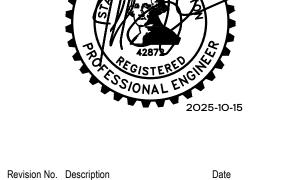




MECHANICAL DRAWINGS

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

PRCTI20240275, Revision#5

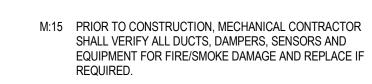


1 VOLTAGE PARK PHASE 2 - PERMIT 10/25/2024
2 VOLTAGE PARK PHASE 2 02/03/2025
REVISIONS
3 VOLTAGE PARK PHASE 2 10/15/2025
REVISIONS 2

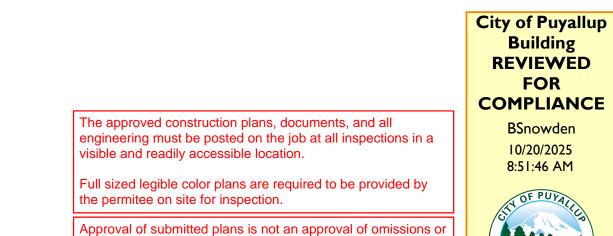
3 VOLTAGE PARK PHASE 2 10/15/2025 REVISIONS 2

MECHANICAL LEVEL 1
Title ENLARGED PLAN

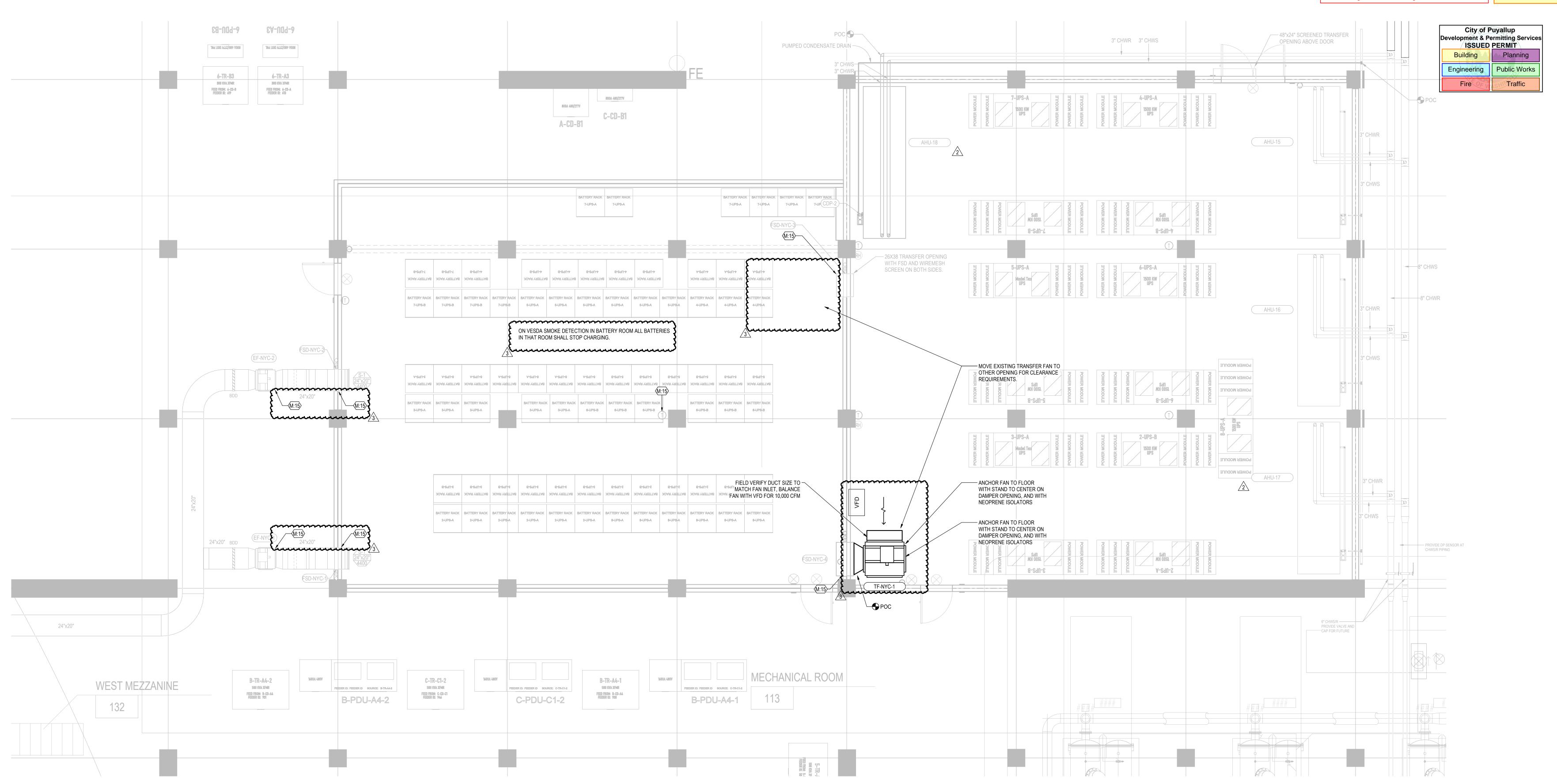
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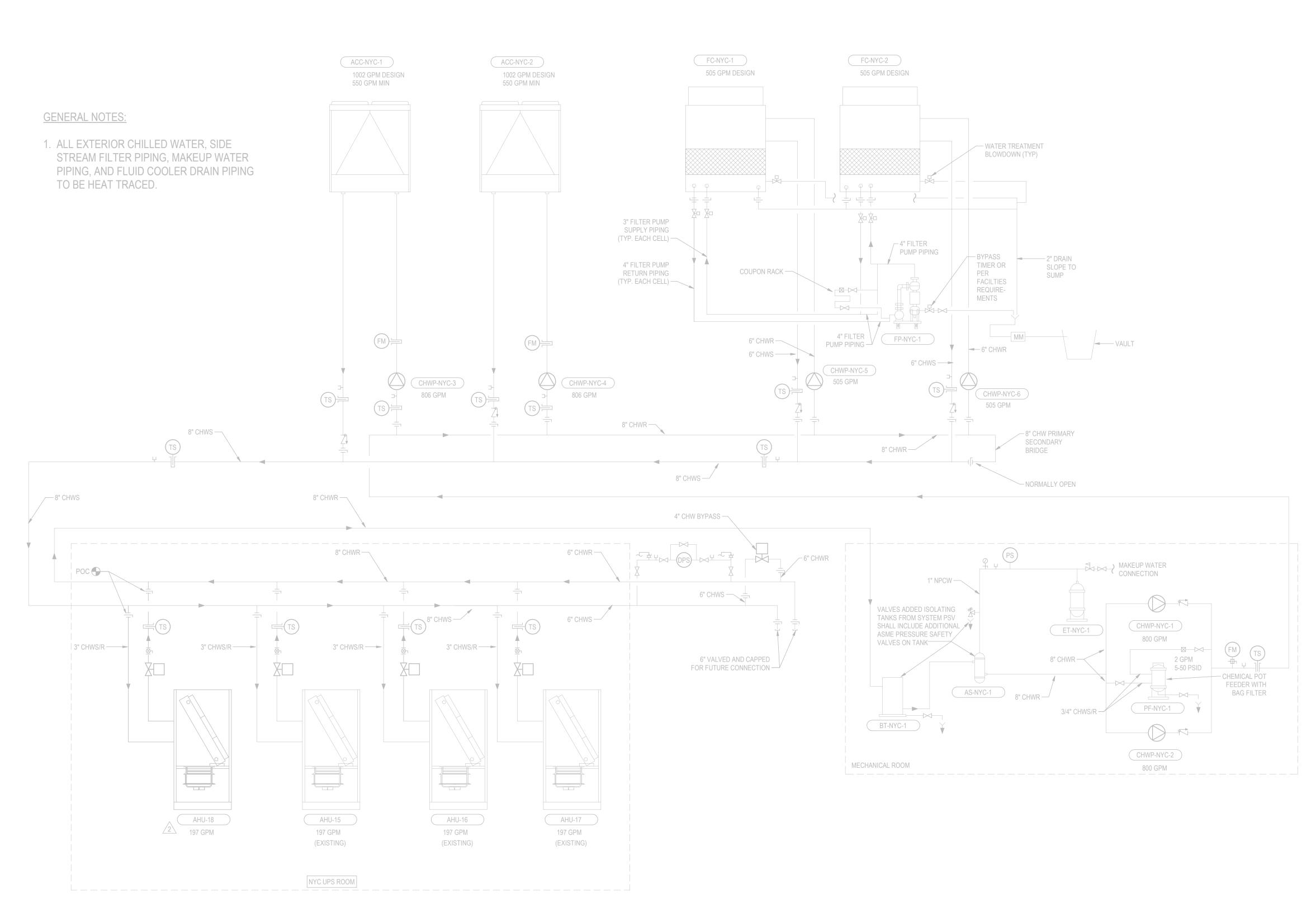


