Penn Yan Municipal Utilities

Specifications for the Installation of

Electric Services
& Meters

Effective date: July 1, 2014

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SECTION I - INTRODUCTION

Purpose - In this booklet, Penn Yan Municipal Utility (PYMU) presents information and general specifications relative to supply of electric from its lines. This booklet is a guide in making electrical installations that protect the interests of our customers and comply with regulations which experience has shown to be necessary for safe, adequate, and satisfactory service.

Scope - The information and specifications included in this booklet cover conductors and equipment connecting the PYMU electric supply system to the customer's premises. Other subjects of mutual interest to PYMU, customer, architect, engineer, and electrical contractor are included. It is not a complete set of rules governing the installation of electrical wire and equipment.

Rate Schedule - For Rate Schedules and the rules and regulations pertaining thereto, reference is made to the Schedule for Electric Service on file with the Public Service Commission. The schedule is available for examination at the PYMU office.

Cooperation - It is the desire of the PYMU to provide and maintain dependable, safe, and satisfactory electric service in a courteous and efficient manner. **INFORMATION SUPPLIED TO THE PYMU EARLY IN THE DEVELOPMENT OF PLANS LEADING TO NEW OR INCREASED ELECTRIC SERVICE WILL AID IN PROPER SCHEDULING OF THE SERVICE WORK.** Cooperation of all interested parties and adherence to the specifications in this booklet will expedite installation of the electric service.

Codes - These specifications are a supplement to the National Electrical Code, but they are not a substitute for that code or municipal, county, state and federal codes. The PYMU requires that the customer's wiring installations be in accordance with all applicable codes and specifications. Service may be denied if these codes and specifications are not met.

Requests For Information - Representatives are available at the PYMU office to receive requests for information regarding the application of these specifications.

Responsibility - Adequate electrical capacity of the service equipment is the responsibility of the customer. Significant increases or changes in connected electrical loads must be reported to the PYMU. The PYMU shall not be liable for problems resulting from improper use and installation of said equipment by the customer or the customer’s agents.

Electrical Inspections – The customer is **required** to furnish, at his expense, an electrical inspection before the PYMU can energize a new installation or upgrade of service. The PYMU may also require re-inspection before re-energizing a service. Inspection certificates will only be accepted from agencies approved by PYMU. PYMU

reserves the right to challenge the inspection when PYMU personnel observe deficiencies in the installation at any time prior to energizing the installation. The PYMU office maintains a list of approved electrical inspectors.

Revisions - These specifications are subject to revision without notice and will be revised or amended as required by developments of the industry to protect the mutual interests of the customer and PYMU. The latest revisions should always be used. Additional copies of this booklet and any revisions can be obtained at the PYMU office.

SECTION II – DEFINITIONS

Building - A structure which stands alone or which is separated from adjoining structures by approved fire walls with all openings therein protected by approved fire doors.

Cost or Expense - The cost of all materials and equipment, labor and other definite charges applicable thereto, plus a reasonable percentage for engineering, purchasing, the use of construction equipment and other costs of a general character associated with the work to be performed.

Customer - A present or prospective user of PYMU's electric service.

Easement - A right granted by a property owner for a specific use of a defined area of said owner's property.

Ground - A conducting connection between an electrical circuit or equipment and earth, or some conducting body which serves in place of the earth.

House Meter – A meter installed in a multiple occupancy building installed to meter the power delivered to any commonly shared area of the building and/or property said building sets on.

Line - A system of poles or conduits, wires or cables, fixtures and accessory equipment used for the distribution of electricity.

Mobile Home - A mobile home is a factory assembled structure or structures equipped with the necessary service connection, made to be readily movable as a unit on its own running gear, and designed to be used as a dwelling unit without a permanent foundation.

Multiple-Occupancy Building – Any structure that has more than one designated living space, commercial space or any combination thereof.

Permanent Foundation - A foundation structure for a mobile home or building to which the mobile home or building is securely attached and not readily moved.

Permanent Sewer System - An installation connected to either an approved septic tank,

dry well and/or leach fields (in compliance with local zoning laws) or to a public sanitary sewer system.

Permanent Structure - A structure is considered permanent when it is permanently connected to an approved sanitary sewer and water system and is in compliance with local zoning laws.

Permanent Water System - A supply of running water derived from connection to a public water system or other approved water source.

