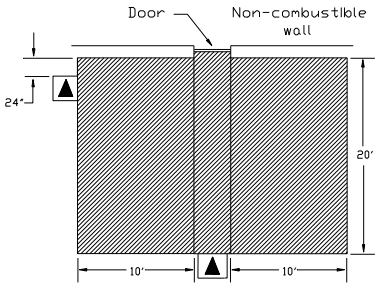
LOCATION OF PAD-MOUNTED TRANSFORMERS

I. NON-COMBUSIBLE WALLS

(This class includes wood-framed brick-veneered buildings, metal-clad steel-framed buildings, asbestos-cement-board walled metal-framed buildings and masonry buildings with a 1-hour fire rating.) Pad-mounted oil-insulated transformers may be located a minimum distance of 24" from non-combustible walls if all the following clearances are maintained from doors, windows, and other building openings.. If a combustible floor overhang exists, a 10' distance from the edge of the transformer to the edge of the overhang (combination of vertical and horizontal distance) shall be required in addition to the other clearances shown.

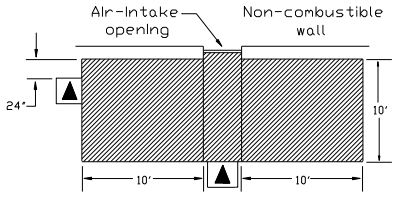
A. DOORS

Pad-mounted oil-insulated transformers shall not be located within a zone extending 20' outward and 10' to either side of a building door.



B. AIR-INTAKE OPENINGS

Pad-mounted oil-insulated transformers shall not be located within a zone extending 10' outward and 10' to either side of an air intake opening located at the level of the transformer. If the air-intake opening is located above the transformer level, the distance from the transformer to the opening shall be a minimum of 25'.



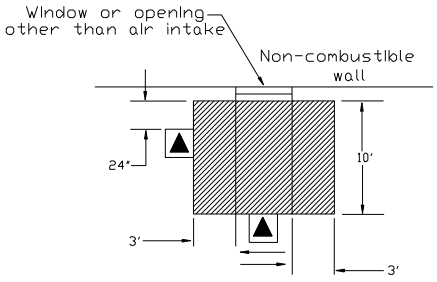
C. WINDOWS OR OPENINGS OTHER THAN AIR-INTAKE

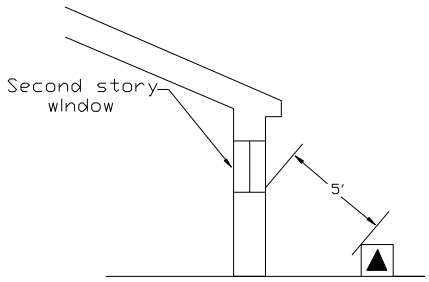
1. First story

Pad-mounted oil-insulated transformers shall not be located within a zone extending 10' outward and 3' to either side of a building window or opening other than an air intake.

2. Second Story

Pad-mounted oil-insulated transformers shall not be located less than 5' from any part of a second story window or opening other than an air intake.





II. COMBUSTIBLE WALLS

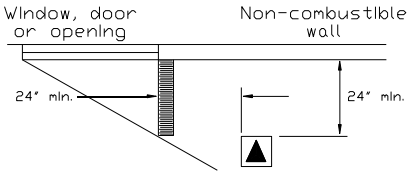
(This class includes wood buildings and metal-clad buildings with wood-frame construction.) Pad-mounted oil-insulated transformers shall be located a minimum of 10' form the building wall in addition to the clearance from building doors, windows, and other opening set forth for non-combustible walls (Section I).
If a combustible floor overhang exists,
a 10' distance from the edge of the transformer to the edge of
the overhang (combination of vertical and horizontal distance)
shall be required in addition to the other clearances shown.

