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GENERAL REQUIREMENTS FOR OVERHEAD SERVICE

Service Drops, Attachments, Supports, and Entrances

1. All service drops are furnished and installed by the Company.
2. In all installations except those stated in the **Rules and Regulations for Electric Service**, the customer shall verify the proper location of the service head and service drop from the Company, which will furnish this information in writing upon request.
3. In all cases, an adequate support for the service drop attachment and service drop shall be provided by the customer. The Company furnishes attachments and will provide information as to the pounds of pull that the service drop support must be designed for or withstand.
4. Typical installations for various service voltages and ampere capacities are shown in succeeding pages. Unusual installations require special consideration and the Company shall be consulted in all cases.
5. The service head is to be located at a height such that the service drop conductors can be dead-ended below the service head and still maintain proper clearance above ground, but they are not to be installed higher than 30' above ground.
6. When 1-phase and 3-phase secondary service is furnished to one building, the service heads shall be spaced approximately 18" apart when installed at the same height. If installed vertically, they shall be spaced approximately 3' apart with the 1-phase head located above the 3-phase head.
7. Only power service-drop conductors shall be permitted to be attached to a service mast (NEC 230.28). Other utilities such as telephone or cable TV shall not be attached to the service mast.
8. All unsupported conduit extending above the roofline shall be made of a metallic conduit. See the table on page O-5 for types of conduit and height of service head above support on an unguyed service mast for acceptable requirements.
9. For paralleled service entrances, the conductors must be connected to the same bus before metering. Paralleled service entrances shall not be routed to separate meter sockets.

Grounding

1. Grounding shall be in accordance with all applicable codes.
2. Stainless steel (A.I.S.I. 302, 304, or 416) ground rods are recommended where ground rods must be installed in the vicinity of buried galvanized rigid conduit, to minimize the possibility of corrosion.
3. The grounding electrode conductor shall not be run through the meter socket or transocket.
4. Bonding to other systems shall not be done on or within a metering enclosure unless a means of bonding, intended for inter-system bonding, is furnished as part of the metering enclosure (PSC 114.099(C)).

Metering

1. This section details the requirements for overhead service drop attachments and connections. Refer to the Metering Section of this manual for details of the metering requirements for each installation.

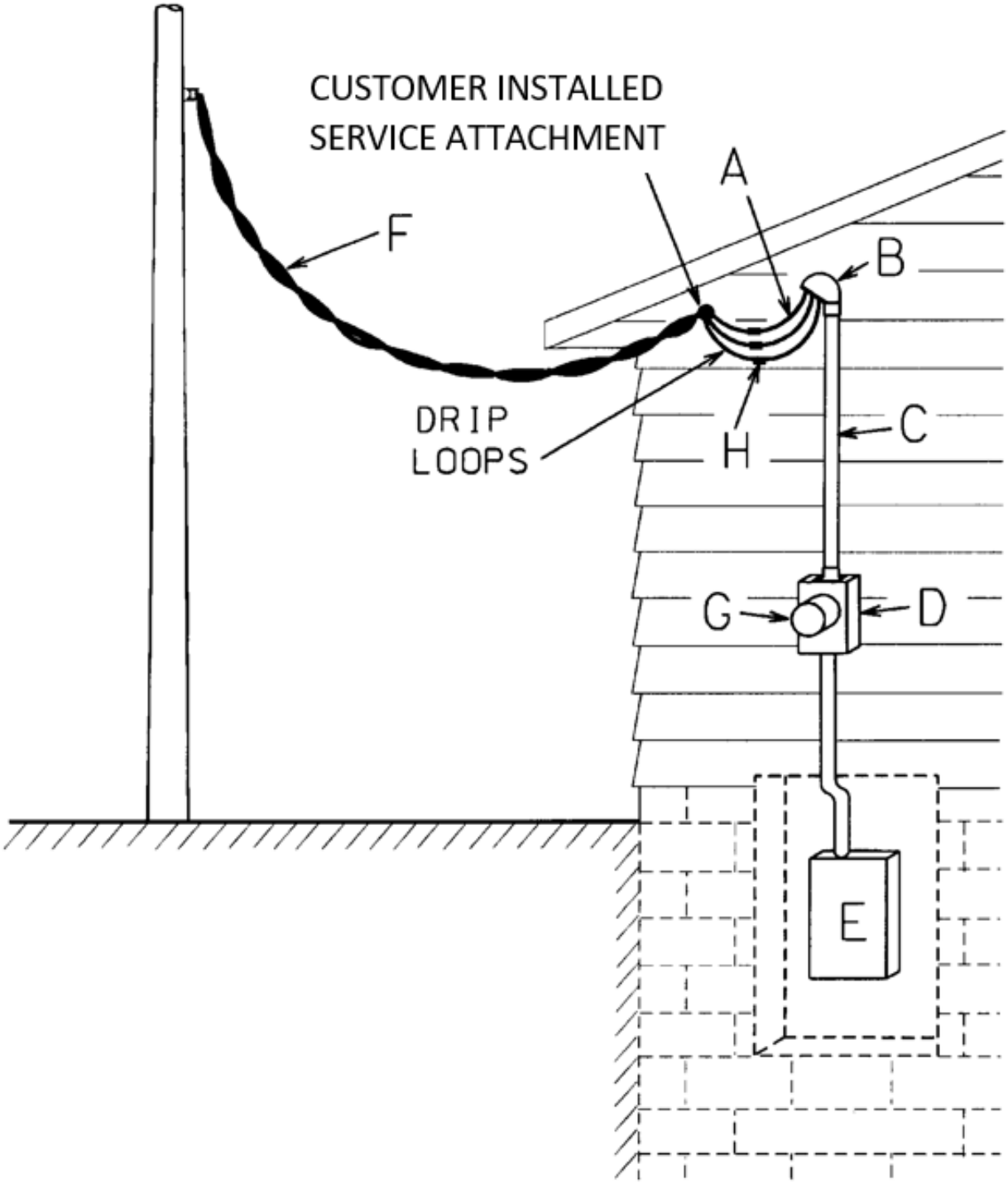
NAMES OF PARTS FOR OVERHEAD SERVICE

Customer furnishes and installs:

A. Service entrance conductors
B. Service head
C. Service mast
D. Company listed metering equipment
E. Service equipment

Company furnishes and installs:

F. Service drop conductors
G. Watthour meter
H. Connectors



SERVICE ATTACHMENT ON AN UNGUYED SERVICE MAST

Customer furnishes and installs:

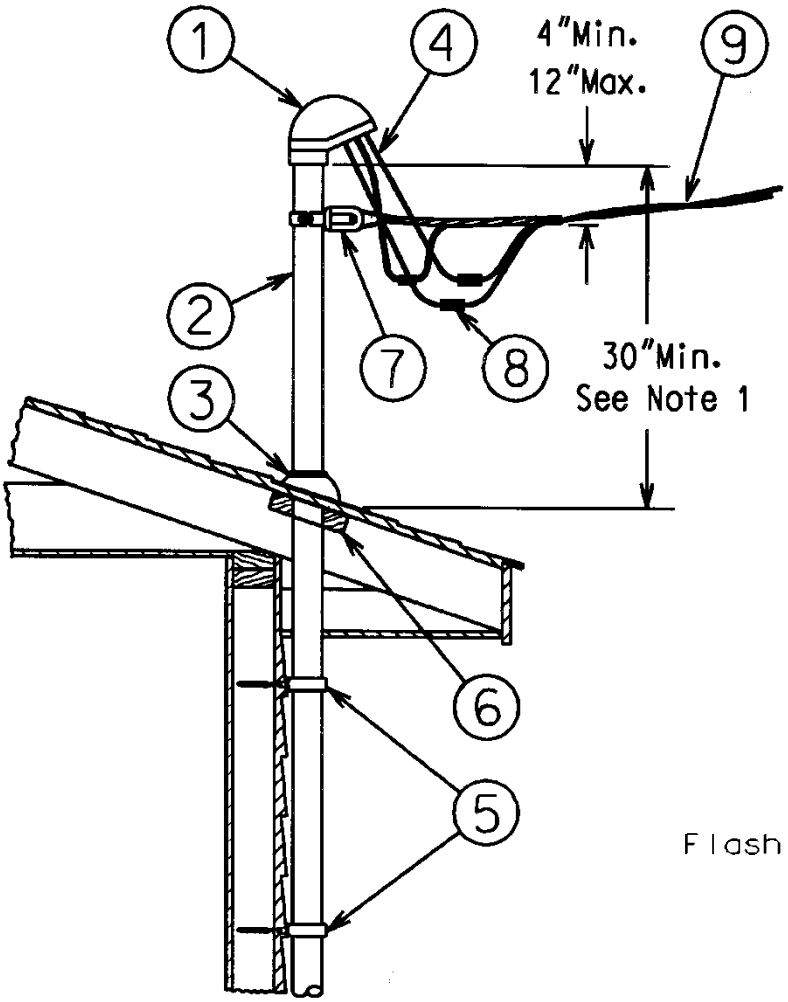
1. Service head.
2. Service mast, 2" minimum rigid metallic conduit (see Note 2).
3. Neoprene collar and flash plate.
4. Service entrance conductors (see Note 3).
5. Split ring type conduit supports.
6. Wood blocking.