Recreational Vehicle - A vehicle primarily designed for recreational camping or travel use, which has its own motive power or is mounted on or drawn by another vehicle. The basic entities are: travel trailer, camping trailer, truck camper, or motor home.

Recreational Vehicle Park or Campgrounds - An accommodation for recreational vehicles or other camping facilities where individual rented site occupancy is normally of short duration and not intended for permanent or year-round living.

Right-of-Way - The right of ingress and egress over and/or to the easement.

Riser - The portion of a system (secondary or primary wires) which transitions between above grade (pole mounted) and below grade (underground).

Service - The conductors and equipment for delivering energy from the electric supply system to the wiring system of the premise served.

Service Connection – The point at which the electric supply system is attached to the wiring system of the premise served.

Service Drop - The overhead service conductors between the PYMU's last pole or other aerial support and the customer's first point of attachment to the building or other structure of the premises being served.

Service Entrance - That part of the installation from the point of connection to the electric supply system to the service equipment protecting the premise served.

Service Entrance Conductors - The service conductors or cable which make up the service entrance.

Service Equipment – Customer owned equipment, usually consisting of a circuit breaker or fused switch and accessories intended to constitute the main control and means of cutoff for the supply to the premises.

Service Lateral – The underground service conductors between the PYMU's last pole or transformer and the underground wiring system of the premise served.

Temporary Service - Service to be used for a limited time (as defined by the PYMU on a case-by-case basis) for construction, exhibits, decorative lighting or similar purposes, or service to non-permanent structures.

Utility Room – A common room where the service entrance and metering points for all utilities needed to a building are installed.

SECTION III – GENERAL INFORMATION AND REQUIREMENTS

General

1. Access to Customer's Premises - PYMU's authorized employees or agents shall have access, at all reasonable times, to its meters and equipment installed on the customer's premises.
2. Identification of Employees - Employees or representatives of the PYMU authorized to visit the customer's premises are furnished with identification which they will show upon request.
3. Connections to PYMU Electric System – All connections between PYMU wires and the customer wire shall be made and removed exclusively by PYMU authorized personnel. Unauthorized connection to the PYMU electric system or any alteration of existing connections is **PROHIBITED BY PENAL LAW AND PUNISHABLE AS A MISDEMEANOR IF DONE WITH INTENT TO INJURE OR DEFRAUD. VIOLATORS MAKING OR USING THESE TYPE OF ILLEGLE CONNECTIONS WILL BE PROSECUTED**.
4. Special Equipment - Services for electrical furnaces, welders, X-ray apparatus, large motors and other types of equipment which may interfere with satisfactory service to other customers require special consideration. Consult with PYMU before installing such equipment.
5. Load Balance - The customer shall balance the load so that a minimum of unbalanced current occurs.
6. Fluctuating Loads - The PYMU reserves the right to discontinue service where equipment used by the customer results in objectionable effects upon, or interference with, the operation of facilities of the PYMU, its customers, or another public service unless the customer discontinues the use of such equipment or installs corrective equipment to overcome the objectionable effect or interference.
7. Customer Owned Power Generating Equipment - The PYMU shall be consulted before any power generating equipment is connected to circuits which are, or may be supplied from the PYMU's lines. See Section XIII for proper installation.
8. Unauthorized Attachments to Poles - The PYMU forbids any unauthorized attachments to its poles, such as banners, signs, clothes lines, antennas, basketball hoops, lighting fixtures, etc. It forbids the use of its poles for placards, political posters or any advertising matter. The PYMU will remove any such unauthorized attachments without notice and may prosecute such trespass.

Applications for Service

1. Applications for service shall be made in writing on PYMU forms.

2. A request for these forms may be made by telephone, mail, electronically or in person at the PYMU office. Applications for service should be made as far as possible in advance of the date electric service is required.
3. The customer (or their contractor) shall consult the PYMU regarding the character of service available before plans are completed, equipment is purchased or construction commences on any facility to be connected to the PYMU electrical system. **Information regarding the customer's requested service that identifies the number of phases, service voltage and maximum momentary and continuous current needs shall be put in writing and made part of the application for service. The PYMU will not be responsible for errors resulting from oral transmission of this information.**

Temporary Service

1. PYMU will provide service for construction purposes or other non-recurring uses at a charge in accordance with existing prices quoted at the time of the request.
2. The customer shall pay the entire cost of installing and removing any material used, less salvage value after removal.
3. The customer shall pay for all electricity used on the basis of the appropriate service classifications for a period of not less than one (1) month.
4. PYMU will prepare an estimate of the cost to install and remove the each temporary service.
5. The customer will be required to pay, **in advance**, for each temporary service in addition to any deposit required as security for the payment of bills rendered for electric used. Such advance payment will be applied to the final actual cost.
6. The customer shall install the service entrance for the temporary service in the same manner as required for a permanent installation.

