



**ROCK ENERGY**  
**COOPERATIVE**  
Empowering Members Since 1936

**ELECTRIC SERVICE**  
**STANDARDS**



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## ELECTRIC SERVICE INSTALLATION

- These Electric Service Standards are to supply information to members, their contractors, architects, engineers, and inspectors, and others concerned with the planning and construction of electric service installations in Rock Energy's service area. Rock Energy's objective is to cooperate and assist members to obtain safe and efficient electric service.
- Information in these Electric Service Standards is intended to cover typical installations. Rock Energy shall be consulted for installations not covered in these standards.
- Before and during the planning stages for electric service, especially larger projects, members, their contractors, architects, and engineers should contact Rock Energy to avoid misunderstanding and unnecessary expenses. Rock Energy will assist in the planning, scheduling, and explain all applicable rates and rules. Early notification will prevent unnecessary delays and expense.

### POINT OF SERVICE

The energy supplied by Rock Energy changes ownership at the point of service. This is the location where the members wiring starts and Rock Energy's ends. For overhead services, the point of service is where Rock Energy attaches its service drop to the member owned attachment point on the building or structure, and where the Rock Energy conductor connects to the member owned conductor from the weatherhead. For underground services, the point of service for an underground service is located at the primary metering point, self-contained meter, metering transformer cabinet or termination box.

### CODES AND RULES

Rock Energy requires that all member wiring installations meet the minimum requirements of the *National Electric Safety Code (NESC)*, *National Electric Code (NEC)*, *National Fuel and Gas Code (NFPA 54)*, *Liquefied Petroleum Gas Code (NEPA 58)*, *International Building Code (IBC)*, *DOT Regulations*, and/or state and local codes when their requirements are more restrictive, including Wisconsin Administrative Code PSC 114 which Rock Energy follows in Wisconsin and Illinois service territories.

- A. Rock Energy reserves the right to refuse to extend service where a member's installation does not comply with these provisions and requirements as stated.
- B. Rock Energy shall de-energize any service when that service is found to be in an unsafe condition.
- C. Rock Energy may give a disconnect notice for services in need of repair.
- D. All meter sockets, meter pedestals, group meter assemblies, modular meter assemblies, CT and VT cabinets, and other electrical cabinets shall be listed by an independent testing agency (such as U.L.) for the specified voltage and amperage rating indicated and carry the testing agency's listing mark.




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## APPLICATION FOR SERVICE

Applications for a **new service** and/or **changes to an existing service** shall be in writing and made well in advance of the date service is required. This will permit Rock Energy to plan and schedule work to provide service by the date required.

**Application forms:** Before we can complete any installation of service, we will need you to become a member of our cooperative. Residential and Commercial Applications are available at our website, rock.coop. Please complete the information in the appropriate packet and return to our Janesville office for services in Wisconsin or our South Beloit office for services in Illinois.

### A. Service Location:

1. The member shall contact Rock Energy for assistance and approval determining the service location on the building or where the structure supporting the service will be located.
2. The member shall provide Rock Energy with the **projected demand load** information and the proposed **service entrance size and voltage requirements. All forms must be signed and dated. *These are required fields.***

### B. Site Plans:

1. The member shall provide Rock Energy with a recorded copy of the Certified Survey Map or a Plat of the property where the service is requested.
2. The member shall provide government approved forms indicating the location of any existing or proposed septic systems.
3. The member shall provide Rock Energy with a site plan which includes existing or future septic systems, wells, pools, decks, sheds, additions, or other possible obstructions to the service conductor. Should the member require the service conductor be relocated after installation, the member will be responsible for all associated costs.
4. The member shall provide easements for services or distribution facilities where required.
5. Members planning any hard surface installations over buried service conductors should furnish Rock Energy with schedule 40 or schedule 80 (traffic) PVC electrical conduit prior to installation.

### C. Line Clearance:

The member shall be responsible for clearing any trees or brush which might inhibit the service installation or maintenance of Rock Energy facilities. Minimum 10 ft wide path is required from the pole/ transformer/ pedestal to the electric meter socket.

### D. Wiring Inspections:

1. Member wiring installations shall meet the minimum requirements as set forth by current NFPA 70 NEC, state regulatory commissions, and the local Authority Having Jurisdiction (AHJ). Rock Energy shall receive written approval from the AHJ.
2. Where no inspection authority exists, Rock Energy shall receive a completed and signed Rock Energy wiring affidavit before energizing any new or modified electric service.
3. Rock Energy reserves the right to inspect for compliance with these standards but assumes no responsibility for the inspection of the member's installation.



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**METERING FACILITIES**

- A.** Should the installing contractor or electrician need to disconnect the electrical service at any point, the installer must contact Rock Energy to schedule a time for Rock Energy crews to perform the disconnect. Cutting the meter seal or making any alterations to Rock Energy's equipment by anyone other than Rock Energy crews will result in a tampering fee being applied to the member's bill.
- B.** Meter sockets are required on all new services, including municipal street lighting and area lighting.
- C.** All residential meter sockets shall be ringless, equipped with a manual operated bypass (either horned (minimum) or lever locking jaw (preferred)), have individual covers and Rock Energy approved. An individual self-contained 200-amp meter socket is the minimum allowed for an underground service.
- D.** Commercial meter sockets shall be ringless, equipped with a lever locking jaw bypass capable of carrying full rated continuous duty current, have individual covers, and Rock Energy approved.
- E.** Traffic Signals shall be considered a commercial service, requiring a lever locking jaw bypass.
- F.** Permanent or added 5<sup>th</sup> terminals shall be member installed, horizontally, in the nine o' clock position. Permanent or added 6<sup>th</sup> terminals shall be member installed, horizontally, in the three o' clock position. All added terminals to the meter socket must be of the screw-in type and not plugged into the socket.
- G.** All outdoor service raceway or cable connections to meter socket bases, meter enclosures, or switches shall be rain tight. Service conductor termination fittings in metering equipment shall be set screw type terminal lug connectors. These lugs shall be rated to accept conductor sizes from #6 to 350KCM. Rock Energy **does not** use compression terminal lugs.
- H.** For installations requiring instrument transformers (potential or voltage transformers (PT's), and current transformers (CT's), a metering transformer cabinet is required. All metering transformer cabinets shall be approved by Rock Energy. An approved list is available from Rock Energy for your specific service size.
- I.** Metering transformer cabinets shall have factory installed bus bars to accommodate bar style CT's provided by Rock Energy. **The bar style CT that Rock Energy uses has outside mounting hole distance of 10 7/8 inches.**
- J.** Meter assemblies that contain breakers must meet Short Circuit Current Rating (SCCR), Fault Current Ratings and Amperage Interrupting Current (AIC), if the meter assembly does not contain breakers, these ratings do not apply.
- K.** Member owned equipment shall not be installed in any cabinets or meter socket areas that are sealed by Rock Energy
- L.** Splices are not allowed in meter sockets, pedestals, or cabinets.
- M.** Metering equipment shall not be used as a raceway unless designed with such provisions.
- N.** It is not permitted to modify or install lugs in a meter socket, pedestal, or metering transformer cabinet other than what is listed on the manufacturer's drawing associated with the UL listing.




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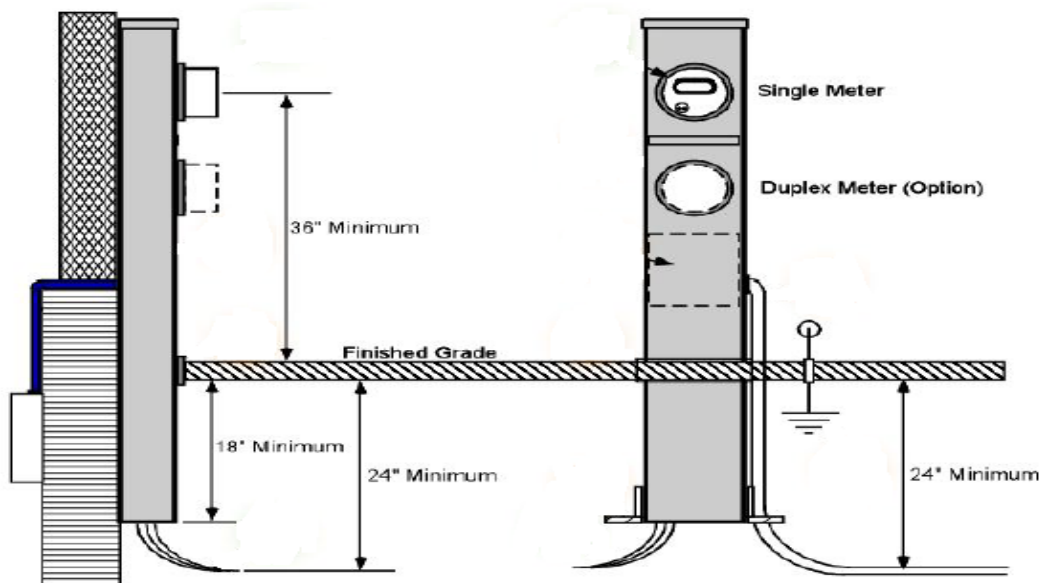
**LOCATION OF METERS**

- A. Rock Energy shall approve the location of all meters and metering equipment. The metering equipment shall be always accessible to Rock Energy representatives. If the electric metering equipment is ever enclosed behind a locked gate, locked fenced area, or made inaccessible due to a building addition, the member shall furnish Rock Energy with a key or code to access the metering equipment.
- B. If metering equipment is located off a well-traveled road, the member will supply Rock Energy with a well-maintained access road wide enough for truck traffic. Example: Metering equipment at an irrigation pivot.
- C. The meter sockets, enclosures or cabinets shall be installed outdoors, securely fastened to a building, structure, or foundation. A free-standing meter pedestal with a stabilization footing may be used where no substantial buildings are available. Metering transformer cabinet shall be installed outdoors securely fastened to a building, structure, or foundation.
- D. When used for metering purposes, Rock Energy requires all yard pole meters, field built metering structures, or free-standing metering pedestals, to be installed so the meter faces an area (usually a driveway) that will accommodate motor vehicle access to the meter. This will allow the meter to be read from the vehicle if necessary.
- E. If a self-contained meter is installed at a location other than a building, or farm distribution center, then over current protection and grounding are required at the metering point. (see grounding standards).
- F. Rock Energy **does not** allow meter sockets to be installed on structure mounted CT cabinets, enclosures, or cabinets.
- G. Meter sockets shall be positioned on the **latch side** of the CT cabinet (unless CT cabinet has two doors). **Contact Rock Energy for an approved list of Meter Sockets.**
- H. Meter sockets shall be mounted at least 36" from the **hinge side** of any hinged entry/ exit door.
- I. Meters and metering devices shall be mounted plumb and at such a height that the center of the meter is at a nominal height of 5 feet (+/- 6") above the final grade, except as follows:
  - Exception #1** – Group mounted meter sockets shall be mounted so that meter's centers are between 2'-6" and 6' above final grade.
  - Exception #2** – Outdoor wall mounted, or free-standing meter pedestals shall be mounted so that meter centers are a minimum of 3' above final grade, while the bottom of the socket is 18" below final grade.
  - Exception #3** – Flood zones. Rock Energy may grant a variance for height requirements in 100-year flood plain areas. A variance request shall be submitted to Rock Energy before any electrical work has begun. The requestor must supply 100-year flood plain documentation for the location and a design that conforms to OSHA Standards 1926.1052 and 1910.23 with the variance request. Rock Energy will not approve any meter heights beyond 3 feet above the 1000-year flood plain levels. Required unobstructed work areas shall be maintained on this and all meter installations.

