

| Section 4 – Clearances – Directory | Page |
|--|------|
| 4.1 Meter Clearances and Locations | 20 |
| 4.2 Clearances of Overhead Service | 23 |
| 4.3 Conductors Near Pools, Spas, or Hot Tubs | 30 |
| 4.4 Clearance from Hazardous (Classified) Locations | 31 |
| 4.5 Free-Standing Meter Socket Clearances from Permanent Power Company Equipment | 31 |
| 4.6 Clearances Between Equipment Pads and Buildings | 32 |
| 4.7 Firewalls (Blast Walls) | 33 |

4. Clearances

This section provides information on required clearances for meter sockets, clear working space, overhead services, and underground services.

4.1 Meter Clearances and Locations

The customer must provide suitable location, space, and provisions for mounting a meter socket, which must be approved in advance by the Power Company.

All metering equipment shall be installed in locations that are accessible to Power Company employees and their equipment.

Metering equipment shall **not** be installed in the following locations unless approved by the Power Company:

1. Any unsafe location, as determined by the Power Company
2. Any hazardous location, as defined by the NEC, for electrical equipment
3. Directly over any window well, stairway, ramp, or steps
4. In any entryway
5. Within 36 inches (36") of a window that has a view of living space or restrooms, or within 36 inches (36") of a door (*guideline*).
6. In any place where moisture, fumes, or dust may interfere with the meter's operation or may damage the meter, as determined by the Power Company
7. On any surface subject to excessive vibration, as determined by the Power Company



8. On Power Company poles or equipment
9. In an area where metering equipment is likely to be fenced in
10. Where the meter face or the door to the metering equipment is obstructed
11. Where the door to the metering equipment is on (or recessed in) an external surface built within seven feet (7') of a property line, alleyway, or driveway, except when expressly permitted in advance by the Power Company
12. On the drive-through side of a building
13. On mobile structures such as, but not limited to trailers, barges, cranes, dredges, draglines, mobile pumping equipment, boat slips, or floating dwelling units such as houseboats
14. Meters shall not be blocked by any materials, including shrubs, landscaping, or other vegetation
15. Closer than 36 inches (36") horizontally from gas meters, gas valves, fixed or threaded fittings, separable valves or unions, or regulators (See *ESR White Paper 4—Pipe Fittings*)



16. Areas adjacent to fuel storage units, including permanently-mounted generator fuel tanks. (See *ESR White Paper 4—Fuel Storage Tanks.*)



4.1.1 Meter Clearance Dimensions

Requirements:

1. An unobstructed level working space shall be provided per NEC 110.26 A, and as shown in Figure 2 and Figure 3.
2. In installations of two or more adjacent meter sockets, additional horizontal clearance is needed; see Figure 3.
3. For minimum vertical clearance requirements in installations of three or more ganged meters, refer to Sections 8.3 and 9.1.
4. Equipment or other material that may obstruct the working space is not allowed, including the space below the meter.

4.1.2 Residential Meters

The customer must install residential meters outdoors at a location acceptable to the Power Company and in accordance with Section 4.2.1, Figure 4 or Section 4.3.1, Figure 7. The meter shall be located within 10 feet (10') of the front (street side) corner of the dwelling, on the side of the dwelling closest to the Power Company's source, except for remodel of existing services, in which case the meter location must be permitted by the AHJ and approved before installation by the Power Company.

Where there is no suitable location available on the structure, a free-standing metering installation may be used, at a location approved in advance by the Power Company.

4.1.3 Meters in Gated Areas and Enclosed Spaces

Gated outdoor areas and enclosed spaces are not considered accessible. Metering equipment located within a gated area may be approved on a case-by-case basis; consult the Power Company prior to installation.

If prior approval for a gated entry is granted by the Power Company, it shall be keyed for a Power Company key or equipped with a Power Company-provided lock box.

For more information, see *ESR White Paper 4—Gated and Enclosed Spaces*.

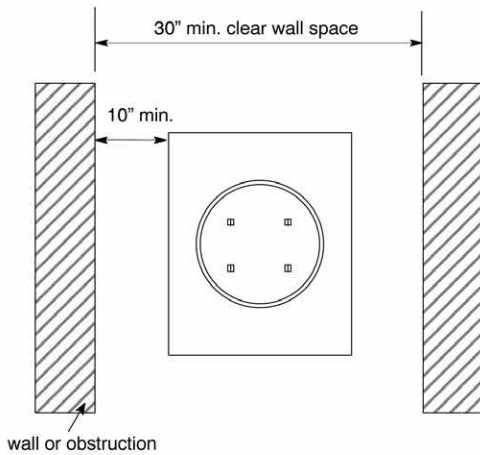


4.1.4 Access

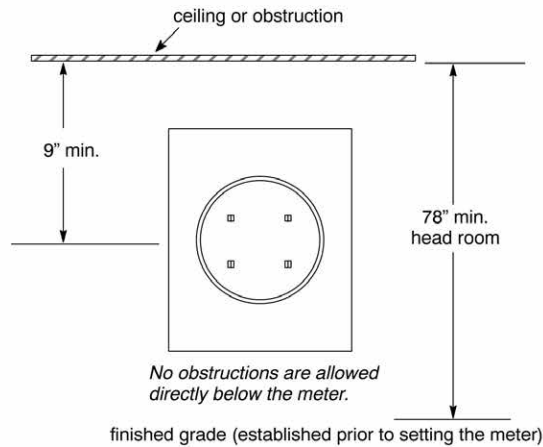
If a meter is inaccessible (as determined by the Power Company), for example, by installing a deck, fence, or enclosure, the customer shall, at their expense, either modify the area to provide safe, unobstructed access to the meter, or move the meter socket to a location acceptable to the Power Company.