Electric Service for Electric Heating/Cooling Systems

1. Insulation Certificate - An insulation Certificate of Compliance will be required by the PYMU for any dwelling, commercial building or mobile home using electric for any form of permanent heating and/or cooling system. It certifies conformity with applicable minimum insulation standards adopted by the Village of Penn Yan and/or by New York State in the Energy Conservation Construction Code. The latter code applies to all buildings (including non-residential) for which application for a building permit is made and plans are filed in this State on or after January 1, 1979. Copies of the Certificate of Compliance form are available from the Penn Yan Village Code Enforcement Office.
2. Residential Heating Element Requirements - Electric resistance heating elements used in equipment such as furnaces, boilers, water heaters, etc., shall not exceed 10KW per element or stage. Heating loads comprised of multiple stages shall be automatically controlled. A minimum delay of 10 seconds between operations of stages is allowed. Some types of electronic control systems may cause noticeable electrical interference. Only full wave type controls are recommended.

Types of Service

1. PYMU supplies alternating current at a nomincal frequency of 60 Hertz.
2. Existing services that are not covered by or exceed the limits listed below may require a different voltage when expansion is necessary.
3. Service Below 600 Volts – Service of the following types are supplied at the option of PYMU:

Phase	Number of Wires	Nominal Service Voltage
1	3	120/240 (a)
3	4	208 wye/120
3	4	240 delta/120 (b)
3	4	480 wye/277 (c)

Notes:

(a) Not supplied for loads exceeding 100KVA or 400 amperes
(b) Not supplied for loads exceeding 150KVA or 400 amperes
(c) Underground service only. Minimum load of 150KVA or 200 amperes
(d) All loads requiring transformer capacity of 500KVA and above shall be served from a pad mounted transformer and will require underground service connections

4. Service Above 600 Volts - Service above 600 volts will be supplied where conditions warrant. PYMU will designate the type of service available

SECTION IV – SERVICE CONNECTIONS

General

1. This section applies to new service installations and to existing installations when changes are made. Each case shall be referred to the PYMU before electrical work is begun.
2. Typically, only one type of electrical service will be made available to a building or premise. Exceptions may be made by special permission in accordance with the National Electrical Code, Article 230 - Services. These exceptions must be approved by PYMU before work is started.
3. The type of construction and route of the service connection will be determined by PYMU. Services will not be run from building to building. When crossing property, service drop wires shall not be carried over buildings or over swimming pools.
4. The customer shall furnish, install, own and maintain all service entrance conductors and service equipment along with the appropriate meter socket/enclosure and required instrument transformers.
5. PYMU shall furnish, install, own and maintain the appropriate meter to measure and record the energy and demand used in accordance with its contracts.
6. To provide for future load growth, PYMU recommends that the capacity of service entrance conductors and service equipment be greater than the National Electrical Code's required minimum.
7. Where service in excess of 600 volts is desired, the customer shall consult PYMU. PYMU will advise the customer of any additional requirements for

electrical insulation, grounding, service equipment and metering facilities. Upon request, PYMU will inform the customer of available short circuit currents. The customer shall submit detailed plans for approval by the PYMU prior to the purchase of equipment or before proceeding with the installation.

