UNDERGROUND SERVICES - SECONDARY

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GENERAL REQUIREMENTS
FOR UNDERGROUND SERVICE

Space Requirements
1. The unobstructed space required in front of termination compartments, transockets and metering equipment shall be as defined by the "Working Space About Electrical Equipment", Section 110.26, of the National Electrical Code (as adopted by the states of Michigan and Wisconsin). This unobstructed space shall extend from the floor or ground to a minimum height of 6'-6". For equipment higher than 6'-6" this space shall extend to the top of the equipment.

Service Laterals and Entrances
1. Service laterals are furnished and installed by the Company.
2. Service laterals will generally be terminated in a meter pedestal, meter socket, transocket or termination compartment. Customers shall obtain information from the Company relative to the proper location of the service lateral and termination equipment. Such information will be furnished in writing upon request.
3. The preferred termination of service laterals is on the outside of a building (or structure). Service laterals that terminate inside of a building shall terminate immediately upon entering as shown in this manual. The raceway for service laterals under or thru a building shall not extend longer than 8' after penetrating the outside wall. Services that terminate in a mezzanine are allowed a maximum length of 14' measured from grade.
4. For services, generally 2000 Amperes and larger, and with Company approval, the service lateral may be terminated in the customer's switchgear or on the customer's bus duct. This type of installation is further restricted by the following:
   a. Customer shall provide all necessary plastic conduit encased in 3" of concrete for the extension of the cable within his building (see Note 3 above).
   b. Customer shall obtain Company acceptance of the switchgear terminal and C.T. compartment (if any) design. Three copies of the switchgear plans shall be submitted to the local company office for acceptance. The plans must show the general layout of the switchgear, the switchgear location within the building, and the specific details of the termination compartment and any C.T. compartment(s). Specific details such as compartment size, bus spacing and drilling dimensions, other clearances, bus & bus support configuration, barrier location, sealing provisions, and materials used are to be included.
5. Only meter mounting devices and termination equipment approved and listed in Section D of this manual are to be used. Additionally all equipment must be listed by a nationally recognized testing laboratory, e.g. UL, installed and used as per the listing and the manufacturer's instructions.
6. Where metallic rigid conduit or IMC is used for the service lateral raceway the ends are to be threaded and threaded couplings, connectors or locknuts are to be used. Slip type fittings shall not be used.
7. For outdoor service terminations with direct buried lateral, the horizontal portion of the conduit shall extend through a minimum of 12" of undisturbed earth where practicable, defined as follows:
   a. Undisturbed earth: The area not excavated for the construction of the building. (May be compacted fill.)
   b. Fill area: The area between the building wall and the undisturbed earth. (May vary from a few inches to several feet or more).
8. Services to individual dwelling units shall consist of one service lateral and one meter.

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 pedestal, meter socket, transocket, or termination compartment, unless a separate raceway is provided. The grounding electrode conductor may terminate on the neutral bus of: the termination compartment for multi-metered installations provided it does not interfere with the installation of the service lateral conductors, or a meter pedestal equipped with a main disconnect and listed as Service Equipment.
4. Ground rods and grounding electrode conductors shall not be located in front of meter pedestals or wiring troughs.
5. 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 underground service lateral terminations and connections.
   Refer to the Metering Section of this manual for details of the metering requirements for each installation.
NAME OF PARTS FOR UNDERGROUND SERVICE

Customer furnishes and installs:
A - Metering Pedestal.
B - Service-Entrance Conduit and Conductors.
C - Distribution Panel, Main Fuse/Disconnect.
D - Meter Socket.
E - Service Lateral Conduit.
F - Transsocket.
G - Transformer Rated Meter Socket.
H - Wiring Trough (1600 Amperes Maximum).
I - Termination Compartment, either wire or bus connected type.

Customer furnishes and installs:
J - Metering or Main Disconnect/Fuse, wire connected for use with wire type termination compartment only.
K - Metering Equipment, bus connected for use with bus connection type termination compartment only and of same manufacturer.

Company furnishes and installs:
L - Underground Service Lateral.
M - Watthour Meter.
SERVICE TERMINATION IN A SERVICE ASSEMBLY
FOR MOBILE HOMES
1-PHASE, 120/240 VOLTS, 0-200 AMPERES PER METER, 1 OR 2 METERS

Customer furnishes and installs:
1. Company listed mobile home metering pedestal (see Sheet D-13).
2. Company listed pedestal supporting stake bolted to the pedestal (see Sheet D-11) or equivalent (see Note 1).
3. Grounding electrode conductor in non-metallic conduit and grounding electrodes(s) per applicable codes (Sheet U-2).

Company furnishes and installs:
4. Watthour meter.
5. Service lateral (radial feed, loop thru installation).

