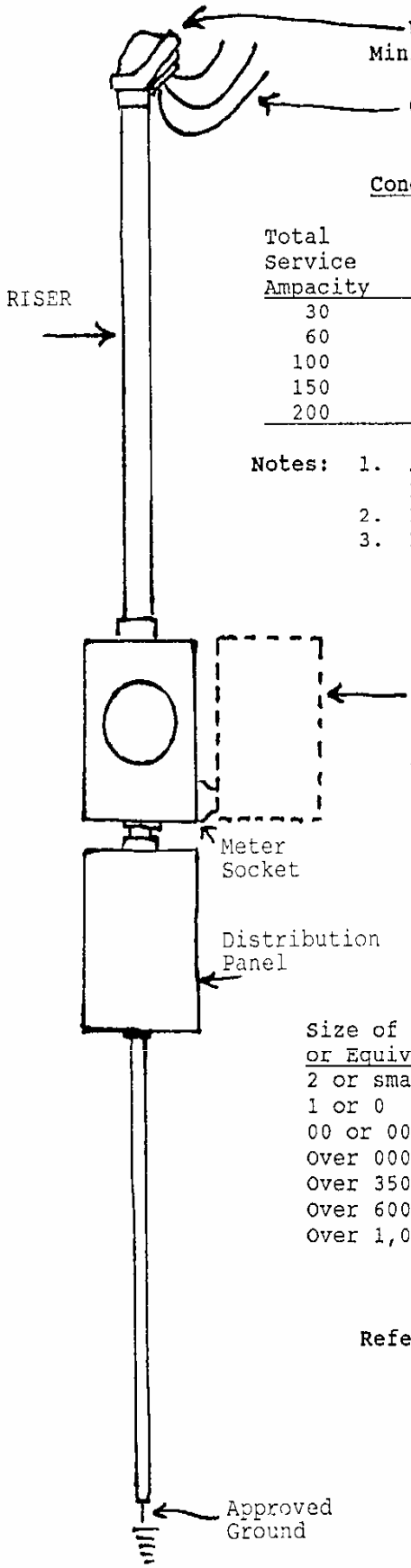
SECTION III – OVERHEAD SERVICE

GENERAL SERVICE INFORMATION - OH-1



Conduit & Wire Sizes for Single Phase Service

Total Service Ampacity	Load (kW)	Entrance Wire Size Max	Min	Conduit Size	No. of Wires	
30	4	6	6	1" min.	2	1,2
60	10	6	6	1½" min.	3	1,3
100	24	1	2	1½" min.	3	1
150	36	3/0	1/0	2" min.	3	1
200	48	4/0	3/0	2½" max.	3	1

Notes: 1. All wire sizes apply to copper conductors type RH-RW, EHW and THW.
2. Limited to special application on fixed loads.
3. Limited to loads of 10kW.

Distribution panel or switch box must be U.L. approved and comply with all city, county and/or National Electrical codes.

Self contained meters are available in two approved ratings. When connected to properly sized service entrance conductors, the approved standard duty socket has a nominal capacity of 100 amperes and must be U.L. approved, and the approved heavy duty socket has a nominal capacity of 200 amperes and must be PUESR approved.

Size of Grounding Conductors

Size of Largest Service Conductor or Equivalent for Multiple Conductors	Copper Wire AWG Number	Conduit or Pipe Trade Size (Inch)
2 or smaller	8	1/2
1 or 0	6	1/2
00 or 000	4	#4 & larger need not be protected by conduit.
Over 000 to 350 MCM	2	
Over 350 to 600 MCM	0	
Over 600 to 1,100 MCM	00	
Over 1,000 MCM	000	

Refer to M-7.1 For Bonding & Grounding Requirements

GENERAL SERVICE INFORMATION - OH-1

OVERHEAD SERVICE: Overhead service can be provided to the customer from an existing overhead distribution system only when certain criteria are met.(The City of Page has an ordinance against the installation of new overhead electric lines). Contact the Utility office for more information.

OWNERSHIP: The utility owns and maintains the overhead service lateral from its distribution line to the connection point at the weather head. The Utility also owns and maintains the meter. The customer owns the meter socket, the meter base, all wiring from the meter socket to the service point and all wiring beyond the meter socket.

CUSTOMERS RESPONSIBILITIES: The customer shall: Furnish and install the meter socket. Locate the meter base and meter socket per “approved meter locations”. Meet all clearances as specified in this manual as well as clearances specified by NESC, OSHA, NSC, ARS, etc. If the meter location is not within the specifications of this book, it must be approved in writing by Page Electric Utility.

POINT OF ATTACHMENT: PEU reserves the right to determine all points of attachment and only authorized PEU personnel of the customer power use service department will determine this location.

WORKING SPACE: To permit access to the metering installations and to provide safety for personnel, a working and standing space entirely on the property of the customer is to be provided in front of all meter sockets.

1. The working space, to remain clear and unobstructed, should extend a minimum of 3' from the face of the meter socket or metering transformer enclosures for services of 600 volts or less.

2. The center line of the meter sockets is to be a maximum of 6'3" and a minimum of 4' from ground level. A minimum of 3' clearance must be provided in front of meter sockets and 12" from center line of meter sockets to nearest side wall with a minimum sideways overall clearance of 3'.

3. The height clearances for the working space should be no less than 6'6" minimum.

4. Service entrance shall be so located that the center of the point of attachment must be within 12" of the center of the weatherhead at the top of the entrance conduit.