Overhead Secondary Service

1. The PYMU will install, own and maintain the overhead service drop.
2. The PYMU reserves the right to designate the location at which its service drop will be attached to the customer's structure. This point will normally be not less than 15 feet or more than 25 feet above final grade. In all cases the point of attachment must provide sufficient wire clearances that satisfy the National Electric Safety Code.
3. The point of service attachment must be accessible from the ground by ladder.
4. The customer shall furnish and install a suitable attachment for the service drop to be securely bolted to a stud or plate at the point designated by the PYMU.
5. Where the customer's structure is too low to provide a point of attachment that will assure the minimum required conductor clearance, the customer will be required to install a mast type riser as shown in Figure No. 19.
6. The customer's service weatherhead shall be located above and within 12 inches of the point of attachment of the PYMU's service drop. Service entrance conductors shall extend a minimum of 36" beyond the service head to allow for connection to the service drop (see Figure No. 18).
7. On farms or other premises where buildings under a single occupancy or management will be supplied through one meter, it may be desirable to install the meter on a pole (see Figures Nos. 13 and 14). In such cases, the meter pole with necessary guys shall be furnished, installed, owned and maintained by the customer. The PYMU shall be consulted in all cases for its requirements regarding meter poles and guys.
8. Where temporary service is to be supplied, the customer shall provide, at the point of attachment, a substantial and adequate support. The support shall be capable of with-standing a horizontal pull of 1000 pounds at the center of the service bracket. The point of attachment to these risers shall be made according to Figure 19. The PYMU shall be consulted in all cases for required pole sizes, setting depths and guying requirements.

Underground Secondary Service

1. General
    a) PYMU shall be consulted before work is started to determine the point from which the underground service will originate, the route to be followed and the location of the meter.
    b) The customer shall, at his expense, install, own, and maintain the underground service lateral in accordance with PYMU specifications and the National Electric Safety Code.
    c) The customer shall dig the trench, install all conduits and backfill in accordance with the PYMU specifications.
    d) All conduits shall be either a rigid galvanized steel or SCH 80 PVC.

e) The underground service lateral cable shall be long enough to extend from the terminals of the meter device to a point 48" beyond the top of PYMU's secondary conductors or transformer secondary terminals.
f) Electric cable approved for the purpose may be direct buried in the ground at a minimum depth of 24 inches below final grade without other protection except at the service pole, through building walls and under roads, driveways and patios.
g) PYMU will provide and install the protective covering and necessary cable supports beyond the conduit provided by the customer.
h) PYMU will make final connections to the distribution system **only after the following conditions are met**:
    i. The installation is in accordance with the requirements as contained herein.
    ii. National Electric Code approval by means of an authorized inspection agency has been provided.
i) Metallic riser conduits on the outside of a building shall be grounded in accordance with the National Electrical Code.
j) The replacement and/or installation of additional or larger conductors due to customer-initiated service changes will be at the customer's expense.
k) PYMU shall be reimbursed for its expense in locating a fault and the repair or relocation of the owner's underground electric service lateral.

2. Trench
    a) The trench shall be in a straight line with vertical sides to a depth of 30 inches.
    b) The width will vary, depending on trench occupancy, but shall have a minimum width of 6 inches.
    c) A 12 inch separation is required between all cables.
    d) Backfill for underground electric service trenches shall be clean earth with no debris or rocks over 2 inches in diameter for the first 12 inches of cover over the conduit or sand bedding. No rocks larger than 6 inches will be allowed in the remaining backfill.
3. Conduit
    a) <u>At the Service Pole</u> - The customer shall furnish and install a 90 degree sweep at the base of the pole that is at least 18 inches to the bottom of the sweep below final grade connected to at least a 2-inch conduit up the pole that is at least 10 feet above final grade. PYMU will provide and install the protective covering, necessary cable supports and conduit or fittings to support the customer provided service cable up the rest of the way on the pole and connect it to the PYMU electrical system.
    b) <u>To a Meter Cabinet</u> - When the underground service lateral terminates in a meter enclosure on the side of a building or transformer, the customer shall furnish and install a 90 degree sweep that is at least 18 inches to the bottom of the sweep below final grade and connected to the meter cabinet with at least a 2-inch conduit.
    c) <u>Penetrating a Wall</u> - Where the underground service cable terminates in a building, it shall be protected by a conduit through the wall to a point not

less than 5 feet beyond the outside face of the wall. All conduits entering a building underground shall be sealed at their indoor ends with a suitable compound to prevent the entrance of moisture and gases.

d) All customer conduit installations shall be continuous from end to end with water tight joints.

