



Electrical Service Requirements

RESIDENTIAL SERVICE

OVERHEAD

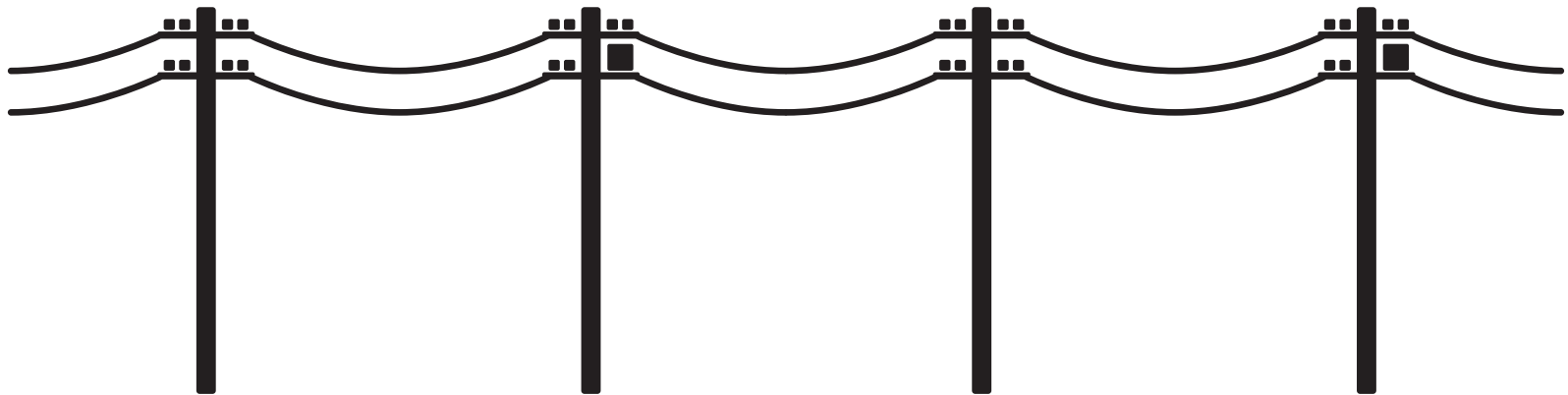


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GENERAL

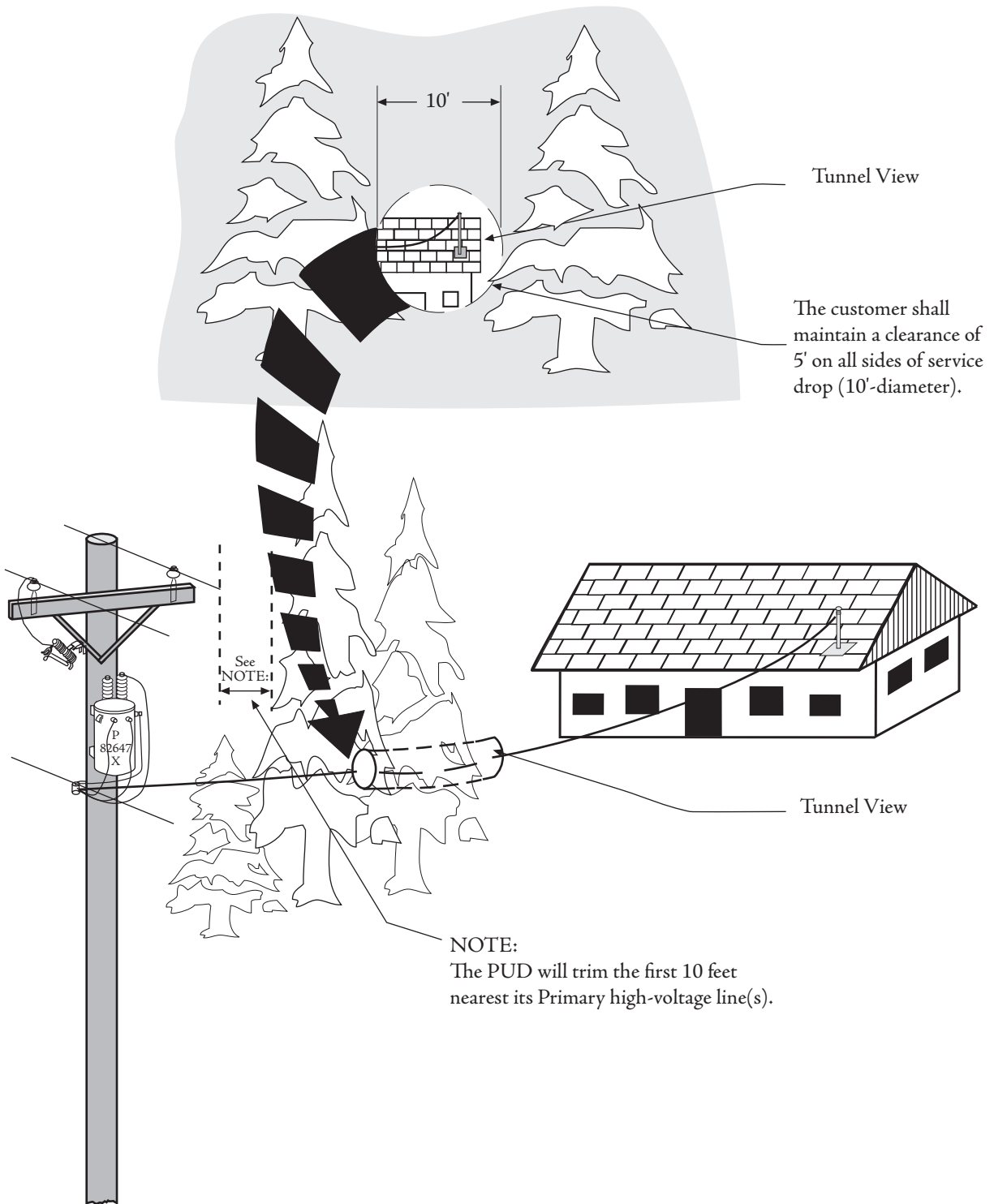
1. Availability and location of PUD facilities for providing overhead service shall be determined at the PUD's office before proceeding with the wiring. Site Plans, Legal Description and New Service Questionnaire/Agreement shall be submitted to the PUD as much in advance as possible prior to any construction.
2. The customer shall do all tree trimming on private property necessary for safe construction and operation of the PUD's electrical facilities, prior to construction.
3. Service drop conductors will not be installed until all electrical inspections have been completed and approved by the PUD and the governmental agency having jurisdiction.
4. The service entrance shall be located so that only one set of service wire attachments (of like voltage) will be required.
5. The PUD will designate the point of attachment for all service drop conductors and the location of the service entrance equipment. When a pole is required for the customer's convenience, the cost and condition shall be in accordance with the PUD's Customer Service Regulations.

CLEARANCES

1. Service Clearing
 - a. Remove trees and limbs a minimum of 5 feet on all sides of proposed service drop route. This is to be maintained by the customer, contact your PUD Area Designer for possible assistance. Refer to Figure 3-2.
 - b. Remove leaning trees beyond the 5 feet minimum on each side, which constitute a potential hazard to the proposed line.
 - c. It is recommended that any trees that may present a future hazard to the service wire (i.e., rotting, dead, or leaning trees that may fall or be blown down) should be removed.
 - d. Should it be necessary to run a service drop through a more congested area than described above, it is the customer's responsibility to top or remove all trees or obstacles taller than 12-½ feet within the service drop area.

Exception: Very large evergreen (e.g., fir and cedar) may be left if mutually agreed upon by the customer and the PUD representative. No variance form required. Side trimming is required.