Devices mounted below the meter are not acceptable.

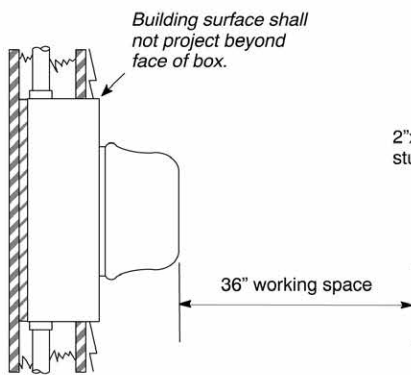
Figure 2—Meter Socket Clearance Requirements



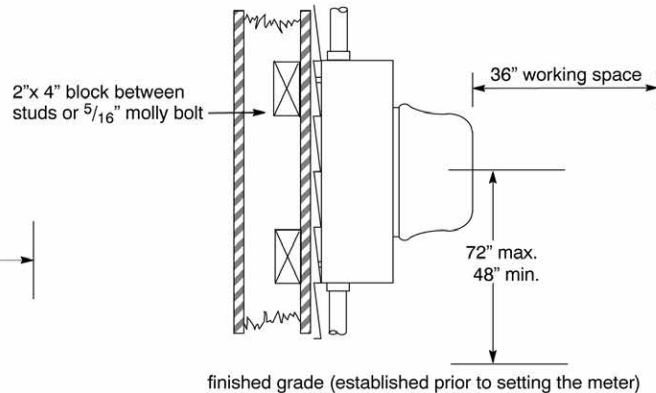
HORIZONTAL CLEARANCE
Flush or surface mount