Notes:
1. A 1-5/8" x 1-5/8" galvanized steel framing channel 80" long or a galvanized steel support of equal strength.
2. 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.
   • Additional 120 Volt, 15 or 20 Amp., GFI protected, receptacles are permitted for equipment located outside of the mobile home.
   • The service or disconnecting means must be with-in sight of and not more than 30 feet from an exterior wall of the mobile home.
   • All wiring must be installed as per the NEC, State and local ordinances.
SERVICE TERMINATION IN A FREE STANDING METER PEDESTAL
DIRECT BURIED LATERAL
0-320 AMPERES, 1 METER
Not To Be Used for Mobile Homes

Customer furnishes and installs:
1. Company listed meter pedestal (see Notes 1 & 2).
2. Company listed supporting stake or concrete footing (.75 cu. ft. min.) (see Notes 3 & 4 and Sheet D-11).
3. Service-entrance conductors (not shown, see Note 5).
4. Service-entrance conduit.
5. Ground conductor in non-metallic conduit, installed only when the pedestal has a main disconnect.
6. Grounding electrode(s) per applicable codes (see Sheet U-2).
7. Accessory foot for concrete foundations.

Company furnishes and installs:
8. Service lateral.
9. Watthour meter.

Notes:
1. Unit shall have a main service switch and fuse, or circuit breaker either integral or attached to the pedestal.
2. Rodent covers for pedestal base, if included, shall be discarded.
3. Pedestal shall be set in firmly compacted soil up to the grade line of the pedestal.
4. A 1-5/8" x 1-5/8" galvanized steel framing channel 80" long or a galvanized steel support of equivalent strength.
5. Service-entrance conductors shall exit the pedestal below the lowest live part and above grade.
SERVICE TERMINATION IN A METER PEDESTAL ATTACHED TO A BUILDING
DIRECT BURIED LATERAL
0-320 AMPERES

Customer furnishes and installs:
1. Company listed meter pedestal (see Notes 1, 2 & 3).
2. Service-entrance conduit.
3. Service-entrance conductors (not shown, see Note 4).

Company furnishes and installs:
4. Service lateral.
5. Watthour meter.

Notes:
1. Pedestal shall set in firmly compacted soil up to the grade line of the pedestal.
2. Rodent covers for pedestal base, if included, shall be discarded.
3. It shall be the customer's responsibility to firmly secure the pedestal to the building.
4. Service-entrance conductors shall exit the pedestal below the lowest live part and above grade.
5. Allowance for the building wall, when the pedestal is mounted to the foundation.
6. When a two position meter pedestal is installed the positions must be labeled (see Note 7 on Page M–2).
SERVICE TERMINATION IN AN OUTDOOR METER SOCKET  
CONCRETE ENCASED LATERAL  
0-200 AMPERES  
NOT TO BE USED WITHOUT PERMISSION FROM THE COMPANY (See Note 1)  

Customer furnishes and installs:  
1. Service-entrance conduit.  
2. Service-entrance conductors.  
4. Company listed meter socket.  
5. Service lateral conduit (see Note 2).  
6. Conduit supports.  

Company furnishes and installs:  
7. Service lateral conduit and concrete envelope.  
8. Service lateral.  
10. Watthour meter (not shown).  

Note:  
1. Not to be used for normal installation; requires permission from the company. See Page U-6 for the standard installation.  
2. Galvanized rigid or galvanized intermediate conduit with threaded ends and fittings at the meter socket.  
   1-phase, 0-100 amperes; one 2" conduit  
   1-phase, 101-200 amperes; one 2-1/2" conduit  
   3-phase, 0-100 amperes; one 2-1/2" conduit  
   3-phase, 101-200 amperes; one 3" conduit
SERVICE TERMINATION IN AN OUTDOOR METER SOCKET
DIRECT BURIED LATERAL
0-200 AMPERES
NOT TO BE USED WITHOUT PERMISSION FROM THE COMPANY (See Note 1)

Customer furnishes and installs:
1. Service-entrance conduit.
2. Service-entrance conductors.
4. Company listed meter socket.
5. Service lateral conduit (see Note 2).
6. Insulated conduit bushing (see Note 3).
7. Split ring type conduit supports or galvanized steel framing channel brackets and conduit clamps. The lower conduit support shall be attached to the building foundation.
8. Standard radius manufactured elbows or field bend conduit (see Note 2).

Company furnishes and installs:
10. Watthour meter (not shown).

Notes:
1. Not to be used for normal installations; requires permission from the Company.
   See Page U-6 for the standard installation.
2. Galvanized rigid or galvanized intermediate conduit with threaded ends and fittings.
   1-phase, 0-200 amperes; one 2" conduit with 12" bend radius
   3-phase, 0-100 amperes; one 2" conduit with 12" bend radius
   3-phase, 101-200 amperes; one 2-1/2" conduit with 15" bend radius
3. Service lateral conduit shall have a temporary waterproof end cap when installed to prevent the accumulation of water, ice and other foreign matter inside the conduit.
SERVICE TERMINATION IN A MULTI-POSITION METER SOCKET
CONCRETE ENCASED LATERAL
1-PHASE, 120/240 VOLTS, 0-400 AMPERE BUS
0-200 AMPERES PER METER, 2-6 METERS

Customer furnishes and installs:
1. Service-entrance conduit.
2. Service-entrance conductors.
4. Company listed 2 to 6 position meter socket with or without circuit breakers (see Notes 1, 2 & 4).
5. Service lateral conduit (see Note 3).
6. Conduit supports. The lower conduit support shall be attached to the building foundation.

Company furnishes and installs:
7. Service lateral conduit and concrete envelope.
8. Service lateral.
10. Watthour meters (not shown).