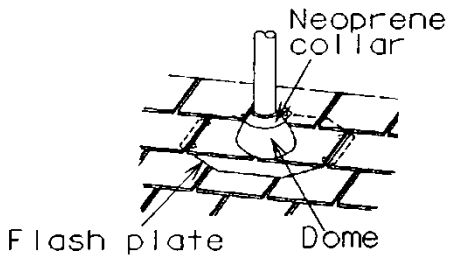
Company furnishes and installs:

7. Service attachment (clamp type wireholder).
8. Service connectors.
9. Service drop.

Notes:

1. Contact the Local Municipal Inspector for approval of service mast that extend more than 3' (914 mm) above the roof.
2. That portion of service mast above uppermost conduit support shall be a continuous length without couplings. Refer to Sheet O-5 for maximum height of service head above support.
3. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
4. For rewires where it is not possible to install Item # 6 (wood blocking) a Heavy Duty Flash Plate is to be used.
5. Only the electric service drop shall be attached to the service mast.





Flash Plate Detail

HEIGHT OF SERVICE HEAD ABOVE SUPPORT ON AN UNGUYED SERVICE MAST

Contact the local Company office if there is a need to extend the conduit beyond 8'.

		Service Drop Length	Maximum Height of Service Head 2" Conduit	2-1/2" Conduit	3" Conduit
Rigid Metal Steel Conduit	#1/0 Aluminum Triplex (1Ø, 0-200 Amp. Service)	30' 40' 50' 60' 70' 80' 90-120'	7'- 8" 6'- 1" 5'- 0" 4'- 4" 3'-11" 3'- 7" 2'- 9"	8'- 0" 8'- 0" 8'- 0" 7'- 2" 6'- 4" 5'- 8" 4'- 2"	8'- 0" 8'- 0" 8'- 0" 8'- 0" 8'- 0" 8'- 0" 6'- 5"
Rigid Metal Aluminum Conduit	#1/0 Aluminum Triplex (1Ø, 0-200 Amp. Service)	30' 40' 50' 60' 70' 80' 90-120'	3'- 8" 3'- 0" 2'- 7" * * * *	6'- 0" 4'-10" 4'- 0" 3'- 6" 3'- 2" 2'-11" *	8'- 0" 7'- 2" 5'-11" 5'- 1" 4'- 7" 4'- 2" 3'- 2"
Intermediate Steel Conduit	#1/0 Aluminum Triplex (1Ø, 0-200 Amp. Service)	30' 40' 50' 60' 70' 80' 90-120'	5'- 2" 4'- 4" 3'- 7" 3'- 2" 2'-11" 2'- 8" *	8'- 0" 7'- 6" 6'- 2" 5'- 4" 4'- 9" 4'- 4" 3'- 3"	8'- 0" 8'- 0" 8'- 0" 7'- 7" 6'- 8" 6'- 1" 4'- 5"

		Service Drop Length		Dimensions Above Ground 2-1/2" Conduit	3" Conduit
Rigid Metal Steel Conduit	#6 Aluminum Duplex	30' 40' 50' 60' 70' 80' 90' 100'***		20'- 4" 15'- 8" 12'-10" 11'- 1" ** ** ** **	31'- 0" 25'- 9" 20'-10" 18'- 1" 15'- 7" 14'- 0" 12'- 9" 11'- 8"

* Conduit not adequate for 30" minimum requirement.
** Conduit not adequate for 10' minimum clearance.
*** Maximum allowable service drop length.

SERVICE ATTACHMENT ON A GUYED SERVICE MAST

Customer furnishes and installs:

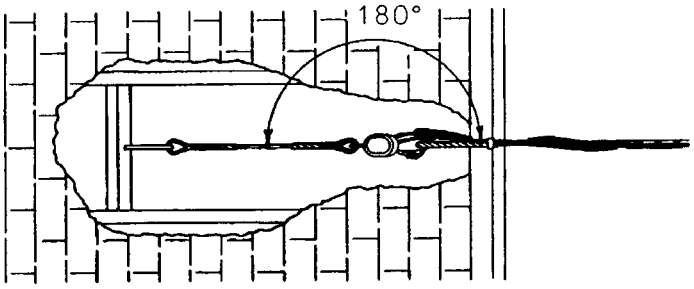
1. Service head.
2. Service mast. 2" minimum rigid metallic conduit (see Note 1).
3. Service entrance conductors (see Note 2).
4. Neoprene collar and flash plate.
5. Split ring type conduit supports.
6. Galvanized guy wire and necessary attachments (1/4" minimum, 3 or 7 strands).

Company furnishes and installs:

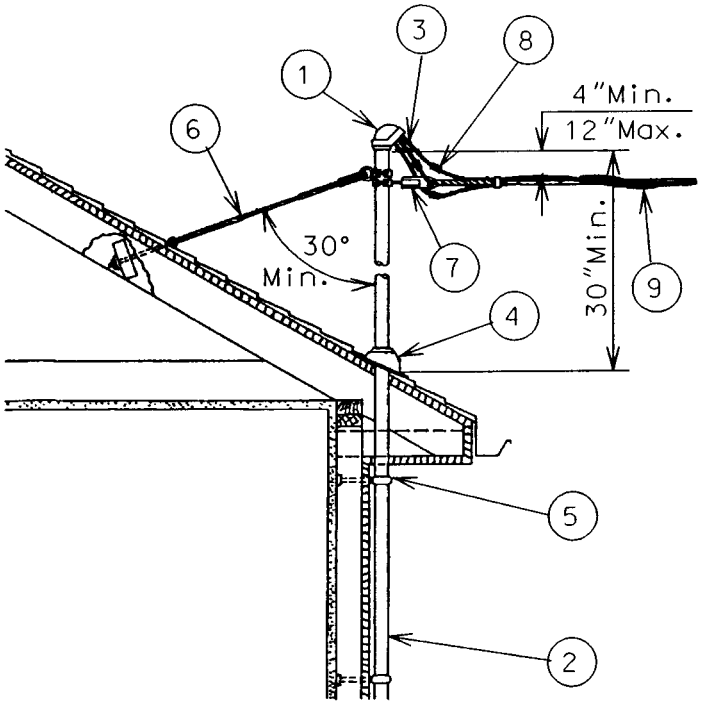
7. Service attachment (clamp type wireholder).
8. Service connectors.
9. Service drop.

Notes:

1. That portion of service mast above uppermost conduit support shall be a continuous length without couplings.
2. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
3. Only the electric service drop can be attached to the service mast.