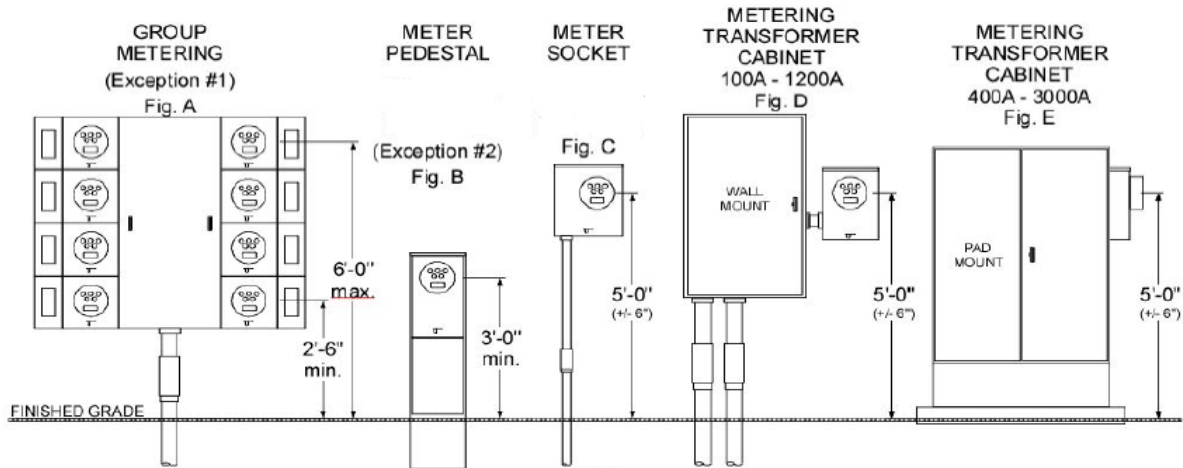
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**METERING INSTALLATIONS**

- A. The member installs, owns, and maintains the service entrance equipment and provides a secure location for holding service wires and service entrance equipment to the building or structure. All service entrances shall include a service disconnecting means, over-current protection, and Rock Energy approved metering equipment located in the vicinity of where electric service is supplied to the building or structure.
- B. Rock Energy limits the location of the service disconnect to a readily accessible location either outside of the building or inside nearest point of entrance of the service conductor's location. The service entrance disconnects, when located inside, must be within 8 feet of where the conductors enter the building through the outside wall of concrete floor
- C. Meter mounting devices shall be securely fastened to the supporting building or structure with non-corrosive fasteners. Conduits and cables shall not be used to support wall mounted devices. Meter sockets or cabinets shall not be installed where they will be exposed to mechanical injury, excessive dust, excessive moisture, corrosive vapors, or vibrations.
- D. All conduits between the building and the metering equipment shall be sealed to prevent moisture and condensation from entering the meter socket.
- E. Rock Energy **does not** allow Current Transformers to be placed inside pad mount transformers or member's switchgear. CT cabinets are required. **Contact Rock Energy for an approved list of CT Cabinets for your service size.**
- F. The member will install a 1½" – 2" diameter rigid metal conduit that is long enough to maintain a minimum of 6 inches of clearance between electrical equipment. This conduit is for the metering wires, between the CT cabinet and the meter socket.
- G. Member shall provide a Test Switch Block for **ALL** CT rated services.
- H. The member is required to furnish and install properly sized secondary conductor(s) to accommodate the members service between Rock Energy's transformer and the member's metering transformer cabinet.
- I. Rock Energy will terminate secondary conductors in the transformer.



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**METERING INSTALLATIONS**
**IDENTIFICATION OF METERS**

For multiple metering installations, each meter position shall be marked with the address or unit number of the location served on the outside of the socket or by the breaker. This marking shall also be placed on the corresponding distribution panel(s). The external marking shall be a **permanent self-sticking brass or engraved rigid plastic label with minimum ½ inch block letters or numbers**. A permanent marking shall also be inside the meter socket base in a visible location when the cover is removed. Rock Energy will not install meters until this requirement is met.

**METER SEALS**

Rock Energy will seal all meters, meter facilities and points of access to un-metered wiring on the member's premises. All cabinets, conduit fittings and equipment enclosures containing un-metered conductors shall be made sealable before the service is energized. It is illegal for members or contractors to remove meter seals. **Should the installing contractor or electrician need to disconnect the electrical service at any point, the installer must contact Rock Energy to schedule a time for Rock Energy crews to perform the disconnect. Cutting the meter seal or making any alterations to Rock Energy's equipment by anyone other than Rock Energy crews will result in a tampering fee being applied to the member's bill.**

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**CLEARANCE REQUIREMENTS FOR METERING EQUIPMENT**

Rock Energy requires a minimum of 48" working space in front of each meter or metering transformer cabinet.

- A. Rock Energy requires a minimum of 48" of working space in front of each meter, meter cabinet, or instrument transformer cabinet. This is measured out from the face of the meter or doors of the cabinet and a minimum 30" wide.
- B. A minimum of 6" vertical and horizontal separation shall be maintained between metering equipment and other obstructions or non-metering equipment (NEC 125)
- C. The space shall be large enough to allow cabinet doors to open 90 degrees.
- D. The space shall be clear from final grade to at least 6'6" (8' preferred) above the ground.
- E. An area of at least 30" wide shall be provided to access the work area.
- F. This work area shall not be used for storage of any kind.

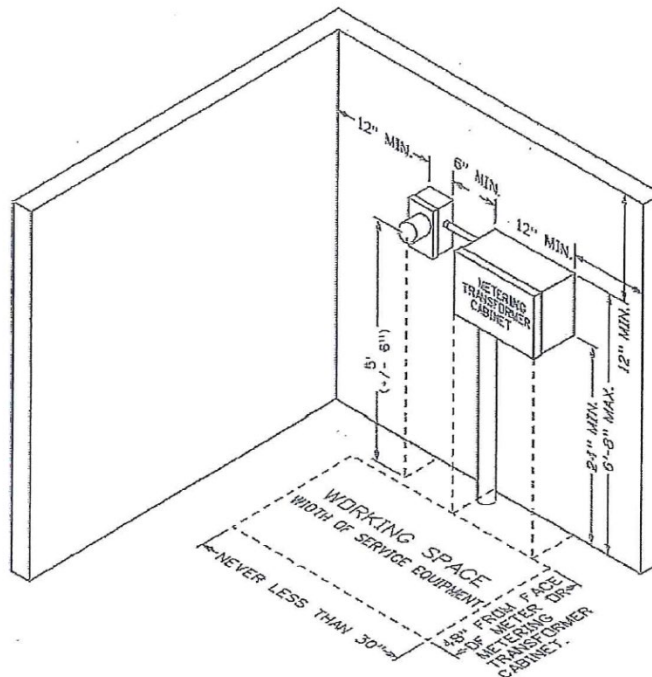


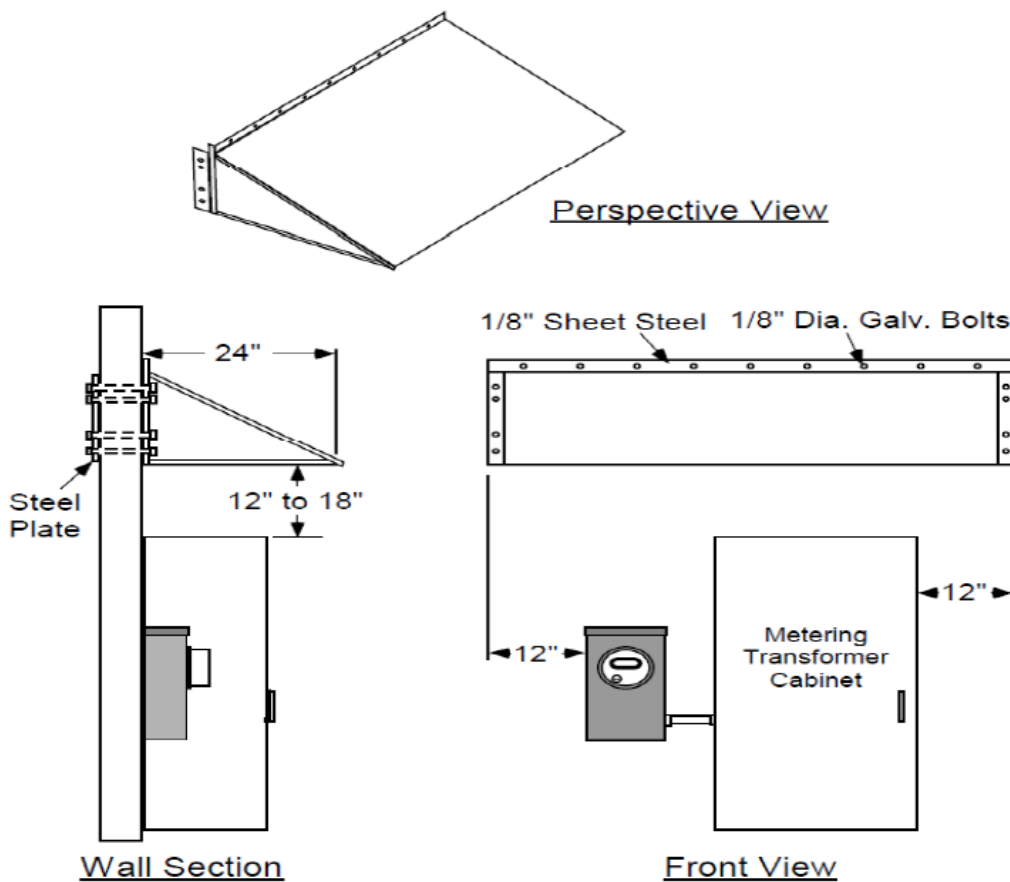
FIGURE 1: CLEARANCES AND WORKING SPACES



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**METERING EQUIPMENT SHIELD**