VERTICAL CLEARANCE
Flush or surface mount

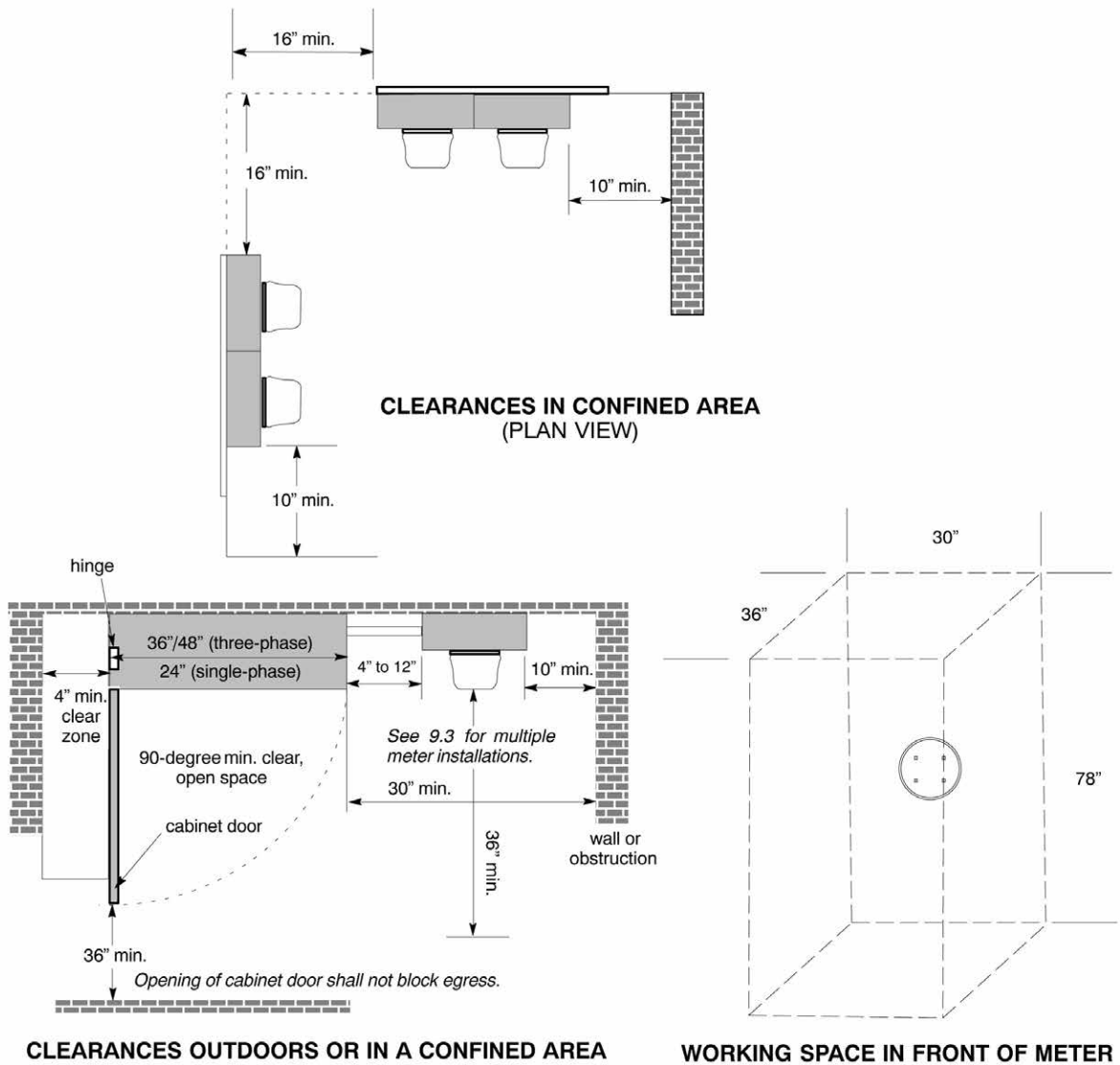


FLUSH MOUNT METER



SURFACE MOUNT METER

Figure 3—Clear Workspace Requirements



4.2 Clearances of Overhead Service

The customer shall provide a point of attachment that allows minimum clearances to be met in all conditions. The clearances listed in Table 6 are required for overhead installations in all states except California. For California clearances, see Table 7. See notes for both clearance tables following Table 7.

Long services or other special cases may require additional clearance. Consult the Power Company if the service length may exceed 45 feet (45'), if the service will cross uneven or sloped terrain, or for situations not listed in the following tables.



For remodels or rewires where services will cross an adjacent property not owned by the customer, consult with the Power Company prior to construction.

Table 6—NESC C2-2012 Clearances for Service Drops and Drip Loops, 750 V and Below

| | NESC Minimum Clearance (ft.) |
|---|-------------------------------------|
| Service drop clearance (NESC Table 232-1) | |
| Over roads, streets, and other areas subject to vehicle traffic over eight feet (8') in height | 16 |
| Over or along alleys, parking lots, and non-residential driveways | 16 |
| Over land travelled by vehicles | 16 |
| Clearances over residential driveways (NESC Table 232-1) | |
| If height of building or installation will permit | 16 |
| If height of building or installation will not permit and is not subject to vehicle traffic over eight feet (8') in height: | |
| • for service drops 120/240 & 120 V/208 Y | 12 |
| • for drip loops of service drops 120/240 and 120/208 V | 10 |
| Clearances over spaces and ways subject to pedestrians/restricted traffic only (NESC Table 232-1. See note 2, Table 7) | |
| If height of building or installation will permit | 12 |
| If height of building or installation will not permit, drip loop clearances may be reduced: | |
| • for 277 V/480 Y (NESC Table 232-1 and applicable notes) | 10.5 |
| • for 120/240 and 120/208 Y (NESC Table 232-1 and applicable notes) | 10 |
| Clearances from building for service drops not attached to the building (NESC Table 234-1) | |
| Vertical clearance over or under balconies and roofs and: | |
| • accessible to pedestrians, if cabled with a grounded bare neutral (not available in coastal areas) | 11 |
| • accessible to pedestrians, if open wire or cabled with an insulated neutral (not available in coastal areas) | 11.5 |
| • not accessible to pedestrians, if cabled with a grounded bare neutral (not available in coastal areas) | 3.5 |
| • not accessible to pedestrians, if open wire or cabled with an insulated neutral (not available in coastal areas) | 10.5 |
| Horizontal clearance to walls, projections, windows, balconies, and areas accessible to pedestrians if: | |
| • cabled with grounded bare neutral (not available in coastal areas) | 5 |
| • open wire or cabled with an insulated neutral (coastal areas only) | 5.5 |
| Clearances for service drops attached to a building or other installation (over or along the installation to which they are attached, service cable with an effectively grounded bare neutral per NESC 230.C) | |
| From the highest point of roofs, decks, or balconies over which they pass and: | |
| • readily accessible (see NESC 234.C.3.d.1) | 10 |
| • not readily accessible (see NESC 234.C.3.d.1, exception 2) | 3 |
| • above a not-readily-accessible roof and terminating at a (through-the-roof) service conduit or approved support, the service and its drop loops set no less than 18" above the roof. No more than 72" of the service cable passes over the roof or within 48" of the roof edge (see NESC 234.C.3.2.1) | 1.5 |
| • in any direction from windows designed to open (does not apply to service cable above the top level of a window; see NESC 234.C.3.d.2) | 3 |
| • in any direction from doors, porches, fire escapes, etc. (see NESC 234.C.3.d.2) | 3 |