Top View



SERVICE ATTACHMENT ON A GUYED SUPPORT STUD
PITCHED ROOF

Customer furnishes and installs:

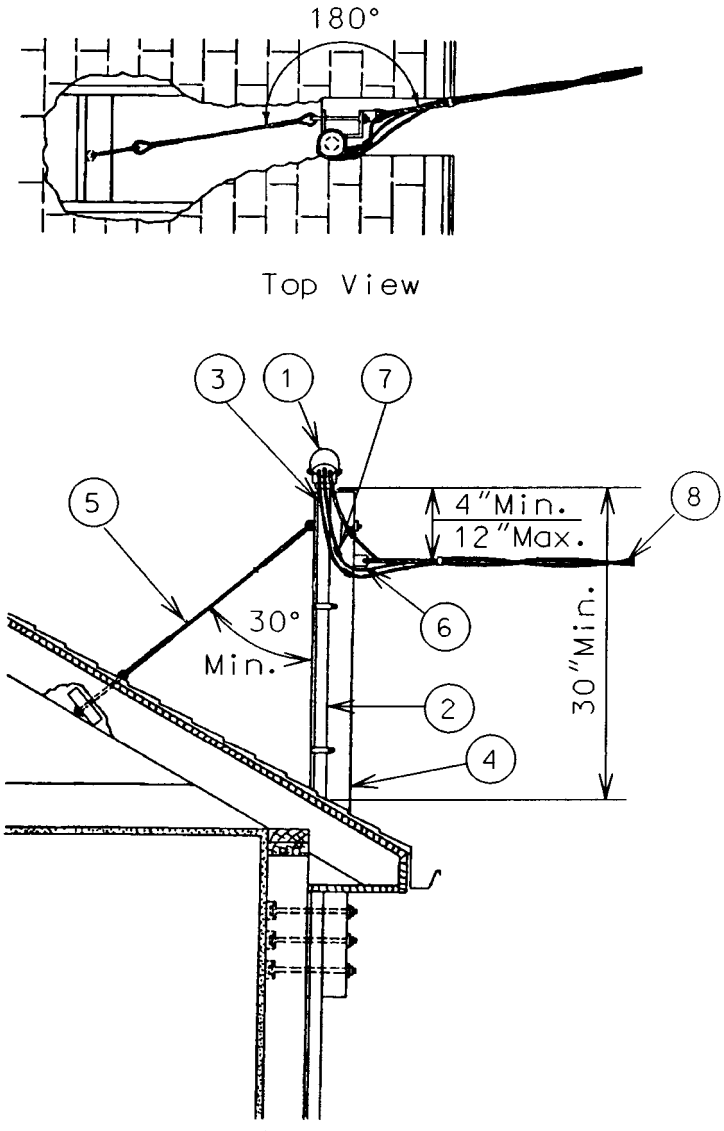
1. Service head.
2. Service entrance conduit.
3. Service entrance conductors (see Note 2).
4. Steel channel or equivalent securely fastened to building wall (see Note 1).
5. Galvanized guy wire and necessary attachments (1/4" minimum, 3 or 7 strands).

Company furnishes and installs:

6. Service attachment.
7. Service connectors.
8. Service drop.

Notes:

1. Customer shall notch roof overhang to accommodate support stud. Stud to have sufficient strength to withstand maximum loading. Install service entrance conduit close to building wall.
2. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
3. Only the electric service drop can be attached to the service mast.



SERVICE ATTACHMENT ON A GUYED SUPPORT STUD
FLAT ROOF

Customer furnishes and installs:

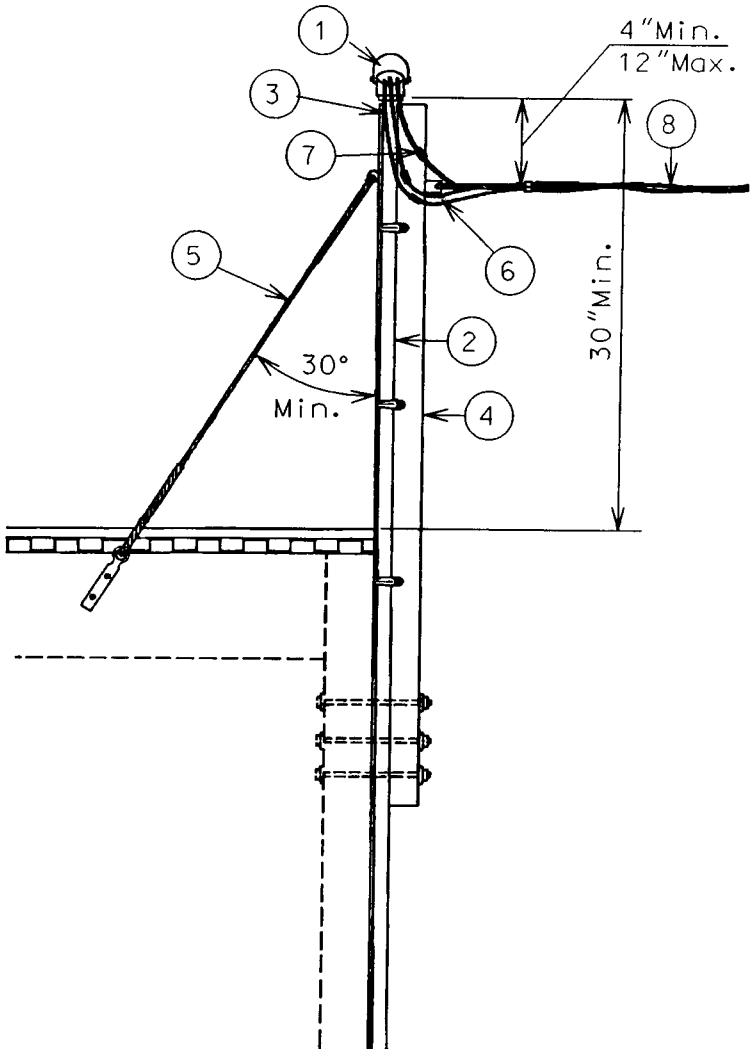
1. Service head.
2. Service entrance conduit.
3. Service entrance conductors (see Note 1).
4. Steel channel or equivalent securely fastened to building wall.
5. Galvanized guy wire and necessary attachments (1/4" minimum, 3 or 7 strands).

Company furnishes and installs:

6. Service attachment.
7. Service connectors.
8. Service drop.

Notes:

1. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
2. Only the electric service drop can be attached to the service mast.