Notes:
1. The Company will provide lugs for terminating incoming service lateral for all sockets rated 401 amperes or more.
2. Separate cable compartments provided on some meter sockets are for the Company’s service lateral cable only.
3. Galvanized rigid or galvanized intermediate conduit with threaded ends and fittings. Consult the local Company office for the proper size of the service lateral conduit.
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.
SERVICE TERMINATION IN A MULTI-POSITION METER SOCKET
DIRECT BURIED LATERAL
1-PHASE, 120/240 VOLTS, 0-400 AMPERE BUS
0-200 AMPERES PER METER, 2-6 METERS

Customer furnishes and installs:
1. Service-entrance conduit.
2. Service-entrance conductors.
3. Metallic conduit shall be bonded.
4. Company listed 2 to 6 position meter socket
   (see Notes 1, 2 & 5 and Sheets D-7 & D-10).
5. Service lateral conduit (see Note 3).
6. Split ring type conduit supports or galvanized steel framing
   channel brackets and conduit clamps. The lower conduit
   support shall be attached to the building foundation.
7. Insulated conduit bushing (see Note 4).
8. Standard radius manufactured elbows or field bend radius.
   (Not shown, see Note 6).

Company furnishes and installs:
10. Watthour meters (not shown).

Notes:
1. The Company will provide lugs for terminating incoming service lateral for all sockets rated 401 amperes
   or more.
2. Separate cable compartments provided on some meter sockets are for the Company’s service lateral
   cable only.
3. Galvanized rigid or galvanized intermediate conduit with threaded ends and fittings. Consult the Company
   office for the proper size of the service lateral conduit. A Company listed wireway may be substituted for the
   service lateral conduit as shown in dashed lines (preferred method).
4. Service lateral conduits shall have a temporary waterproof end cap to prevent the accumulation of water, ice
   and other foreign matter inside the conduit.
5. 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.
6. Conduit
   | Min. Bend Radius |
   | 2-1/2" | 3" | 3-1/2" |

   WITHOUT BREAKER
   
   WITH BREAKER

U-10
TEMPORARY SERVICE TERMINATION IN AN OUTDOOR METER SOCKET
1-PHASE, 120/240 VOLTS, 0-200 AMPERES
1-PHASE, 120/208 VOLTS, 0-200 AMPERES

Customer furnishes and installs:
1. Treated 4" x 4" wood post or equivalent (see Note 1).
2. Painted 3/4" weatherproof plywood to extend a minimum of 1" beyond the meter socket on all 4 sides.
3. 200 Amp., Company listed meter socket (see D-7 & D-8).
5. Service-entrance conductors.
7. Weatherproof disconnecting means (see Note 2).
8. Ground conductor in conduit.
9. Grounding electrode(s) per applicable codes (see Sheet U-2).
10. Service lateral conduit (see Note 3).
11. Split ring type conduit supports or galvanized steel 2-hole conduit straps.

Company furnishes and installs:
13. Flexible polyethylene conduit.
15. Watthour meter (not shown).

Notes:
1. The temporary service assembly shall be located 6' from the Company service pedestal or padmounted transformer.
2. Consult the local Company office for alternate locations for mounting the disconnect.
3. 2" galvanized rigid, galvanized intermediate, or rigid nonmetallic schedule 80 PVC conduit per NEMA Standard TC-2.
SERVICE TERMINATION IN A FREE STANDING TRANSOCKET
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
ALL 3-PHASE VOLTAGES, 201-3000 AMPERES
Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed transocket (see M-21 & D-17).
2. Company listed transformer rated meter socket, usually supplied with transocket (see D-18).
3. Service lateral conduit (see Notes 1, 2 & 3).
4. 4" Galvanized rigid or IMC 90° elbow with 24" radius.
5. Insulated conduit bushing (see Note 4).
7. Galvanized steel framing channel, 1-5/8" x 1-5/8" x 12 Ga.
8. Conduit clamps.
9. 3" galvanized rigid with galvanized end cap (see Note 5).
10. Concrete footing (12" min. hole size).

Company furnishes and installs:
11. Service lateral.
12. Watthour meter, current transformers and associated meter wiring.

Notes:
1. Galvanized rigid or IMC with threaded ends and fittings. Metallic conduit shall be bonded. For services 201-400 amperes, one 4" conduit with 24" bend radius is required. For services larger than 400 Amperes consult the local Company office for number and size of the service lateral conduits.
2. Conduits to be grouped at end furthest from the termination compartment to allow for service lateral bending. See pages U-26 & U-28 for conduit details.
3. For 201-1600 ampere services, a Company listed wireway may be used for Item 3 (see D-18).
4. Service lateral conduit shall have a temporary waterproof end cap to prevent the accumulation of water, ice and other foreign matter from inside the conduit.
5. As an alternative to Item 9 above; 4" x 4" x 3/8" galvanized steel angle may be used.
6. For concrete encased service lateral refer to U-14, U-22 and U-23.
SERVICE TERMINATION IN A FREE STANDING TRANSOCKET
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
FOR FARM SERVICE ONLY
Obtain acceptance for installations larger than 400 amperes from the Company

**Customer furnishes and installs:**
1. Company listed transocket (see M-21 & D-17).
2. Company listed transformer rated meter socket, usually supplied with transsocket (see D-18).
3. Service lateral conduit (see Notes 1, 2 & 3).
4. 4” Galvanized rigid or IMC 90° elbow with 24” radius.
5. Insulated conduit bushing (see Note 4).
7. Galvanized steel framing channel, 1-5/8” x 1-5/8” x 12 Ga.
8. Conduit clamps.
9. Post, 6” x 6”, pressure treated for Ground Contact (preservative retention of .60 # per cu. ft.).
10. Wood, 2X, pressure treated for aboveground use (preservative retention of .40 # per cu. ft.).
11. Concrete footing (12” min. hole size).