III. BARRIERS

(This class includes reinforced concrete, brick or concrete block barrier walls with a 3-hour fire rating.) If the clearance specified in Section II cannot be obtained, a fire-resistant barrier shall be constructed in lieu of the separation. The barrier when required is provided by the customer. The following methods of construction are acceptable:

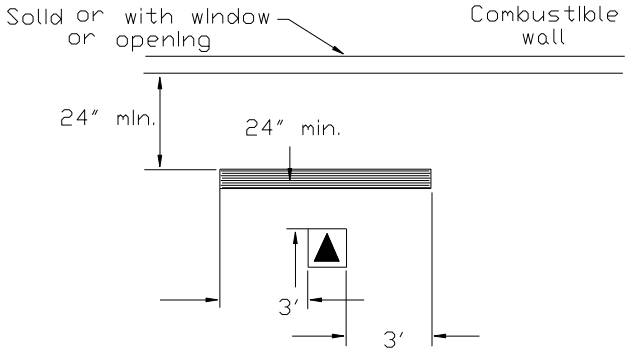
A. NON_COMBUSTIBLE WALLS

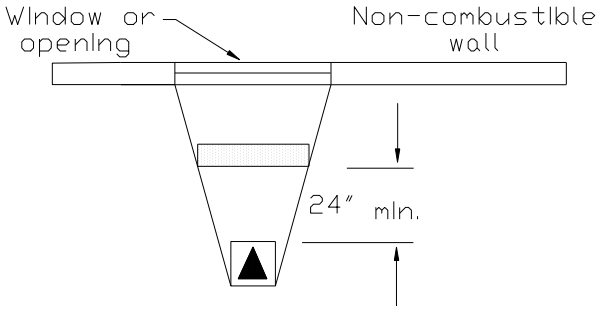
The barrier shall extend to a projection line from the outside corner of the pad mount to the furthest corner of the window, door or opening in question. The height of the barrier shall be 1' above the top of the pad-mounted transformer.



B. COMBUSTIBLE WALLS

The barrier shall extend 3' beyond each side of the pad-mounted transformer. The height of the barrier shall be 3' above the height of the pad-mounted transformer. If a combustible first-floor overhang exists, the 24" specified shall be measured from the edge of the overhang rather than from the building wall.





IV. FIRE ESCAPES

Pad-mounted oil-insulated transformers shall be located such that a minimum clearance of 20' is maintained from fire escapes at all times.

Exception: Pad-mounted transformers may be located closer to a fire escape than the 20’ minimum when a fire resistant barrier is constructed around the pad mount (side walls and roof). The barrier shall extend to a minimum of 1’ beyond the pad mount. The pad mount and barrier shall not in any way obstruct the fire escape exit. 10’ clearance required in front of pad-mount transformer doors. Adequate transformer accessibility and ventilation must be provided.

V. DECORATIVE COMBUSTIBLE ENCLOSURE

Decorative combustible enclosures (fencing) installed by the customer around pad-mounted transformers adjacent to a combustible building wall shall not extend more than 24” beyond the transformer towards the combustible wall. 10’ clearance required in front of pad-mount transformer doors. Adequate transformer accessibility and ventilation must be provided.

MINNESOTA VALLEY ELECTRIC COOPERATIVE
CURRENT AND VOLTAGE TRANSFORMER METERING

Services over 200 amp will require transformer rated metering. All 480-volt services regardless of size shall be transformer rated.

Current and voltage transformers, where needed, will be supplied by the Cooperative and installed by the member.

Current and voltage transformers shall not be installed on the member's side of the disconnect. The disconnecting means may be provided by the Cooperative normal line design. Consult the Cooperative.

Member to supply lugs on line side of current transformers to accommodate Cooperative's wire.

For commercial installations meter sockets for transformers rated metering will be supplied by the Cooperative.

For all residential installations at 300 to 600 amps, the electrician shall use the dual meter socket available through the Cooperative.

CONDUIT & WIRE SIZE

- The conduit from the CT cabinet to meter is to be:
  - ¾ inch for single phase
  - 1 inch for three phase
- Wires are to be no smaller than #12: solid insulation to be T.H.H.N. The distance between current transformer cabinet and meter socket shall not be more than 25 feet.
- No member wiring is to be installed in the current transformer cabinet, meter socket, or conduits dedicated for metering wires.
- No member wiring shall be permitted to be connected to Cooperative's meter secondary wires.

TRANSFORMER CABINET

- Metering transformer cabinets shall have provisions whereby MVEC can install a padlock. Transformer cabinets shall have provision for mounting the bar type current transformers 1 1/2-inch from the surface of the cabinet.
- Current transformer cabinets mounted outside shall be approved for that purpose and shall have provision for draining moisture.
- Dimensions for transformer cabinets are as follows:

2 C.T.s	20 X 36 X 8
3 C.T.s	28 X 36 X 8
3 C.T.s	36 X 36 X 8

All cabinets are to have provision for grounding.