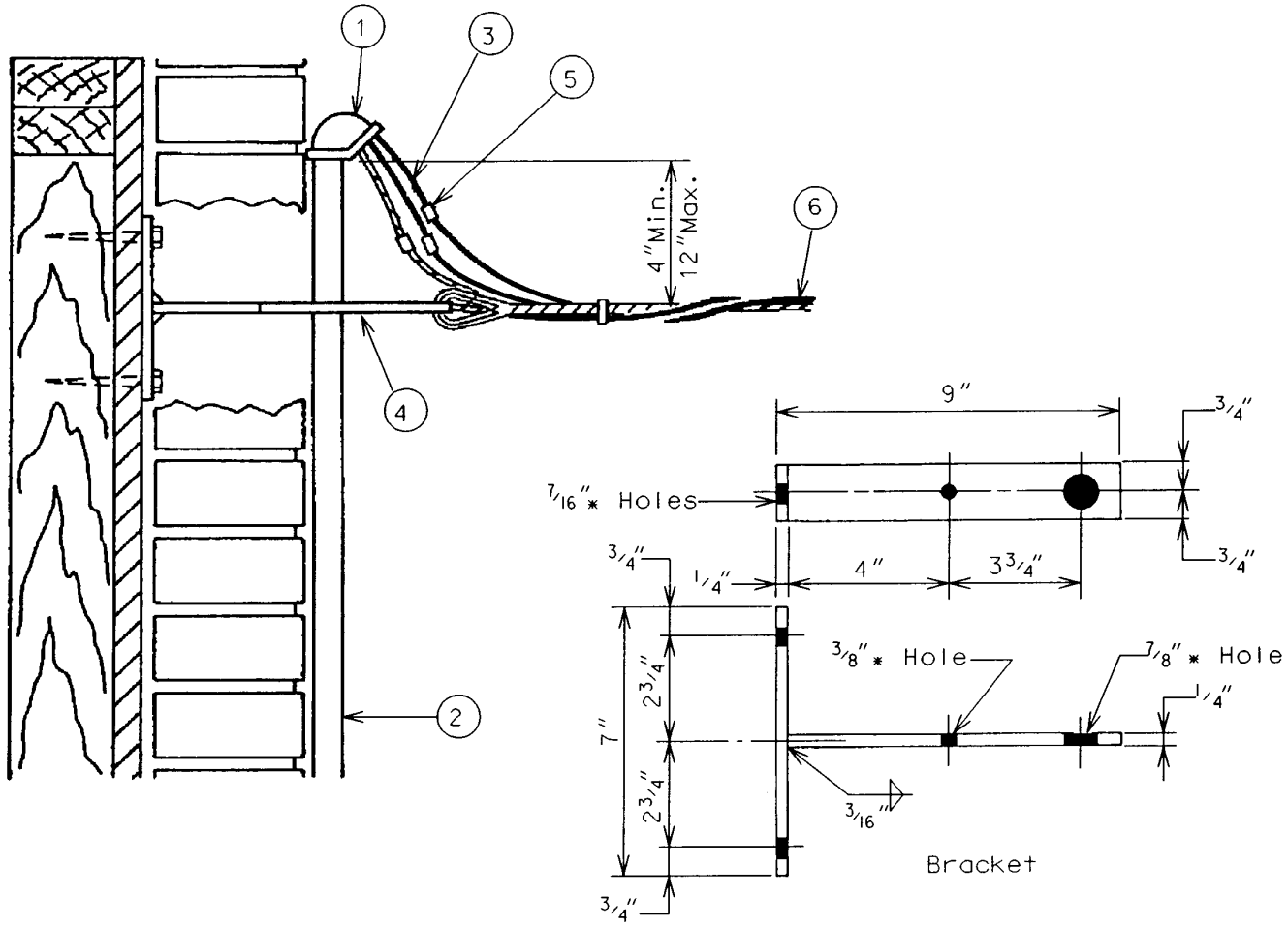
SERVICE ATTACHMENT ON A BUILDING WITH BRICK OR STONE VENEER

Customer furnishes and installs:
1. Service head.
2. Service entrance conduit.
3. Service entrance conductors (see Note 2).

Company furnished and installs:
5. Service connectors.
6. Service drop (#2 & #1/0 triplex only).

Company furnishes and Customer installs:
4. Service attachment. "T" type bracket installed with 3/8" x 4" lag screws (see Note 1).

Notes:
1. The customer may provide a bracket of the type shown below. Install a steel strap from the hole in the bracket to an adjacent studding for service drops that pull off at an angle.
2. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.



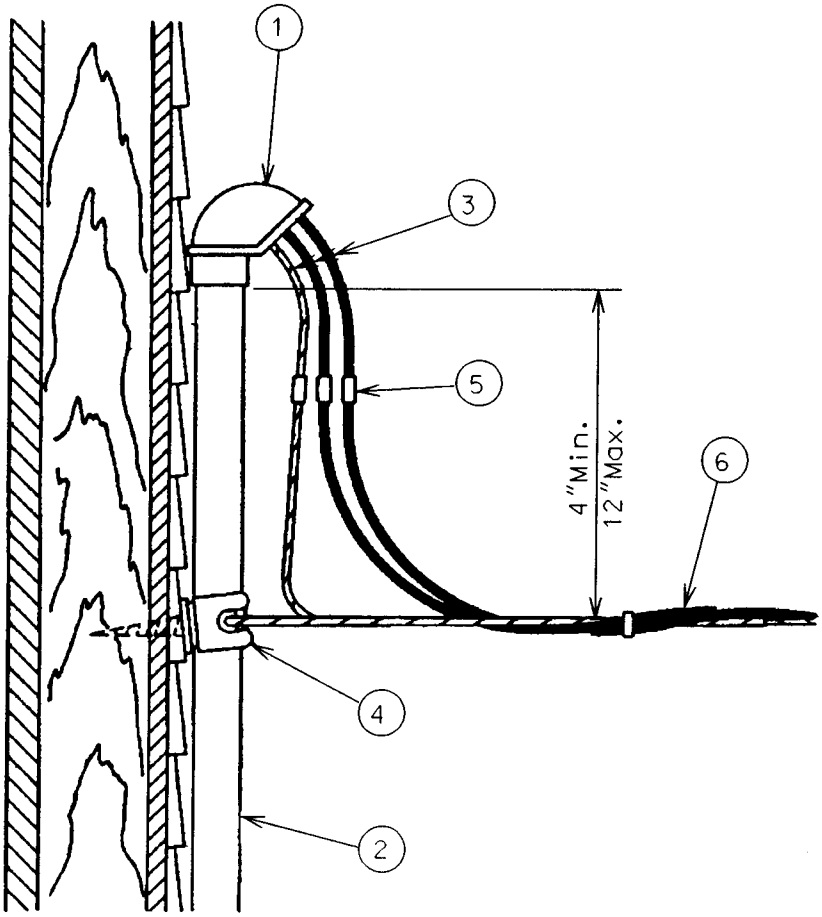
SERVICE ATTACHMENT ON A BUILDING
WITH WOOD, ALUMINUM, STUCCO OR SIMILAR SIDING
0-320 AMPERES

Obtain acceptance for installations larger than 200 amperes from the local Company office.

Customer furnishes and installs:
1. Service head.
2. Service entrance conduit.
3. Service entrance conductors (see Note 2).

Company furnishes and installs:
4. Service attachment (see Note 1).
5. Service connectors.
6. Service drop.

Notes:
1. Customer shall mark location of studs on building.
2. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.



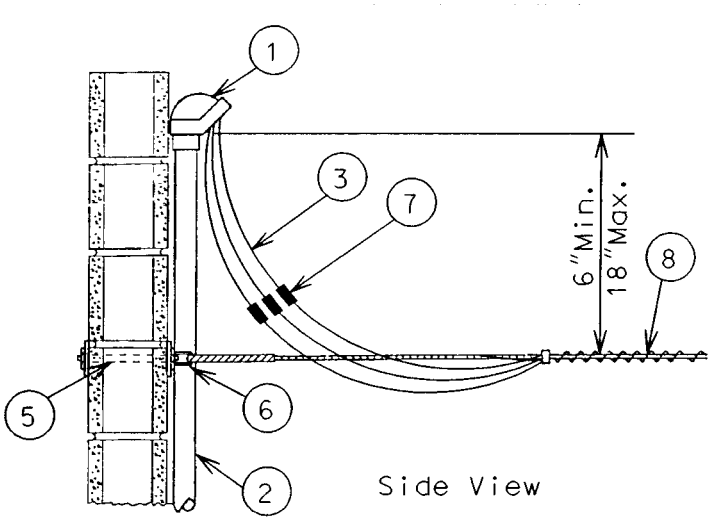
SERVICE ATTACHMENT ON A BUILDING
BRICK OR METAL BUILDING WITH SINGLE OR PARALLELED SERVICE ENTRANCES

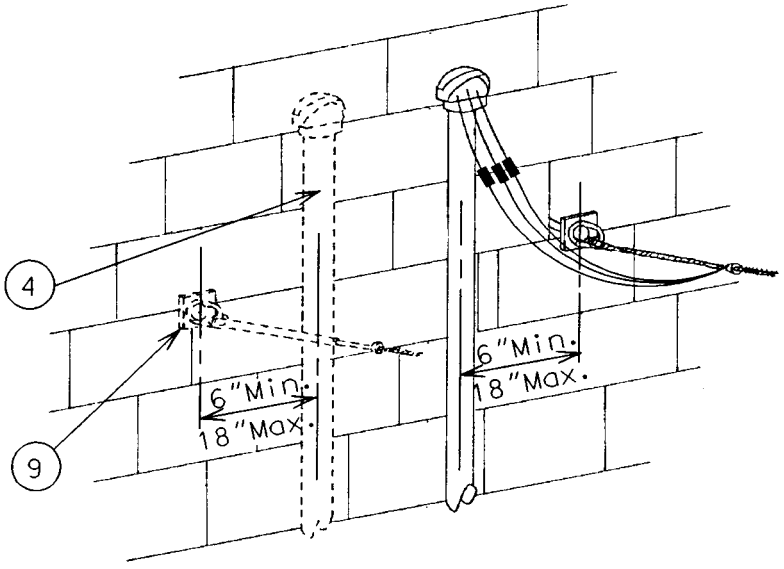
Customer furnishes and installs:
1. Service head (a maximum of 4).
2. Service entrance conduit.
3. Service entrance conductors (see Note 2).
4. Additional outlet for parallel services if required.

