



EWEB ACCESS

DISTRIBUTION CUSTOMER RESPONSIBILITIES STANDARD  
EUGENE WATER & ELECTRIC BOARD - EUGENE, OREGON

**VAULT ROOM REQUIREMENTS FOR INDOOR TRANSFORMER INSTALLATION**

Approved Sept 7, 2023

**EC5-A.9000**

**REV  
3**

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# 1.0 SCOPE

1.1 This Standard is designed to provide Eugene Water and Electric Board (EWEB) customers/developers with Transformer Vault Room Requirements.

# 2.0 GENERAL INFORMATION

- 2.1 A Vault room refers to a room provided by the customer/developer to house EWEB owned transformers and associated equipment.
- 2.2 When a vault room is allowed, the customer/developer shall provide EWEB with construction plans and specifications prepared in accordance with this standard.
- 2.3 **VAULT ROOM PLANS SHALL BE APPROVED BY EWEB PRIOR TO CONSTRUCTION.**
- 2.4 It is critical to coordinate vault room location with EWEB during the earliest phase of the project.
- 2.5 This standard is the minimum EWEB requirements for service transformers of 750kVA and smaller. For service transformers larger than 750kVA, additional requirements may apply, including but not limited to a larger vault room, larger ventilation openings, and larger access doors.
- 2.6 The customer/developer is responsible to design and build this vault room per the requirements of the National Electrical Code (NEC) article 450 part III, all other applicable codes and all additional requirements deemed necessary by EWEB.
- 2.7 The Point of Delivery shall be the load side of the secondary conductor termination cabinet. The customer shall provide, own, and maintain the service entrance conductors and associated conduit from the secondary conductor termination cabinet to the customer’s service switchgear or main disconnect switch.
- 2.8 For new construction, a primary vault with load break modules or an SE-3 cabinet is required within 50 ft. of transformer vault room to provide a means to deenergize and ground the primary cable and service transformer. Any deviation requires electric operations and engineering approval.

**FOR THE PURPOSE OF THIS STANDARD, THE WORD “PROVIDE” WILL MEAN TO “FURNISH AND INSTALL”.**

# 3.0 QUALIFICATION FOR THE VAULT ROOM OPTION

- 3.1 A padmount transformer located outside of the building it serves or an overhead transformer bank is the PREFERRED METHOD to supply 3 phase power to EWEB customers.
- 3.2 Exceptions to this will only be granted by EWEB when the customer/developer has “zero lot line” space constraints and no space is available to locate a pole or padmount transformer.

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# 4.0 TRANSFORMER VAULT MINIMUM REQUIREMENTS

## VAULT LOCATION:

- 4.1 The Vault room shall be located on the ground floor and contain an exterior wall accessible by vehicle. This provides the best location for ventilation and EWEB’s access to install and maintain transformers and equipment.
- 4.2 Provide room with minimum dimensions shown with floors designed to support the transformer weight.
- 4.3 Only EWEB equipment shall be allowed inside vault room. Equipment NOT ALLOWED in transformer vault room includes but is not limited to:
  - 4.3.a HVAC ducts for adjacent rooms
  - 4.3.b Water pipes, excluding fire sprinklers
  - 4.3.c Drain pipes
  - 4.3.d Conduit for equipment located outside of vault room

## VAULT DOORS

- 4.4 Doors shall be located for easy access to EWEB maintenance equipment and trucks and be either hinged double doors or rollup door as described below.
  - 4.4.a Hinged Double Doors
    - 4.4.a.1 4 feet wide by 8 feet high each.
    - 4.4.a.2 Hinged to swing open to 180 degrees out from building.
    - 4.4.a.3 Each door shall be equipped with panic bars, pressure plates or other devices that are normally latched but open under simple pressure.
  - 4.4.b Rollup Door.
    - 4.4.a.1 8 feet wide by 8 feet high.
    - 4.4.a.2 Provide an additional personnel door, 3 feet wide by 80 inches high, hinged to open out and equipped with panic bars, pressure plates or other devices that are normally latched but open under simple pressure.
- 4.5 All doors into the transformer vault room shall be re-keyed to EWEB locks prior to EWEB installing any equipment, contact Baird Safe & Lock Co. Inc. to re-key locks to a EWEB “dead bolt key”.
- 4.6 EWEB will provide door warning stickers/signs.