**Company furnishes and installs:**

**Notes:**
1. Galvanized rigid or IMC with threaded ends and fittings. Metallic conduit shall be bonded. For services 201-400 amperes, one 4” conduit with 24” bend radius is required. For services larger than 400 Amperes consult the local Company office for number and size of the service lateral conduits.
2. Conduits to be grouped at end furthest from the termination compartment to allow for service lateral bending.
3. For 201-800 ampere services, a Company listed wireway may be used for Item 3 (see D-18).
4. Service lateral conduit shall have a temporary waterproof end cap to prevent the accumulation of water, ice and other foreign matter from inside the conduit.

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![Front View](image1)

**Alternate Locations**

![Side View](image2)
SERVICE TERMINATION IN AN OUTDOOR TRANSOCKET
CONCRETE ENCASED LATERAL
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
ALL 3-PHASE VOLTAGES, 201-3000 AMPERES
(NOT FOR AC NETWORK)

Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed transocket with transformer rated
   meter socket mounted on cover (see Note 1).
2. Service-entrance conduit and conductors.
3. Metallic conduit shall be bonded.
4. Service lateral conduit (see Notes 2 & 3).
5. Conduit supports solidly attached to building.

Company furnishes and installs:
7. Service lateral conduit and concrete envelope.
8. Service lateral with compression lug terminations.
9. Watthour meter, current transformers and
   associated meter wiring (not shown, see
   Metering Section M-21).

Notes:
1. The cable trough compartment (for 401-3000 ampere services) is for the Company's service lateral cables only. This compartment may be on the left side, contact your distributor or manufacturer.
2. Galvanized rigid or galvanized intermediate conduit with threaded ends and threaded fittings at the transocket. Service sizes 201-400 amperes require one 4" conduit. For larger services consult the local Company office for the proper number and size of the conduits. For services 1200-1600 amperes with concrete encased service laterals, a 1600 ampere wireway may be substituted for the conduits. See sheet D-18, Note (1) for correct burial depth.
3. Conduits to be grouped at the end furthest from the termination compartment to allow for service lateral bending, (see Note 1). See pages U-26 & U-28 for conduit details.
SERVICE TERMINATION IN AN OUTDOOR TRANSOCKET
DIRECT BURIED LATERAL
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
ALL 3-PHASE VOLTAGES, 201-1200 AMPERES
Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed transocket with transformer rated meter socket mounted on cover (see Note 1).
2. Service-entrance conduit and conductors.
4. Wireway, preferred, 1600 Ampere Maximum (see D-18).
5. Service lateral conduit (see Notes 2, 3 & 4).
6. Conduit supports solidly attached to building.
7. Solid bar.

Company furnishes and installs:
8. Service lateral with compression lug terminations.
9. Watthour meter, current transformers and associated meter wiring (not shown, see Metering Section M-21).

Notes:
1. The cable trough compartment (for 401-1200 ampere services) is for the Company's service lateral cables only. This compartment may be on the left side, contact your distributor or manufacturer.
2. Service lateral conduit shall have a temporary waterproof end cap when installed to prevent the accumulation of water, ice and other foreign matter inside the conduit.
3. Galvanized rigid or galvanized intermediate conduit with threaded ends and threaded fittings. For services 201-400 amperes, one 4" conduit with 24" bend radius is required. For larger services consult the local Company office for the proper number and size of the conduits.
4. Conduits to be grouped at the end furthest from the termination compartment to allow for service lateral bending, (see Note 1). See pages U-26 & U-28 for conduit details.
SERVICE TERMINATION IN A TRANSOCKET FIRST FLOOR INSTALLATION
CONCRETE ENCASED LATERAL
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
ALL 3-PHASE VOLTAGES, 201-3000 AMPERES
Obtain acceptance from the Company

Customer furnishes and installs:
1. Company listed transocket (see M-21 & D-17).
2. Transformer rated meter socket, usually supplied with transocket (see D-18).
3. Service lateral conduit (see Note 1).
4. Continuous concrete envelope with 3" of concrete on all sides (see Note 1).
5. 4" I.D. 90° bend with 36" minimum radius (see Note 1).
6. Steel reinforcing rods, 5/8" x 2'.
7. Insulated bushing & temporary watertight end cap.

Company furnishes and installs:
8. Service lateral, conduit, coupling and concrete envelope.

Notes:
1. Galvanized rigid or galvanized intermediate with threaded ends, or rigid nonmetallic schedule 40 PVC. For services 201-400 Amperes, one 4" conduit and 90° elbow with 24" bend radius is required. For larger services consult the Local Company Office. See pages U-26 & U-28 for conduit details.
2. The cable trough compartment (for 401-3000 ampere services) is for the Company's service lateral cables only. This compartment may be on the left side, contact your distributor or manufacturer.