METER LOCATION: PEU reserves the right to determine all meter locations and only authorized PEU personnel will determine this location.

All meters shall be located on an outside wall in an area that shall not be enclosed. In addition, this area must be accessible for testing, maintenance and reading without requiring passage through restricted private areas, gates or fences.

The meters shall be located on the street-side of the residence or a side lot position no more than 3' from the street-side corner provided the area is unfenced.

WIRE: For single phase electrical installations:

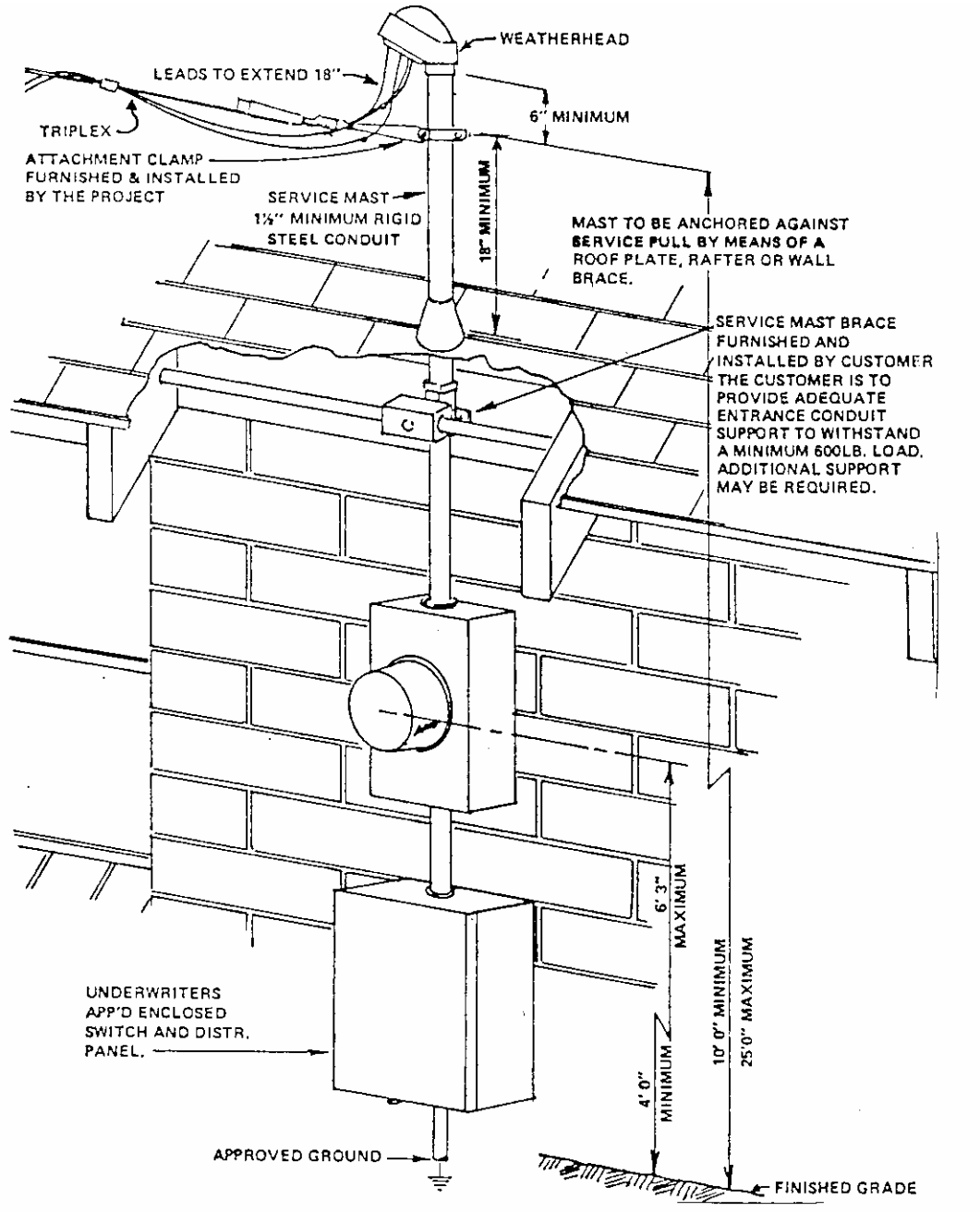
1. A minimum of #2 AWG copper wire, with code approved insulation for the service entrance, except for installations having not more than 10kW load, #6 AWG copper wire may be used.
2. Neutral wires shall be white or gray; or permanently identified at both ends of wire with white paint or tape. Wire shall not be broken or cut in the meter socket.
3. Code sized aluminum conductor accepted, if installed per NEC.
4. If insulated wire is used for ground or bonding the insulation shall be green.