Company furnishes and Customer installs:
5. 5/8" spacer bolt with two 4" square flat washers. Washers to be installed on both sides of building wall (see Note 1).

Company furnishes and installs:
6. Service attachment.
7. Service connectors.
8. Service drop.
9. Alternate service attachment if required.

Notes:
1. It shall be the customer's responsibility to provide adequate wall strength to support service drop tensions as provided by the Company.
2. Service entrance conductors shall extend at least 30" beyond the service head to permit proper connection to the Company's conductors.





SERVICE ATTACHMENT ON A BUILDING
WITH BUS DUCT SERVICE ENTRANCE AND INDOOR METERING

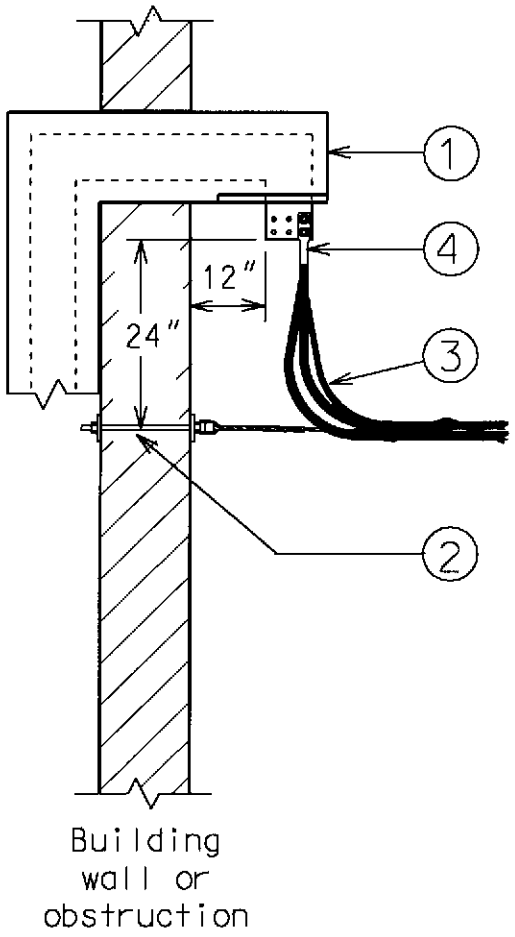
Obtain acceptance and specific details from the local Company office.

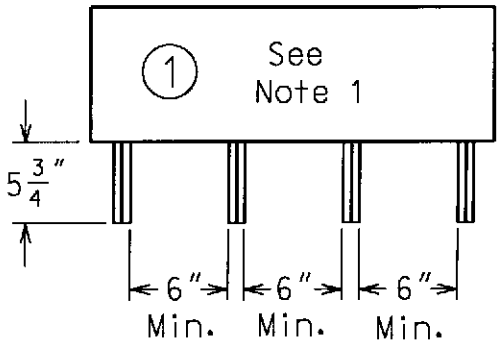
Customer furnishes and installs:
1. Service entrance duct (see Note 1).

Company furnishes and installs:
3. Service drop and attachment.
4. Service connectors.

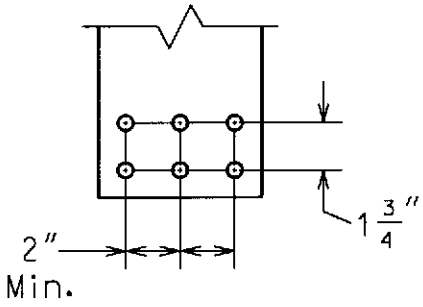
Company furnishes and Customer installs
2. 5/8" spacer bolt with two 4" square flat washers. Washers to be installed on both sides of building wall (see Note 2).

Notes:
1. If the vertical dimension of the bus bars exceed 5-3/4", the customer shall be responsible for taping the top of the bus bars such that not more than 5-3/4" remain exposed.
2. It shall be the customer's responsibility to provide adequate wall strength to support service drop tensions as provided by the Company.





BUS BAR SPACING



BUS DRILLING DETAILS

All holes 9/16" Dia.

SERVICE ENTRANCE ON A PRIVATE METERING POLE
0-320 AMPERES

Customer furnishes and installs:

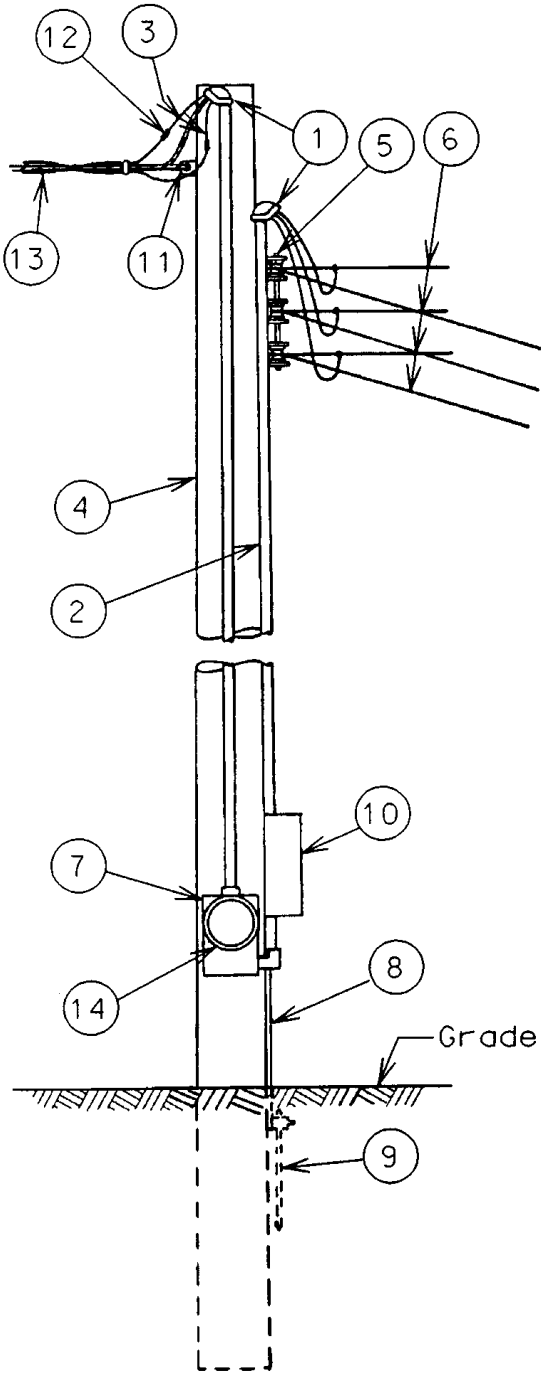
1. Service heads.
2. Service entrance conduit. Provide mechanical protection to a point 8' above grade.
3. Service entrance conductors (see Note 5).
4. Treated wood pole (see Notes 1 & 2).
5. Secondary pole rack or equivalent.
6. Sub-service conductors (see Notes 1 & 3).
7. Company listed 1-position meter socket (see Note 6).
8. Grounding electrode conductor.
9. Grounding electrode(s) per applicable codes (see Sheet O-2).
10. Weatherproof disconnecting means (see Note 4).

Notes:

1. It may be necessary to guy the meter pole. Customer shall consult the Company to obtain such information as service drop tension and direction so that adequate and effective guying can be installed.
2. Customer shall consult the Company for the class, setting depth and length of pole to be installed. Minimum requirements are class 6, 5' setting depth and 25' length; additional pole height may be required to maintain clearances as specified in the NEC.
3. Other sub-services may be installed where necessary when each is provided with proper service ground.
4. On meter poles where the disconnecting means is installed at some other location, direct grounding of the meter socket is permissible.
5. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
6. For farm installations the centerline of the meter shall be 5' above grade. For all other installations, use standard meter mounting height (see M-2).

Company furnishes and installs:

11. Service attachment.
12. Service connectors.
13. Service drop.
14. Watthour meter.



SERVICE ENTRANCE ON A PRIVATE METERING POLE
WITH OUTDOOR CURRENT TRANSFORMERS AND A TRANSFER SWITCH
1-PHASE OR 3-PHASE, 201-800 AMPERES
FOR FARM SERVICES ONLY

Obtain acceptance from the local Company office.