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**VAULT LIGHTING AND RECEPTACLES**

- 4.7 Provide lighting to produce 20 foot-candles, minimum, of light at the vault floor.
  - 4.7.a Provide light switch mounted on inside wall near doors as shown.
  - 4.7.b Provide one duplex ground fault circuit interrupter (GFCI) receptacle on each wall as shown.

**PANELBOARD**

- 4.8 Provide panelboard to power all lights and receptacles in the vault room.
  - 4.8.a 120/240 Volt single phase, 3 wire.
  - 4.8.b 60 amp 2 pole main breaker.
  - 4.8.c 20 amps, single pole breaker for lights.
  - 4.8.d 20 amp, single pole breaker for receptacles.
  - 4.8.e (2) 20 amp, single pole breaker spares
- 4.9 Provide conduit and conductors from panelboard to lights and receptacles.
- 4.10 Provide 1" EMT conduit from panelboard up wall, across ceiling to above secondary terminals of service transformer. Coordinate exact routing of conduit with EWEB Electric Operations.
- 4.11 EWEB will provide wires from panelboard to secondary terminals of service transformer in the conduit.

**VENTILATION**

- 4.12 Natural ventilation is preferred. Mechanical ventilation may be approved by EWEB when natural ventilation will not provide adequate cooling for transformer.
- 4.13 Total area of ventilation opening shall be 20 square feet minimum. One half of the louvers shall be in an exterior wall a minimum of 24 inches above the floor and the remainder shall be in an exterior wall near the ceiling to provide efficient air circulation. When possible cross ventilation is preferred.
- 4.14 Louvers shall be equipped with fire dampers.
- 4.15 Customer/developer shall comply with minimum fire ratings.

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**OIL CONTAINMENT**

- 4.16 Vault rooms must be designed to retain the entire volume of oil from the largest transformer installed in the vault room.
- 4.17 A removable watertight sill shall be installed below doors inside of the vault room entrance. The sill shall be a minimum of 4 inches tall and shall be installed after EWEB’s transformers are placed in the vault room but before the vault room is energized.
- 4.18 The sill shall be painted caution yellow.
- 4.19 It is the customer/developer’s responsibility to ensure that all applicable Local, State and Federal requirements are met for oil containment.

**GROUNDING**

- 4.20 Provide copper-clad ground rods as shown.
- 4.21 Each rod shall be electrically connected to the building footing rebar with a minimum 2/0 bare stranded copper conductor.
- 4.22 Top of ground rods shall protrude above finished floor a minimum of 4 inches and a maximum of 6 inches and equipped with cap.
- 4.23 Embed 4/0 bare stranded copper conductor in floor below doors inside the vault room entrance with 2 foot long conductor tails at each end for EWEB connection. EWEB will provide and complete grounding loop at floor around perimeter of room and make connections to grounding rods and 4/0 conductor tails.

**CONDUIT**

- 4.24 All conduits that enter vault room through floor shall extend above finished floor a minimum of 6 inches.
- 4.25 All conduits entering vault room through a wall shall extend out of the wall 1 ½ inches +/- ½ inch and shall be grouted around conduit entrance flush with wall.
- 4.26 All service conduits entering vault shall be fire sealed on both ends.
- 4.27 Primary conduit shall be fire sealed in the vault room end of conduit only; EWEB crew will provide fire sealant for this application.

**CONDUCTOR RACKING**

- 4.28 Provide a minimum of 18 threaded inserts “all threads” couplers to accommodate ½” x 13 course thread rods in ceiling. EWEB will provide course thread rods at locations necessary to install conductor racking equipment.

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4.29 Provide sufficient length of service cable to allow EWEB to rack cable along the vault wall/ceiling and connect to wall mounted secondary conductor termination cabinet, approx. 30 feet per conductor is required.

## 5.0 EWEB RESPONSIBILITY

- 5.1 EWEB will provide, own and maintain transformer, primary conductor, grounding conductor for inside vault perimeter, wall mounted secondary conductor termination cabinet and secondary conductors from it to the transformer secondary terminals, ½"x 13 rods, cable racks and connections.
- 5.2 Customer shall pay EWEB 100% contribution in aid for labor, equipment and material provided by EWEB.