Figure 3-2: Service Clearance

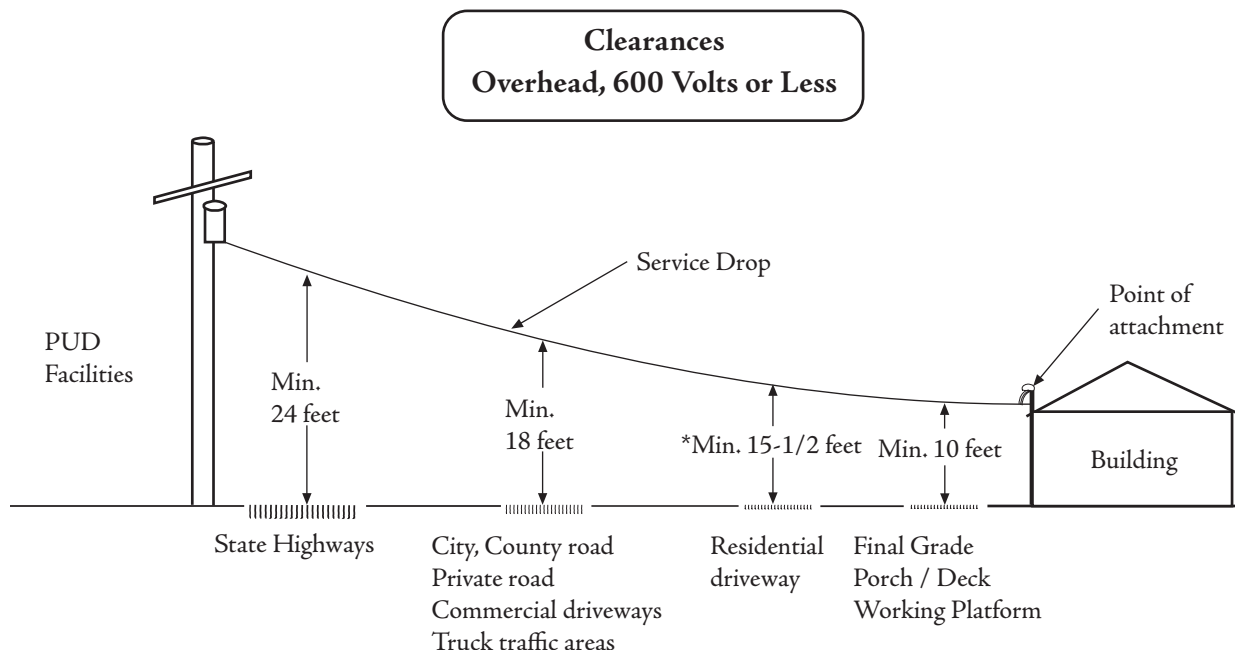


2. Service Clearance

- a. Where the roof is readily accessible and the service voltage is 120/240V, the service drop conductors shall have a clearance of not less than 10 feet from the highest point of the roof over which it passes. Where the roof is or is not readily accessible and the service voltage is 277/480V, the service drop conductors shall have a clearance of not less than 10 feet from the highest point of the roof over which it passes. NESC 234.C.3.d.(1). However, the clearance may not be less than 3 feet where the voltage between conductors does not exceed 300 volts and the roof is not readily accessible or cannot be readily walked upon. These clearances shall be maintained except within 4 feet of the point of attachment. Reference NESC 234.C.3.d.(1).
- b. The service attachment bracket shall be a minimum of 10 feet above the ground at the point of attachment and high enough to maintain a service conductor clearance of 10 feet over a finished grade or working platform, 15-1/2 feet over residential driveways, 18 feet over city, county or private roads, streets, alleys and all driveways other than residential, and 24 feet over State highways. The point of attachment shall not be more than 20 feet above the grade unless specifically approved by the PUD. Refer to Figure 3-3 and (NEC 230-24).

Exception: Where the height of attachment to a building or other installation does not permit 15-1/2 feet of clearance, clearances over residential driveways may be reduced to 12 feet for supply service drops limited to 150 volts to ground (NESC 232-1).

Figure 3-3: Minimum Service Clearances



METERING EQUIPMENT - MOUNTING SPECIFICATIONS

1. The customer shall furnish and install all required service brackets for wall or mast mounting. When the circumstance is such that the PUD must run larger than 1/0-service wires, the customer shall install a heavy-duty service rack. Refer to Figure 3-7.

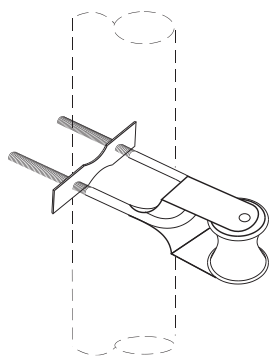


Figure 3-4
Service Mast
Bracket (Trunnell)

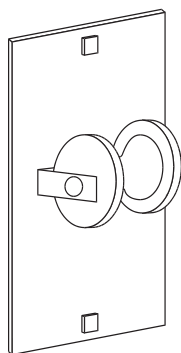


Figure 3-5
Deadend Plate
Bracket (Strike
Plate)

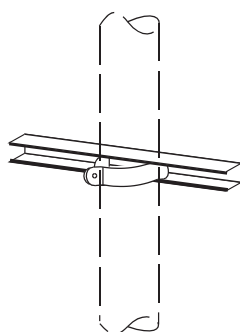


Figure 3-6
Kindorf/Unistrut
Bracket

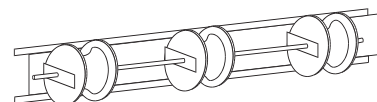


Figure 3-7
Heavy-duty
Service Bracket

APPROVED BRAND	MODEL NUMBER
FLORIDA WIRE AND CABLE	FW768 W/ 3 - FW151
MCGRAW (COOPER)	DR1F8
AB CHANCE	C207-0052 W/ 3 - C909-1032
PORCELAIN PRODUCTS	4038

2. The service mast shall consist of a minimum 2-inch rigid galvanized steel conduit and must have a lead ring or neoprene type flashing at the roofline. Two “U” bolts spaced at least 2 feet apart shall be required to attach all mast services. If a coupling is used, it must be located at least 3 feet below the wall plate and “U” bolts must be installed near the wall plate and as close to the top of the coupling or reducer as possible. There shall be no couplings above the plate unless the distance between the lower couplings and weatherhead exceeds 10 feet. In such situations, an additional guy attached immediately above the coupling shall be required. Refer to Figure 3-8, 3-9 and 3-10.

Note: Refer to State of Washington, Department of Labor and Industries, Electrical Inspection Division, Rules and Regulations for specifics on service mast installations.

3. Non-metallic conduit may be used for service entrance conductors where the service bracket or other point of attachment for service drop conductors is not attached to the conduit and is on the

outside lines of the building. Refer to Figure 3-11.

4. Where there is no problem with roof clearances, mast type services must have a minimum height of 18-inches extending above the roof to the point of attachment.
5. Approved metal strike plate, complete with insulator attached, shall have corrosion-resistant carriage bolts of not less than 3/8-inch diameter. Refer to Figures 3-5 and 3-11.
6. For a duplex or larger building where only one strike to the building is permitted but more than one weatherhead is desired, the weatherheads must terminate within 18 inches of each other.
7. Only three conduits per service entrance shall be used. Two of the masts shall be within 18 inches of the central mast attachment point.
8. Weatherheads are required on all overhead service conduits.
9. The practice of attaching a strike plate to the bargeboard and fanning the conductors above the edge of the roof to connect to a service mast will not be permitted. Strike plate attached directly to the roof is not acceptable.
10. Unfused service conductors within a building or structure shall be installed in metallic raceways, other than electrical metallic tubing, permitted in Section 230-43 of the NEC or in schedule 80 rigid non-metallic conduit. The raceway shall extend no more than 15 feet inside the building or structure. Reference WAC 296-46. Install conduit per NEC 300-4 requirements.
11. The PUD will run the secondary service and make permanent service connections, furnish and install meters.
12. Service masts, weatherheads and strike plates must be permanently and safely accessible. If a service mast cannot be reached by a PUD service truck then it must be located:
 - a. 17 feet or less above the ground or ladder base and less than 18 inches from the edge of the roof (refer to Figure 3-12),

Note: If a ladder is to be used there must be a firm, level surface and enough clearance at the base of the ladder to allow a ratio of 4:1 (1 foot out from the top support or wall for every 4 foot in working length or height) or a 75-degree pitch for ladder safety.

Where the service insulator is 4 feet from the edge of the roof and 18 inches above the roof or 3 feet from the edge of the roof and not higher than 4 feet above the roof it may be worked from a ladder.

or
 - b. The service insulator cannot exceed 6 feet above the roof and the roof must be able to be

walked on and worked on safely. Roofs not acceptable to the PUD are roofs with pitches 4:12 or greater and roofing that may be easily damaged like soft tile, metal, glass or fiberglass. Also, any roof that the PUD inspector considers unsafe, deteriorated or not structurally sound is unacceptable.

13. WAC 296-155-24510 requires employees exposed to a hazard of falling from a location 10 feet or more in height to be protected by fall restraint, fall-arrest systems, or positioning device systems.

Due to the above requirement, in some cases, such as when a roof or shed extension has been added and the PUD cannot reach the strike point either by ladder in compliance with current strike requirements, or by truck, it will be necessary for the customer to install a new strike point and new conductor to allow the PUD to reach the location in compliance with current regulations and requirements. The customer will also need to secure an electrical inspection and approval of the work done from the appropriate jurisdiction before the PUD can make permanent connections at the new strike location. Refer to Figure 3-13.