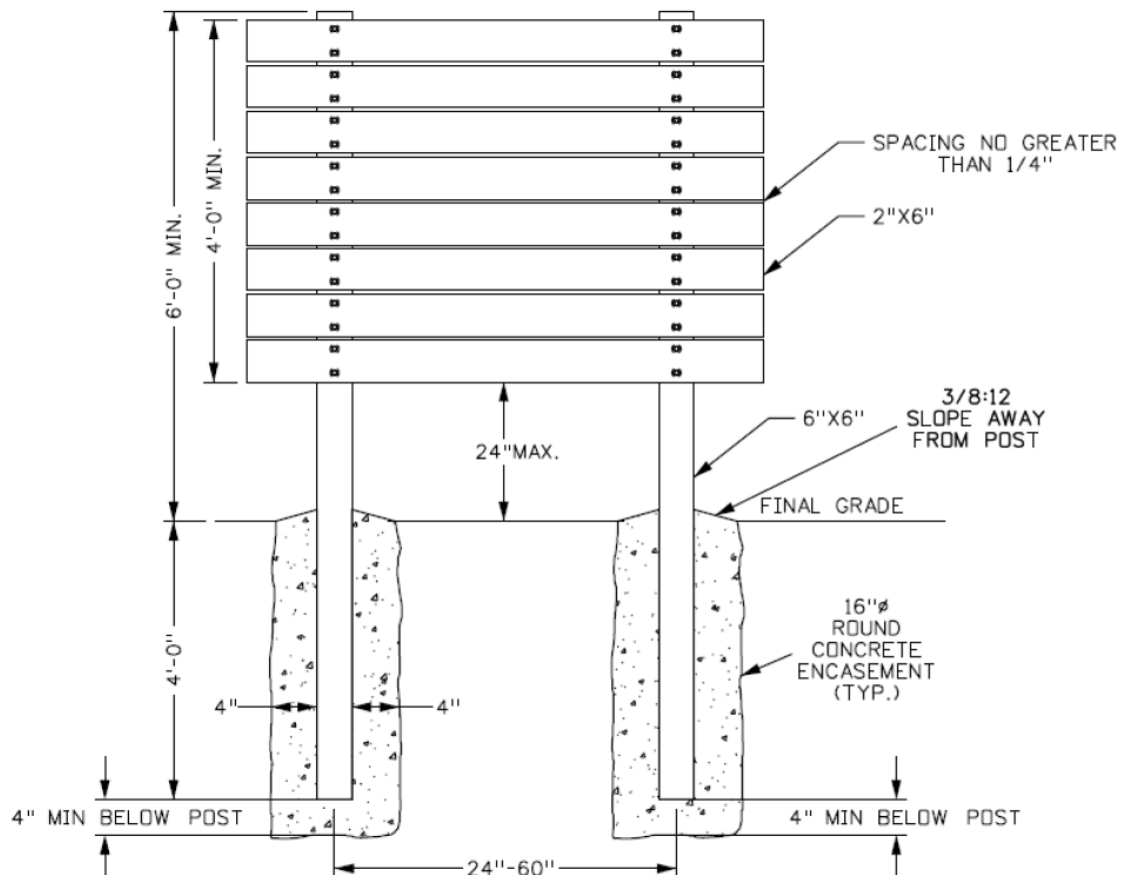
The Member is responsible for protecting Rock Energy's meter(s) and Member's own metering equipment from damage caused by falling, ice, snow, or other objects. If protection is not provided for meter equipment, by adequate roof overhang, the Member shall construct a protective shield, or the meter location shall be moved to a safe area. The Member will be charged for meter replacement if damage occurs and typically an outage will be required to replace any damaged equipment. An adequate roof overhang shall extend a minimum of 18 - 24" out from the face of the wall to which the meter is mounted.

**NOTES:**

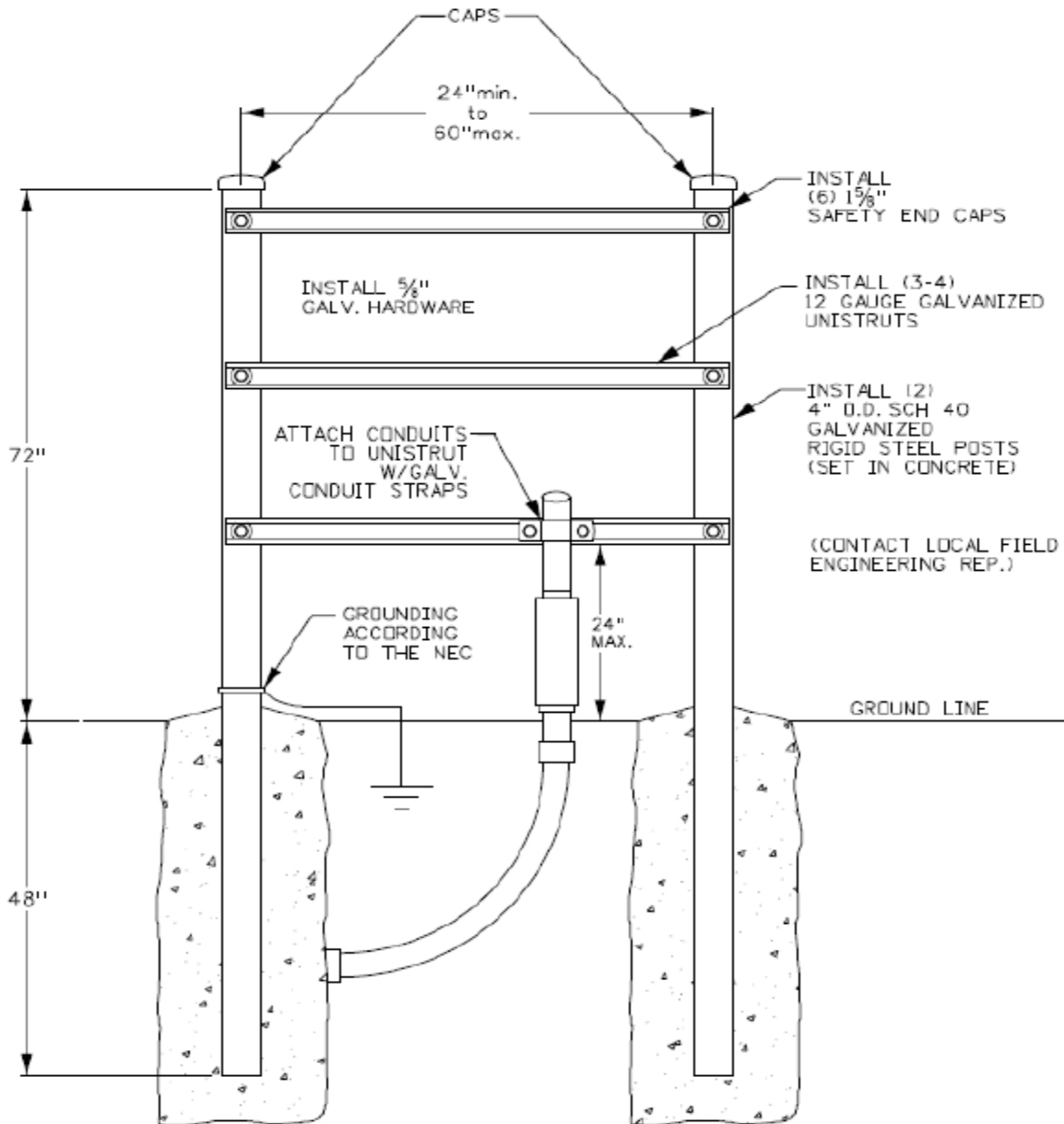
1. Steel to be primed and painted with rust resistant paint.
2. Shield shall be capable of supporting 50 pounds.
3. Shield may be constructed of steel, treated wood or masonry. Thin sheet metal (tin) is not acceptable.
4. Shield to be so located as to not be a "head bumping" hazard.
5. Width of shield may vary depending on the number of meters/ cabinets being protected.

**FREE STANDING (Field-Built) METER STRUCTURES**

- A. Field built structures are limited to 1200 Amp maximum.
- B. Wood field-built structures shall have a minimum of two 6" x 6" wood posts and 2" x 6" planks that are pressure treated against decay per the American Wood Protection Association. The posts shall be buried a minimum of 4 feet deep, plumb and set in concrete the full depth. The planks shall be level and fastened with stainless steel or hot-dipped galvanized hardware (bolts, washers, nuts, etc.), **nails and screws are not acceptable**. The member is responsible for the maintenance of the structure.
- C. All service equipment shall be NEMA 3R minimum, lockable and listed by an approved testing agency for service entrance use.

**WOOD CONSTRUCTION**


## STEEL POST CONSTRUCTION



### NOTES:

1. Steel posts are not allowed to serve as equipment bonding conductor.
2. Unistrut shall not extend beyond post and must have safety end caps for safety reasons.
3. All metallic parts shall be bonded according to NEC.
4. Grounding shall conform to NEC.
5. Aluminum posts or beams are not allowed due to their corrosive properties when installed in concrete.



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**ATTACHMENT OF SERVICE DROPS**

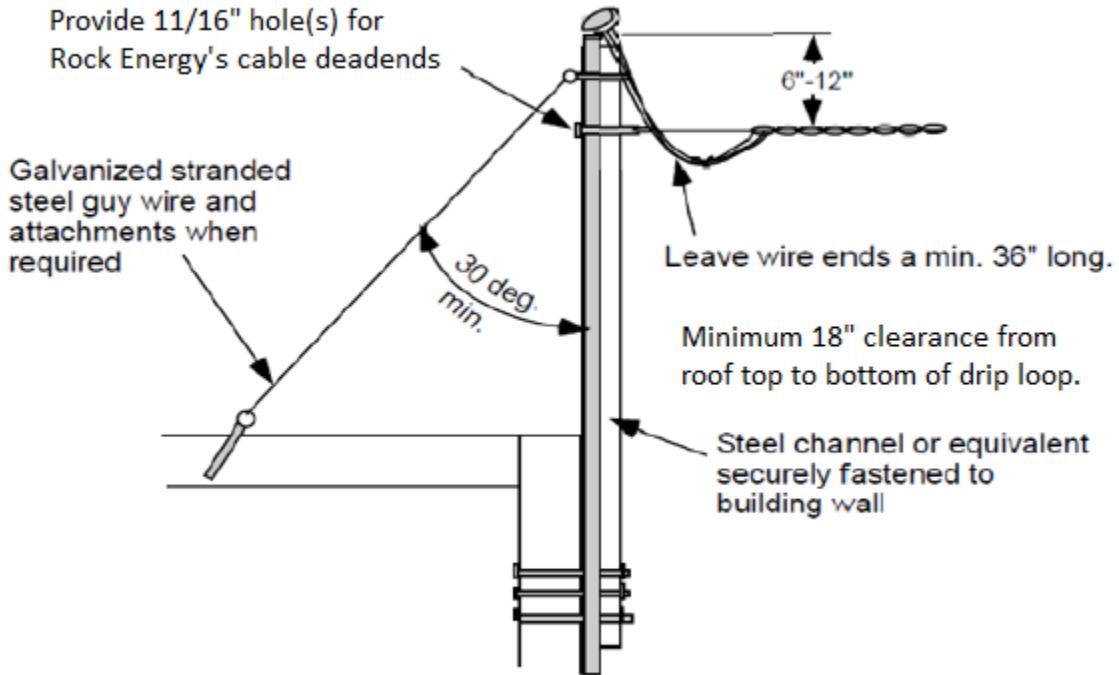
- A. The member's structure shall support the service drop and meet required clearances for the service drop and drip loops above the ground, buildings, driveways, roads, and other facilities.
- B. The member shall provide and install the attachment device.
- C. For connection to Rock Energy's service drop wires, the member's service entrance conductors shall extend *at least* 36 inches beyond the weatherhead for a single service riser.
- D. Neutral conductors are to be identified according to the National Electric Code (NEC).
- E. The maximum height Rock Energy will attach a service drop to a building is 20 ft above the ground. If a greater attachment height is required, the member shall obtain prior approval from Rock Energy.