Front View

Side View
SERVICE TERMINATION IN A TRANSOCKET FIRST FLOOR INSTALLATION
DIRECT BURIED LATERAL
1-PHASE, 120/240 VOLTS, 201-800 AMPERES
ALL 3-PHASE VOLTAGES, 201-1200 AMPERES
Obtain acceptance from the Company

Customer furnishes and installs:
1. Company listed transocket (see M-21 & D-17).
2. Transformer rated meter socket, usually supplied with Transocket (see D-18).
3. Service lateral conduit (see Note 1).
4. Continuous concrete envelope with 3" of concrete on all sides (see Note 1).
5. 4" I.D. 90° bend with 36" minimum radius (see Note 1).
6. Insulated bushing & temporary watertight end cap.

Company furnishes and installs:
7. Watthour meter, current transformers and associated meter wiring.
8. Service lateral (not shown).

Notes:
1. Galvanized rigid or galvanized intermediate with threaded ends, or rigid nonmetallic schedule 40 PVC. For services 201 - 400 Amperes, one 4" conduit and 90° elbow with 24" bend radius is required. For larger services consult the Local Company Office. See pages U-26 & U-28 for conduit details.
2. The cable trough compartment (for 401-1200 ampere services) is for the Company's service lateral cables only. This compartment may be on the left side, contact your distributor or manufacturer.
SERVICE TERMINATION IN A TERMINATION COMPARTMENT
DIRECT BURIED OR CONCRETE ENCASED LATERAL
ALL 1-PHASE VOLTAGES, 400-800 AMPERES
ALL 3-PHASE VOLTAGES, 400-3000 AMPERES ONLY
Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed termination compartment (see Note 1 and D-19).
2. Wireway, 400-1600 Amperes Max. (see Note 2 & D-18).
3. Service lateral conduit 400-3000 Amperes (see Note 3).
5. Service-entrance conduit (see Note 4).
6. Service-entrance conductors (see Note 5).
8. 90° metallic elbow (see Note 6).
9. Insulated conduit bushing.

Company furnishes and installs:
10. Service lateral and connectors.

Notes:
1. The termination compartment may be bonded to the neutral termination pad.
2. For services 1600 Amperes or less the wireway is preferred. If the wireway cannot be used, such as where the termination compartment is located in a paved area, conduit may be used. Contact the local office for approval and number of conduits required.
3. 4" galvanized rigid or IMC shall have threaded ends and locknuts at the termination compartment. Set screw or threadless fittings shall not be used. For concrete encased laterals the lower ends are not required to be threaded. Conduits are to be located on 6" centers and extend to grade level. Contact the local office for approval and number of conduits required. See page U-26 for conduit details. For services 1200-1600 amperes with concrete encased service laterals, a 1600 ampere wireway may be substituted for the conduits. See sheet D-18, Note (1) for correct burial depth.
4. If the service-entrance conduits are located above the termination pads, watertight hubs or sealing locknuts are required. When the service-entrance conduit enters box at the top watertight hubs are required.
5. The customer’s service-entrance conductors shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase.
6. Galvanized rigid or galvanized intermediate 90° metallic elbows. The ends shall be threaded and threaded couplings are to be used.
   • 201-400 amperes, one 4" conduit with 36" radius elbow.
   • 401-800 amperes, two 4" conduits with 36" radius elbows.
WITH SERVICE LATERAL DIRECT BURIED IN EARTH

WITH SERVICE LATERAL IN CONDUIT
SERVICE TERMINATION IN A TERMINATION COMPARTMENT ABOVE GRADE
DIRECT BURIED OR CONCRETE ENCASED SERVICE LATERAL CONDUITS
AND SERVICE ENTRANCE CONDUITS EXITING THE BOTTOM
ALL 1-PHASE VOLTAGES, 400-800 AMPERES
ALL 3-PHASE VOLTAGES, 400-3000 AMPERES ONLY
Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed termination compartment (see Note 1 & D-19).
2. Termination pads, see Note 2.
3. Service lateral conduit 801-3000 Amperes (see Note 3).
4. Conduit supports, 2 minimum.
5. Service-entrance conduit (see Note 4).
6. Service-entrance conductors (see Note 5 & 6).
8. 90° metallic elbow (see Note 7).
9. Insulated conduit bushing.

Company furnishes and installs:
10. Service lateral and connectors (see Note 8).
11. Conduit package.

Notes:
1. The termination compartment may be bonded to the neutral termination pad.
2. The termination pads are to be raised to their highest position.
3. The service lateral conduits are to be 4" galvanized rigid or IMC with threaded ends and locknuts at the termination compartment and installed in a row, on 6" centers, in the front of the compartment. Set screw or threadless fittings shall not to be used. If the service lateral is to be installed in a concrete encased duct package the lower ends are not required to be threaded and shall extend to grade level. Contact the Company for approval and number of conduits required.
4. The service-entrance conduits are to be located at the back of the termination compartment and in a row.
5. The customer's service-entrance conductors are to terminate on the back of the termination pads and shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase. They shall not share bolts with the service lateral.
6. The service entrance conductors are to be trained so to leave the front of the compartment available for training the service lateral conductors.
7. Galvanized rigid or galvanized intermediate 90° metallic elbows. The ends shall be threaded and threaded couplings are to be used.
8. The service lateral conductors will terminate on the front of termination pads.
WITH DIRECT BURIED SERVICE LATERAL