KEY NOTES

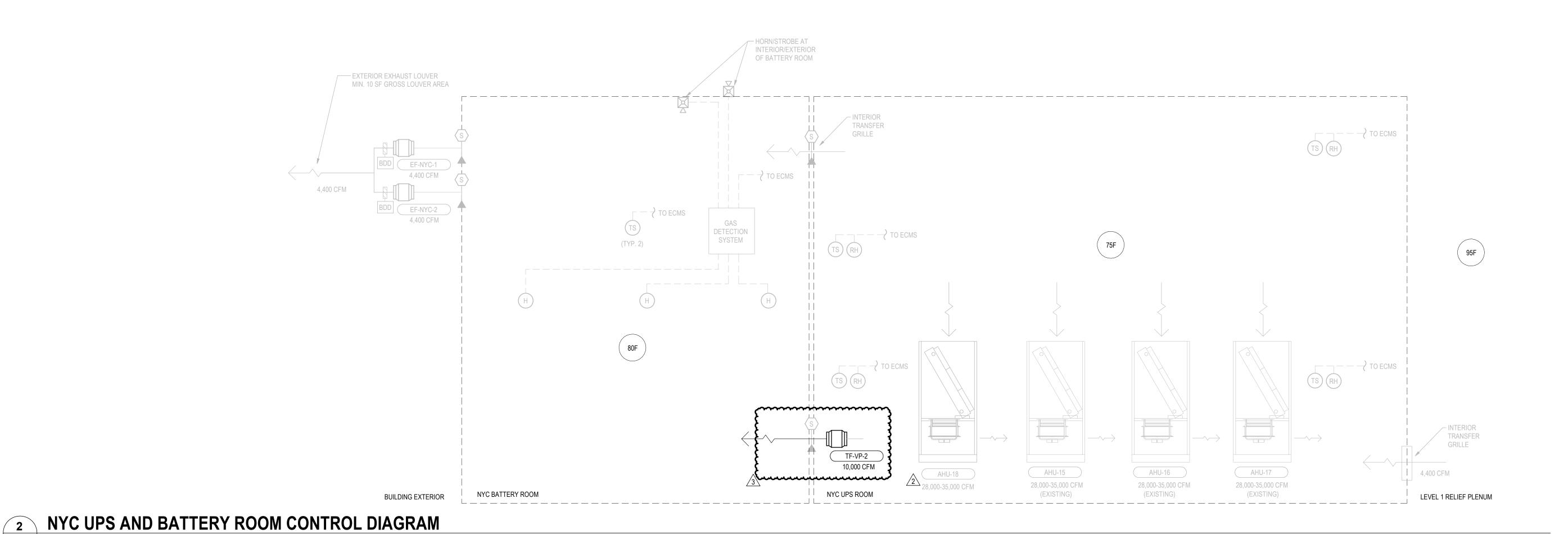


Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.