Customer furnishes and installs:

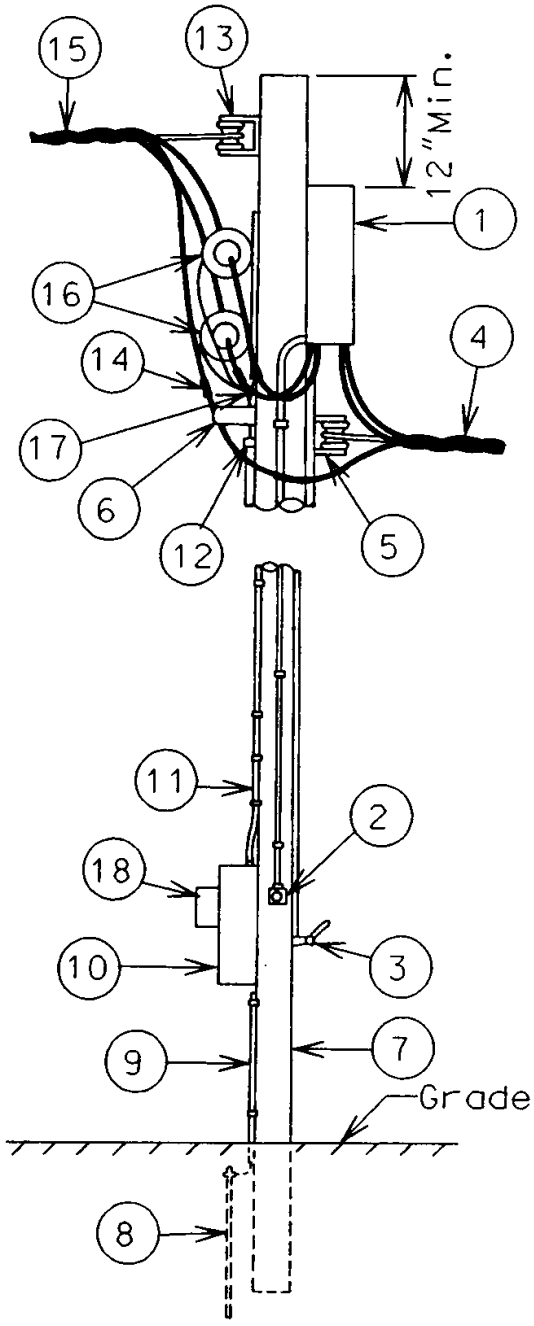
1. Transfer switch, UL listed or equivalent.
2. Weatherproof receptacle for generator.
3. Operating handle for transfer switch (grounded).
4. Service entrance conductors (see Note 1 & 2).
5. Service attachment (secondary wireholder or equivalent).
6. Screw type insulator to support neutral conductor.
7. Treated wood pole (see Notes 3 & 4).
8. Grounding electrode(s) per applicable codes (see Sheet O-2).
9. Grounding electrode conductor.
10. Company listed transformer rated meter socket (see Sheet D-17).
11. Conduit (see Note 5).
12. Water-tight entrance connector with neoprene bushing, or weatherhead.

Notes:

1. Service entrance conductors shall extend at least 36" past the bottom of the pole top transfer switch to permit proper connection to the Company's conductors.
2. Underground service entrance conductors and conduit may be substituted for the overhead conductors. If this is done the pole must be accessible by bucket truck and mechanical protection 8' above and 18" below grade, minimum, are required.
3. It may be necessary to guy meter pole. Customer shall consult the Company to obtain such information as service drop tensions and direction so that adequate and effective guying can be installed.
4. Customer shall consult the Company for the class, setting depth and length of pole to be installed. Minimum requirements are class 6, 5' setting depth and 25' height; additional pole height may be required to maintain clearances as specified in the NEC.
5. 1-1/4" galvanized rigid, galvanized intermediate or rigid nonmetallic schedule 40 PVC conduit per NEMA Standard TC-2, and 1-1/4" coupling with 1-1/4" to 1" reducer. Conduit to be securely fastened to pole with standard conduit straps or clamps.

Company furnishes and installs:

13. Service attachment (secondary wireholder or equivalent).
14. Service connectors.
15. Service drop.
16. Current transformers.
17. Metering cable.
18. Watthour meter.



SERVICE ENTRANCE TO A MOBILE HOME
1-PHASE, 120/240 VOLTS, 0-200 AMPERES, 1 METER

Customer furnishes and installs:

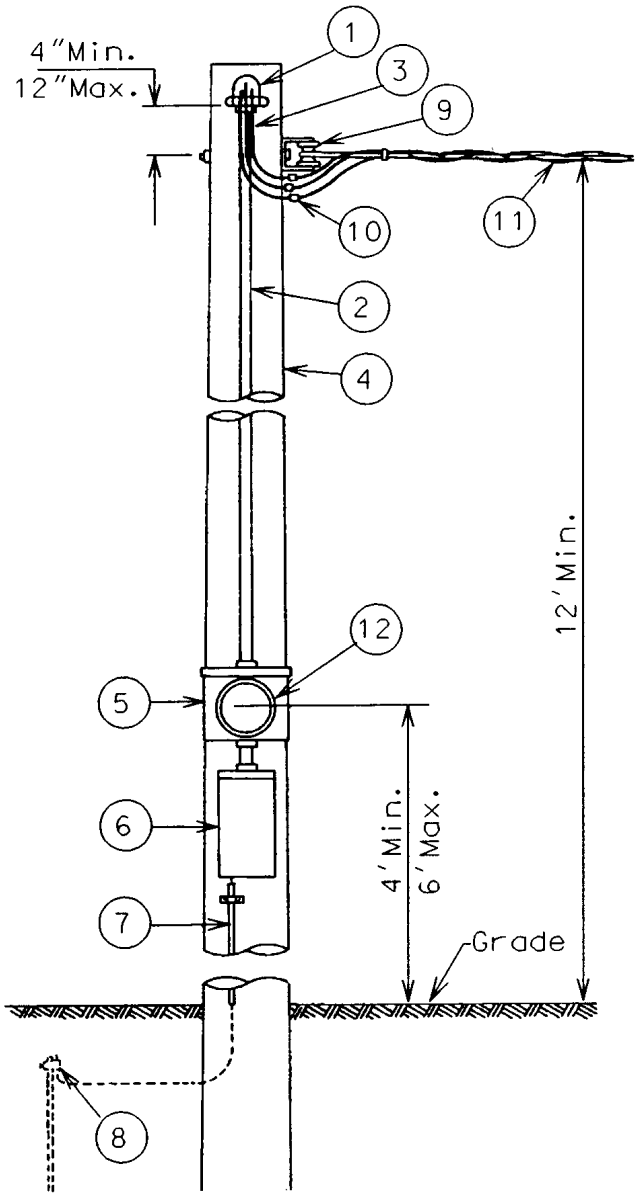
1. Service head.
2. Service entrance conduits. Provide mechanical protection to a point 8' above grade.
3. Service entrance conductors (see Note 3).
4. Treated wood pole (see Notes 1 & 2).
5. Company listed 4-terminal meter socket.
6. Weatherproof panelboard (see Note 4).
7. Grounding electrode conductor.
8. Grounding electrode(s) per applicable codes (see Sheet O-2).

Company furnishes and installs:

9. Service attachment.
10. Service connectors.
11. Service drop.
12. Watthour meter.

Notes:

1. It may be necessary to guy the meter pole. Customer shall consult the Company to obtain such information as service drop tension and direction so that adequate and effective guying can be installed.
2. Customer shall consult the Company for the class, setting depth and length of pole to be installed. Minimum requirements are class 6, 5' setting depth and 20' length; additional pole height may be required to maintain clearances as specified in the NEC.
3. Service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
4. Article 550 of the *National Electrical Code* covers the special requirements for mobile homes. A few of the requirements are listed below. See the NEC for a complete listing of the requirements.
   - Mobile home service equipment must have a means for providing service to an auxiliary building or electrical equipment located outside the mobile home by a fixed wiring means.
   - It also permits additional 120 Volt, 15 or 20 Amp., GFI protected, receptacles to be installed for equipment located outside of the mobile home.
   - The service or disconnecting means must be with-in sight of and not more than 30' from an exterior wall of the mobile home.
   - All wiring must be installed as per the NEC, State and local ordinances.