3. Meter Box Location
   a) The meter box shall be provided and installed by the customer.
   b) The meter box is to be installed within 5 feet of a corner of the building to be served that's closest to the electric source.
4. Service Cable
   a) An 18-inch diameter horizontal loop in all direct buried cable installations must be provided at the trench bottom to accommodate for settling.
   b) Cables for service up to 200 feet in length shall be 3 conductor (2-4/0 & 1-2/0) aluminum. For lengths or sizes of services exceeding this consult PYMU.
   c) Service cables are to be installed in one continuous length; **no splices will be allowed.**
   d) Direct buried cables must be laid in the middle of a 12-inch layer of clean sand.

PRIMARY ELECTRIC SERVICE

1. General
   a) Information for primary voltage supply from 2,400 volts to 34,500 volts is available at the PYMU office.
   b) Contact PYMB before any assumptions are made as to the route that the electric will be brought to your facility.
   c) PYMU requires that underground switchgear and transformers be installed on private property.

SECTION V – SERVICE EQUIPMENT

General

1. Each service entrance shall be provided with disconnecting means and overcurrent protection.
2. The service equipment shall be installed in a clean, dry, readily accessible location as near as practical to the service entrance point.
3. Service equipment shall conform to the National Electrical Code and local authorities having jurisdiction.
4. The customer is responsible for maintenance of their service equipment.
5. Connections made between the meter and the main service equipment shall be provided with their own disconnecting means and overcurrent protection.
6. The customer shall install service equipment which is UL listed and meets the following requirements:
   a) Have a voltage rating suitable for the service provided
   b) Have an ampere rating which is adequate for the initial load requirements
   c) Be capable of interrupting load current equal to its ampere rating.

d) Equipped with circuit breakers employing trip free operation and an overcurrent tripping device arranged for delayed overcurrent protection with instantaneous tripping for the available fault currents present.
e) Be rated for the environment the equipment will be installed in.

Ampere Rating

1. Service Connected to Overhead Lines - The capacity of service equipment for an installation of one meter shall not be less than 100 amperes.
2. Service Connected to Underground Lines - The capacity of service equipment for an installation of one meter shall not be less than 150 amps.

   Note: A reduction of the above minimum requirements for overhead and underground service equipment **may be** permitted with PYMU approval for signs, traffic signals, CATV power supplies, and for temporary construction buildings, etc., where the load will not exceed 3000 watts.

3. Service Less Than 320 Amperes and Less than 600 Volts - Service equipment shall conform to the requirements of the National Electrical Code.
4. Service 320 Amperes and Above and Less than 600 Volts
   a) The customer shall provide PYMU with detailed plans and specifications in writing prior to the purchase of service equipment or proceeding with the installation.
   b) The PYMU, upon request, will inform the customer concerning the magnitude of the current which the service equipment may be called upon to interrupt.

SECTION VI – GROUNDING

1. The grounding conductor and equipment of the service entrance shall be effectively and permanently grounded in accordance with the latest edition of the National Electrical Code as approved by the American National Standards Institute, or in accordance with the requirements of applicable authorities having jurisdiction where any difference occur.
2. AN APPROVED GROUND SHALL BE MADE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND PYMU SPECIFICATIONS.
3. PYMU requires a minimum of #4 Copper for all service grounds
4. UNDER NO CIRCUMSTANCES SHALL A GAS OR FUEL OIL PIPING SYSTEM BE USED AS A GROUNDING ELECTRODE.
5. See Section XII for lightning or surge protection grounding requirements.

SECTION VII – METERS & METER INSTALLATIONS

General

1. For services above 600 volts, the customer shall consult PYMU.

2. The customer shall furnish and install all meter mounting equipment such as meter cabinets, metering transformer enclosures or mounting devices. (See SECTION XVI - PYMU Approved Meter Mounting Equipment List)
3. Subject to ADVANCED approval by PYMU, the customer may be permitted to deviate from meter mounting equipment on the PYMU Approved Meter Mounting Equipment List (See SECTION XVI)
4. When the metered current exceeds 320 amperes, metering transformers will be required
5. Meter mounting boxes shall not be used as junction boxes
6. All meters, metering equipment and other points of unmetered wiring on the customer's premise will be sealed by PYMU. **THE BREAKING OF SEALS, TAMPERING OF METERS OR INSTALLATION OF UNAPPROVED UNMETERED WIRING IS PROHIBITED BY NEW YORK STATE PENAL LAWS. VIOLATORS WILL BE PROSECUTED.**
7. PYMU will refuse to connect the service or install the meter if the customer installation is defective or is in violation of the PYMU standards.
8. Any changes made by the customer making the existing meter or service equipment unsafe, inaccessible, or overloaded are the responsibility of the customer to correct. Consult PYMU whenever any of these situations occur.