Figure 3-8: Surface Mount Outside Wall Installation

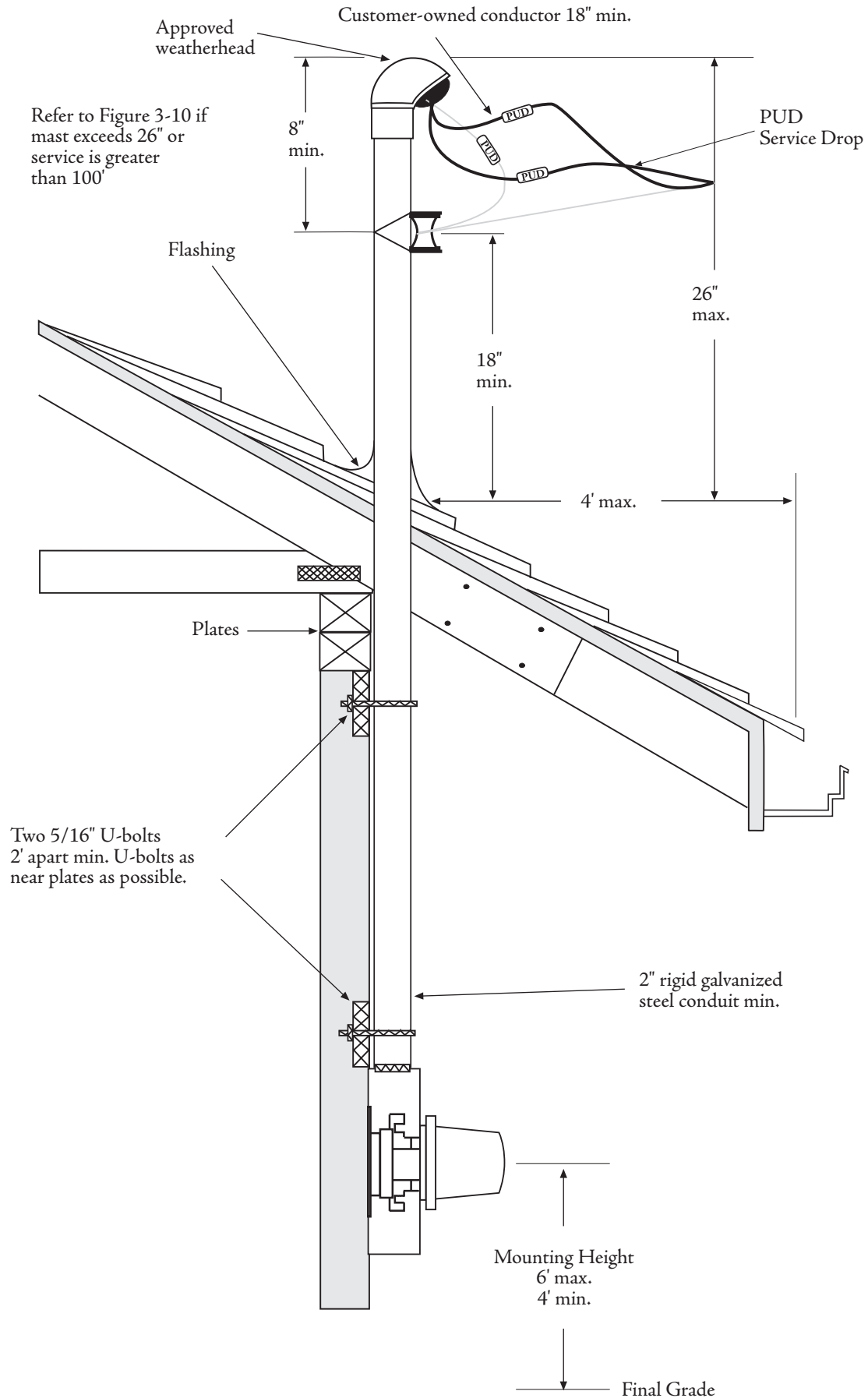


Figure 3-9: Overhead Service Bracing

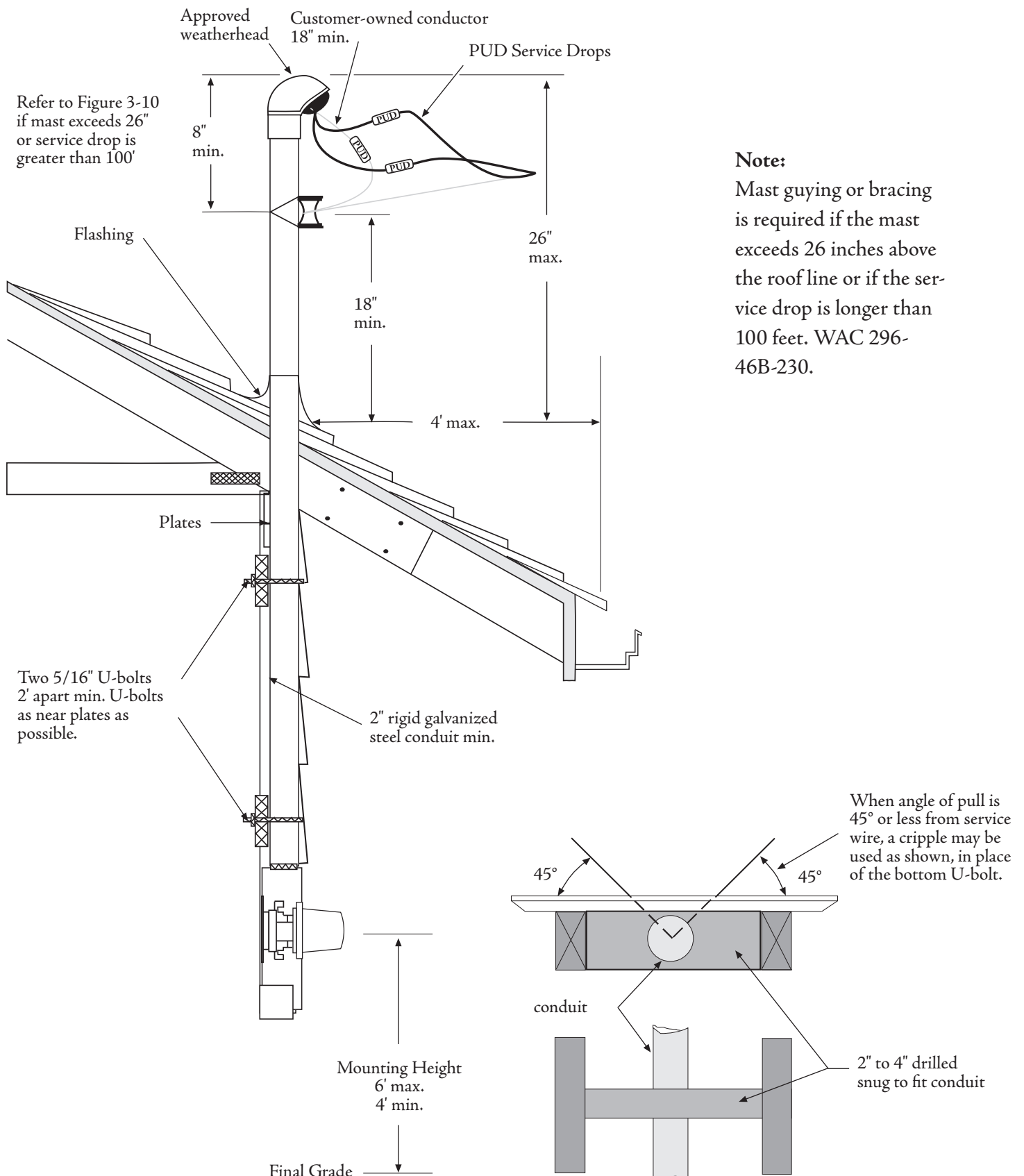
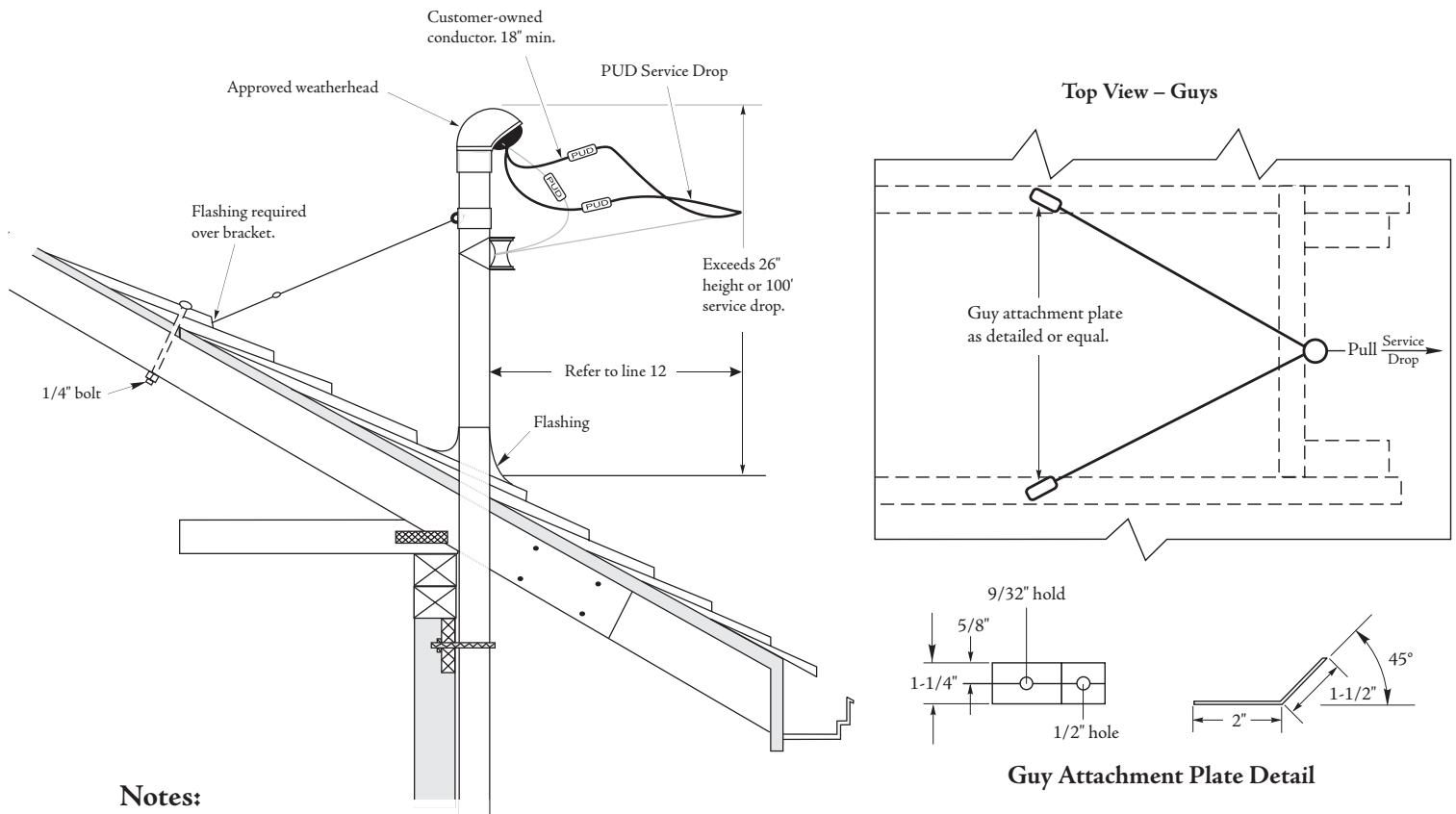