Table 7—Minimum Clearances for Service Drops and Drip Loops, California Only (GO 95), 277/480 V and Below

| | GO 95 Minimum Clearance (ft.) |
|---|--------------------------------------|
| <i>Service drop clearance</i> | |
| • Crossing or along thoroughfares in urban districts or crossing thoroughfares in rural districts | 18 |
| • Above ground along thoroughfares in rural districts, or across other areas traversed by vehicles or agricultural equipment | 15 |
| • Over private driveways, lanes, or other private property areas accessible to vehicles used for industrial or commercial purposes | 16 |
| • Over private driveways, lanes, or other private property areas accessible to vehicles used for residential purposes only | 12 |
| • Above ground in areas accessible to pedestrians only | 10 |
| <i>Clearances from buildings for service drops not attached to the building</i> | |
| • Vertical clearance above walkable surfaces on buildings, bridges, or other structures that do not ordinarily support conductors, whether attached or unattached | 8 |
| • Vertical clearance above non-walkable surfaces on buildings, bridges, or other structures that do not ordinarily support conductors, whether attached or unattached | 8 |
| <i>Horizontal and radial clearances</i> | |
| • From fire escapes, exits, windows, and doors | 3 |
| • Horizontal clearance of the conductor at rest from building, bridges, or other structures where such conductor is not attached | 3 |
| <i>Clearances for service drops near swimming pools</i> | |
| • Consult the Power Company prior to the installation of pools, spas, or hot tubs | |

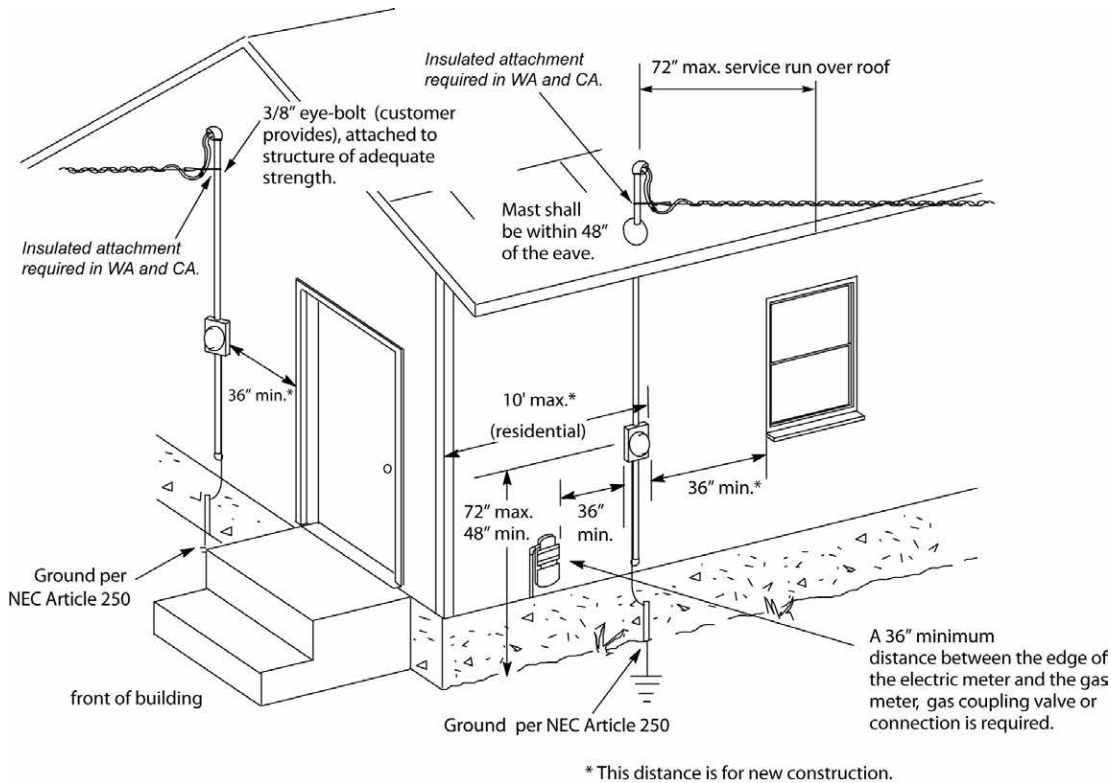
Notes for Clearance Table 6 and Table 7:

1. A “truck” is any vehicle exceeding eight feet (8’) in height. Areas not subject to truck traffic include places where truck traffic normally doesn’t occur or is not reasonably anticipated.
2. “Spaces and ways subject to pedestrians or restricted traffic only” include those areas where equestrians, vehicles, or other mobile units that exceed eight (8’) feet in height are prohibited by regulations, permanent terrain configurations, or are otherwise not normally encountered or anticipated.
3. Roofs, balconies, or other areas shall be considered readily accessible to pedestrians if they can be casually accessed through a doorway, ramp, window, stairway, or permanently-mounted ladder, by a person on foot who neither exerts extraordinary physical effort nor employs special tools or devices to gain entry. A permanently-mounted ladder is not considered a means of access if its bottom rung is eight feet (8’) or more from the ground or other permanently-installed accessible surface (NESC 234.C.3.d, Exception 1).



4.2.1 Clearances for Buildings Supporting an Overhead Service

Figure 4—Clearances for Buildings Supporting an Overhead Service



Requirements:

1. A ten-foot maximum distance from the front corner of a residential building to the far side of the meter is allowed.
2. Table 6 and Table 7 list the minimum drip loop and service drop clearance requirements.
3. The cable and drip loop (lowest point) shall be at least 18 inches (18") above a non-accessible roof (NESC 234.C.3.d, Exceptions 1 and 2).
4. Meters shall not be installed within 36 inches (36") of a window that has a view of living space or restrooms, or within 36 inches (36") of a door (*guideline*).
5. The customer must install residential meters outdoors at a location acceptable to the Power Company and in accordance with Figure 4.
6. Buildings shall not be constructed under or adjacent to power lines.
7. For further details regarding meter clearances and locations, see Section 4.1.