**SERVICE MAST CONSTRUCTION**

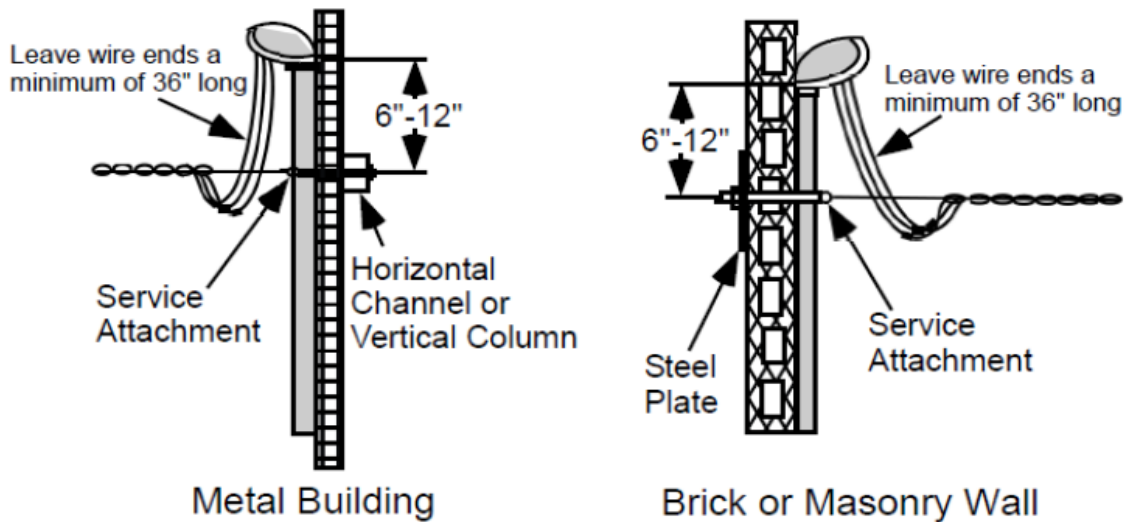
- A. Service masts for support through the roof shall be constructed of galvanized steel Rigid Metal Conduit (RMC) with an inside diameter of no less than 2 inches. Intermediate Metal Conduit (IMC) is not allowed.
- B. The portion of the mast above the uppermost conduit support (roof line) shall be continuous in length without couplings.
- C. Service masts over 48 inches require guying.
- D. Service masts shall not extend more than 6 feet above any roof and must be guyed.
- E. Per NEC, only power service drop conductors shall be permitted to be attached to a service mast.

SERVICE MAST INSTALLATION

FLAT OR LOW-ROOFED BUILDINGS



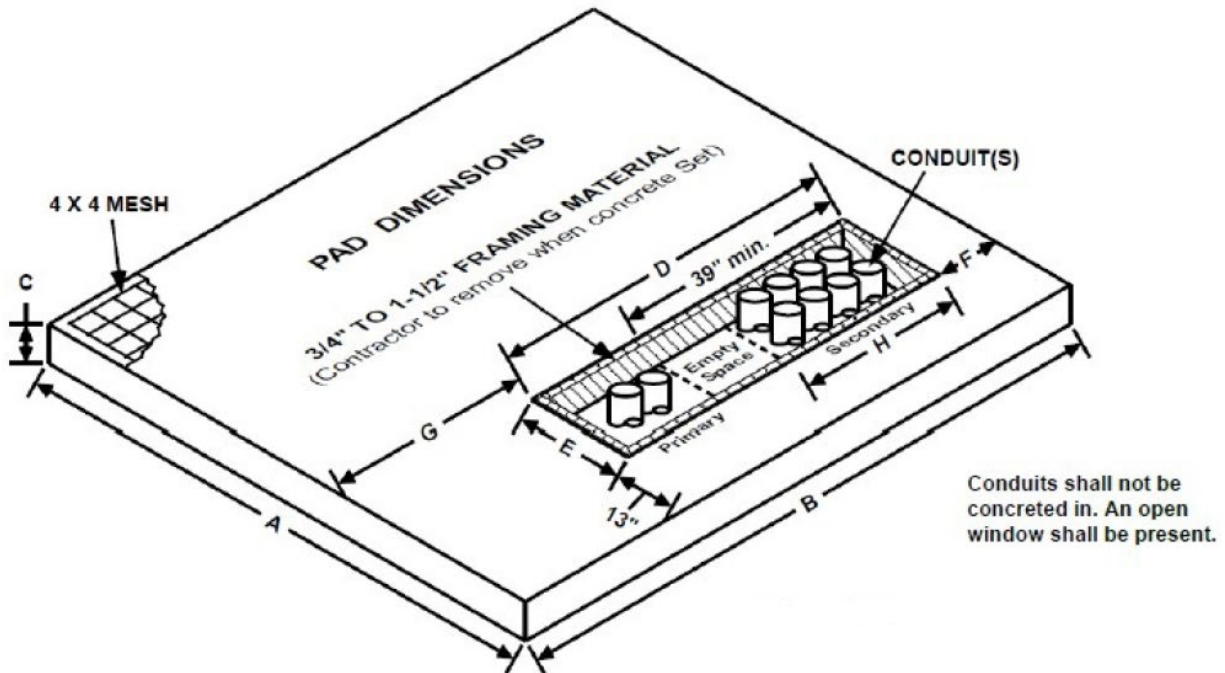
METAL BUILDINGS, BRICK OR MASONRY WALL





**CONCRETE PAD SPECIFICATIONS FOR THREE-PHASE, PAD MOUNT TRANSFORMERS 75 – 2500 KVA**

- A. The member shall install, own, and maintain a concrete transformer pad. Maintenance and replacement costs are the member’s responsibility.
- B. Pad shall rest on firm, well-compacted soil, free of organic or other undesirable materials.
- C. Concrete mix shall have a minimum strength of 4000 lb./sq. in. after 28 days.
- D. The top of the pad shall be level and all edges and corners rounded off.
- E. The pad shall be reinforced with #4 wire, 4” x 4” welded mesh or equivalent materials with additional 3/8 reinforcing rods around the cable opening. The mesh shall not be less than 1” from the edges and opening, and 3” below the surface.
- F. If the #4 wire, 4” x 4” mesh is not available, two layers of #10 wire, 6” x 6” mesh, staggered by 2 inches horizontally, may be substituted for the #4 wire.
- G. Macro-Synthetic Fiber may be used in lieu of wire mesh. The fiber shall be installed per manufacturer specifications for minimum shrinkage and temperature reinforcement for slab on grade applications.
- H. Dalmaray Concrete Products in Janesville WI offers precast options for Type I & II transformer pads. Delivery is available.

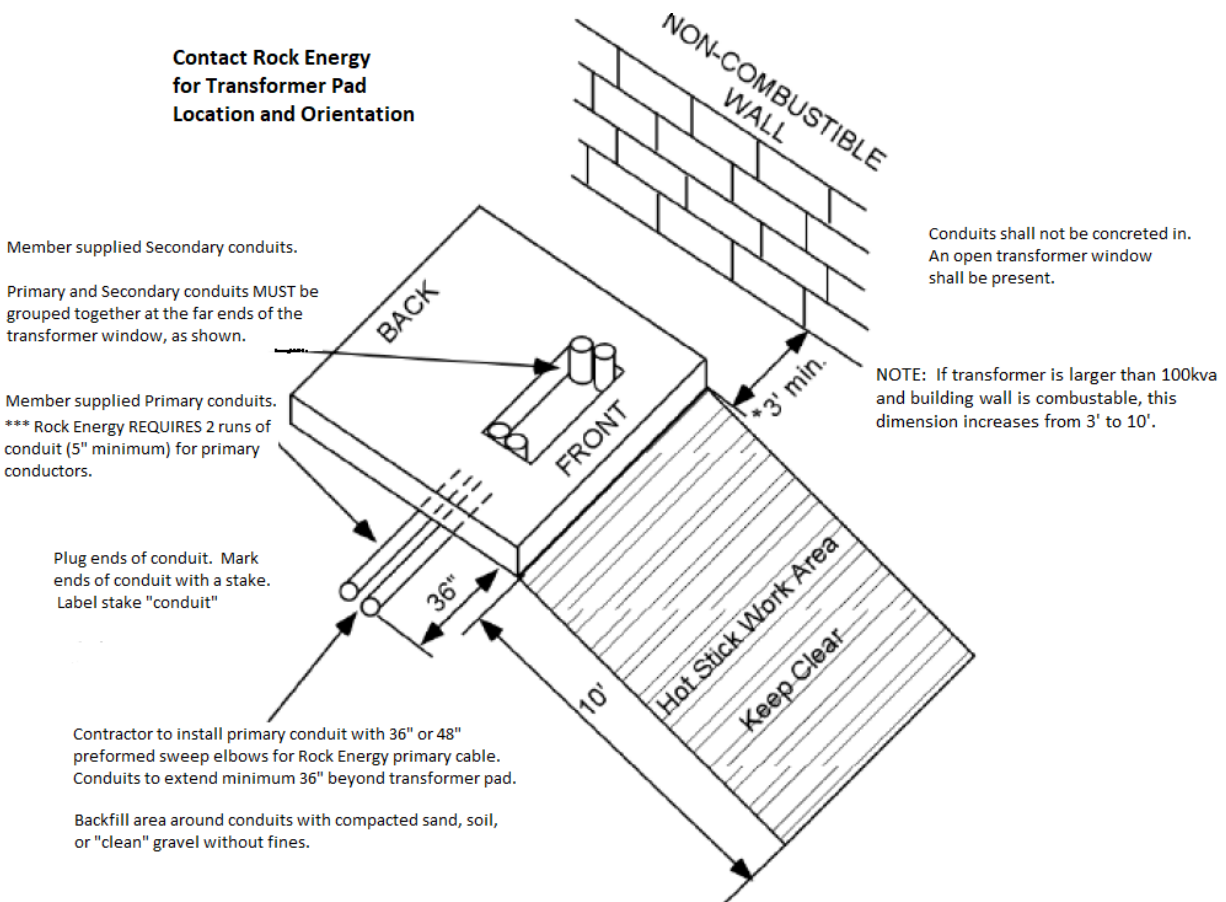


PAD	TRANSFORMER KVA	SERVICE SIZE		PAD SPECIFICATIONS IN INCHES							
		208Y/120 AMPS	480Y/277 AMPS	A	B	C	D	E	F	G	H
I	75-500	100-1200	100-600	84	96	6	55	17	10	31	22
II	750-2500	1600-3000	800-3000	105	108	8	60	17	14	34	27

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**CONCRETE PAD LAYOUT FOR THREE-PHASE, PAD MOUNT TRANSFORMERS 75 – 2500 KVA**


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**NOTES:**

1. A clear space of **10 feet** shall be maintained in front of the transformer to provide working space for hot-stick operation of the transformer AND 3 FEET ON ALL OTHER SIDES. Transformers or other pad-mounted equipment shall not be covered with decorative objects for the purpose of hiding the Rock Energy equipment from public view.
2. Pad mounted CT cabinets may be mounted on an isolated pad, minimum 24" away from, and adjacent to the transformer pad. Contact Rock Energy for pad locations and orientations.
3. REC may require Primary Conduits to extend farther than the noted 36 inches. Contact REC for site visit to determine conduit length requirements and conduit orientation.
4. All conduits shall enter through the window opening provided in the pad foundation. These conduits shall be cut off, so the top of the conduit is flush with the surface of the concrete pad.
5. All metallic conduits shall be fitted with an insulating bushing.
6. When an oil sump is required, excavate 18" under, and around the pad, and fill with coarse crushed rock. Check with local building code to determine if an oil sump is required.