WITH CONCRETE ENCASED SERVICE LATERAL
SERVICE TERMINATION IN A FREE STANDING TERMINATION COMPARTMENT
ALL 1-PHASE VOLTAGES, 400 - 800 AMPERES
ALL 3-PHASE VOLTAGES, 400 - 3000 AMPERES

Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed termination compartment
   (see Note 1 & D-19).
2. Termination pads (see Note 2).
3. Service lateral conduit (see Note 3).
4. Conduit supports, 2 min.
5. 90° metallic elbow, 36" radius (see Note 4).
6. Service-entrance conduit (see Note 5).
7. Service-entrance conductors (see Note 6 & 7).
8. Bonding (not shown). Metallic conduit shall be bonded.
9. Insulated conduit bushing.
10. Structure supports (see Note 9 & 10).
    400 – 1600 Amperes - 3" Galvanized rigid conduit.
    1601 – 3000 Amperes - 4" Galvanized rigid conduit.
11. Concrete footing, 12" min. diameter.

Company furnishes and installs:
13. Service lateral and connectors (see Note 8)

Notes:
1. The termination compartment may be bonded to the neutral termination pad.
2. The termination pads are to be raised to their highest position.
3. The service lateral conduits are to be 4" galvanized rigid or IMC with threaded ends and locknuts at the termination compartment and installed in a row, on 6" centers, in the front of the compartment. Set screw or threadless fittings shall not be used. If the service lateral is to be installed in a concrete encased duct package the lower ends are not required to be threaded and shall extend to grade level. Contact the Company for approval and number of conduits required.
4. Galvanized rigid or galvanized intermediate 90°, 36" radius, metallic elbows. The ends shall be threaded and threaded couplings are to be used.
5. The service-entrance conduits are to be located at the back of the termination compartment and in a row.
6. The customer's service-entrance conductors shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase. They shall not share bolts with the service lateral.
7. The service entrance conductors are to terminate on the back of the termination pads and be trained so to leave the front of the compartment available for training the service lateral conductors.
8. The service lateral conductors will terminate on the front of termination pads.
9. To prevent water from entering the supports they must be either capped or filled with concrete.
10. The supports must be spaced far enough apart to allow the service entrance conduits to pass between them. To calculate the minimum distance needed between the supports (center to center) use the formula; 

\[(6 \times n) + d\]  
Where “n” is the number of conduits and “d” is the diameter of the footings.
Direct Buried Service Lateral

Concrete Encased Service Lateral
SERVICE TERMINATION IN A TERMINATION COMPARTMENT
CONCRETE ENCASED SERVICE LATERAL
ALL 1-PHASE VOLTAGES, 400-800 AMPERES
ALL 3-PHASE VOLTAGES, 400-3000 AMPERES ONLY
AC NETWORK, 0-800 AMPERES ONLY
MULTI-METERED INSTALLATIONS

Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed termination compartment (see Note 1 and D-19).
2. Service lateral conduit 400-3000 Amperes (see Note 2).
3. Conduit supports.
4. Service-entrance conduit (see Note 3).
5. Service-entrance conductors (see Note 4).

Company furnishes and installs:
7. Service lateral and connectors.
8. Conduit package.

Notes:
1. The termination compartment may be bonded to the neutral termination pad.
2. 4" galvanized rigid or IMC with threaded ends and locknuts at the termination compartment, the lower ends are not required to be threaded. Set screw or threadless fittings shall not be used. Conduits are to be located on 6" centers and extend to grade level. Contact the local office for approval and number of conduits required. See pages U-26 & U-28 for conduit details. For services 1200-1600 amperes with concrete encased service laterals, a 1600 ampere wireway may be substituted for the conduits. See sheet D-18, Note (1) for correct burial depth.
3. If the service-entrance conduits are located above the termination pads, watertight hubs or sealing locknuts are required. When the service-entrance conduit enters box at the top watertight hubs are required.
4. The customer's service-entrance conductors shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase.

Side View

Front View
SERVICE TERMINATION IN A TERMINATION COMPARTMENT LOCATED BELOW GRADE CONCRETE ENCASED LATERAL
ALL 1-PHASE VOLTAGES, 400-800 AMPERES
ALL 3-PHASE VOLTAGES, 400-3000 AMPERES
(AC NETWORK, 0-800 AMPERES ONLY)
FOR MANHOLE AND NETWORK AREAS ONLY (SUCH AS DOWNTOWN MILWAUKEE)

Customer provides:
1. Company listed termination compartment (see Note 1 and D-19a).
2. Service lateral conduit (see Note 2).
3. Terminal adapter with locknuts and insulated bushing.
4. Steel reinforcing rods, 5/8" x 6'.
5. Continuous concrete envelope with a minimum of 3" of concrete on all sides.
7. Service-entrance conductors (see Note 3).
8. Temporary watertight end cap.

Company furnishes and installs:
10. Service lateral and connectors.