Figure 3-10: Guying/Bracing Requirements



Notes:

Mast guying or bracing is required if the mast exceeds 26 inches above the roof line or if the service drop is longer than 100 feet. WAC 296-46B-230.

Stiff Leg/Push Brace Application

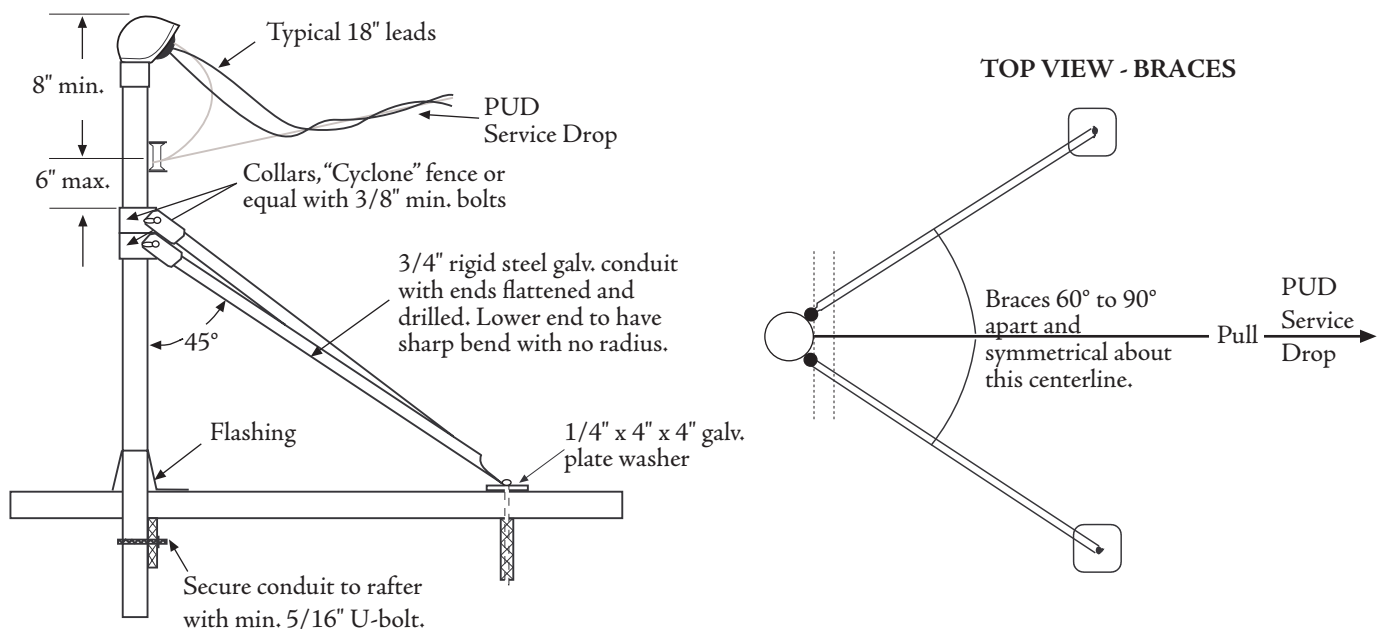