4.2.2 Mast Guying and Bracing

If the point of attachment is more than 36 inches (36") above a point of support on the mast, two independent guys are required to secure the masthead. Figure 5 and Figure 6 show guyed masts, a braced mast, and anchoring options.

Table 8—Acceptable Service Conductor Lengths for Wall-Mounted Meters

| Service Mast (Steel Conduit) | Service Size | Utility Service Length without Guying | Utility Service Length with Guying |
|------------------------------|---------------------|---------------------------------------|------------------------------------|
| 2" min. | 200 A or Less | 60' Maximum | 90' Maximum |
| 2 1/2" min. | 201 - 400 A Service | 45' Maximum | 90' Maximum |
| | 401 A and Above | Consult the Power Company | |

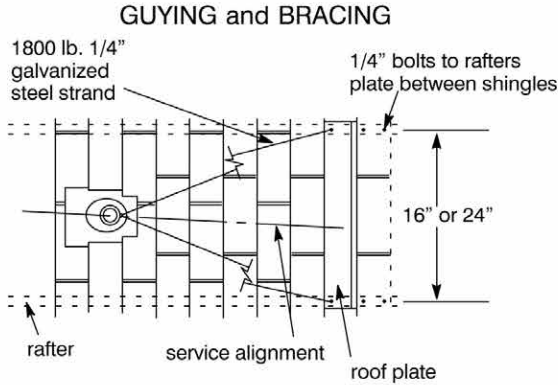
Note: For clearances, see Section 4.2.

Requirements:

1. The service mast shall extend through the roof line except when sufficient height can be obtained to meet the clearances given in Table 6 or Table 7.
2. Where the mast has service cable attached to it, the mast shall be Rigid Metallic Conduit (RMC) or Intermediate Metallic Conduit (IMC). IMC may not be allowed by the authority having jurisdiction.
3. The mast shall be securely fastened to the building.
4. Conduit coupling shall not be installed between the roof line and the point of attachment.
5. Guying is required if a coupling is within eight feet (8') of the weatherhead and located above the last point of securement to the structure.
6. The mast shall be guyed if the point of attachment is more than 36 inches (36") above the roof line.
7. Guying shall be 1/4" common galvanized steel strand or equivalent, rated at 1,800 lbs. Two guys are required.
8. Building-mounted masts shall use a rigid steel pipe clamp as the point of attachment between the guy wire and the service mast (except in contaminated and coastal areas stainless steel pipe clamp is required). The point of attachment shall be securely fastened to a significant structural member.

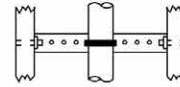


Figure 5—Mast Guying, Anchoring, and Bracing

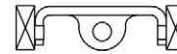


The roof plate must be installed such that the service alignment extension falls within the angle of guys.

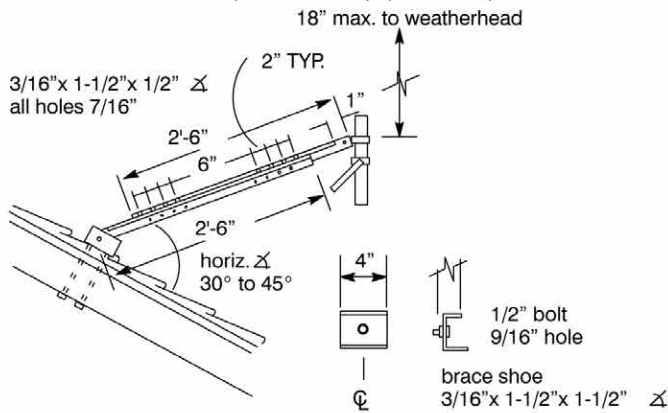
MAST ANCHOR



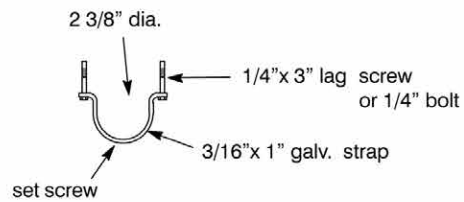
METAL BRACKET (OR EQUAL)



PUSH BRACE (OR EQUAL) (2 REQ'D)

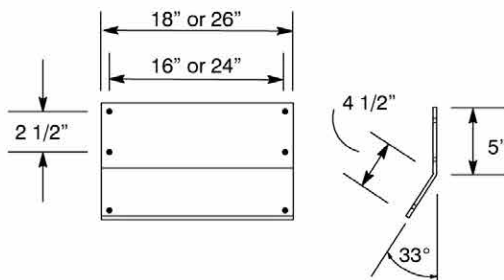


ANCHOR STRAP NO. 1 (OR EQUAL)



3/8" eye bolts and washers with header block between rafters are acceptable, but eye lags are not acceptable.