Notes:
1. The termination compartment may be bonded to the neutral termination pad. Only termination compartments listed on Page D-19a as for use below grade are to be used. These units have termination pads that are adjustable to obtain the 24" min. from the top of the pad to the bottom of the conduits.
2. 4" Rigid nonmetallic schedule 40 PVC conduit per NEMA standard TC-2. Conduits are to be arranged horizontally and on 6" centers as shown. Contact the local office for number of conduits required.
3. The customer's service-entrance conductors shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase.
SERVICE TERMINATION IN A TERMINATION COMPARTMENT BUILDING WITHOUT A BASEMENT, FIRST FLOOR INSTALLATION
ALL 1-PHASE VOLTAGES, 400-800 AMPERES
ALL 3-PHASE VOLTAGES, 400-3000 AMPERES
(AC NETWORK, 0-800 AMPERES ONLY)
MULTI-METERED INSTALLATIONS

Obtain acceptance for 1-phase installations larger than 400 amperes from the Company

Customer furnishes and installs:
1. Company listed termination compartment (see Note 1 and D-19).
2. Service lateral conduit (see Note 2).
3. 4" I.D. 90° elbow (see Note 2).
4. Steel reinforcing rods, 5/8" x 6’.
5. Conduit spacers.
6. Continuous concrete envelope with a minimum of 3" of concrete on all sides.
8. Service-entrance conduit.
9. Service-entrance conductors (see Note 3).
10. Temporary watertight end cap.

Company furnishes and installs:
12. Service lateral and connectors.

Notes:
1. The termination compartment may be bonded to the neutral termination pad.
2. 4" Galvanized rigid, galvanized intermediate or rigid nonmetallic schedule 40 PVC conduit. If metallic conduit is used, the ends shall be threaded and threaded connectors and couplings are to be used.
   • 201-400 amperes, one 4" conduit with 36" radius elbow.
   • 401-800 amperes, two 4" conduits with 36" radius elbows.
   • 801-1200 amperes, three 4" conduits with 36" radius elbows.
   • 1201-1600 amperes, four 4" conduits with 36" radius elbows.
   • For services larger than 1600 amperes contact local office for number of conduits required.
3. The customer’s service-entrance conductors shall leave the termination compartment as a maximum of two circuits regardless of the number of conductors per phase.
4. Conduit for direct buried installations shall extend a minimum of 12” into undisturbed earth.
WITH DIRECT BURIED SERVICE LATERAL

WITH CONCRETE ENCASED SERVICE LATERAL
SERVICE TERMINATION IN A CUSTOMER’S TERMINATION COMPARTMENT
FREE STANDING SWITCHGEAR LOCATED BELOW GRADE
FOR AREAS SERVED BY CONDUIT AND CABLE ONLY
FOR ALL 3-PHASE VOLTAGES, 2000 - 4000 AMPERES (see Note 3).
NOT FOR AC NETWORK (DOWNTOWN MILWAUKEE)
REQUIRES COMPANY APPROVAL

Customer furnishes and installs:
1. Completely enclosed termination compartment with rigidly supported bus bars, located and drilled as shown (see Notes 1 & 2).
2. 4" Schedule 40 PVC conduit, concrete encased. See table for the minimum number of conduits required.
3. Temporary watertight end caps.
4. Reinforcing rods (epoxy coated re-bar).

Company furnishes and installs:
5. Service lateral conduit and concrete envelope (not shown). We Energies does not lace cables.
6. Service lateral conductors with compression lug terminations (not shown).

Notes:
1. • Rigidly supported Barriers shall separate the termination compartment from other compartments.
   • Front panels are to be removable and sealable; and when removed shall leave a clear and unobstructed opening exposing only the service lateral termination area.
   • Minimum live part clearances: 2" phase-to-phase, 1" phase-to-ground.
2. Only the service lateral conductors are allowed in this termination compartment. The grounding electrode conductor shall not pass-thru or terminate in this compartment, nor shall bonding of the neutral and grounding buses be done in this compartment.
3. Three sets of prints for the switchgear termination and metering compartments are to be sent to the local district office for acceptance prior to any construction.
4. The dimension shown is from the bottom of the conduit to the top hole in the bus bar. For 3Ø, 3 wire installations omit the neutral bus and use the 40" dimension.
5. See Pages M-24 & 25 for metering details.

BUS DRILLING DETAILS

CONDUIT DETAILS

See Table for the number of Conduits Required
<table>
<thead>
<tr>
<th>SWITCHGEAR AMPERAGE</th>
<th>MINIMUM WIDTH OF TERMINATION COMPARTMENT</th>
<th>SETS OF HOLES REQUIRED</th>
<th>MINIMUM NUMBER OF DUCTS</th>
<th>WIDTH OF CONDUIT PACKAGE</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
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<td>6</td>
<td>6</td>
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</tr>
<tr>
<td>4000</td>
<td>36 Inches</td>
<td>10</td>
<td>10</td>
<td>36 Inches</td>
</tr>
</tbody>
</table>

**Note:** The dimensions shown above are minimums and should not be used for design purposes. For actual dimensions contact the switchgear manufacturer.
SERVICE TERMINATION IN A CUSTOMER'S TERMINATION COMPARTMENT
FREE STANDING SWITCHGEAR LOCATED ON FIRST FLOOR OR ABOVE
ALL 3-PHASE VOLTAGES, 2000 - 4000 AMPERES (see Note 3).
NOT FOR AC NETWORK (DOWNTOWN MILWAUKEE)