Figure 3-11: Wall Attachment

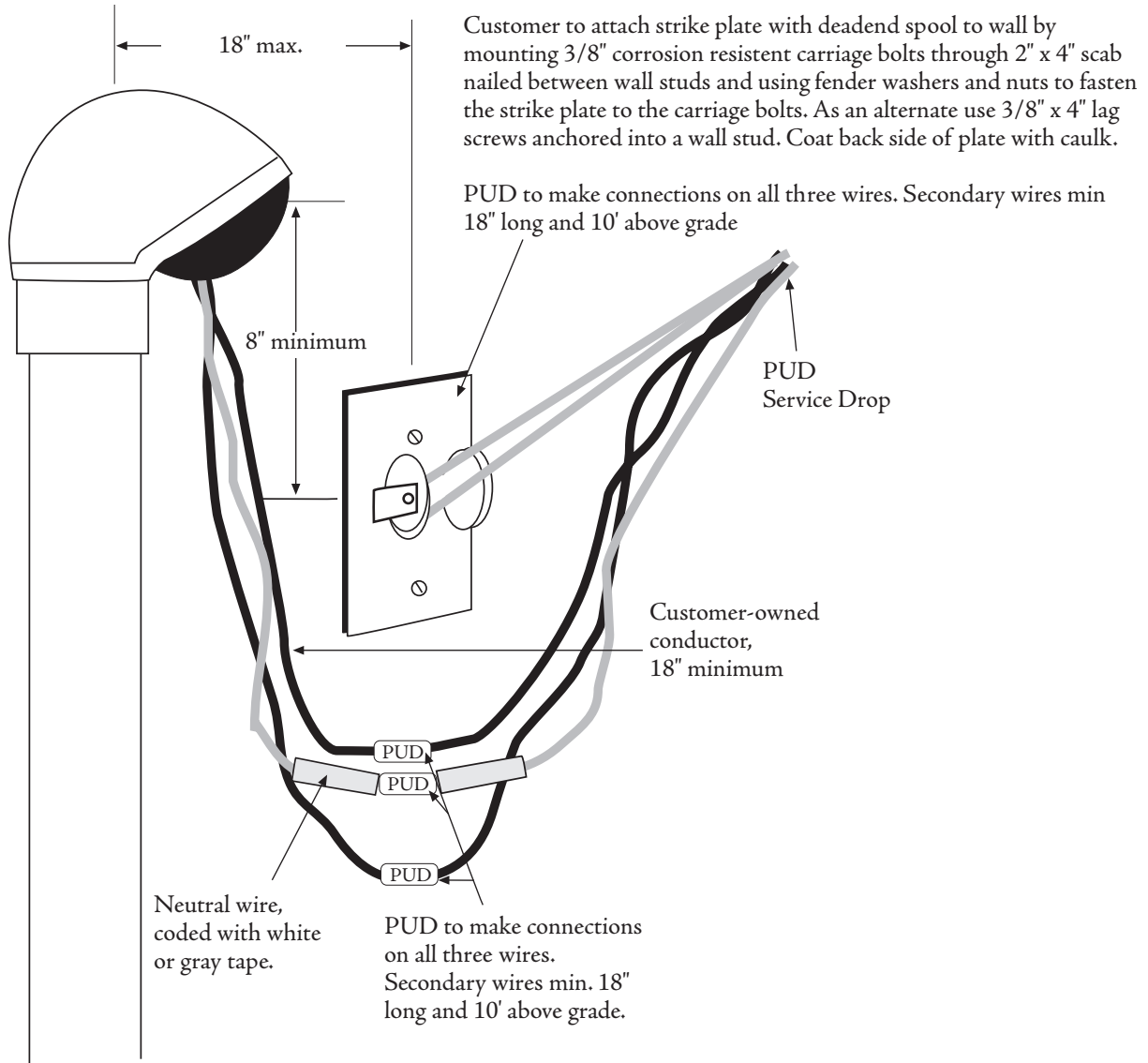


Figure 3-12: Mast Location / Accessibility

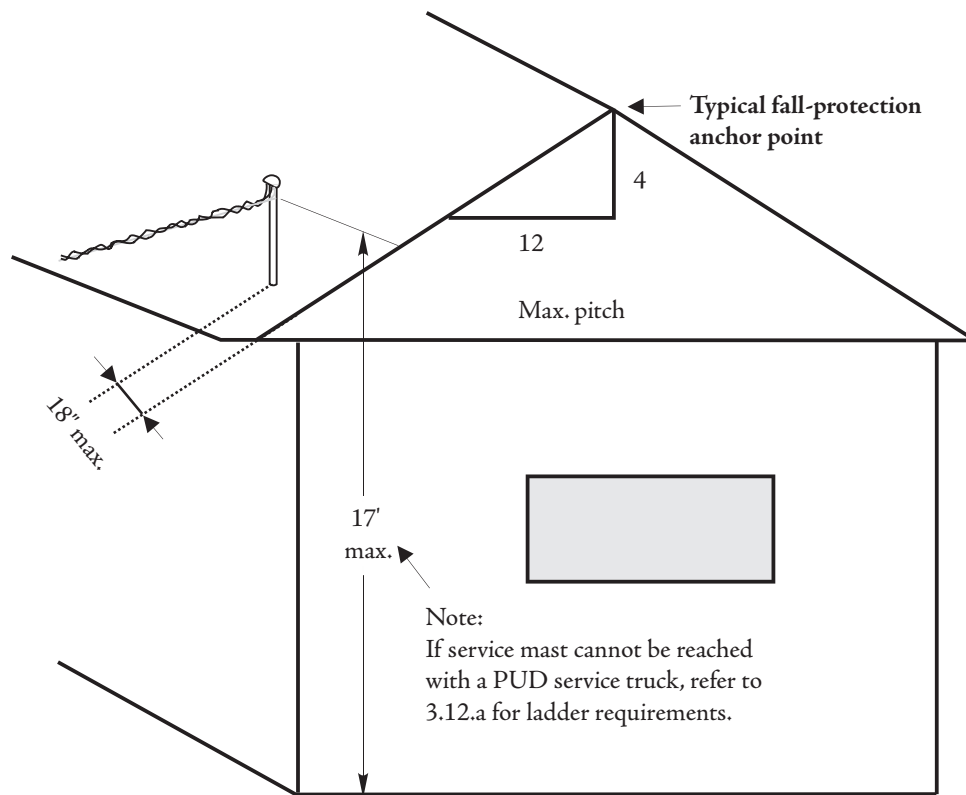
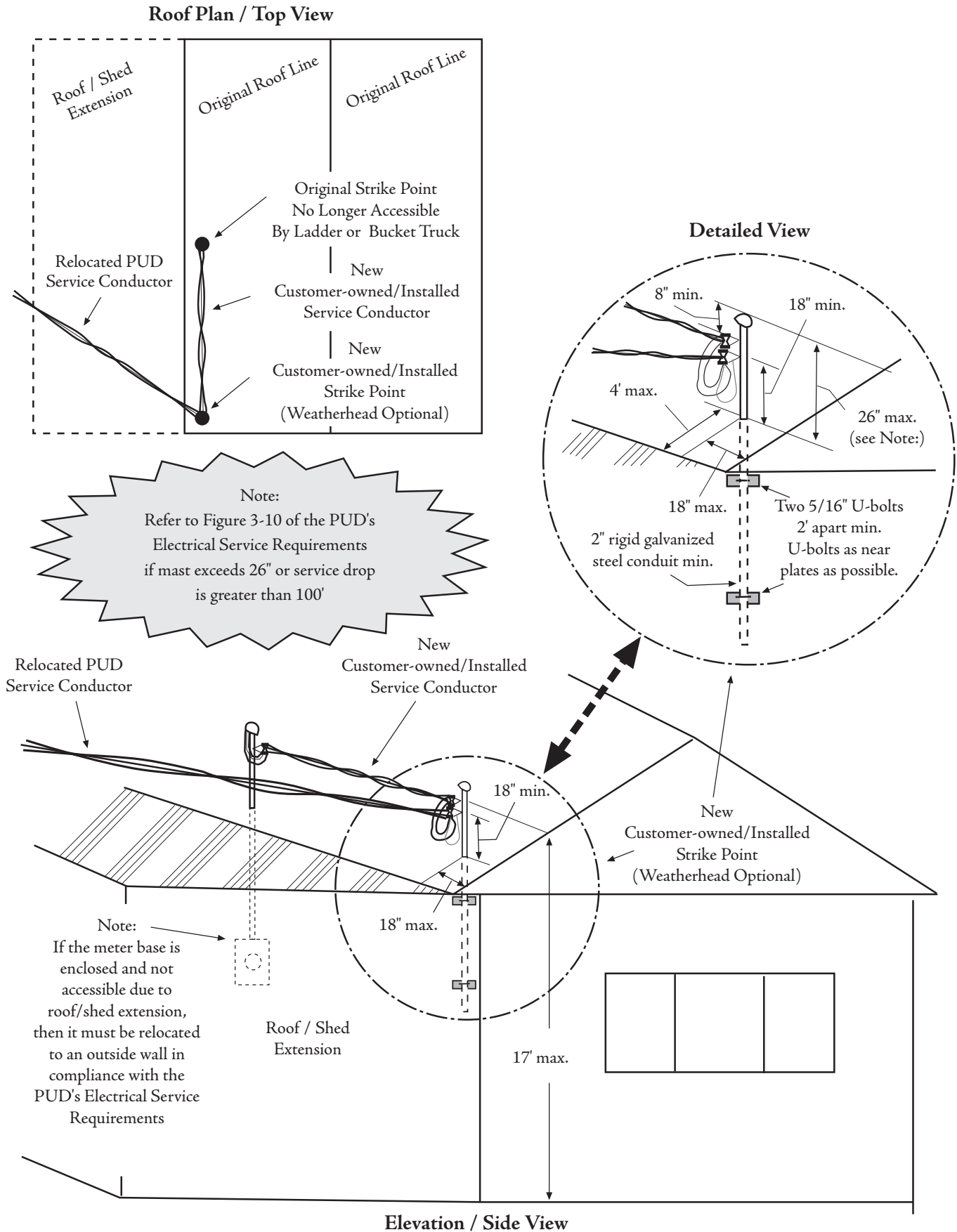


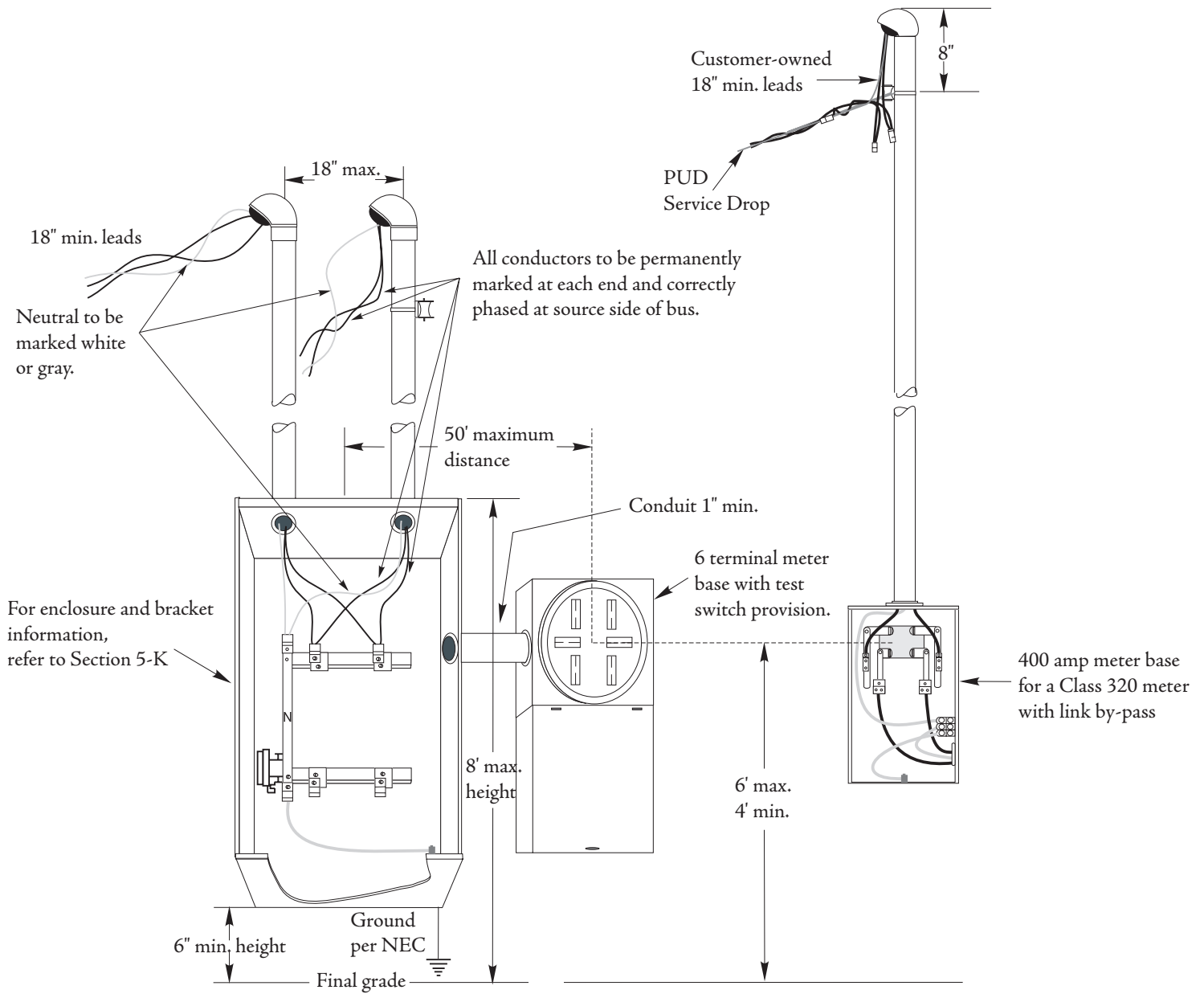
Figure 3-13: Alternate Mast Strike Location



