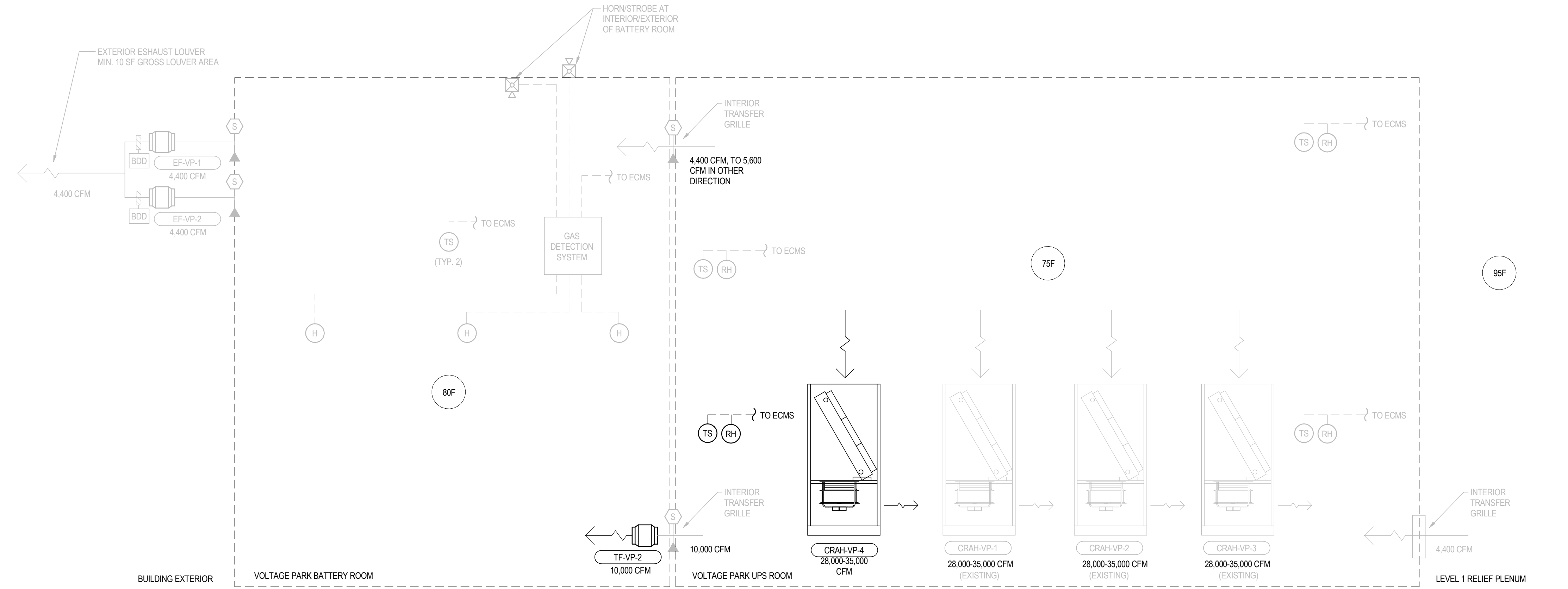
GENERAL NOTES:

- ALL EXTERIOR CHILLED WATER, SIDE STREAM FILTER PIPING, MAKEUP WATER PIPING, AND FLUID COOLER DRAIN PIPING TO BE HEAT TRACED.



1 VP2-UPS AIR-COOLED CHILLER PIPING DIAGRAM

M.VP2.601 NTS



2 VP2-VOLTAGE PARK UPS AND BATTERY ROOM CONTROL DIAGRAM

M.VP2.601 NTS

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DESCRIPTION OF OPERATIONS

- CONTROLS GENERAL

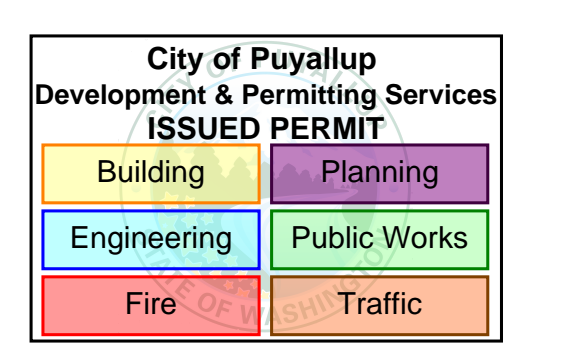
THIS SEQUENCE OF OPERATION IS WRITTEN FOR CONTROLLING THE CENTERIS FUTURE TENANT HEATING VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS ON THE BUILDING EXTERIOR AT 1019 39TH AVE, PUYALLUP, WA.