Meter Location

1. The customer shall contact PYMU for the location of all metering equipment for all new electric installations or electric service upgrades.
2. PYMU requires all new and upgraded residential electric installations containing less than four meters to be outdoors.
3. Meters supplied from underground service laterals shall be installed within 5 feet of a corner of the building to be served that's closest to the electric source.
4. Electrical installations requiring 4 or more meters may be installed in a single Utility Room as defined in SECTION II with PYMU approval.
5. The location that all meter equipment is installed in shall have an unobstructed space of 12 inches on all sides and a clear space (floor to ceiling) in front of the metering equipment that is (4) feet wide.
6. Meters for all customers in multiple-occupancy buildings shall be grouped in a single location as determined by requirements 2 and 4 of this section.
7. Multiple-Occupancy Buildings as defined in SECTION II shall provide a House Meter as defined in SECTION II for any electric used in common areas of the building and/or property the building sets on.
8. Any upgrade to an existing multiple-occupancy building that has metering on multiple floors shall be changed to meet requirement number 6 of this section.
9. The horizontal centerline of all meters shall be no more (6) feet or no less than (3) feet above the finished floor or final grade where the meter is installed.

Meter Installations

1. All metering equipment, including service pedestals, shall be adequately supported, securely fastened and be in a level and plumb position.
2. Customer devices shall not be installed on the line (supply) side of any meter.

3. Wherever there is more than one meter installed on any premise, the owner of the premise shall identify and document each meter socket with a distinctive, permanent marking identifying the location that meter serves. **No meter will be installed by PYMU until this identification and documentation thereof has been made.**
4. Any customer that wishes to furnish and install pre-wired combination metering and service equipment pedestals for underground service to mobile homes must be approved for use prior to purchase.

Metering Transformer Installations

1. The location of the metering transformer enclosure shall be determined by PYMU.
2. The customer shall furnish and install all metering transformers and metering test switches, unless otherwise specified by PYMU.
3. The customer shall furnish and install all conduits from the metering transformer enclosure to the meter location.
4. PYMU will land all the wires from the metering transformer enclosure in the metering test switch.
5. Any metering transformer installation approved by PYMU not included on the PYMU Approved Meter Mounting Equipment List shall be submitted on an engineered drawing by the customer for approval by PYMU.

Special Equipment

1. Any special equipment requested shall be discussed and approved by PYMU.
2. All costs associated to purchase and install this equipment shall be paid by the customer.
3. PYMU does not assume any responsibility for this special equipment and will not stock replacement parts for its repair.

SECTION VIII MOTORS AND CONTROLLERS

General

1. PYMU shall be consulted concerning the characteristics of the service to which a motor will be connected.
2. PYMU's Director of Public Works shall be advised of any single-phase motor rated 3HP or larger and any three-phase motor rated 10HP or larger.
3. PYMU will require motor information that includes:
    a) Rated Voltage
    b) Full Load and Locked Rotor Current
    c) Number of motor starts per hour
    d) Operating characteristics of driven machine
4. Alternating current motors connected directly to PYMU's electric system must be designed for operation at a frequency of 60 hertz

Motor Protection

1. All motors should be properly protected against overload, including overloads caused by low voltage conditions.
2. The customers shall protect three phase motors against the possibility of single-phase operation or phase reversal operation.

Motor Starting Current Limits

Momentary fluctuation of circuit voltage occurs each time a motor is started on the circuit. Where this effect is pronounced, a visual disturbance or lighting flicker may be observed by the customer or other customers served from the same system. To avoid objectionable voltage variations and maintain proper service to the customer and neighbors, it is necessary to set a **M**aximum **P**ermissible **L**imit (**MPL**) to the current drawn from the service during each step of a motor-starting operation, based upon frequency of starts.