COLOR CODING

The number of wires and color-coding shall be as follows:

- Voltage Circuits are to have the following colors: RED, BLACK and, if a third circuit, BLUE.
- Current Circuits are to have the following colors: ORANGE, BROWN and, if a third circuit, PURPLE.
- Two WHITE wires and a GREEN wire shall be provided for neutral and grounding.

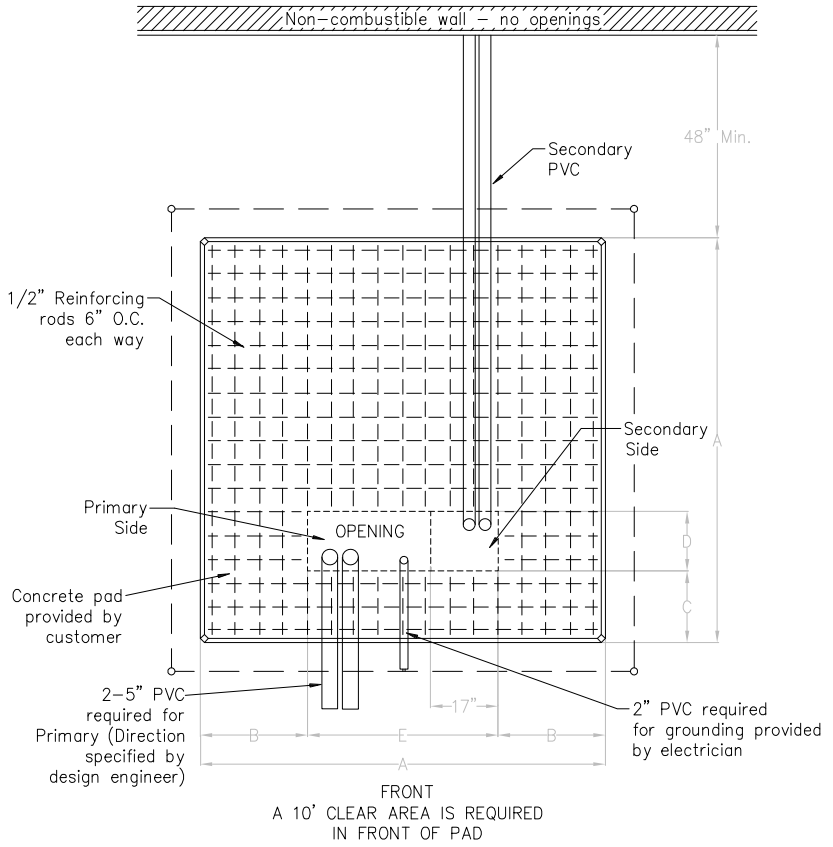
MINNESOTA VALLEY ELECTRIC COOPERATIVE

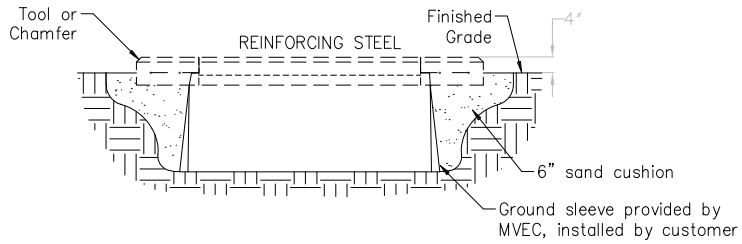
COMMERCIAL SERVICE STANDARDS

1. TRANSFORMER
   a. MVEC will determine transformer location and routing upon study of site plans and completed load data sheet. Please show service entrance location on plans.
   b. Three phase customers must provide a concrete transformer pad per MVEC's specifications

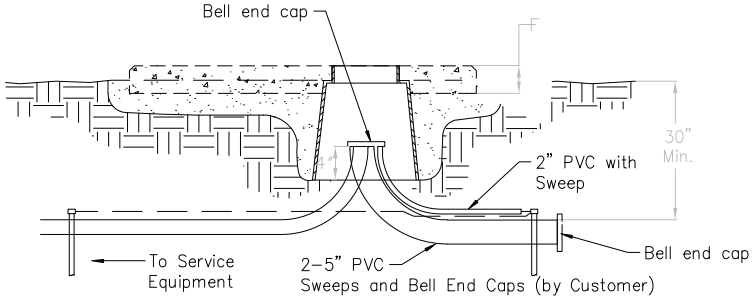
2. SECONDARY
   a. A maximum of six 500 MCM or smaller conductors per phase are allowed brought into the secondary compartment of the transformer. If more are necessary, we require a transition cabinet adjacent to the transformer with all conductors entering from the bottom. Secondary wires to and connections at the transition cabinet must be installed by the customer.
   b. All service wires and conduits are provided and installed by the customer. Minnesota Valley Electric Cooperative supplies secondary connectors at the transformer.