METERING: 200 AMPS TO 400 AMPS

1. For single phase services 201 to 400 amperes, a 400 ampere meter base for a class 320 meter with link by-pass is preferred. When current transformer enclosures are used, the following requirements apply:
 - a. The current transformers shall be mounted in a raintight enclosure on the outside of the building. Refer to Figures 3-14 and 3-15.
 - b. Indoor type current transformers are furnished and installed by the PUD.
 - c. Mast mounted current transformers are no longer allowed for new installations. Any major alterations on existing services using this type of metering shall be rebuilt utilizing an outdoor enclosure.
 - d. Wall mounted current transformers are no longer allowed for new installations. Any major alterations on existing services using this type of metering shall be rebuilt utilizing an outdoor enclosure.

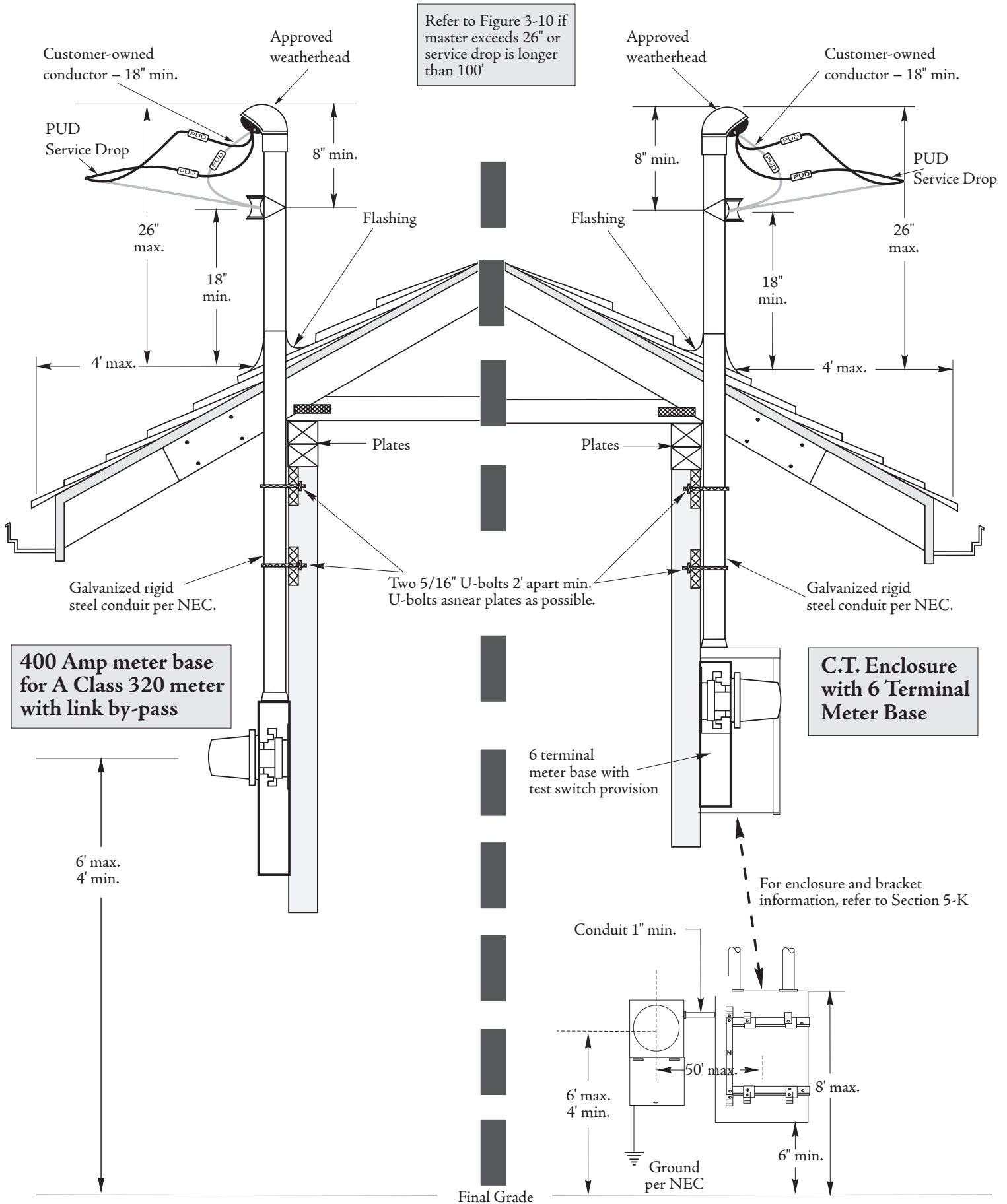
Figure 3-14: OH CT Enclosure / 201-400 Amps



NOTE:

The PUD will furnish, install and wire the current transformers. The PUD will also make metering connection and final service connection at the weatherhead. For 400 Amp 480 Volt single-phase, the PUD will install a potential transformer.

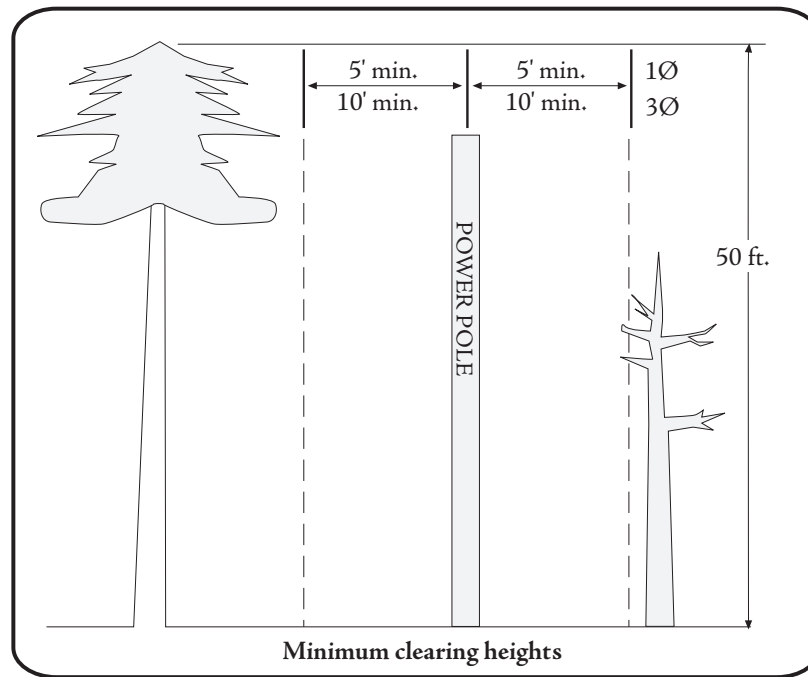
Figure 3-15: OH Mast Surface Mounting / 201-400 Amps



PRIMARY SERVICE (INDIVIDUAL RESIDENCE)

1. The plot plan provided by the customer will show the desired location for the service entrance and metering equipment (to be approved by the PUD prior to construction) and any special conditions affecting pole or wire locations. This includes objects such as wells, pools, hot tubs, utilities, buildings and driveways.
2. The PUD will design and install the complete overhead distribution system.
3. Clearing for Primary Lines on Private Property
 - a. The customer will provide and permanently maintain a road with adequate base and size to support the heavy equipment required for line construction and maintenance, adjacent to the poles, prior to construction.
 - b. The customer will remove all trees a minimum of 5 feet on each side of a proposed single phase line location or 10 feet on each side of a proposed three phase line, as staked by the PUD's engineer. Refer to Figure 3-16.
 - c. The customer will remove or top below the wire height leaning trees that the PUD representative constitutes as a potential hazard to the proposed line.
 - d. The customer will remove or top below the wire height all overhanging branches.
 - e. The customer will remove low growing trees, which by their location could in the future constitute a hazard to the proposed line.
 - f. The customer will remove debris that is hazardous to construction personnel.
4. The PUD will maintain tree trimming for existing primary lines.