GENERAL SERVICE INFORMATION - OH-1

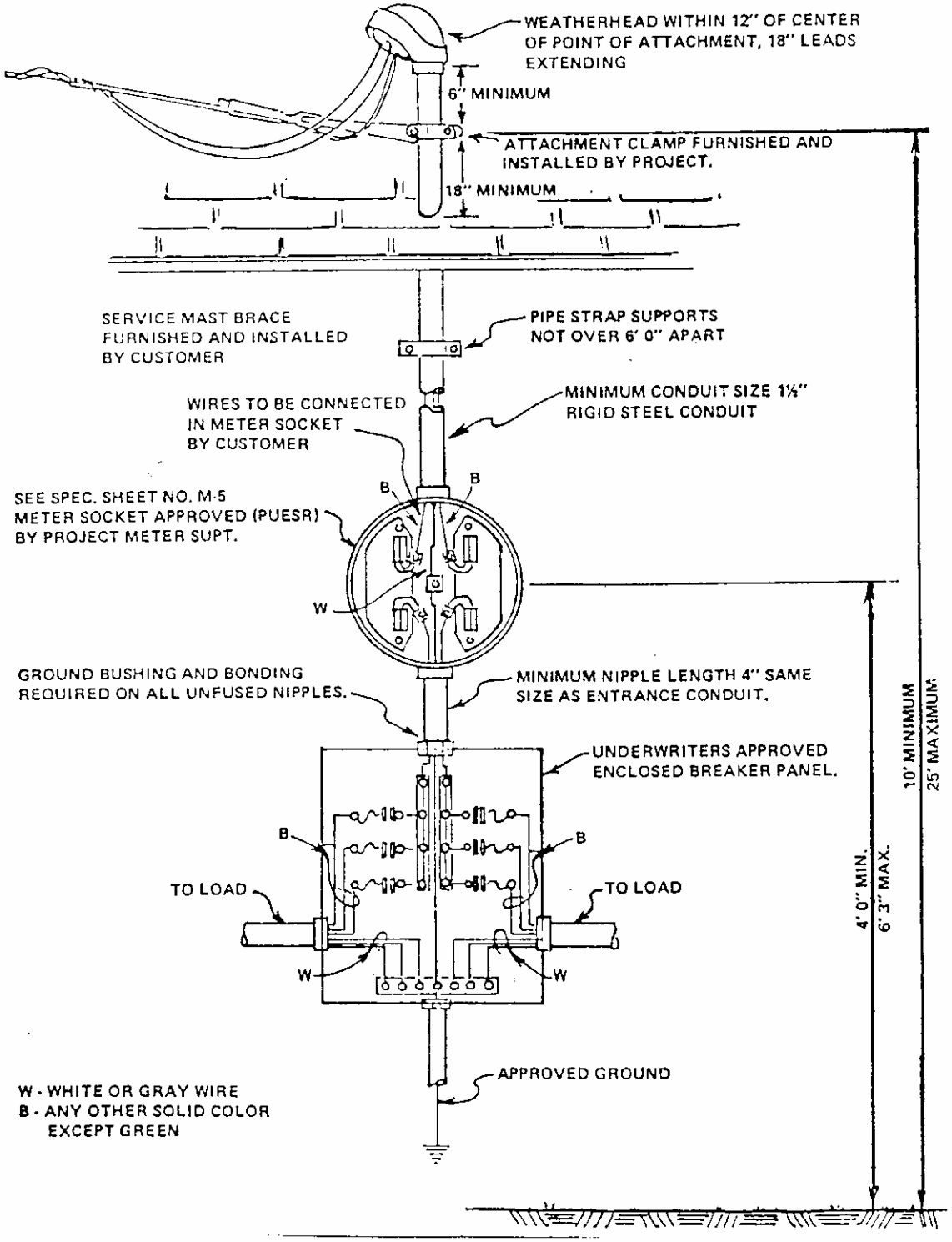
GROUNDING (Shall comply with NEC or city/county inspection agencies): The grounding conduit shall contain a grounding conductor either bare or with green insulation
extended from the service switch neutral lug to the ground clamp and shall have an ampere rating not less than 1/3 of that of the largest service conductor.

Bare wire is acceptable as a grounding conductor provided it is #4 copper or larger, solid or stranded. #4 or larger need not be installed in conduit. Service bonding conductor must be the same as service grounding conductor.