TEMPORARY SERVICE FOR A CONSTRUCTION SITE
(0-320 AMPS)

Customer furnishes and installs:

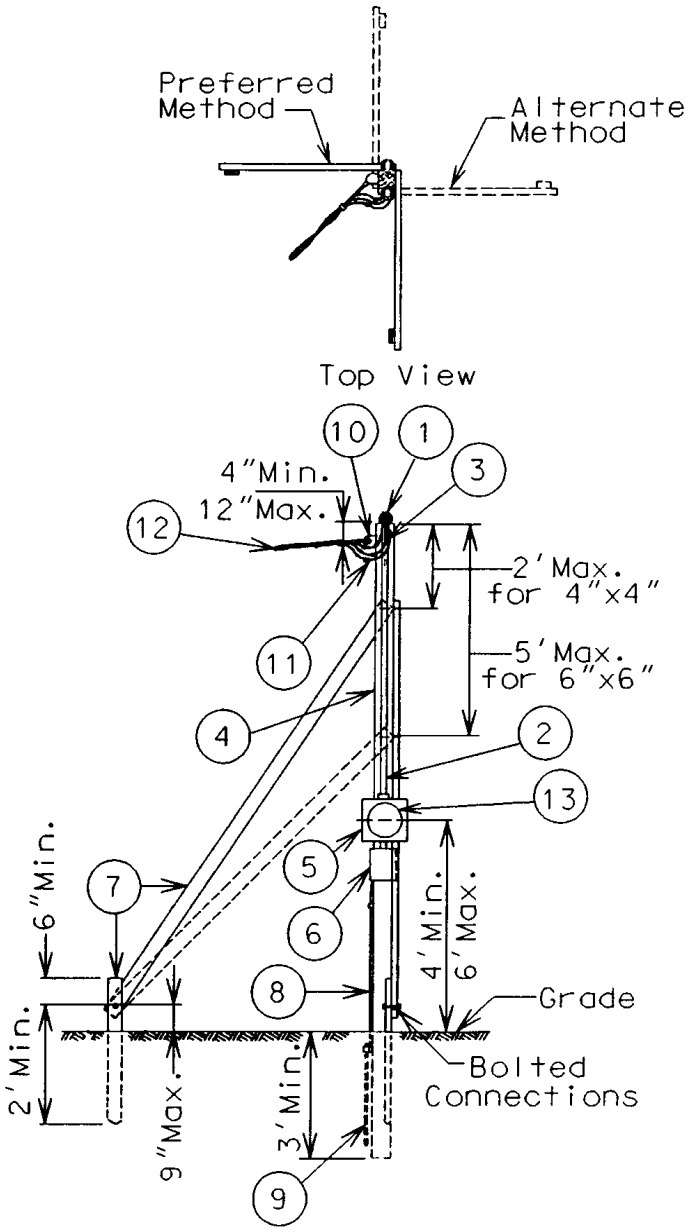
1. Service head.
2. Service entrance conduit.
3. Service entrance conductors (see Note 4).
4. Timber upright (4" x 4" or 6" x 6") (see Notes 1 & 2).
5. Company listed meter socket (see Note 3).
6. Service switch and distribution panel (see Note 3).
7. Brace or guy timbers to hold 1000 pounds load each (see Note 1).
8. Grounding electrode conductor.
9. Grounding electrode(s) per applicable codes (see Sheet O-2).

Company furnishes and installs:

10. Service attachment (secondary porcelain screw bracket or equivalent wireholder).
11. Service connectors.
12. Service drop.
13. Watthour meter.

Notes:

1. For temporary service the customer shall install this structure or other Company listed equivalent structure: Utility Service Manufacturing Company Miti-Mast, MM or ML series with catalog numbers suffix "HDB" (for heavy duty back stake). This approval applies only to the meter socket and the strength of the temporary mast, but does not include approval of the disconnecting device or the power outlet.
2. Consult the Company for the location and the required height of the structure.
3. A Company listed temporary service assembly, as listed on Sheet D-6, may be substituted for the meter socket, service switch and distribution panel.
4. Service entrance conductors shall extend at least 30" beyond the service head to permit proper connection to the Company's conductors.
5. For 400A or larger temporary services, construct U-10 at the base of the pole with an approved OH transocket (D-14).



SERVICE TO A TELECOMMUNICATION COMPANY
1-PHASE, 120 VOLTS, 0-30 AMPERES

Customer furnishes and installs:

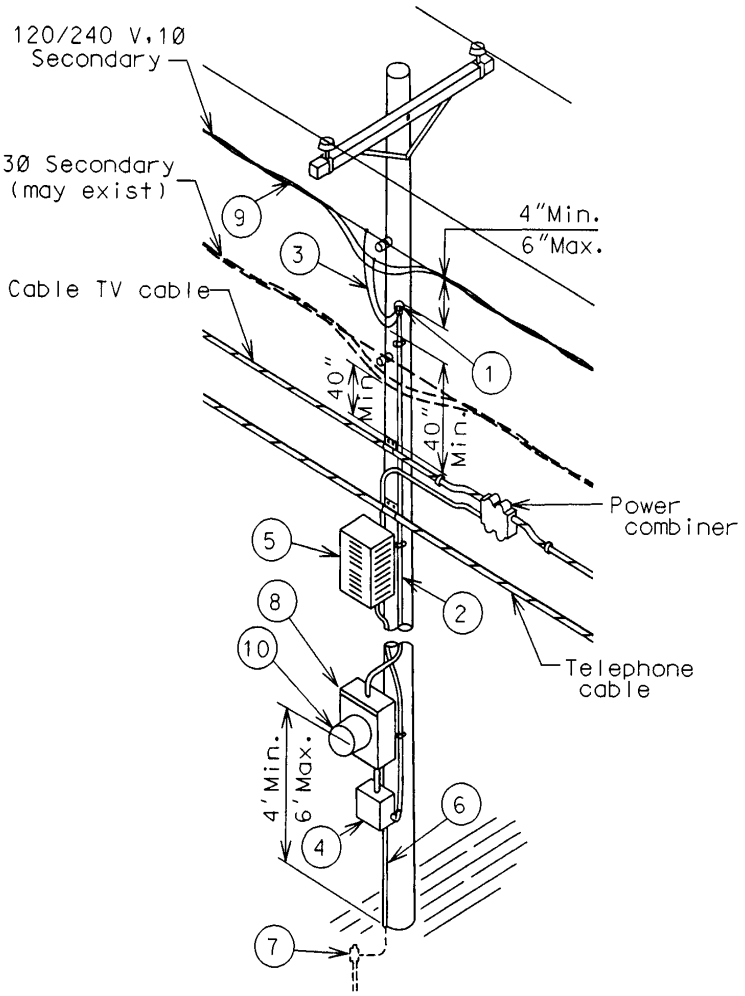
1. Service head.
2. Service entrance conduit (see Note 1).
3. Service entrance conductors (see Note 2).
4. Weatherproof, dead front, fuse or circuit breaker (see Notes 3 & 4).
5. Telecommunication equipment (see Notes 3, 4, 5, 6 & 7).
6. Grounding electrode conductor.
7. Grounding electrode(s) per applicable codes (see Sheet O-2).
8. Company listed meter socket (see Notes 3 & 8).