NYC UPS AIR-COOLED CHILLER PIPING DIAGRAM



DESCRIPTION OF OPERATIONS

- 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 VOLTAGE PARK HVAC SYSTEMS. THE CONTROL SYSTEM IS PROGRAMMED TO SEQUENCE THE OPERATION DESCRIBED WITHIN THE CONTRACT DOCUMENTS. ATS SHALL PROVIDE AND INSTALL ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING, BUT NOT LIMITED TO SENSORS, RELAYS, GATEWAYS, COMMUNICATION WIRING AND CONDUIT, AND ALL NECESSARY ELECTRICAL DEVICES, WIRING, AND CONDUIT.
- B. ALL POINTS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS WILL BE DISPLAYED ON THE USER'S GRAPHIC INTERFACE. ALARMS AND OTHER SYSTEM NOTIFICATIONS REPORT TO SYSTEM USERS. C. THE ARCHITECTURE OF THE BAS SHALL BE SO THAT COMMUNICATION FAILURE WITH AN INDIVIDUAL EQUIPMENT
- CONTROLLER SHALL NOT DISABLE EQUIPMENT FROM BEING ABLE TO OPERATE ON THE LOCAL CONTROLLER SETPOINTS FOR STANDALONE OPERATION SHALL BE ESTABLISHED WITH ETH OWNER. D. SYSTEMS CONTROLLED
- a. THE CONTROL SYSTEM SHALL EXECUTE CONTROL FUNCTIONS OVER THE FOLLOWING NEW SYSTEMS: COMPUTER ROOM AIR HANDLING UNITS (CRAH).
- BATTERY ROOM EXHAUST FANS (EF-NYC). BATTERY ROOM TRANSFER FAN (TF-NYC-1). b. OTHER POINTS MONITORED
- BATTERY ROOM HYDROGEN GAS DETECTION.
- 2. UNIT SMOKE DETECTOR STATUS. STANDBY POWER STATUS.
- NORMAL POWER STATUS. FIRE ALARM STATUS.

2.0 COMPUTER ROOM AIR HANDLING UNIT (EXISTING AHU-15 THRU AHU-17, AND NEW AHU-18)

- A. GENERAL a. 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 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. B. 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
- a. MANUAL SHUTDOWN OF AN INDIVIDUAL UNIT. b. SCHEDULED MAINTENANCE.
- c. SMOKE DETECTION OR FIRE ALARM SHUTDOWN. C. UPON ENABLING A CRAH UNIT THE FAN MINIMUM SPEED SHALL BE 75% (ADJ) TO PROVIDE 3/4rds OF THE PEAK UNIT
- AIRFLOW, OR 28,000 CFM EACH. FAN MINIMUM SPEED WITH THE VFD'S SHALL BE 12% (ADJ) OF FULL FLOW. D. 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.

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. E. IF THE CHILLED WATER VALVE SETPOINT IS ABOVE 75% (ADJ) AND 3/4rds 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. 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 ON THE SINGLE CRAH UNIT, AND RAISE THE SPEED OF OPERATING CRAH TO 100%.
- J. 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).
- LOW ZONE HUMIDITY RATIO, 28°F DEW POINT (ADJ). g. TEMPERATURE SENSOR FAILURE.
- HUMIDITY SENSOR FAILURE. SUPPLY FAN FAILURE.
- SUPPLY FAN IN-HAND. k. 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). u. LEAK DETECTION ALARM.