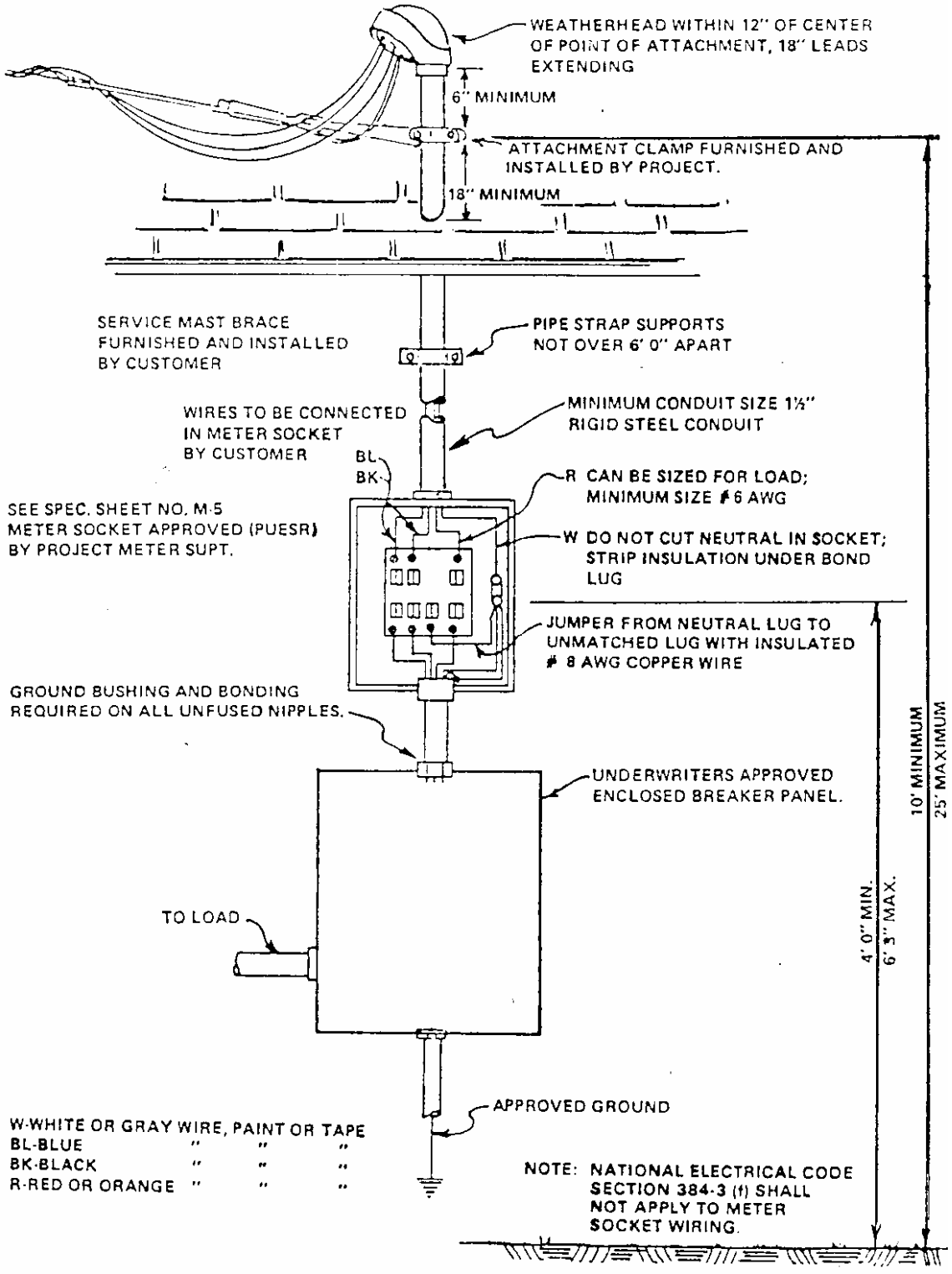
TYPICAL SERVICE MAST INSTALLATION - OH-2



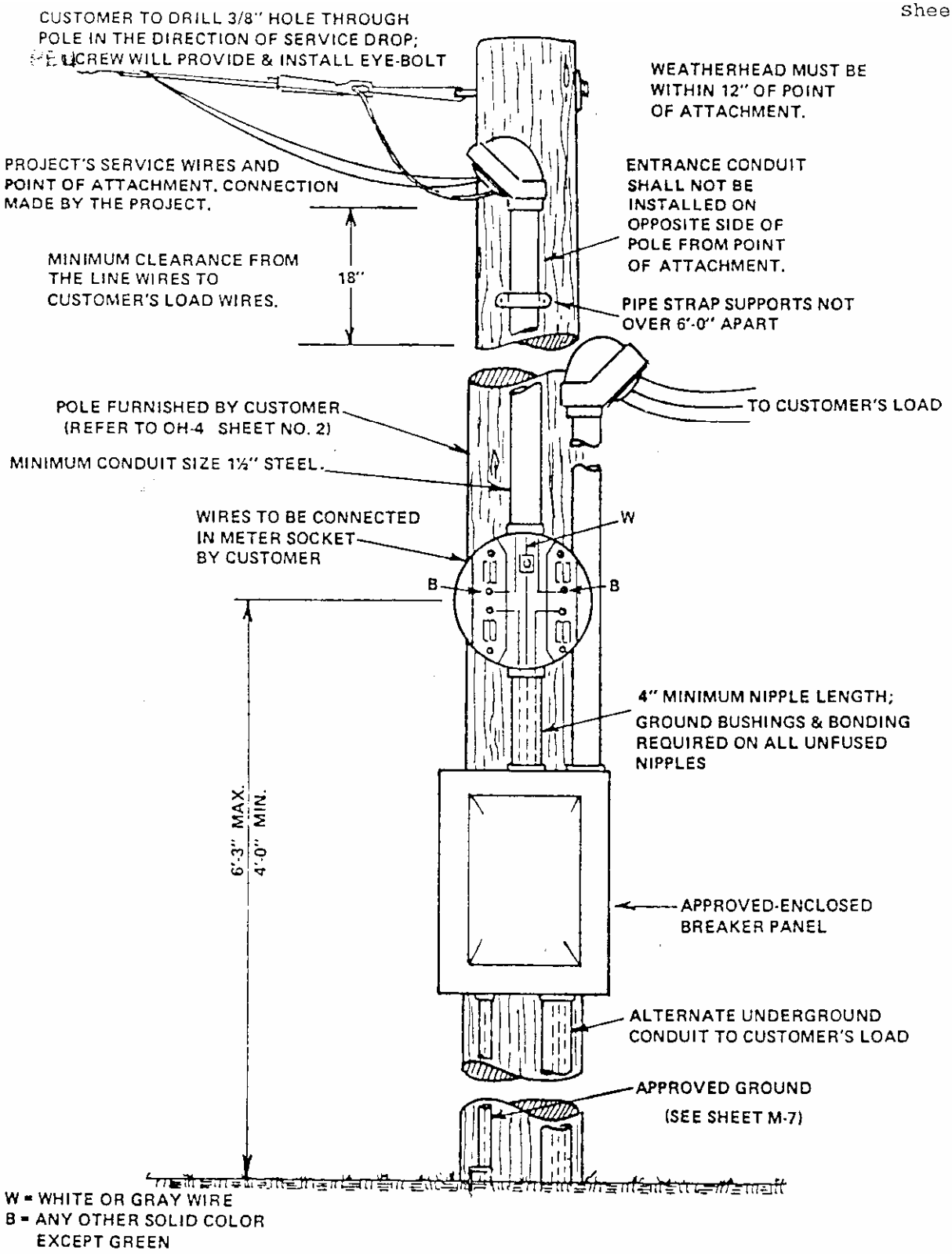
TYPICAL METER INSTALLATION
(6 CIRCUIT BREAKERS WITH MAIN SWITCH)
APPLICABLE FOR 120/240 VOLTS - 3 WIRE - SINGLE PHASE - OH-3