Customer furnishes and installs:
1. Completely enclosed termination compartment with rigidly supported
   bus bars located and drilled as shown (see Notes 1 & 2).
2. 4" Schedule 40 PVC conduit, concrete encased. See table for
   minimum number of conduits required. All metallic conduit must
   be bonded.
3. Temporary watertight end caps.
4. Reinforcing rods (epoxy coated re-bar).
5. 4" Schedule 40 PVC, 90° elbows with 36" radius

Company furnishes and installs:
6. Service lateral conduit and concrete
   envelope (not shown). We Energies
does not lace cables.
7. Service lateral conductors with
   compression lug terminations
   (not shown).

Notes:
1. • Rigidly supported barriers shall separate the termination compartment from other compartments.
   • Front panels are to be removable and sealable; and when removed shall leave a clear and unobstructed
     opening exposing only the service lateral termination area.
   • Minimum live part clearances: 2" phase-to-phase, 1" phase-to-ground.
2. Only the service lateral conductors are allowed in this termination compartment. The grounding electrode
   conductor shall not pass-thru or terminate in this compartment, nor shall bonding of the neutral and grounding
   buses be done in this compartment.
3. Three sets of prints for the switchgear, termination and metering compartments are to be sent to the local
   district office for acceptance prior to any construction.
4. The dimension shown is from the top of the conduit to the lower hole in the bus bar. For 3Ø, 3 wire installations
   omit the neutral bus and use the 40" dimension.
5. The preferred termination of service laterals is on the outside of a building (or structure). Service laterals that
   terminate inside of a building shall terminate immediately upon entering as shown in this manual. The raceway
   for service laterals under or thru a building shall not extend longer than 8' after penetrating the outside wall.
6. Where the termination compartment is located on a mezzanine, a continuous duct package must be installed
   with a maximum distance of 14' from final grade to the bottom of the termination compartment.
7. See Pages M-24 & 25 for metering details.
### Switchgear Requirements 2000, 3000 and 4000 Amperes

<table>
<thead>
<tr>
<th>Switchgear Amperage</th>
<th>Minimum Width of Termination Compartment</th>
<th>Sets of Holes Required</th>
<th>Minimum Number of Ducts</th>
<th>Width of Conduit Package</th>
</tr>
</thead>
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<tr>
<td>2000</td>
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<tr>
<td>3000</td>
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<td>8</td>
<td>30 Inches</td>
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<tr>
<td>4000</td>
<td>36 Inches</td>
<td>10</td>
<td>10</td>
<td>36 Inches</td>
</tr>
</tbody>
</table>

**Note:** The shown above are minimums and should not be used for design purposes. For actual dimensions contact the switchgear manufacturer.
POLICY ON SERVICES FOR COMMUNICATION TOWERS

1.0 NEW SERVICES

We Energies policy is to provide one electric service to each tower site. This service must be sized to accommodate present and future carriers that may have space on the tower with a meter position for each carrier. Applications for service to tower sites shall include information on each tower’s capacity (i.e. total number of carriers the tower will accommodate). This information is a requirement for electric service to the tower site.

If additional carriers are allowed space on the tower and the size of the service or number of meter sockets need to be increased, the owner shall be responsible for increasing the size of the service and/or the number of meter sockets. Additional services are not permitted.

2.0 EXISTING SERVICES

For existing towers the owner will be required to install a multi-position metering bank to serve the number of additional tenants that may attach to the tower in the future.

Existing services installed prior to Friday, January 19, 2001 will be allowed to remain and after this date additional service to a tower site must meet the requirements of Rule 1.0 above.
FREE STANDING SERVICE FOR COMMUNICATION TOWER
SERVICE TERMINATION IN A MULTI-POSITION METER SOCKET
DIRECT BURIED LATERAL
1-PHASE, 120/240 VOLTS, 0-800 AMPERE
0-200 AMPERES PER METER, 2-6 METERS

Customer furnishes and installs:
1. Service-entrance conduit.
2. Service-entrance conductors.
3. Metallic conduit shall be bonded.
4. Company listed 2 to 6 position meter socket (see Notes 1 & 4 and Sheet D-10).
5. Service lateral conduit (see Note 2).
6. Insulated conduit bushings (see Note 3).
7. 4” galvanized rigid or IMC 90° elbow with 24” radius.
8. Galvanized steel framing channel, 1 5/8” x 1 5/8” x 12 ga.
10. 3” galvanized rigid with galvanized end cap (see Note 5).
11. Concrete footing (12” min. hole size).

Company furnishes and installs:
13. Watthour meters.

Notes:
1. Separate cable compartment is provided for the Company’s service lateral cable only.
2. 4” galvanized rigid or galvanized intermediate conduit with threaded ends and fittings. Consult the Company office for the proper number of service lateral conduits.
3. Service lateral conduits shall extend underground to a point outside of fenced area and have temporary waterproof end caps to prevent the accumulation of water, ice and other foreign matter inside the conduits.
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 a 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.
5. As an alternative to Item 10 above; 4” x 4” x 3/8” galvanized steel angle may be used.

![Diagram of service termination setup](image-url)