3. METERING
   a. METER LOCATIONS: The meters shall be mounted on the outside of the building and shall be accessible to Cooperative personnel at all time. They shall not be located under decks, along driveways or walkways where they are subject to damage or create a safety hazard. The metering equipment is to be located in areas free from excessive moisture, high temperatures, strong fumes, excess vibration, dust and dirt. All metering locations require the final approval of MVEC.
   b. ACCESSIBILITY: Meters shall not be located where hazardous conditions exist or may exist. Meter locations must also be clear of shrubs, bushes etc. These could cause problems while installing, servicing or reading the meters. The member is required to maintain the Metering locations to allow a open walkway to and from the metering location for convenient access 24 hours a day. Meters are to have an unobstructed space of 3 feet in front and 18 inches on either side.
   c. MOUNTING HEIGHTS: Meter sockets are to have a maximum height of 6 feet and a minimum height of 4 feet unless otherwise agreed to by the Cooperative.
   d. SAFETY: Meters are to be located so as to be safe from damage. If damage or the possibility of damage occurs in the future due to any member facility changes, the member will be required to provide additional physical protection for the metering.
   e. SPECIFICATIONS:
      -ALL Services must be metered.
      -All wiring per the National Electrical Code. See code for wire size and number of conductors.
      -All services in excess of 200 amp require CT metering. The electrician obtains the CT's, PT's and socket from MVEC's Meter Department and mounts. MVEC furnishes and installs the meter.
      -All 480-volt services of any size require CT and PT metering.
      -The electrician installs all wiring and conduit between CT cabinet and meter socket. Eight color-coded #12 THHN consisting of red, black, blue, orange, brown, purple, white and green shall be supplied.
      -MVEC does not allow switchboard mounted meter base.
      -ALL services must be metered. It is the responsibility of the member to pick up equipment supplied by MVEC at the Jordan Headquarters. Call in advance to make arrangements for pick up.





Transformer KVA	Pad Dimensions						Design Weight
	A	B	C	D	E	F	
75-1500	8.5'	27"	18"	15"	48"	8"	15,000 lbs



MVEC MUST BE NOTIFIED 48 HOURS MINIMUM PRIOR TO POURING TO ALLOW GROUND-GRID PLACEMENT AND CHECKING OF FORMS.

Customer must pour pad and provide PVC installed as directed by MVEC.

PVC for secondary sized and placed as directed by Owner's electrician.

Ground rods and ground wire installed by MVEC.

Extend PVC for primary beyond any area to be surfaced at Owner's expense.

Customer provides and installs ALL secondary conductor.

** Conduits of adequate size and number to receive all necessary primary or secondary wires shall be provided by the customer.

NOTES:

1. Soil: bearing value is to be 2000 PSF
2. Concrete testing 3750 pounds per square inch after 28 days. Maximum aggregate 3/4 inch.
3. Minimum concrete cover over reinforcing steel 2 inches unless noted.
4. Wood flat finish, leaving no depression.
5. Reinforcing steel, ASTM-A615 Grade 40 placed approximately 6" O.C. each way and securely tied together.
6. The minimum distance from concrete pad to windows, doors and combustible material shall be 10 feet.
7. The minimum distance from comcrete pad to building or attachment shall be 48". More is required for combustible walls or to doors or openings. See respective state code if a greater distance is required.
8. Conduits of adequate size and number to receive all necessary primary or secondary wires shall be provided by the customer.
9. Conduits for secondary cable must be placed as closely as possible to the right side of opening in pad. The 17 inches shown is finished dimension.
10. When pad is located in a traffic area, yellow bollards are required to be placed at corners of pad for protection, by customer at the direction of MVEC Engineer (See Spec. UM5.B).

THREE PHASE TRANSFORMER GROUND SLEEVE GUIDE

No.	Description	Engr	Appd	Date

MVEC Minnesota Valley Electric Cooperative

12.47/7.2 KV
February 2021

Engr Tech:	Line Dept:	Approved:	Date:
HJN	KR	Curt C.	02/12/21

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