1. Motor (**MPL**) Starting Currents - The maximum starting currents permitted for single phase and three phase conventional motorized equipment rated in horsepower and for air conditioning or heat pump equipment rated in BTUH **based on (4) starts per hour** are:

SINGLE PHASE MOTORS

Service Voltage	Maximum Starting Current per Step	Equivalent Rating of Air Conditioner or Heat Pump (BTUH)
120 Volts	50 Amperes	10,000
208 or 240 Volts	60 Amps for 2 HP Motor	20,000
208 or 240 Volts	80 Amps for 3 HP Motor	25,000
208 or 240 Volts	120 Amps for 5 HP Motor	40,000

THREE PHASE MOTORS

Service Voltage	Maximum Starting Current per Step	Equivalent Rating of Air Conditioner or Heat Pump (BTUH)
208 or 240 Volts	100 Amps up to 5 HP Motor	40,000
208 or 240 Volts	130 Amps for 7½ HP Motor	50,000
208 or 240 Volts	160 Amps for 10 HP Motor	75,000
208 or 240 Volts	230 Amps for 15 HP Motor	150,000
480 Volts	50 Amps up to 5 HP Motor	40,000

480 Volts	65 Amps for 7½ HP Motor	50,000
480 Volts	80 Amps for 10 HP Motor	75,000
480 Volts	115 Amps for 15 HP Motor	150,000

2. Motor-starting current limitations are the maximum allowable increase in current on the line side of the motor-starting device at any instant during the starting operation. The limitation does not restrict the total current that can be taken by the motor in starting, but may require that the total be built up gradually, or in steps, each of which does not exceed the specific limitation for the motor. Where a step type starter is used, an appreciable time must be allowed on each step and the current increase of each step shall not exceed the imposed limitation.
3. When motors are started in a group instead of individually, the starting current limitations apply to the group and not to the individual motors. In some cases, sequential starting may be necessary.
4. There are locations on the PYMU system where starting currents larger than specified may be permitted. These locations are on network systems or systems which supply large loads or where special conditions exist. The PYMU shall be consulted whenever larger starting currents are contemplated for a specific installation.

SECTION X – MOBILE HOMES, MOBILE HOME PARKS & RECREATIONAL VEHICLE PARKS

General Service Requirements

1. The requirements for electric service and meters for mobile homes, mobile home parks and recreational vehicle parks differ from the requirements for other types of service and, therefore, must be given special consideration.
2. All installations must be in accordance with the National Electrical Code.
3. The customer shall provide a suitable meter board for support of the PYMU's meters.
4. When more than one mobile home is served, each meter position shall be permanently marked by the customer to clearly identify the mobile home the meter serves
5. The PYMU shall be consulted in advance for each mobile home installation.

Single Mobile Homes

In addition to the applicable requirements in Section IV, the following requirements also apply:

1. Overhead Service
    a) 100 AMP MINIMUM service for each meter position is required
    b) The customer shall be required to provide a substantial and adequate support, adjacent to, but not attached to, the mobile home for the attachment of the service drop.

c) The support shall be capable of withstanding a horizontal pull of 1,000 pounds at the center of the service bracket.
d) The support shall be a preservative pressure treated pole set in solid earth and guyed, if necessary.
e) The pole shall be of sufficient length to provide necessary clearance.
f) Contact PYMU for required pole sizes, setting depths and guying requirements.

2. Underground Service from an Overhead Distribution Line
   a) 150 AMP MINIMUM service for each meter position is required
   b) Where service entrance conductors are underground, the meter may be located on an approved service pedestal. Consult PYMU to seek approval for the location of this service pedestal.

Mobile Homes Considered as Permanent Structures

1. A mobile home with all running gear removed and securely mounted to a permanent foundation can be considered a permanent structure if the requirements of a permanent structure are met.
2. A permanent structure must be permanently connected to an approved sanitary sewer and water system and in compliance with local zoning laws.
3. The permanent foundation must be a poured concrete or block foundation with a cellar or crawl space, not a slab on grade with removable skirting.
4. If requirements of a permanent structure are not met, service to the structure shall comply with the requirements of this section.

Recreational Vehicles and Recreational Vehicle Parks

1. Service to Individual Recreational Vehicles - An individual recreational vehicle not in a recreational vehicle park or campground shall be served with a temporary service.
2. Service to Recreational Vehicle Parks - **S**ervice to a recreational vehicle park or campground will be provided through one service to one location in the name of the park operator. Individual vehicle sites in a park or campsites will not be metered by PYMU and must meet the requirements of the National Electric Code.