Figure 3-16: Clearing for OH Line Extensions



Before preparation for line extension.



After preparation for line extension.



CONVENIENCE POLES

1. When requested by the customer for their specific benefit, the PUD may furnish and install a 35' convenience pole, with or without guying and anchoring, at the customer's expense.
2. Poles longer than 35 feet may be provided on an individual cost basis.
3. The customer shall advance the required fees prior to final engineering and construction.
4. The PUD shall install, own and maintain convenience poles.

SERVICE POLES

1. The PUD shall install, own and maintain service poles as necessary to provide adequate clearance and support of the service conductors.

METER POLES

1. When requested by the customer, the PUD may furnish and install a 35' meter pole, with or without guying and anchoring, at the customer's expense.
 - a. The customer shall provide an adequate road-like surface for the PUD's heavy equipment required for the installation of the pole.
 - b. The customer shall be liable for personnel injuries, vehicle damage and crew time loss caused by an inadequate access.
2. The meter pole will be the property of the customer
3. The meter pole location shall have a minimum 10' horizontal clearance from the outermost point of any PUD equipment on the field (house) side. A minimum 15' clearance shall be provided on the road (access) side to allow for PUD vehicle access. See Figure 3-17 and Figure 3-18 for an example of meter pole clearances.
4. When the meter pole is to be replaced, the customer shall, at his or her expense, transfer all customer-owned service entrance equipment to the new pole.
5. Permanent safe walking access shall be provided and maintained by the customer to meter poles that have PUD equipment on them, e.g., meter and service wires. Refer to Section 2-N.
6. *Neither trees nor the PUD distribution or transmission poles shall be used as meter poles.*
7. When a pole is used as a metering point and central distribution center and the conductors beyond the metering point are subject to contact with machinery, the customer is required to install a main disconnect switch on that pole.
8. Meter poles shall be installed and sized to provide the clearances as detailed in Figures 3-3, 3-17 and 3-18.
9. Meter poles meeting PUD requirements may be customer furnished and installed.

Figure 3-17: Meter Pole Clearance

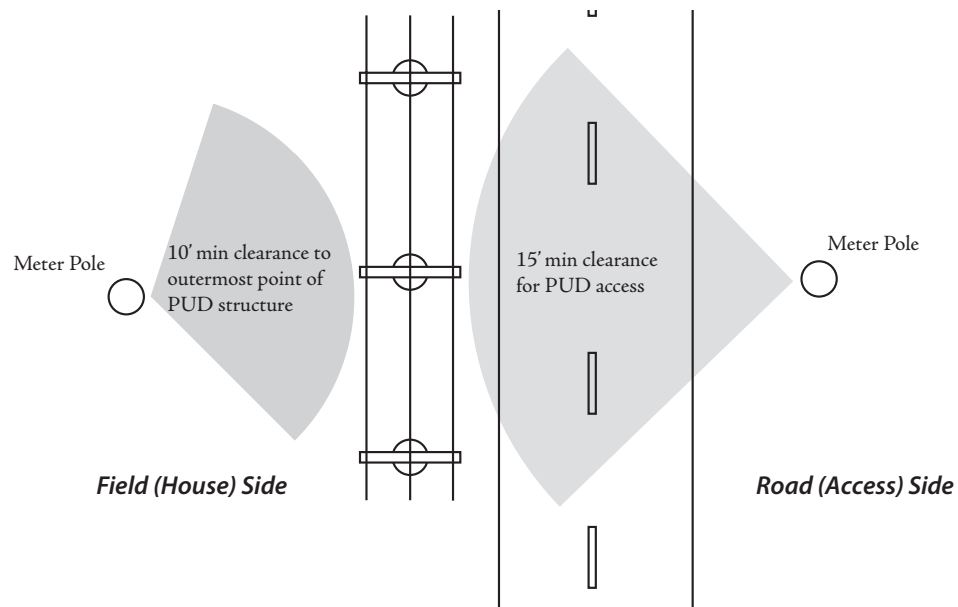
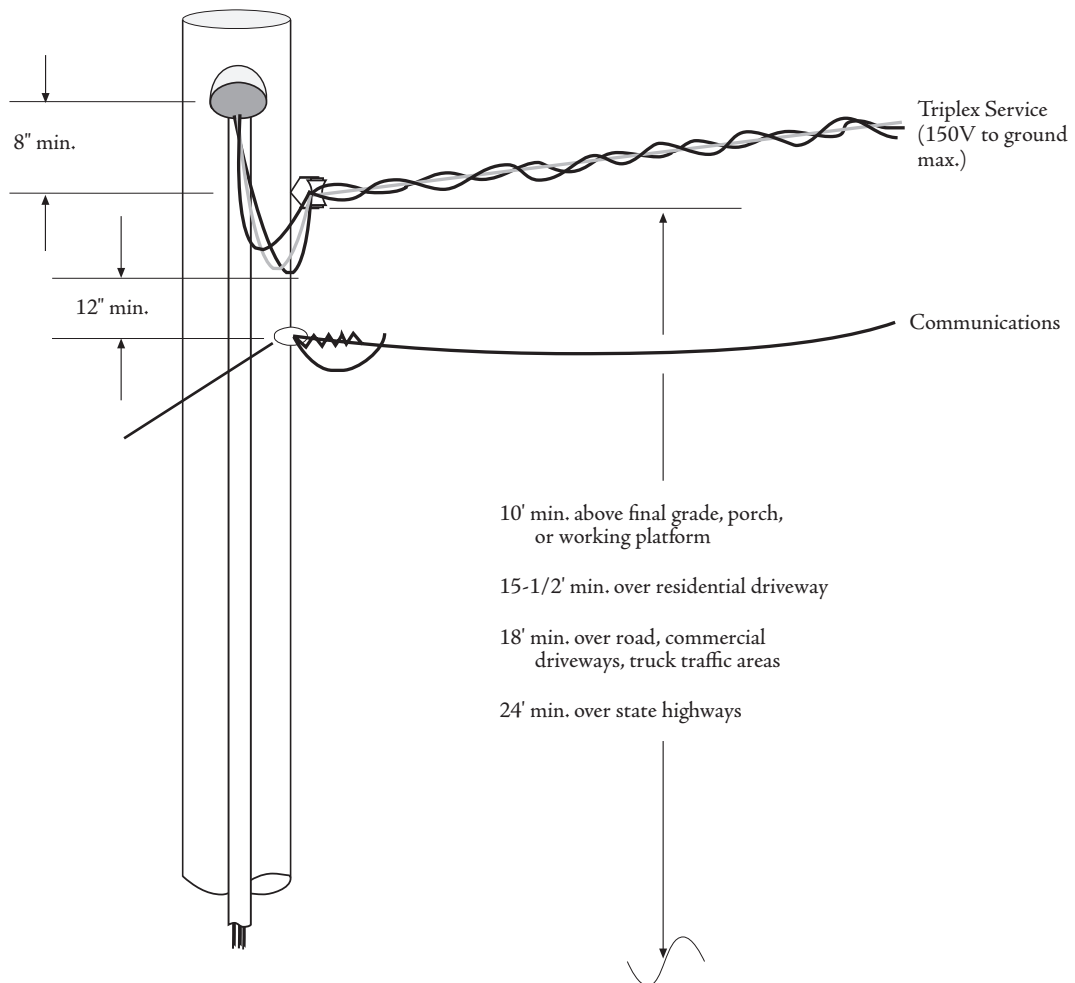


Figure 3-18: Meter Pole Clearance (Joint Occupancy)



10. Either cedar or fir poles may be used, provided fir poles are full length pressure treated, and cedar poles are butt treated in accordance with American Wood-Preservers' Association Standards.
11. Outer bark must be completely removed from all meter poles. The pole, with minimum requirements as listed below, shall be set at the proper depth and backfilled with rocks and soil. Backfill shall be tamped to provide a sound installation.