TYPICAL METER INSTALLATION
100 OR 200 AMP
120/240 OR 120/208 VOLT, 4-WIRE, 3-PHASE - OH-3.1



TYPICAL POLE INSTALLATION
APPLICABLE VOLTAGE 120/240, 3-WIRE - SINGLE PHASE - OH-4



W = WHITE OR GRAY WIRE
B = ANY OTHER SOLID COLOR EXCEPT GREEN

SERVICE POLE LOCATION:

PEU reserves the right to determine the customer's service pole location and only authorized PEU personnel will determine this location.

INSTALLATION:

If it is necessary to mount the point of attachment and service entrance on a timber rather than on a building, the customer must provide, install and maintain the timber. It must be of solid, one-piece nature, of sufficient height to provide the required clearance for the service wires.

Any such timber must be set solidly in place and not be subject to eventual loosening. For permanent installations, the timber must be at least 8"X8" and set in concrete, except that commercially treated poles of at least 8" diameter are acceptable and may be set directly in firm earth. For temporary installations, the timber must be at least 6"X6", but does not require concrete.*****

***Temporary meter pole must be a minimum of 20' from permanent structure.**

METERS AND ATTACHMENTS SHALL NOT BE MOUNTED ON PEU POLES:

The customer's pole shall not be placed closer than 10' from any PEU pole and must not be located within 10' to the centerline of PEU's line.

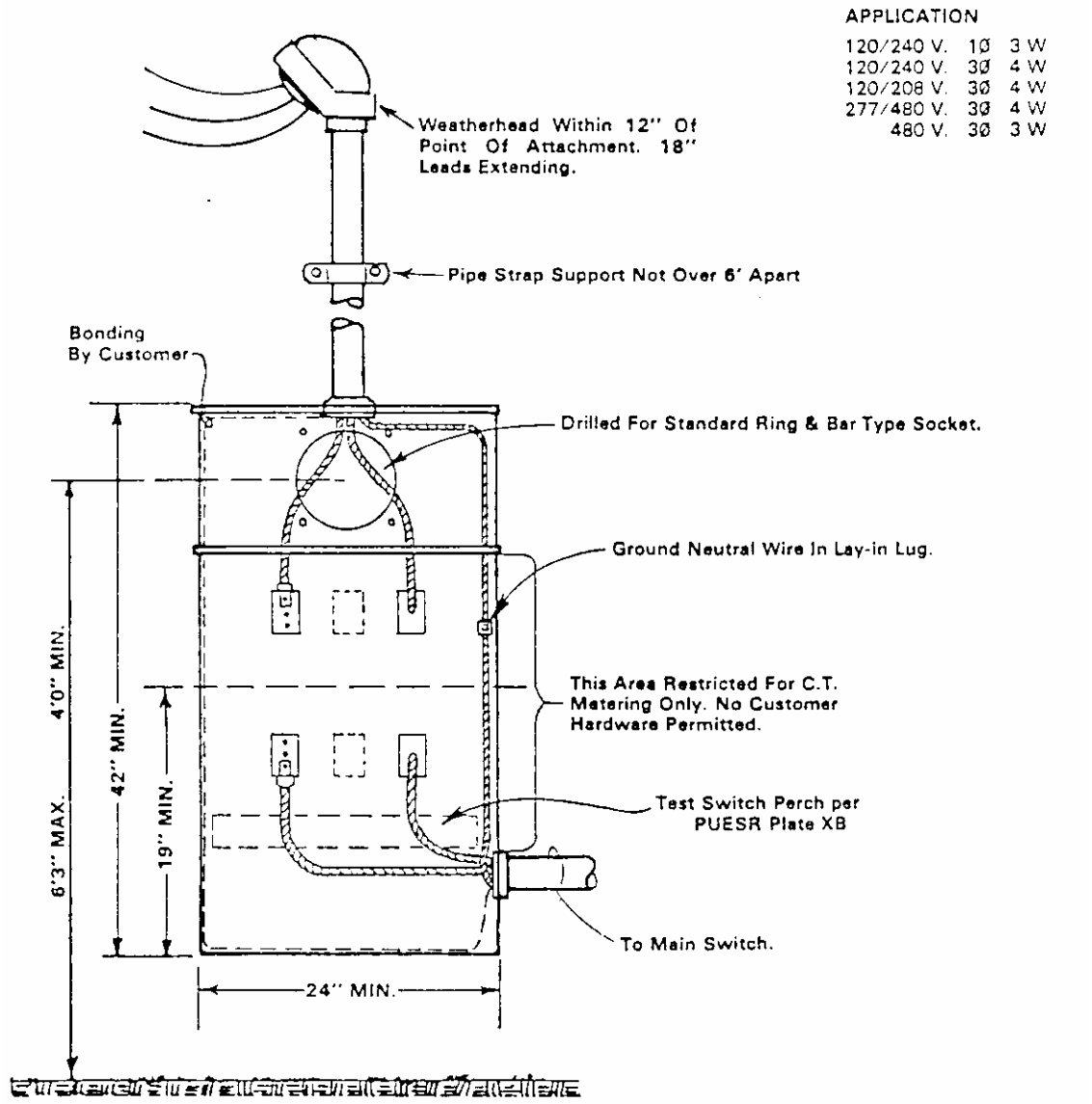
SETTING DEPTH REQUIREMENTS:

The point of attachment of PEU's wires on the customer's timber must be high enough to minimum ground clearances in keeping with the safety requirements of the National Electrical Code and National Electrical Safety Code. (See also Service Drop Clearance - OH-7).

The minimum setting depth of poles and timbers less than 25' in length shall be 5'. For poles of 25' in length, the minimum setting depth shall be 5½'.

TYPICAL CURRENT TRANSFORMER & METER INSTALLATION
For Loads of 400 Amps up to Maximum 600 Amps - OH-5

(1Ø 3W And Customer Wiring Shown)

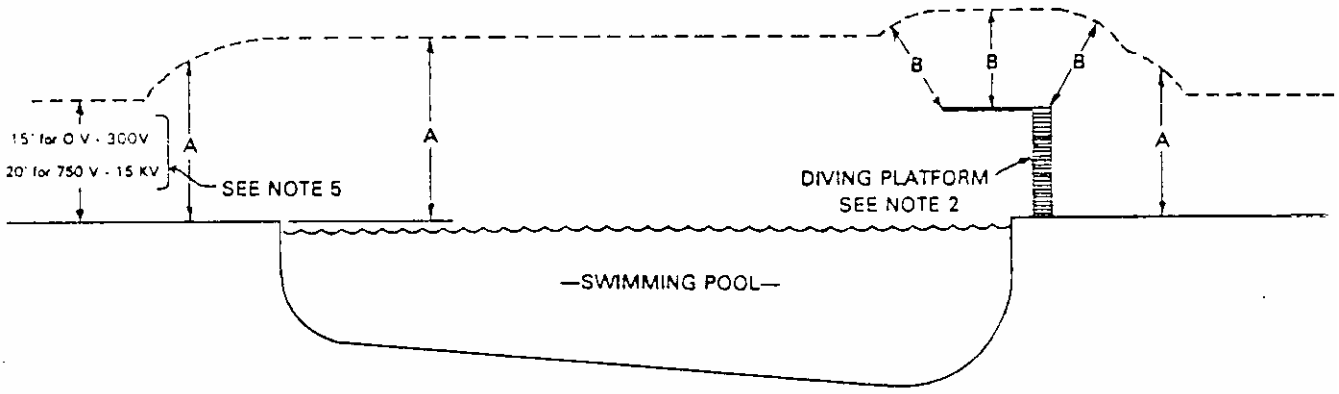


NOTES:

1. PEU furnishes and installs the meter, current transformer and test switch.
2. Current transformer mounting base and test switch perch must be per PUESR Plates "L" and "XB".
3. Cabinet shall have a sealable cover with two lifting handles and a plate reading "**DO NOT BREAK SEALS, NO FUSES INSIDE"**.
4. Wire and conduit sizes shall be per code.
5. No connections shall be made in the instrument transformer box to supply any other meter, and not more than one load circuit shall leave the transformer box.

SWIMMING POOL CLEARANCES - OH-6

SWIMMING POOL CLEARANCES FROM UTILITY OWNED, OPERATED AND MAINTAINED SUPPLY LINES AND SERVICE DROPS
(RULE 234, N.E.S.C., 1977 EDITION)



MINIMUM VERTICAL CLEARANCES (FT.)

DIMENSION A:

VOLTAGE	OVER POOL	HORIZONTAL DIST. FROM EDGE OF POOL OR DIVING PLATFORM BASE														
		1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
0-300V OR NEUTRAL WIRE	18'-0"	18'-0"	17'-11"	17'-9"	17'-7"	17'-4"	17'-0"	16'-7"	16'-2"	15'-7"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
750 V - 15 KV	25'-0"	25'-0"	24'-11"	24'-10"	24'-8"	24'-6"	24'-3"	24'-0"	23'-8"	23'-4"	22'11"	22'-6"	21'11"	21'-4"	20'-9"	20'-0"

DIMENSION B: 0-300V. OR NEUTRAL -14' 750 V -15 KV - 16'

NOTES:

1. All voltages are phase to ground.
2. To determine the minimum clearance from the diving platform, use the larger of:
   a. dimension "A" from Table, or
   b. dimension "B" plus the diving platform height.
3. Minimum clearances must be maintained from neighboring services.
4. For clearances from underground cable, see Sheets UG-15.
5. Clearances shown are for areas accessible to pedestrians only. These are areas where vehicular traffic is not normally encountered or anticipated.
6. The swimming pool clearances shown above apply to all types of swimming areas including above and below the ground pools.
7. Clearances shown for conductors 0-300 volts are based on conductors supported on and cabled together with an effectively grounded messenger. Contact PEU for clearances from open wire conductors.