 - THE EXISTING ALERTON BUILDING AUTOMATION SYSTEM (BAS) AS PROVIDED BY ATS SHALL BE EXPANDED UPON FOR THE VOLTAGE PARK CONTROL SYSTEMS IS PROGRAMMED TO SEQUENCE THE OPERATION DESCRIBED WITHIN THE CONTRACT DOCUMENTS. ATS SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING, BUT NOT LIMITED TO SENSORS, RELAYS, GATEWAYS, COMMUNICATION WIRING AND CONDUIT, AND ALL NECESSARY ELECTRICAL DEVICES, WIRING, AND CONDUIT.
 - 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.
 - 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 THE OWNER.
 - SYSTEMS CONTROLLED
 - THE CONTROL SYSTEM SHALL EXECUTE CONTROL FUNCTIONS OVER THE FOLLOWING NEW SYSTEMS:
 - COMPUTER ROOM AIR HANDLING UNITS (CRAH).
 - BATTERY ROOM EXHAUST FANS (EF-VP).
 - BATTERY ROOM TRANSFER FAN (TF-VP-1).
 - OTHER POINTS MONITORED
 - BATTERY ROOM HYDROGEN GAS DETECTION.
 - UNIT SMOKE DETECTOR STATUS.
 - STANDBY POWER STATUS.
 - NORMAL POWER STATUS.
 - FIRE ALARM STATUS.
 - COMPUTER ROOM AIR HANDLING UNIT (EXISTING CRAH-VP-1-1 THRU CRAH-VP-1-3, AND NEW CRAH-VP-4)
 - GENERAL
 - THE THREE (3) EXISTING AND (1) NEW COMPUTER ROOM AIR HANDLING UNITS SERVE THE UPS SPACE FOR VOLTAGE PARK. UNITS ARE SIZED FOR N-1 CAPACITY. COMPUTER ROOM AIR HANDLING UNITS ARE VERTICAL DOWNFLOW UNITS WITH A DIAGONAL CHILLED WATER COIL IN DRAW-THRU CONFIGURATION. THE BAS SHALL INCLUDE NEW COOLING SYSTEMS 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.
 - MANUAL SHUTDOWN OF AN INDIVIDUAL UNIT.
 - SCHEDULED MAINTENANCE.
 - SMOKE DETECTION OR FIRE ALARM SHUTDOWN.
 - UPON ENABLING A CRAH UNIT THE FAN MINIMUM SPEED SHALL BE 75% (ADJ.) TO PROVIDE 344cfs OF THE PEAK UNIT AIRFLOW, OR 28,000 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 ROOM.
 - EACH OF THE 5 TEMPERATURE SENSORS SHALL BE PROVIDED 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 75% (ADJ.) AND 344cfs OF FULL OPEN FOR MORE THAN 10 MINUTES, THEN THE CRAH UNIT FANS SHALL MODULATE IN UNISON BETWEEN 75% AND 100% 35,000 CFM, IN UNISON WITH THE VALVE COMMAND INCREASES. THIS CONDITION SHALL GENERATE A UPS ROOM UNABLE TO MAINTAIN REDUNDANT UNIT OPERATION ALARM.
 - HUMIDITY SENSORS ARE FOR MONITORING ONLY.
 - DISCHARGE AIR TEMPERATURE IS FOR MONITORING ONLY.
 - LEAVING WATER TEMPERATURE IS FOR MONITORING ONLY.
 - THE BAS SHALL CLOSE THE CHILLED WATER CONTROL VALVE IF A DRAIN PAN OVERFLOW ALARM IS GENERATED ON THE SINGLE CRAH UNIT, AND RAISE THE SPEED OF OPERATING CRAH TO 100%.
 - THE BAS SHALL PROVIDE A LEAK DETECTION CABLE AROUND THE PERIMETER OF EACH CRAH UNIT.
 - THE BAS SHALL CONNECT TO EACH CRAH WITH A RS485 MODBUS RTU CONNECTION.
 - COMPUTER ROOM AIR HANDLING UNIT ALARM LIST
 - HIGH UPS TEMPERATURE ALARM, ABOVE 80°F (ADJ.).
 - LOW UPS TEMPERATURE ALARM, BELOW 68°F (ADJ.).
 - HIGH BATTERY ROOM TEMPERATURE ALARM, ABOVE 90°F (ADJ.).
 - LOW BATTERY ROOM TEMPERATURE ALARM, BELOW 72°F (ADJ.).
 - HIGH ZONE HUMIDITY RATIO, 80% DEW POINT (ADJ.).
 - 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.
 - SUPPLY FAN PHASE LOSS.
 - CHILLED WATER VALVE FAILURE.
 - REDUNDANT UNIT OPERATION ALARM.
 - LOSS OF COMMUNICATIONS.