Table 1: Meter Pole Specifications and Setting Depth

6	Pole Class	Setting Depth (Firm Soil)	Minimum Circumference 6' from Butt		Minimum Circumference at Top
			Fir	Cedar	
20 ft	4	4 ft	25"	27"	21"
25 ft	4	5 ft	27.5"	30"	21"
30 ft	4	5 ft	29.5"	32.5"	21"

12. All wood meter poles shall have a 2" wide, 1/2" deep gain 12' up from bottom of pole.
13. Other than wood poles will be considered and evaluated on an individual basis. These poles shall have a gain identification mark or tag at 12' up from bottom of pole or as designated by the PUD.
14. Location and inspection of the meter pole shall be approved by a PUD representative prior to installation.
15. **The customer is responsible for having the pole hole inspected by the PUD for proper depth. This inspection shall be made prior to setting the pole, after the hole is prepared and the meter pole is on site.**
16. **The PUD will not connect to any customer-installed meter pole that has not been inspected and accepted by the PUD.**
17. The customer shall be responsible for anchoring/guying of a customer installed meter pole, to withstand the pull imposed by the PUD's service conductors. A PUD Engineer will inform the customer if the pole requires anchoring and guying. An anchor and guy will typically be required for services over 125' or with an angle of 15° or more in the service run. The PUD will not connect to any meter pole that is unstable or in any way does not conform to this Standard.
18. The thru-bolt type insulator bracket installed by the customer shall be located 8" below and 45° from the weatherhead, facing the point of attachment to the PUD facilities. The insulator shall be mounted high enough above ground to provide adequate conductor to ground clearances for the PUD's service drop. Refer to Figure 3-3 and 3-18.
19. Relocations of the meter pole may be done at the customer's request on an individual cost basis.
20. Pole mounted current transformers are not allowed for new installations. Any major alterations on existing services using this type of metering shall be rebuilt utilizing a 400 amp rated meter socket for a class 320 meter or outdoor current transformer enclosure. Refer to Figure 3-20.

Figure 3-19: Typical Meter Pole Installations

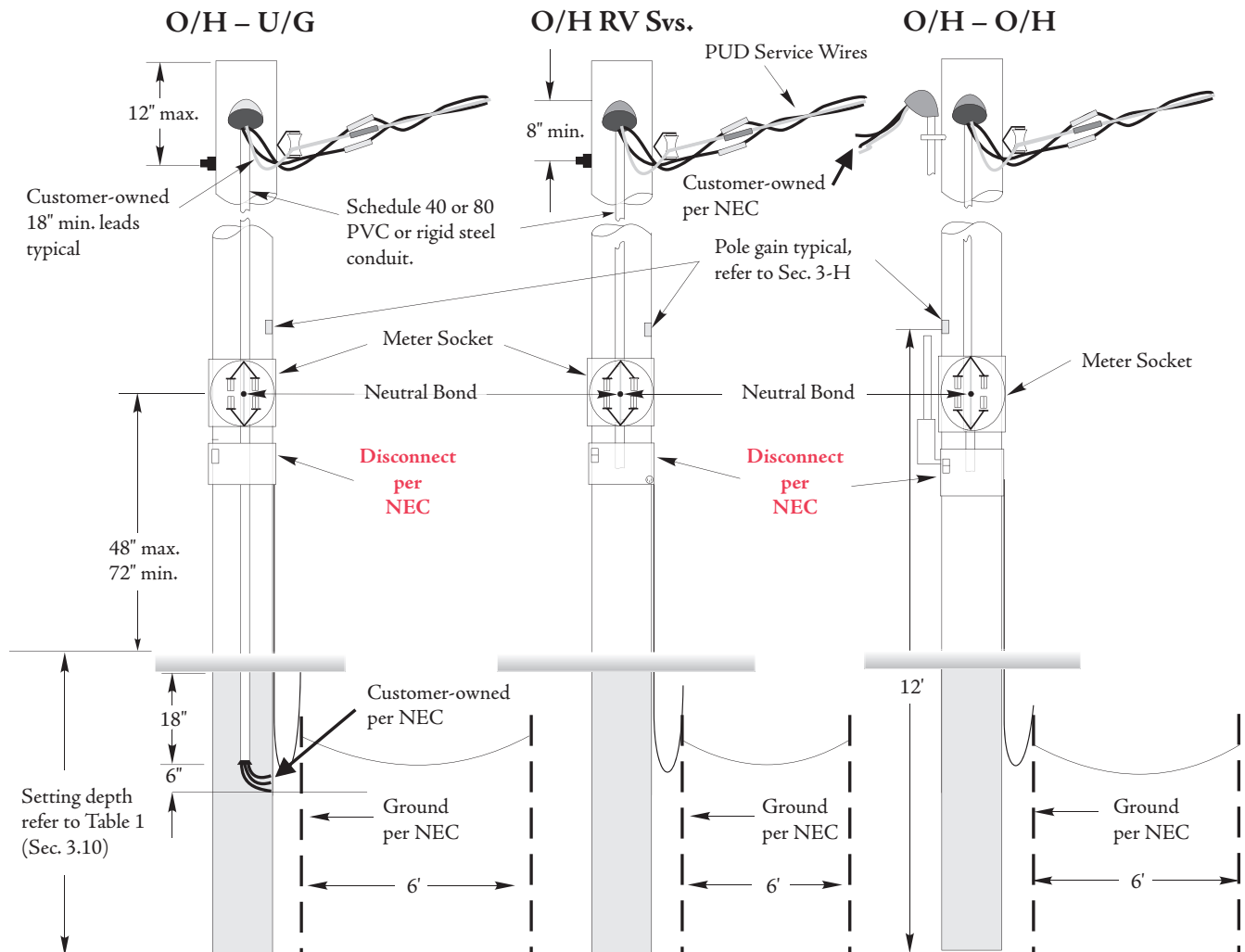
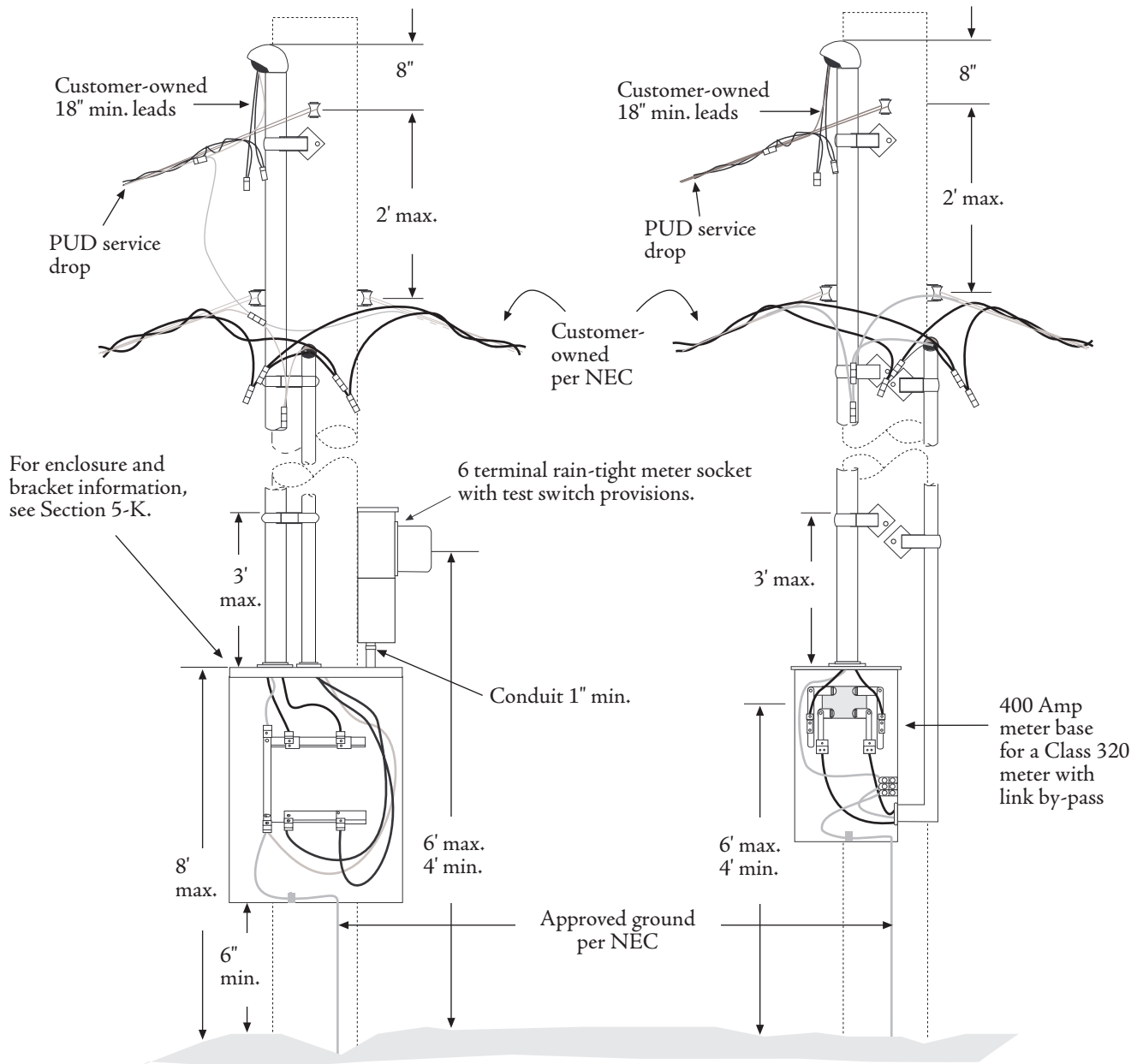


Figure 3-20: Meter Poles Over 200 Amp



When a pole is used as a metering point / central distribution center and the overhead conductors beyond the metering point are subject to contact with machinery, the customer is required by the State to install a main disconnect switch on the pole.



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