ROOF PLATE (OR EQUAL)



ANCHOR STRAP NO. 2 (OR EQUAL)

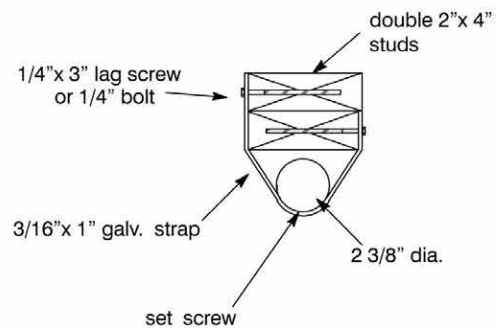
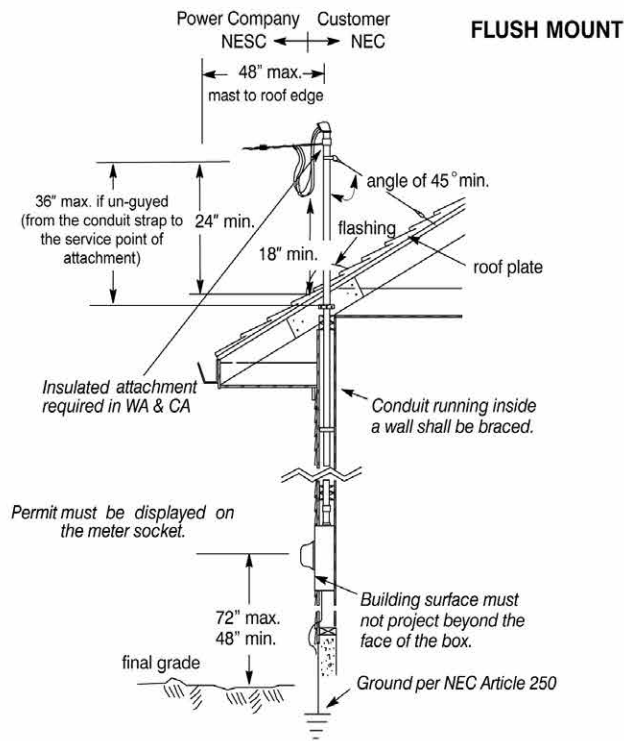
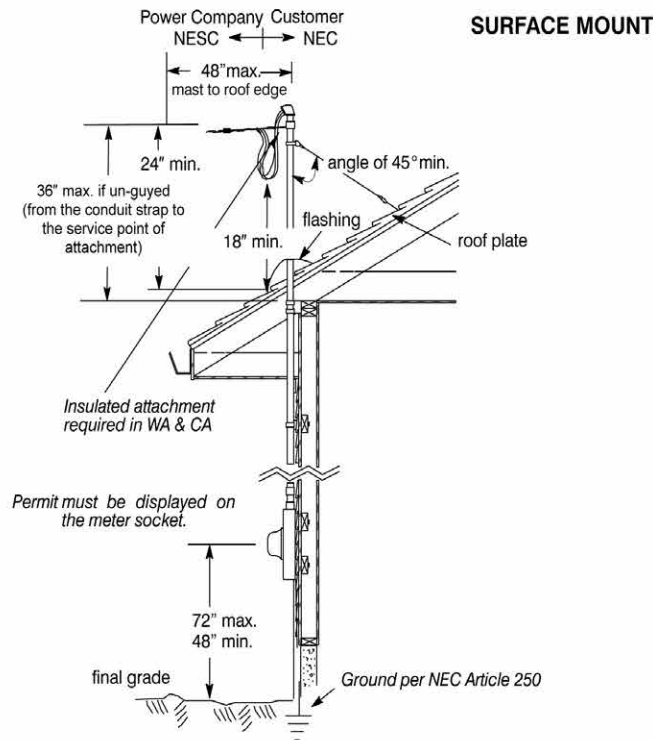


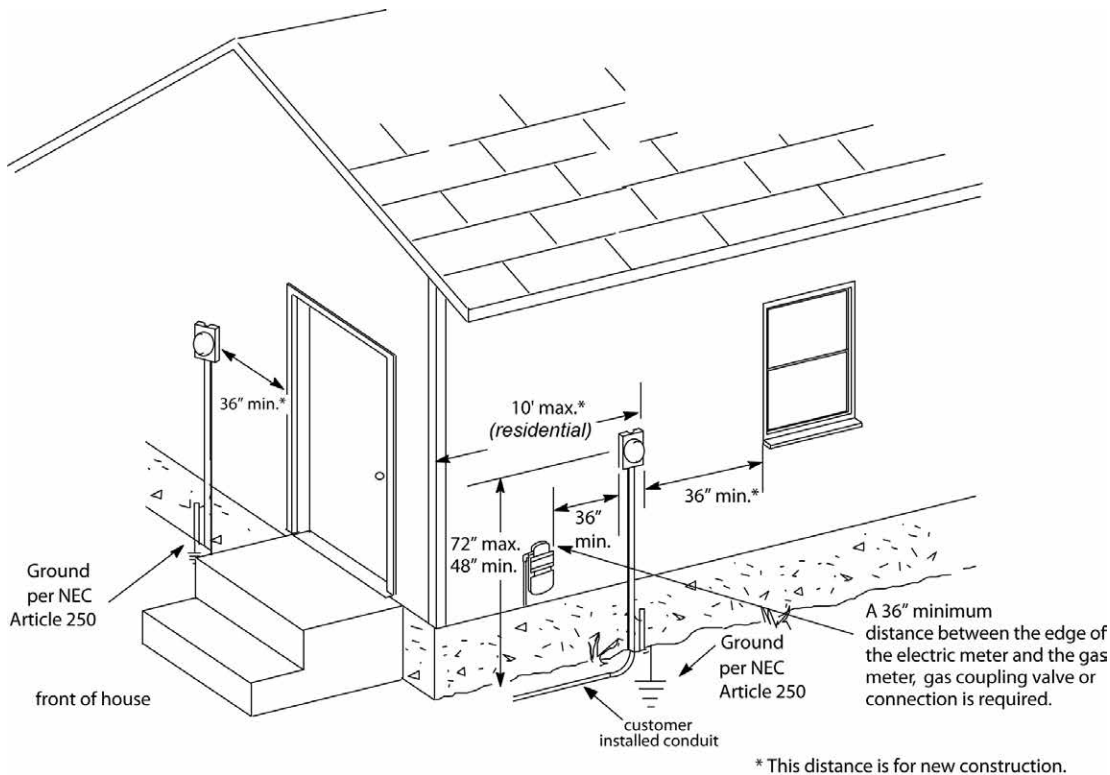
Figure 6—Overhead Service to Wall-Mounted Meters
Surface or Flush-Mount Metering (New and Rewire)