**CONCRETE PAD SPECIFICATIONS AND LAYOUT FOR JOINT PAD THREE-PHASE, PAD MOUNT TRANSFORMER AND METERING TRANSFORMER CABINET “BACK TO BACK DESIGN” 75 – 2500 KVA**

- A. The member shall install, own, and maintain a concrete transformer pad. Maintenance and replacement costs are the member’s responsibility.
- B. The member shall contact Rock Energy for sizes and number of primary and secondary conduits.
- C. Pad shall rest on firm, well-compacted soil, free of organic or other undesirable materials.
- D. Concrete mix shall have a minimum strength of 4000 lb./sq. in. after 28 days.
- E. The top of the pad shall be level and all edges and corners rounded off.
- F. The pad shall be reinforced with #4 wire, 4” x 4” welded mesh or equivalent materials with additional 3/8 reinforcing rods around the cable opening. The mesh shall not be less than 1” from the edges and opening, and 3” below the surface.
- G. If the #4 wire, 4” x 4” mesh is not available, two layers of #10 wire, 6” x 6” mesh, staggered by 2 inches horizontally, may be substituted for the #4 wire.
- H. Macro-Synthetic Fiber may be used in lieu of wire mesh. The fiber shall be installed per manufacturer specifications for minimum shrinkage and temperature reinforcement for slab on grade applications.
- I. Joint pad is an extension of Rock Energy standard transformer pad.
- J. Pad dimensions vary based on Metering Transformer Cabinet used.
- K. For assistance with final pad dimensions, contact Rock Energy.
- L. Joint pads are not allowed at farm installations where livestock may be present.

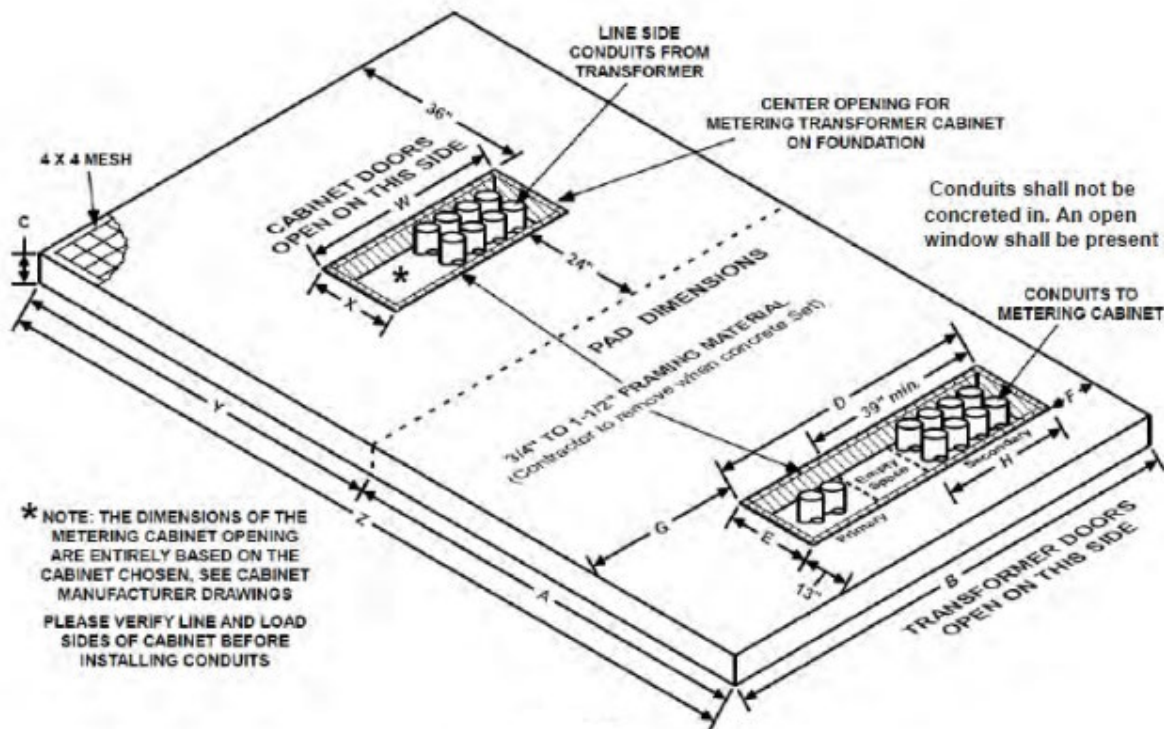
*Note: On a farm with livestock, the Metering Transformer Cabinet and transformer are required to be on separate pads. This has to do with the potential of needing a neutral isolator. If using a shared pad, neutral isolation may be impacted by the metal reinforcing rods.*

PAD	TRANSFORMER	SERVICE SIZE		KNOWN DIMENSIONS							
		KVA	208Y/120	480Y/277	A	B	C	D	E	F	G
		AMPS		INCHES							
III	75-500	100-1200	100-600	84	96	6	55	17	10	31	22
IV	750-2500	1600-3000	800-3000	105	108	8	60	17	14	34	27

PAD	TRANSFORMER	SERVICE SIZE		DIMENSIONS BASED ON METERING TRANSFORMER CABINET USED			
		KVA	208Y/ 120	480Y/ 277	W	X	Y
		AMPS		INCHES			
III	75-500	100-1200	100-600	Width of the cabinet minus 10 inches	Based on Cabinet	60” + depth of the cabinet	A+Y
IV	750-2500	1600-3000	800-3000	Width of the cabinet minus 10 inches	Based on Cabinet	60” + depth of the cabinet	A+Y



**CONCRETE PAD SPECIFICATIONS AND LAYOUT FOR JOINT PAD THREE-PHASE, PAD MOUNT  
TRANSFORMER AND METERING TRANSFORMER CABINET "BACK TO BACK DESIGN" 75 – 2500 KVA  
(CONTINUED)**



**NOTES:**

1. A clear space of **10 feet** shall be maintained in front of the transformer to provide working space for hot-stick operation of the transformer AND 3 FEET ON ALL OTHER SIDES. Transformers or other pad-mounted equipment shall not be covered with decorative objects for the purpose of hiding the Rock Energy equipment from public view.
2. Pad mounted CT cabinets may be mounted on an isolated pad, minimum 24" away from, and adjacent to the transformer pad. Contact Rock Energy for pad locations and orientations.
3. REC may require Primary Conduits to extend farther than the noted 36 inches. Contact REC for site visit to determine conduit length requirements and conduit orientation.
4. All conduits shall enter through the window opening provided in the pad foundation. These conduits shall be cut off, so the top of the conduit is flush with the surface of the concrete pad.
5. All metallic conduits shall be fitted with an insulating bushing.
6. When an oil sump is required, excavate 18" under, and around the pad, and fill with coarse crushed rock. Check with local building code to determine if an oil sump is required.
7. Joint pad IS NOT allowed for Agriculture use.

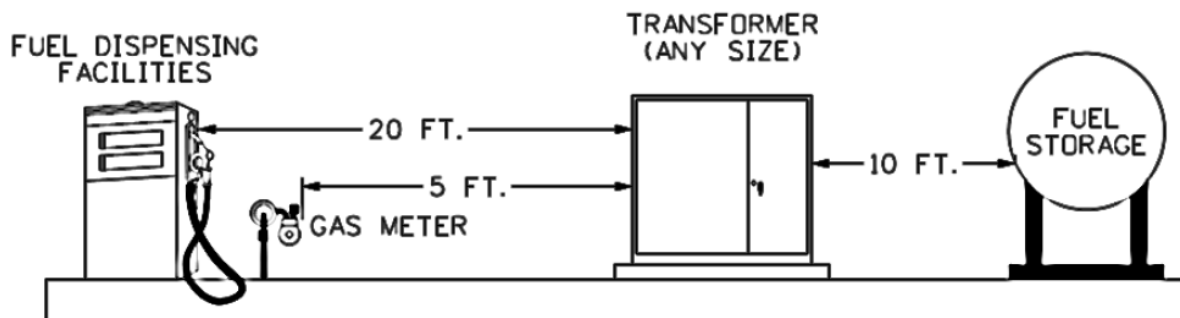
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**PAD-MOUNT TRANSFORMER LOCATIONS**

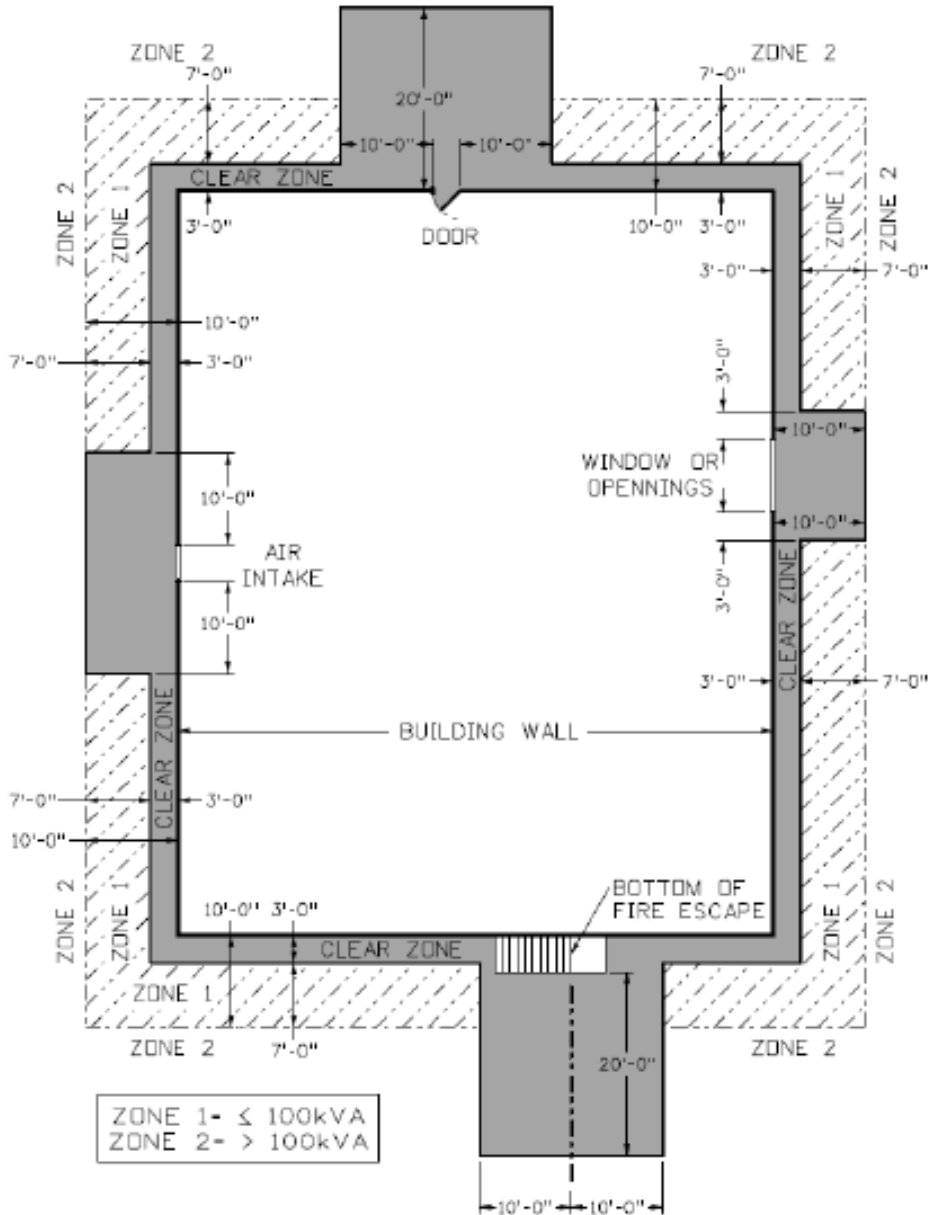
- Rock Energy shall approve the location of all transformer pads.
- Transformer pad locations shall be in accordance with the requirements of NEC, NESC, National Fire Protection Association (NFPA), Environmental Protection Agency (EPA) and any state or local requirements.
- Pad-mounted transformers are to be located far enough from the building overhang so they will not be subject to damage by falling snow and ice.
- Pad-mounted transformer locations shall be graded for proper drainage and be readily accessible by truck or other means for change-out.
- Where danger of snow plowing or traffic damage exists, barriers consisting of concrete filled pipe shall be provided for protection.
- Strict adherence to clearance requirements is required in all cases.