 - DRAIN PAN OVERFLOW.
 - RH SENSOR OUT OF RANGE.
 - FILTER CHANGE REQUIRED.
 - HIGH ZONE HUMIDITY, ABOVE 70% (ADJ.).
 - LOW ZONE HUMIDITY, BELOW 17% (ADJ.).
 - LEAK DETECTION ALARM.
 - EXISTING (FOR REFERENCE ONLY) BATTERY ROOM EXHAUST FAN (EF-VP-1-1 & EF-VP-1-2)
 - GENERAL
 - TWO (2) EXHAUST FANS SERVE THE BATTERY ROOM SPACE FOR VOLTAGE PARK. FANS ARE SIZED FOR N-1 CAPACITY OF THE MINIMUM AIRFLOW REQUIRED FOR BATTERY ROOMS. FANS ARE IN-LINE BELT DRIVEN AXIAL FANS WITH VFD'S FOR SPEED CONTROL. THE BAS SHALL INCLUDE NEW CONTROLS FOR THE VOLTAGE PARK EXHAUST 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 THE FOLLOWING:
 - MANUAL SHUTDOWN.
 - SCHEDULED LEAD-LAG ROTATION.
 - TEMPERATURE CONTROL. IF BATTERY ROOM TEMPERATURE IS ABOVE 77 °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 EXPOSURE 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.
 - A HARD WIRED POSITION SWITCH FROM EACH FIRE SMOKE DAMPER ASSOCIATED WITH EACH FAN SHALL SHUTDOWN THE FAN IF DAMPER END SWITCH IS NOT FULLY OPEN, AND GENERATE A FAN FAILURE ALARM.
 - BATTERY ROOM ALARM LIST
 - HIGH ZONE TEMPERATURE ALARM, ABOVE 90°F (ADJ.).
 - LOW ZONE TEMPERATURE ALARM, BELOW 72°F (ADJ.).
 - TEMPERATURE SENSOR FAILURE.
 - EXHAUST FAN FAILURE.
 - EXHAUST FAN IN-HAND.
 - LOSS OF COMMUNICATIONS WITH VFD.
 - HIGH HYDROGEN GAS, ABOVE 1% LEL.
 - HYDROGEN GAS SYSTEM DETECTION FAILURE.
- BATTERY ROOM TRANSFER FAN (TF-VP-1-1)
 - GENERAL
 - ONE TRANSFER FAN SERVES THE BATTERY ROOM FOR ADDITIONAL TEMPERATURE CONTROL OF THE BATTERY ROOM SPACE FOR VOLTAGE PARK. FAN IS SIZED FOR TO REMOVE HEAT AFTER A 50% FULL BATTERY DISCHARGE EVENT ENABLING RECHARGE OF BATTERIES 1 HOUR AFTERWARDS. THIS CONDITION IS PROVIDED ALL COOLING SYSTEMS IN THE UPS REMAIN ONLINE. FAN IS IN-LINE BELT DRIVEN AXIAL FANS WITH VFD'S FOR SPEED CONTROL. THE BAS SHALL INCLUDE NEW CONTROLS FOR THE VOLTAGE PARK TRANSFER FAN SYSTEMS THAT INCLUDE TRANSFER AIR BACK INTO THE UPS SPACE FROM THE BATTERY ROOM.
 - THE TRANSFER FAN SHALL BE COMMANDED OFF CONTINUOUSLY BY THE BAS. SHUTDOWN CAN OCCUR FOR ANY OF THE FOLLOWING:
 - MANUAL SHUTDOWN.
 - BATTERY ROOM TEMPERATURE IS BELOW 90 °F.
 - SCHEDULED LEAD-LAG ROTATION.
 - TEMPERATURE CONTROL. IF THE AVERAGE BATTERY ROOM TEMPERATURE IS ABOVE 90 °F, HIGH ZONE TEMPERATURE, THEN OPERATE NEW TRANSFER FAN AS WELL AS BOTH EXHAUST FANS UNTIL AVERAGE ZONE TEMPERATURE IS 5 °F BELOW HIGH TEMP SETPOINT (85 °F).
 - MODULATE THE TRANSFER FAN TO MAINTAIN THE WORST CASE AVERAGE BATTERY ROOM TEMPERATURE AT 85 °F.
 - A HARD WIRED POSITION SWITCH FROM EACH FIRE SMOKE DAMPER ASSOCIATED WITH THE TRANSFER FAN SHALL SHUTDOWN THE FAN IF DAMPER END SWITCH IS NOT FULLY OPEN, AND GENERATE A FAN FAILURE ALARM.
 - BATTERY ROOM TRANSFER FAN ALARM LIST
 - TRANSFER FAN FAILURE.
 - TRANSFER FAN IN-HAND.
 - LOSS OF COMMUNICATIONS WITH VFD.



MECHANICAL DRAWINGS

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



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1	VOLTAGE PARK PHASE 2 - PERMIT	10/25/2024

Drawn By: DO
Checked By: JL

MECHANICAL DIAGRAMS

Sheet **M.VP2.601**