4.2.3 Clearances for Underground Service

Clearances for Underground Service

Figure 7—Clearances for Underground Service



Requirements:

1. A ten-foot maximum distance from the front corner of a residential building to the far side of the meter is allowed.
2. Meters shall not be installed within 36 inches (36") of a window that has a view of living space or restrooms, or within 36 inches (36") of a door (guideline).
3. The customer shall obtain Power Company approval for the meter location prior to installation.
4. A minimum of 24 inches (24") of backfill above underground conduit is required. See Figure 11.
5. For further details regarding meter clearances, see Section 4.1.

4.3 Conductors Near Pools, Spas, or Hot Tubs

4.3.1 Overhead

The Power Company recommends that pools, spas, or hot tubs not be placed below or near overhead conductors. Consult the Power Company before placing pools, spas, or hot tubs



below or near overhead conductors.

4.3.2 Underground

Never locate underground conductors under or within 60 inches (60") horizontally from the inside wall of a pool or spa. Likewise, pools or spas shall not be installed over or within 60 inches (60") horizontally from an existing underground conductor.

4.4 Clearance from Hazardous (Classified) Locations

Power Company distribution equipment will not be installed in any location classified as hazardous per NEC 500. Customers must provide adequate working clearance (for construction and maintenance) to ensure that neither Power Company equipment nor personnel are in locations classified as hazardous. Upon Power Company request, customers shall provide documentation as defined in the NEC 500.4 (A).

4.4.1 Clearance from Fuel Storage Tanks

For information about clearances around fuel storage tanks see *ESR White Paper-4—Fuel Storage Tanks*.



4.5 Free-Standing Meter Socket Clearances from Permanent Power Company Equipment

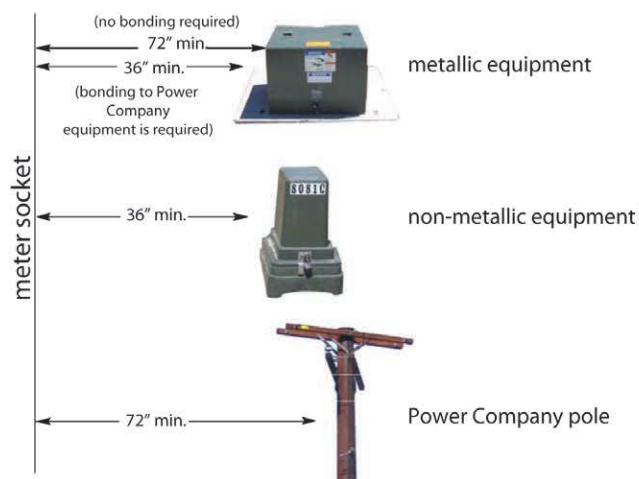
The customer shall comply with the distances listed in the figures below, in addition to state and local requirements.

Figure 8—Free-Standing Meter Socket Clearances from Permanent Power Company Equipment

The meter socket shall be a minimum of 36" from a transformer or other metallic equipment. Distances less than 72" require bonding to Power Company equipment.

The meter socket shall be a minimum of 36" from non-metallic equipment (such as secondary boxes). Greater separation may be needed for conduit and minimum sweep requirements.