SERVICE DROP CLEARANCES - OH-7

CLEARANCE OF SERVICE DROPS: Service drop conductors shall not be readily accessible and shall conform to the following:

(a) **Clearance Over Roof** - Service drop conductors shall have a clearance of not less than 8' from the highest point of roofs over which they pass with the following exceptions:

Exception #1: Where the voltage between conductors does not exceed 300 and the roof has a slope of not less than 4" in 12" the clearance may be less than 3'. The intent of Exception #1 is that where the roof has a slope greater than 4" in 12", it is considered difficult to walk upon and the height of conductors could then be less than 8' from the highest point over which they pass, but in no case less than 3' except as permitted in Exception #2. See Fig. 2.

Exception #2: Service drop conductors of 300 volts or less which do not pass over other than a maximum of 4' of the overhang portion of the roof for the purpose of terminating at a (through-the-roof) service raceway or approved support may be maintained at a minimum of 18" from any portion of the roof over which they pass. See Fig. 1.

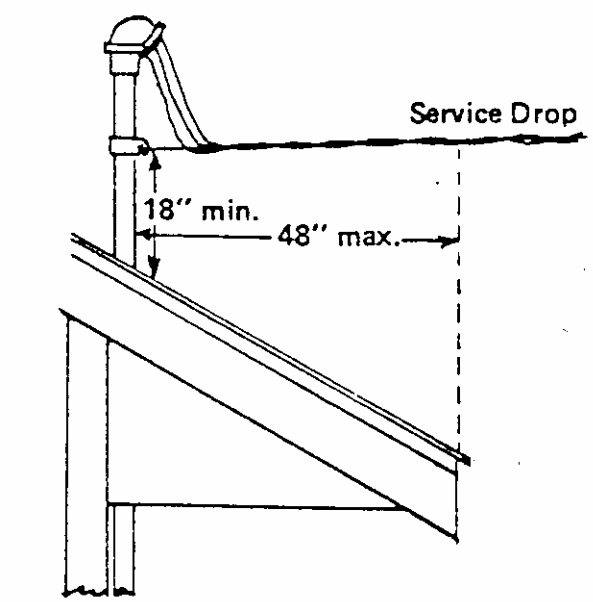


Fig. 1. Service-drop conductors passing over the overhang portion of the roof.

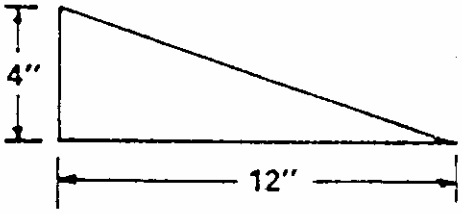


Fig. 2. Roof having a slope of not less than 4 in. in 12 in.

(b) **Clearance From Ground** - Service drop conductors when not in excess of 300 volts phase to ground, shall have the following minimum clearance from ground. Clearances are based on conductors supported on and cabled together with an effectively grounded messenger.

Crossing over areas accessible to pedestrians only.....15'*****
Crossing over residential driveways & commercial areas not subject to truck traffic.....15'*****
Crossing over roads, streets, alleys & commercial areas subject to truck traffic (Any vehicle exceeding 8' in height).....18'
Crossing over areas traversed by vehicles such as cultivated, grazing, forest or orchard areas (vehicle overall operating height less than 14').....18'

***If more than 25' measured in any direction from swimming pool or driving platform, the clearance can be reduced to 12'.**

(c) **Clearance From Buildings** - Conductors shall have a horizontal and vertical clearance of not less than 36" from buildings.

There must be an 8' minimum clearance above and below balconies and roofs accessible to pedestrians.

NOTE: A roof, balcony or area is considered accessible to pedestrians if the means of access is through a doorway, ramp, stairway or permanently mounted ladder.

All space clearances shown area based on service conductors supported on and cabled together with an effectively grounded messenger. Contact PEU for clearances from open wire service drops.

POINT OF ATTACHMENT - OH-8

POINT OF ATTACHMENT (Requirements in addition to NEC and NESC):

PEU reserves the right to determine all points of attachment and only authorized PEU personnel will determine this location.

1. The point of attachment of conductors to a building or other structure shall meet the minimum clearance requirements as specified in the NEC and the NESC.

2. Overhead service point of attachment on buildings shall be provided on or within 24" of an accessible exterior wall and within 4' of the edge of any roof overhang.

3. A solid point of attachment (to withstand a minimum 600 lbs. tension)***** for supporting a service drop to a building is to be provided at a height satisfactory to meet the NEC and NESC requirements for safe service connection and clearance. Height of attachment for service shall be not less than 10' or more than 25' above ground level. The responsibility for furnishing a sufficiently substantial support rests solely with the customer.