**CLEARANCE TO FUEL EQUIPMENT**

1. Transformers shall have a minimum separation of 5-feet from gas service equipment.
2. A minimum separation of 5-feet shall be maintained between transformers and liquid petroleum facilities on site but not filled on site.
3. If the liquid petroleum facilities are filled on site, the minimum separation is 10-feet.



PAD-MOUNT TRANSFORMER LOCATION MAP



**Notes:**

**Clear Zone:** (Grey Area) = No transformers shall be located in this zone

**Zone 1:** (Shaded Area) = Minimum distance for pad-mounted transformer up to 100 kVA

**Zone 2:** Minimum distance for pad-mounted transformers greater than 100 kVA from a combustible building

An oil-collecting sump shall be installed for transformers over 500kVA if the immediate terrain is pitched toward the building.

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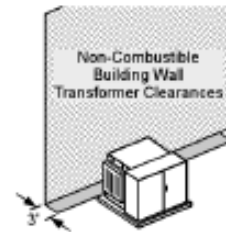
**NON-COMBUSTIBLE BUILDING WALLS**

A non-combustible wall is one that will not ignite, burn or support combustion when subject to fire or heat. Non-combustible walls are made of non-combustible materials, such as Portland cement concrete, full size brick or stone, hollow concrete block or steel.

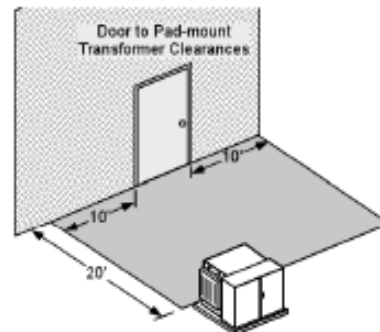
Metal skinned wood framed buildings are considered to be combustible.

A non-combustible wall shall have not less than a 3 hour fire-resistance rating with all openings in the wall protected with 3 hour rated fire door assemblies. Reference Wisconsin's State Electrical Code SPS 316.

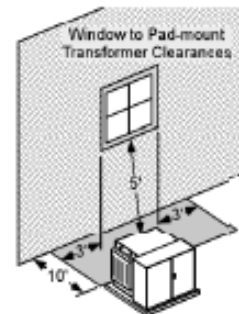
Pad-Mount oil insulated transformers shall be located a minimum of 3-feet away from non-combustible walls. The following clearances shall also be maintained from doors, windows and other openings:


**1. Doors:**

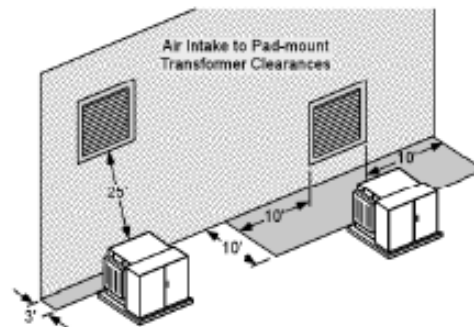
Pad-Mount oil insulated transformers shall not be located within a zone extending 20-feet outward and 10-feet to either side of the building door.


**2. Windows or Openings Other than Air Intake:**

- a) Pad-Mount oil insulated transformers shall not be located within a zone extending 10-feet outward and 3-feet to either side of a window or opening other than an air intake.
- b) Pad-Mount oil insulated transformers shall not be located less than 5-feet from any part of a second story window or opening other than an air intake.


**3. Air-Intake Openings:**

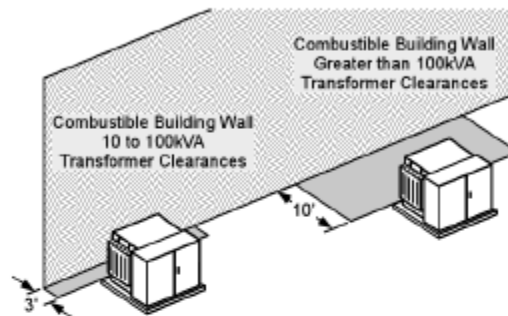
Pad-Mount oil insulated transformers shall not be located within a zone extending 10 feet outward and 10 feet to either side of an air intake opening. Transformers may be located within the zone beneath an air intake opening provided there is a minimum 25 feet diagonal separation between the transformer and the opening.



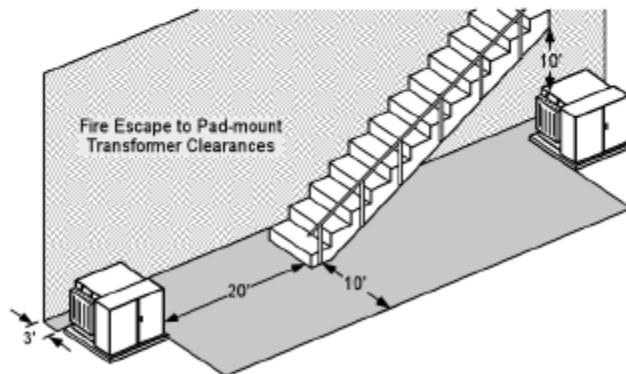
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**COMBUSTIBLE BUILDING WALLS**

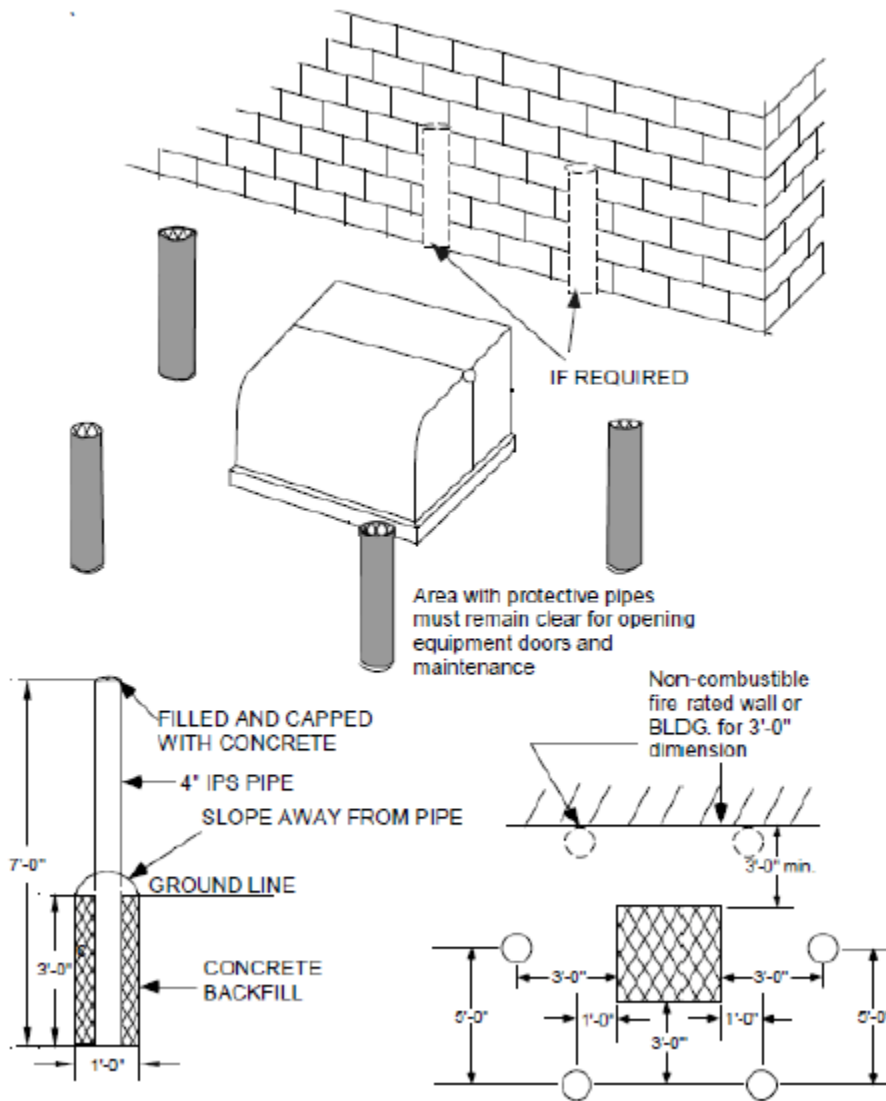
1. Pad-mount oil insulated transformers in sizes up to and including 100 kVA shall be located according to the provisions set forth in the Non-Combustible Buildings Walls Section
2. Transformers greater than 100 kVA shall be located a minimum of 10-feet from a combustible wall. Also, the clearances from building doors, windows and other openings set forth for non-combustible walls shall be maintained.
3. An oil-collecting sump shall be installed for transformers in sizes exceeding 500 kVA if the immediate terrain is pitched toward the building.

**E. Fire Escapes**

Pad-mount oil insulated transformers shall be located such that a minimum outward clearance of 20-feet and a minimum clearance of 10-feet to either side of the point where the fire escape touches the ground shall be maintained at all times. If the pad-mount transformer is located under the fire escape, a vertical clearance of 10-feet shall be maintained.