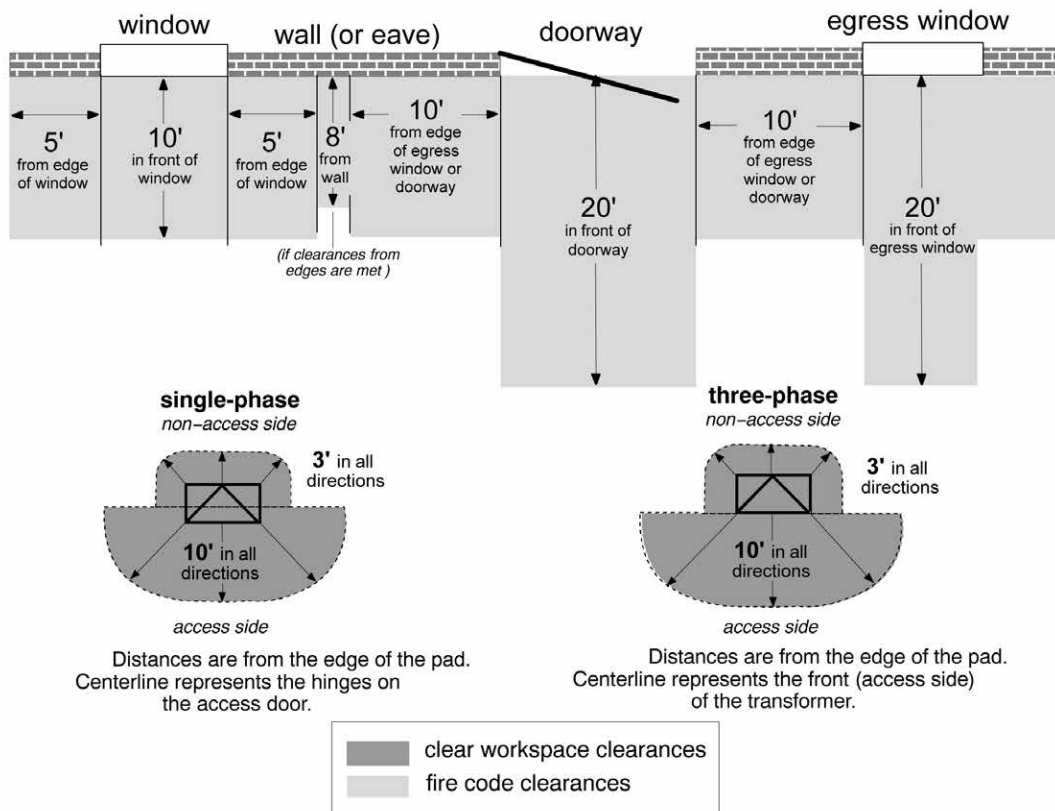
The meter socket shall be a minimum of 72" from a pole. (Customer-owned poles taller than 10' shall not be placed beneath overhead lines.)



4.6 Clearances Between Equipment Pads and Buildings

The customer shall comply with the distances listed in the figures below, in addition to state and local requirements.

Figure 9—Minimum Clearances Between Equipment Pads and Buildings



Requirements:

- Distances noted in Figure 9 and Table 9 are from the edge of the equipment pad.
- If the building has an overhang, the distance is measured from the outside edge of the overhang.
- Outside edges of any attachments to the building, such as ramps, and stairs, will be considered part of the building perimeter.
- Distances less than those specified in Table 9 (but not less than the required working space) may be allowed if approved by the appropriate code enforcement authority. This may require alternate means of fire protection per NEC Section 450.27 and NESC Section 152(A)(2), including fire barriers, fire-rated walls, sprinkler systems, oil-containment means, or other measures. Use of alternate means of fire protection must be approved by the authority having jurisdiction.
- The final grade at the location of the transformer should provide oil drainage away from the building. Otherwise, an adequate oil containment means is required.

6. The customer shall conform to all local building codes, insurance regulations, and/or ordinances affecting the transformer location.
7. Combustible/non-combustible construction types are defined by respective state building codes.
8. No vegetation over six inches (6") in height shall be present in the clear workspace (see Figure 9).
9. Trip hazards such as gutters, spigots, etc., shall not exist within the clear workspace (see Figure 9). Curbs may be acceptable in the clear workspace; consult the Power Company during site scoping.
10. A minimum 72 inch (72") clearance between fire hydrants and metallic pad-mounted equipment shall be maintained. This clearance may be reduced to 48 inches (48") for non-metallic equipment. Greater separation may be required by local ordinances.
11. Where equipment is exposed to vehicle traffic, barrier posts are required; see Section 1.11, and consult the Power Company for installation-specific requirements.
12. Additional clearances may be required for other pad-mounted equipment.

Table 9—Minimum Clearances Between Oil-Filled, Pad-Mounted Equipment and Structures, and Structure Openings

| Type of Framing | Clearance in Front of Framing (ft.) | Clearance to Side of Framing (ft.) | Vertical Clearance from Framing (ft.) |
|---------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Fire escape | 20 | 10 | |
| Doorway | 20 | 10 | |
| Window that can be opened | 20 | 10 | |
| Solid window | 10 | 5 | 10 |
| Air vent intake | 20 | 10 | 25 |
| Air vent exhaust | 10 | 10 | 25 |
| Combustible surface | 8 | 10 | |
| Non-combustible surface | 3 | 10 | |

4.7 Firewalls (Blast Walls)

At locations where the clearances in Table 9 are not met, a firewall (also called a blast wall) may be constructed. The firewall shall be constructed such that the heat and flame from a dynamic event are deflected away from a combustible surface or a storage tank.

The firewall shall be approved by the authority having jurisdiction. Consult the Power Company for information on firewalls. Also see *ESR White Paper 4—Firewalls*.