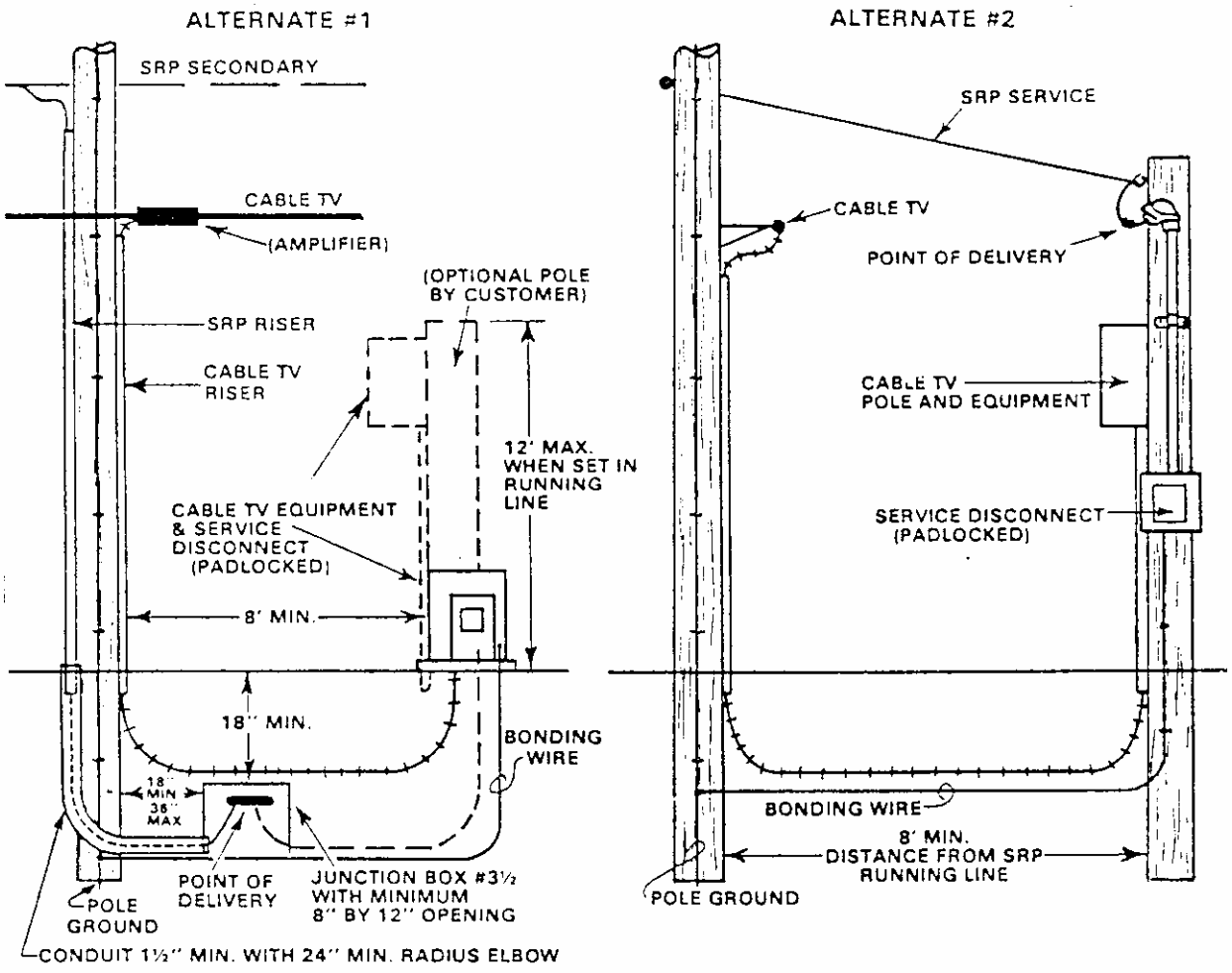
4. Where the service conduit is used as a mast for supporting the service drop, it shall be rigid steel, not less than 1½" trade size, and shall not contain any coupling which would be subject to strain by the service drop. (Where couplings are necessary, they shall be threaded steel.)

5. Service entrance shall be so located that the center of the point of attachment must be within 12" of the center of the weatherhead at the top of the service entrance conduit.

6. A maximum of three service conduits shall be supplied from one overhead service drop.

***Attachment tensions greater than 600 lbs. may be required in special cases.**

CABLE TV INSTALLATIONS - OH-9



NOTES:

1. PEU Engineering Tech. shall, per the pole attachment agreement, determine which poles may be used for cable TV riser attachment.
2. The customer shall provide adequate protection for his cable on the PEU pole to prevent damage from climbing hooks.
3. Customer riser on PEU poles shall be mounted flush to the pole. Stand-off brackets shall not be permitted.
4. Customer wiring to comply with NEC.
5. Customer equipment to be bonded to the pole ground by the customer.

CABLE TV INSTALLATIONS - OH-9

Alternate #1

1. PEU will install, own and maintain a pole riser and conductor from the overhead facilities to a customer-provided junction box and necessary wiring to his equipment.
2. The customer shall provide and install the junction box and necessary wiring to his equipment.
3. PEU will make all connections to the customer's service wire in the junction box. Said connections will be the point of delivery.
4. Customer to provide and install conduit from junction box to ground level at pole.

Alternate #2

1. PEU will install, own and maintain the overhead service drop and will make connections to the customer's service wires. Said connections will be the point of delivery.
2. The customer will provide and install the pole, riser and wire to the point of delivery. The pole shall be sufficient height to provide the minimum required ground clearance for the service wires.

(If served from a pad mounted transformer, refer to UG-16)