3.0 EXISTING BATTERY ROOM EXHAUST FAN (EF-NYC-1 & EF-NYC-2) A. GENERAL

- a. TWO (2) EXHAUST FANS SERVE THE BATTERY ROOM SPACE FOR NORTH YARD CRITICAL. FANS ARE SIZED FOR N+1 CAPACITY OF THE MINIMUM AIRFLOW REQUIRED FOR BATTERY ROOMS. FANS ARE INLINE BELT DRIVEN AXIAL FANS WITH VFD'S FOR SPEED CONTROL. THE BAS SHALL INCLUDE NEW CONTROLS FOR THE VOLTAGE PARK EXHUAST SYSTEMS THAT INCLUDE TRANSFER AIR TO THE BATTERY ROOM THROUGH THE UPS SPACE. B. ONE EXHAUST FAN SHALL BE COMMANDED ON CONTINUOUSLY BY THE BAS. SHUTDOWN CAN OCCUR FOR ANY OF
- THE FOLLOWING: a. MANUAL SHUTDOWN.
- b. SCHEDULED LEAD-LAG ROTATION.
- c. CLOSURE OF THE FSD UPSTREAM OF THE FAN. C. 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).
- D. 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). E. 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)

WORN-STROBES SHALL RE-PROVIDED AT EACH PATTERY ROOM ENTRANCE AND AT A VISIBLE ELEVATION WITHIN THE

- APPROVED LOCATIONS AN HIGH HXDROCEN CAS ALARM SHALL BE GENERATED IF HYDROGEN GAS IS DETECTED ABOVE 25% OF THE LOWER FLAMMABILITY LEVEL (LFL)
- BATTERY ROOM. HORN STROBES SHALL ACTIVATE UPON A HIGH HYDROGEN GAS ALARM. G. 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. A HARD WIRED POSITION SWITCH FROM EACH FIRE SMOKE DAMPER ASSOCIATED WITH EACH FAN SHALL SHUTDOWN
- THE EAN IE DAMPER END SWITCH IS NOT FULLY OPEN, AND GENERATE A FAN FAIL URE ALARM.

 3 I. THE VESDA SYSTEM SHALL LOCKOUT ALL CHARGING OF BATTERIES ON DETECTION OF SMOKE IN THE SPACE.

 J. BATTERY ROOM ALARM LIST
- a. HIGH ZONE TEMPERATURE ALARM, ABOVE 90°F (ADJ).
- b. LOW ZONE TEMPERATURE ALARM, BELOW 72°F (ADJ).
- c. TEMPERATURE SENSOR FAILURE. d. EXHAUST FAN FAILURE.
- e. EXHAUST FAN IN-HAND.
- f. LOSS OF COMMUNICATIONS WITH VFD g. HIGH HYDROGEN GAS, ABOVE 25% LFL. 3
 h. HYDROGEN GAS SYSTEM DETECTION FAILURE

4.0 BATTERY ROOM TRANSFER FAN (TF-NYC-1) A. GENERAL

- a. 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 INLINE 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.
- B. THE TRANSFER FAN SHALL BE COMMANDED OFF CONTINUOUSLY BY THE BAS. SHUTDOWN CAN OCCUR FOR ANY OF THE FOLLOWING:
- a. MANUAL SHUTDOWN.
- b. BATTERY ROOM TEMPERATURE IS BELOW 90 °F c. SCHEDULED LEAD-LAG ROTATION.
- C. 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). D. MODULATE THE TRANSFER FAN TO MAINTAIN THE WORST CASE AVERAGE BATTERY ROOM TEMPERATURE AT 85 °F
- E. 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.
- F. BATTERY ROOM TRANSFER FAN ALARM LIST a. TRANSFER FAN FAILURE.
- b. TRANSFER FAN IN-HAND. c. LOSS OF COMMUNICATIONS WITH VFD.

MECHANICAL Title DIAGRAMS

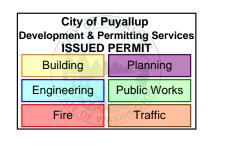
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MECHANICAL DRAWINGS

PRCTI20240275, Revision#5





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

VOLTAGE PARK PHASE 2 10/15/2025

REVISIONS 2