Company furnishes and installs:

9. Service conductors and connectors from secondary to service entrance conductors.
10. Watthour meter.

Notes:

1. Non-metallic conduit, Schedule 80. If metallic conduit is used, it shall be covered with a non-metallic covering 40" above and 72" below any communications attachments.
2. The service entrance conductors shall extend at least 18" beyond the service head to permit proper connection to the Company's conductors.
3. The disconnect, power supply unit, meter socket, and all other equipment shall be mounted on the same quadrant of the pole.
4. When a unit contains both the service switch and the power supply, installation height shall be in accordance with applicable codes.
5. Unit may not be mounted on any pole on which there are transformers, risers, vertical supply conductors to aerial services, switch handles, traffic signals, capacitor banks or similar fixtures. Additionally, it may not be mounted on a distribution system corner pole.
6. Where mounted on a pole on which a lighting fixture is installed, a clearance of 20" is required to an ungrounded fixture or 4" if fixture is grounded and bonded to the power supply.
7. All installations must conform to the Wisconsin or Michigan State Electrical Code as applicable for clearances, climbing space and working space.
8. Equipment shall be installed such that it is not subject to vehicle or pedestrian traffic. The Company may refuse to allow service on a pole used by We Energies, in this case, use a free standing pedestal or customer owned service pole.
9. Not to be served from a transformer equipped with neutral isolator.



SERVICE TO A TELEPHONE CO. POLE MOUNTED DRYER
1-PHASE, 120 VOLTS, 0-30 AMPERES

Customer furnishes and installs:

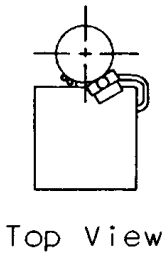
1. Air dryer (see Note 1).
2. Weatherproof dead front, fuse or circuit breaker (see Note 2).
3. Service head, entrance conduit and minimum size #10 conductor (see Notes 3 & 4).
4. Company listed meter socket.
5. Air line covered with molding.
6. Alarm pair covered with molding.
7. Grounding electrode conductor covered with molding.
8. Grounding electrode(s) per applicable codes (see Sheet O-2).

Company furnishes and installs:

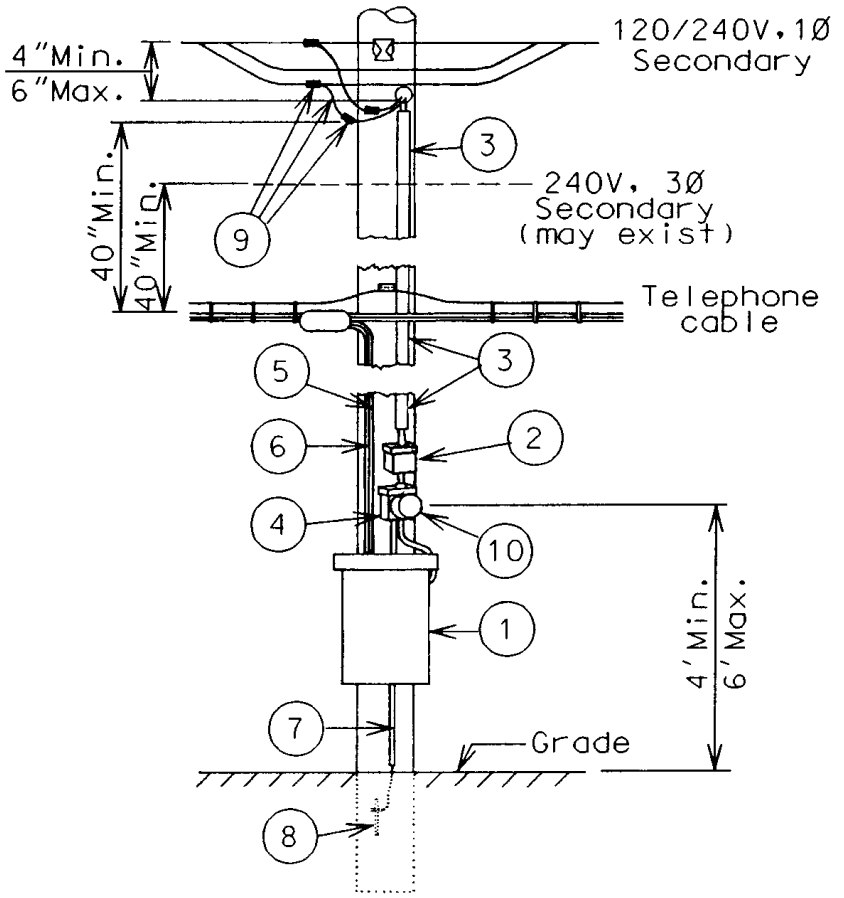
9. Service conductors and connectors from secondary to service entrance conductors.
10. Watthour meter.

Notes:

1. Unit may not be mounted on any pole on which there are risers, vertical supply conductors to aerial services, switch handles, traffic signals, capacitor banks or similar fixtures. Air line, alarm pair and service conduit are risers, and no more than 3 risers are permitted on a pole.
2. All installations must conform to the Wisconsin or Michigan State Electrical Code for clearances, climbing space, working space.
3. Where mounted on a pole on which a lighting fixture is installed, a clearance of 20" is required to an ungrounded fixture or 4" if fixture is grounded and bonded to the communication strand.
4. Non-metallic conduit, Schedule 80. If metallic conduit is used, it shall be covered with a non-metallic covering 40" above and 72" below any communications attachments.
5. Not to be served from a transformer equipped with neutral isolator.



Top View



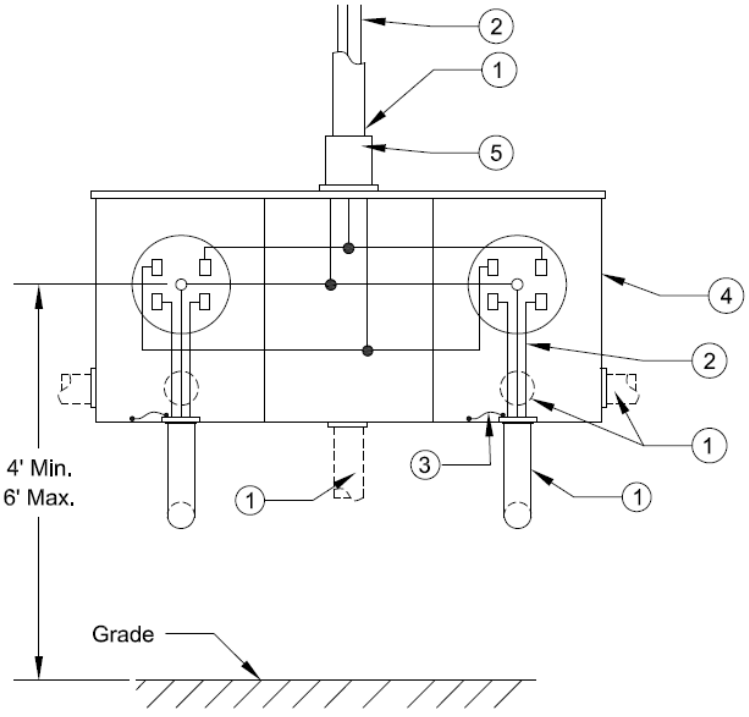
SERVICE TERMINATION IN A MULTI-POSITION METER SOCKET
1-PHASE, 120/240 VOLTS, 0-200A PER METER, 2-6 METERS
OVERHEAD SERVICE

Customer furnishes and installs:

1. Service entrance conduit (see Note 1).
2. Service entrance conductors (see Notes 1 and 2).
3. Metallic conduit shall be bonded.
4. Company listed 2 to 6 position meter socket (see D-3, D-4, or D-5).
5. Weather-tight hub.

Company furnishes and installs:

6. Watthour meter.
7. Service lateral (not pictured).

Notes:

1. Customer entrance conduit should exit socket as shown below. Alternative knockouts (dotted lines), out of the side, out of the back, or out of the center portion of the socket can be utilized instead as well. If the center section alternative location is used, only conductors from one meter socket shall enter it.
2. If the center alternative location is not utilized, the service entrance conductors shall exit directly below (bottom knockout or back knockout) or directly to the right or left of the corresponding meter socket.
3. Customer entrance conductors shall be routed out of the socket such that metered conductors from separate meters do not cross.
4. Each meter position shall be marked on the outside of the socket or by the breaker (if available) with the address of the unit served. If the marking is on the outside of the removable cover, it shall also be marked on the inside of the meter socket in a visible location. This marking shall also be placed on the corresponding distribution panel(s). The marking shall be a permanent label with 1/2" block letters and may consist of individual self-stick letters or numbers, suitable for the location so as to be considered permanent (see Note 7 on M-2).