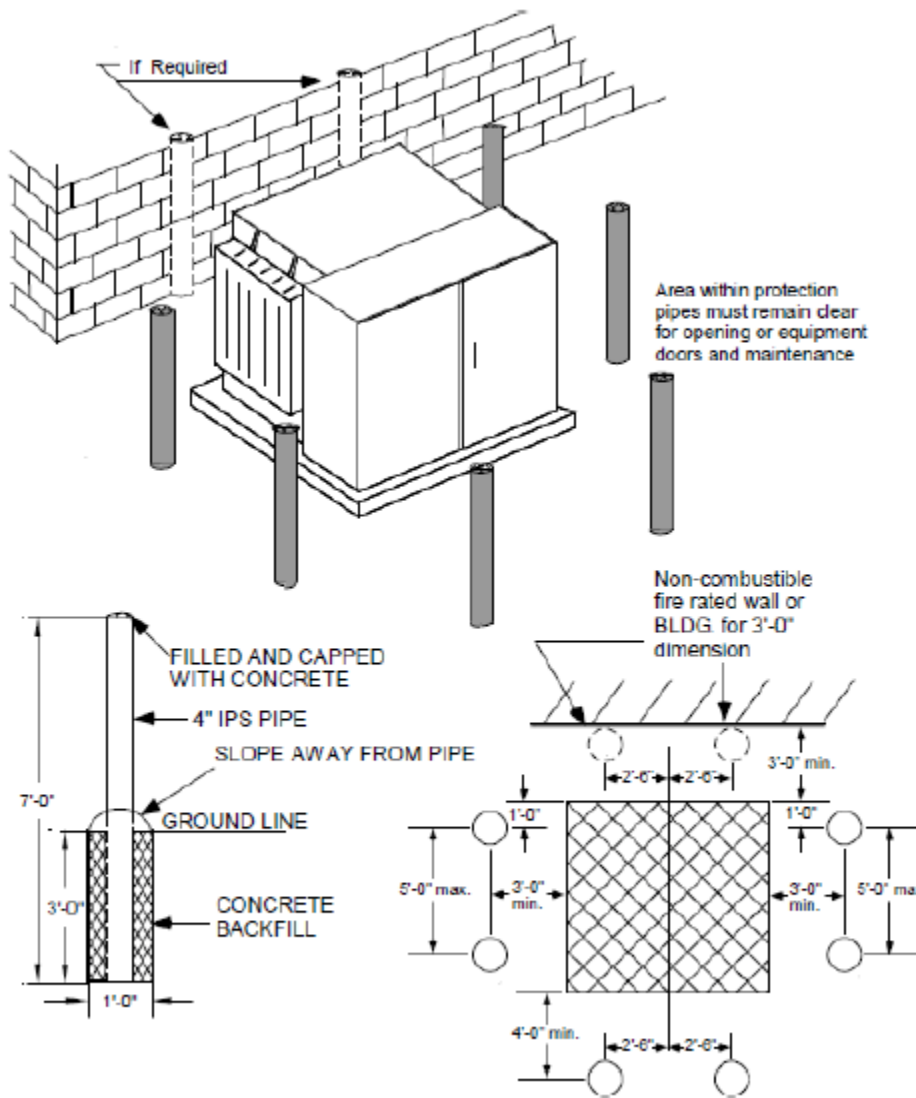
SINGLE-PHASE, PAD-MOUNT TRANSFORMER PROTECTION



Transformer protection required as requested by Rock Energy.

Horizontal Barriers between posts are not allowed without Rock Energy Approval.

THREE-PHASE, PAD-MOUNT TRANSFORMER PROTECTION



Transformer protection required as requested by Rock Energy.

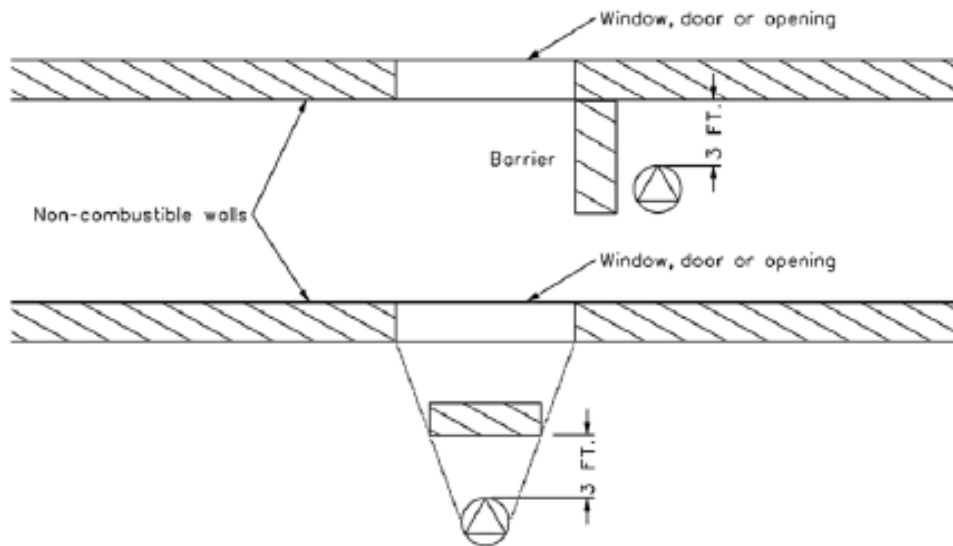
Horizontal Barriers between posts are not allowed without Rock Energy Approval.

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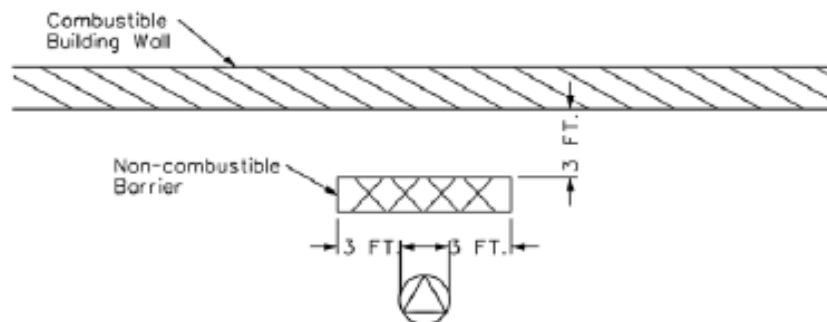
**BARRIERS**

If the clearances specified above cannot be obtained, a fire-resistant barrier may be constructed in lieu of the separation. The following methods of construction are acceptable.

- A. Non-combustible walls** – The barrier shall extend to a projection line from the corner of the pad-mount to the farthest corner of the window, door or opening in question. The height of the barrier shall be 1 foot above the top of the pad-mount transformer.



- B. Combustible walls** – The barrier shall extend 3-feet beyond each side of the pad-mount transformer. The height of the barrier shall be 1-foot above the top of the pad-mount transformer.



- C. A barrier is not an acceptable solution to Air-Intake opening clearance requirements.**






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**UNDERGROUND CONDUIT TYPES**

- A. Rigid Metal Conduit (RMC)
- B. Intermediate Metal Conduit (IMC)
- C. Schedule 80 electrically rated PVC
- D. Schedule 40 electrically rated PVC
- E. Electric Metallic Tubing (EMT) is not allowed.

The table shown below is to be used by Rock Energy personnel, as a general guide to determine the conduit sizes and number for the services listed. The sizes and numbers of these facilities may have to be modified to take into account the length of the lateral, the member loads, and any voltage drop considerations that may apply.

UNDERGROUND THREE-PHASE (25 ft max.)

Main Service Disconnect Amperes	Number of Conduit	Conduit Size	Min. Radius Bend Galvanized Steel	Min. Radius Bend Rigid Non-Metallic
100	1	3"	13"	24"
200	1	3"	13"	24"
300	1	4"	13"	24"
400	2	4"	16"	30"
600	2	4"	16"	30"
800	3	4"	16"	30"
1200	5	4"	16"	30"
1600	4	5"	24"	36"
2000	5	5"	24"	36"
2500	7	5"	24"	36"
3000	8	5"	24"	36"

**NOTES:**

1. All PVC service elbows shall be sweeps, and preformed.
2. For longer conduit runs containing three or more bends, the Member shall consult with Rock Energy for the conduit size, and for the radius bend to use.
3. Conduit installation depths shall meet the minimum requirements as set forth by current NFPA 70 NEC.




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**OVERHEAD SECONDARY CLEARANCES**

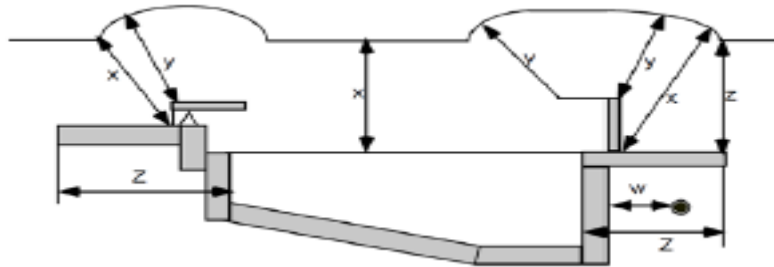
Where Service Drop Attaches or Crosses to a Supplied Building	Minimum Required Clearances	Notes
Weatherhead	Attachments shall be 12 inches min. and 24 inches max. horizontally; 6 inches & 12 inches max vertical from weatherhead	
Building attachment	12 feet above ground	1
Residential areas accessible to pedestrian only	10 feet (0 – 150 volts Phase to Ground)	
Driveway	16 feet above ground (non-residential); 12 feet above ground if residential only (no trucks)	2
Commercial areas not subject to truck traffic	16 feet above ground	
Roads, streets, commercial driveways and other areas subject to truck traffic	18 feet; 20 feet (Iowa State and Federal Hwys); 22 feet (Minn. State and Federal Hwys)	
Decks and balconies readily accessible to pedestrians	10 feet	
Decks and balconies not readily accessible to pedestrians	8 feet where possible; 3.5 feet minimum	3
Drip loop on triplex	10 feet above ground	
Windows, doors, porches, fire escapes, and awnings attached to a building	3 feet	
Where wires pass opposite a window	5 feet	
Communication wires	2 feet	7
Gas Regulator	3 feet from electric meter or terminating equipment; 5 feet from electric transformers	
LP Gas (liquid petroleum)	10 feet from electric metering or termination equipment	4
Where service drop crosses but does not attach to building, or sign, etc.	4.5 feet (Horizontally)	
Where service passes over a roof but does not attach	11 feet (Vertically) if accessible; 3.5 feet (Vertically) if non-accessible	6
Pool or Pond	22.5 feet (any direction 0 – 750 volts); 25 feet from diving board (any direction 0 – 750 volts); 5 feet from Underground Secondary Conductors	5
Where doors open outward	Service equipment shall be minimum of doors width, plus 6 inches away	8

**Secondary Clearance Notes:**

1. If height of building does not permit 12 ft., it may be reduced to 10.5 ft.
2. May be reduced to 12.5 Feet for residential only driveways
3. Maintain 8 feet, if possible, may be reduced to 3.5 feet if necessary
4. If drop is subject to wind movement, the horizontal clearance is 3.5 feet min. at blow out position.
5. Only under the most extreme conditions should lines be run over water
6. **In Wisconsin** clearance may be reduced to 8 feet if accessible and 3.0 feet if it is non-accessible with a 4/12 slope roof
7. Clearances for services over state and federal highways are 17 Feet in Wisconsin
8. Where door opens outward clearance shall be the width of the door plus 6 inches



**MINIMUM CLEARANCES FOR SERVICES 300 VOLTS AND BELOW, OVER POOLS**



	Insulated supply/ service cables up to 750v to ground. Supported and cabled with an effectively grounded neutral conductor	All other supply/ service drop conductors
<b>X-</b> Clearances in any direction to the water level, edge or water surface, base of diving platform or permanently anchored raft	22.5'	25'
<b>Y-</b> Clearance in any direction to the diving platform or tower	14.5'	17'

**W** - Clearance from all underground conductors from the outside edge of the pool shall be a minimum of 5 feet.

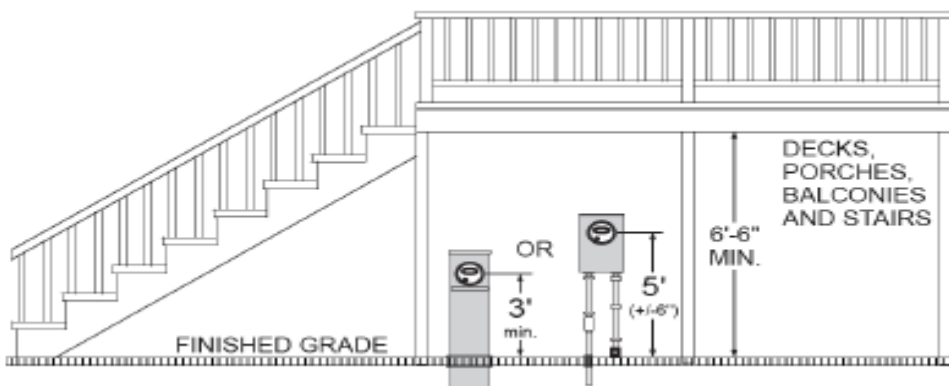
**Z** - Horizontal limit of clearance measured from the inside wall of the pool shall extend to the outer edge of the structure and not less than 10 feet.

**SERVICE CONDUCTOR CLEARANCE FROM SIGNS**

Conductor or Cable	Clearance
Horizontal (displaced by wind)	3.5'
Vertical	3.5'

**METERING EQUIPMENT UNDER DECKS, PORCHES, BALCONIES, OR STAIRS**

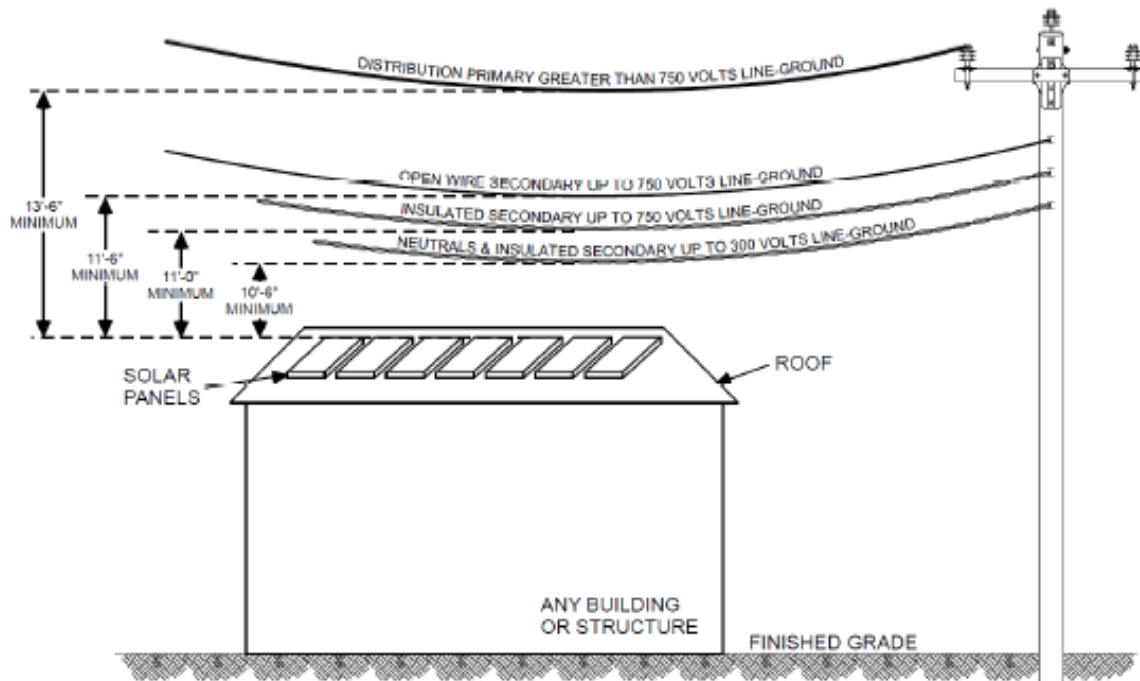
In order for a meter socket, pedestal or any other metering equipment to be located under decks, porches, balconies or stairs, a minimum vertical clearance of 6.5 feet is required.





**SOLAR PANEL CLEARANCE REQUIREMENT**

A minimum clearance of 10.5 feet is required from any Rock Energy secondary or service conductors that cross over any building or structure containing solar panels. Additional clearances are required based on the type of conductor spanning over the location of the proposed solar panel installation.





**SHORT CIRCUIT DUTY REQUIREMENTS**

The member’s service equipment and other devices shall be adequate to withstand and interrupt the maximum available short circuit current (Fault Current).

**A. SELF-CONTAINED METERING: MINIMUM SHORT CIRCUIT CURRENT RATINGS**

120/240 VOLT, SINGLE-PHASE & 120/208 VOLT, SINGLE-PHASE	
Service Ampacity	Minimum Short Circuit Current Ratings
100 amp	10,000
150 amp	10,000
200 amp (service length > 50')	10,000
200 amp (service length < 50')	22,000
300 amp (Commercial)	22,000
320 amp (Residential)	22,000
400 amp (120/240V)	22,000
600 amp (120/240V)	35,000
800 amp (120/240V)	35,000

1. Single Phase meter service applications are limited to a single service and have a maximum transformer size of 50kva for single phase or a 150kva three phase overhead bank. If larger transformer is installed, these numbers will change.
2. Total service ampacity ratings of all present and future service entrance equipment connected to the same overhead service drop or underground service lateral.

**B. INSTRUMENT TRANSFORMER METERING: MINIMUM SHORT CIRCUIT RATINGS**

120/208 VOLT THREE-PHASE	
Service Ampacity	Minimum Short Circuit Current Ratings
400	35,000
600	35,000
800	35,000
1200	65,000
1600	65,000
2000	65,000
2500	65,000
3000	65,000

277/480 VOLT THREE-PHASE	
Service Ampacity	Minimum Short Circuit Current Ratings
400	35,000
600	35,000
800	35,000
1200	35,000
1600	35,000
2000	35,000
2500	65,000
3000	65,000

1. Total service ampacity ratings of all present and future service entrance equipment connected to the same distribution transformer.
2. Minimum fault current equipment requirements do not apply to member yard pole, pole top switches.
3. All 277/ 480 volt services require an instrument transformer metering cabinet.



## ROCK ENERGY APPROVED 13-TERMINAL METER SOCKETS

Manufacturer	Use	Catalog Number	Bypass	Mount	SCCR	Notes
<b>3PH - 13-Terminal - 20 Amp</b>						
<b>Brooks Utility Products</b>						
	OH/UG	602U3060B13-1541 MK	Test Switch	WALL	10KA	
	OH/UG	602U3060B13-1542 MK	Test Switch	WALL	10KA	
<b>Durham, Easton-Cutler Hammer or Midwest Electric Products</b>						
	OH/UG	USTS132*101-()	Test Switch	WALL	10KA	(1)
	OH/UG	USTS132*-()	Test Switch	WALL	10KA	(1)
<b>Erickson Electric</b>						
	OH/UG	I-340	Test Switch	WALL	10KA	
	OH/UG	W-340	Test Switch	WALL	10KA	
<b>Milbank</b>						
	OH/UG	UC7449-XL-871-ALT	Test Switch	WALL	10KA	
	OH/UG	UC7449-XL	Test Switch	WALL	10KA	
<b>Siemens/ Talon</b>						
	OH/UG	9837-0932	Test Switch	WALL	10KA	
	OH/UG	9837-0933	Test Switch	WALL	10KA	
	OH/UG	9837-8503	Test Switch	WALL	10KA	
<b>Tesco/ Advent</b>						
	OH/UG	9070111	Test Switch	WALL	10KA	
	OH/UG	9070122	Test Switch	WALL	10KA	

NOTES:

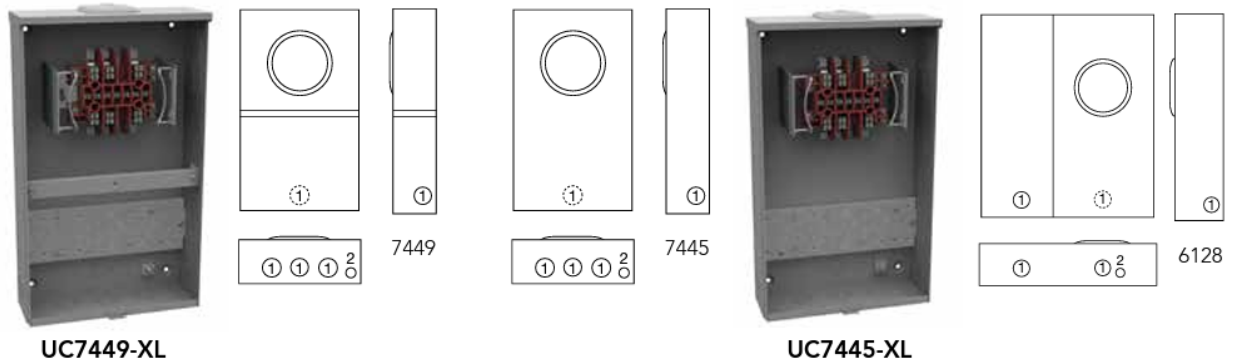


- (1) -() = (blank) Durham, (CH) Easton-Cutlet Hammer, € Eaton, (MEP) Midwest Electric Products or (SQD) Square-D
- (2) UHT, UGHT, UTH, UGTH, UT, USTS & UGT Series: \*= Select desired bolt-on hub or top configuration

13-TERMINAL METER SOCKET AND TEST SWITCH

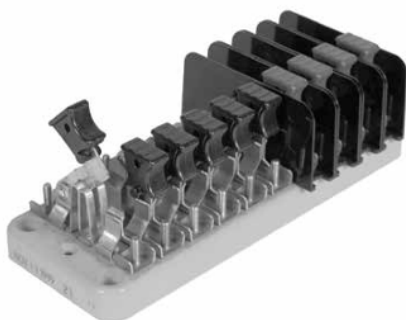
# Transformer Rated

20 Amps | 13 Terminals | Ringless | 600 VAC



Approved | with Factory Wired Test Switch or Test Switch Provision\* | Ringless

Catalog Number	Terminals	Service	Hub	Meter Form	Cover	Connectors CU	Dimensions			Knockouts	
							D"	W"	H"	1	2
UC7449-XL-871-ALT	13	OH/UG	C.P.	6, 8, 9 & (ALT) 10	2 Piece	#14 - #4 Max	4 7/8	12	20	1 1/4	1/4, 1/2



# Test Switches

Catalog Number	10-Pole									
TS10-0109	P	[P]	P	[Pn]	C+	C	C+	C	C+	C