SECTION XI – DISTURBANCES

General

1. Large flashing signs, welders, arc furnaces, dielectric and induction heaters, inverters, variable voltage and frequency devices, radio and television transmitters, X-ray equipment, reciprocation compressors and similar items having an intermittent flow of large current can interfere with other users of PYMU's electric service.
2. The customer shall assure PYMU before planning to use such equipment that it won't interfere with other users of PYMU's electric service.
3. PYMU reserves the right to discontinue service where any of this type of equipment results in objectionable effects upon others unless corrective measures are taken.

Harmonics

1. SCR controllers, large rectifiers, inverters, variable voltage and frequency devices, etc. may cause harmonic waveform distortion.
2. Harmonic voltage distortion on the system shall not cause any applicable ANSI standards for PYMU equipment connected to the system to be exceeded.
3. Harmonic voltage distortion should not exceed 3% for any single frequency or 5% total harmonic distortion.
4. PYMU will endeavor to maintain these harmonic distortion limits
5. PYMU cannot guarantee an essentially distortion free waveform. Those customers whose particular service requirements necessitate such a waveform are encouraged to install, own, and maintain signal conditioning equipment on their service.

Computers, Solid State Devices or Other Voltage Sensitive Equipment

1. PYMU shall endeavor to supply voltage within an approximate 5% tolerance, but shall not be responsible for damage to equipment or loss of data due to outages or voltage transients that exceed these limits
2. It is the responsibility of the customer to provide and maintain his own protective interface equipment.
3. Secondary surge arresters shall be connected on the load side of the main disconnect, not at the weatherhead.
4. Lightning rod systems should be installed per the NFPA 78 Lightning Protection Code. A bond between the customers lightning rod system and service neutral shall not be installed. Spacing should be arranged so that the meter enclosure is not bonded to the lightning rod system down ground conductors. Refer to the National Electric Code for spacing requirements.

SECTION XII – SPECIAL PROVISIONS AND EQUIPMENT

Customer Installed Capacitors

Customers installing capacitors to improve the power factor of their load should contact the PYMU for advice regarding supply system characteristics and essential coordination details.

Swimming Pools

1. Swimming pools shall be properly wired in accordance with the National Electrical Code.
2. Circuits serving pools or associated areas shall be protected by Ground Fault interrupters

Lightning Protection Systems

PYMU recommends the use of secondary surge arrestors for protection of customer's equipment, where such additional protection is desired. Surge arrestors shall be connected on the load side of the main disconnect, not at the weatherhead.

Lightning Rod Systems, if desired, should be installed per NFPA 78 "Lightning Protection Code." A bond between the lightning rod system down ground and the service neutral should not be installed. Refer to the NEC Section 250-46 for spacing requirements. Spacing should be so arranged that the meter enclosure is not bonded to the lightning rod system down ground conductors.

Transient Surge Protectors

Transient surge protectors are available through distributors to help protect particularly sensitive customer equipment from low energy transient surges.

Carrier Current Systems

Where the building wiring is used for a carrier current system for communication, remote control, signaling, etc., the customer shall install a suitable filter to prevent the carrier current signal from leaving the customer's service entrance.

SECTION XIII – GENERATORS

Customer Owned Power Generating Equipment

1. All installations of customer generating equipment require adherence to fundamental rules to safeguard all personnel and PYMU equipment.
2. **PYMU shall be consulted before any generating equipment is connected** to any circuit which is, or can be supplied from, PYMU's distribution system.

Standby Generators

1. This type of generator is for emergency supply for lighting and other load and is usually connected in case of loss of the normal supply.
2. A double throw switch or contactor shall be provided to transfer all ungrounded conductors of an emergency lighting or power load to either the standby generator or the normal supply. **Automatic transfer systems shall be approved in writing by the PYMU.**
3. The standby generator shall be 60 cycles alternating current.

Direct Current Generators

1. Direct current generator shall not be used

Electric Systems Operated in Parallel with PYMU Supply

Customers considering the installation of generating equipment to supply all or a portion of their electrical energy requirements and who wish to arrange for, or continue to receive, service from the PYMU system for their remaining electrical energy requirements and/or for standby service, shall **consult with the PYMU** regarding the design, installation and operation of such generating equipment. This consultation shall be done before the customer commits to a specific system design.

SECTION XV DRAWINGS AND TABLES

FIGURE 1

Service Drop Attachment Options

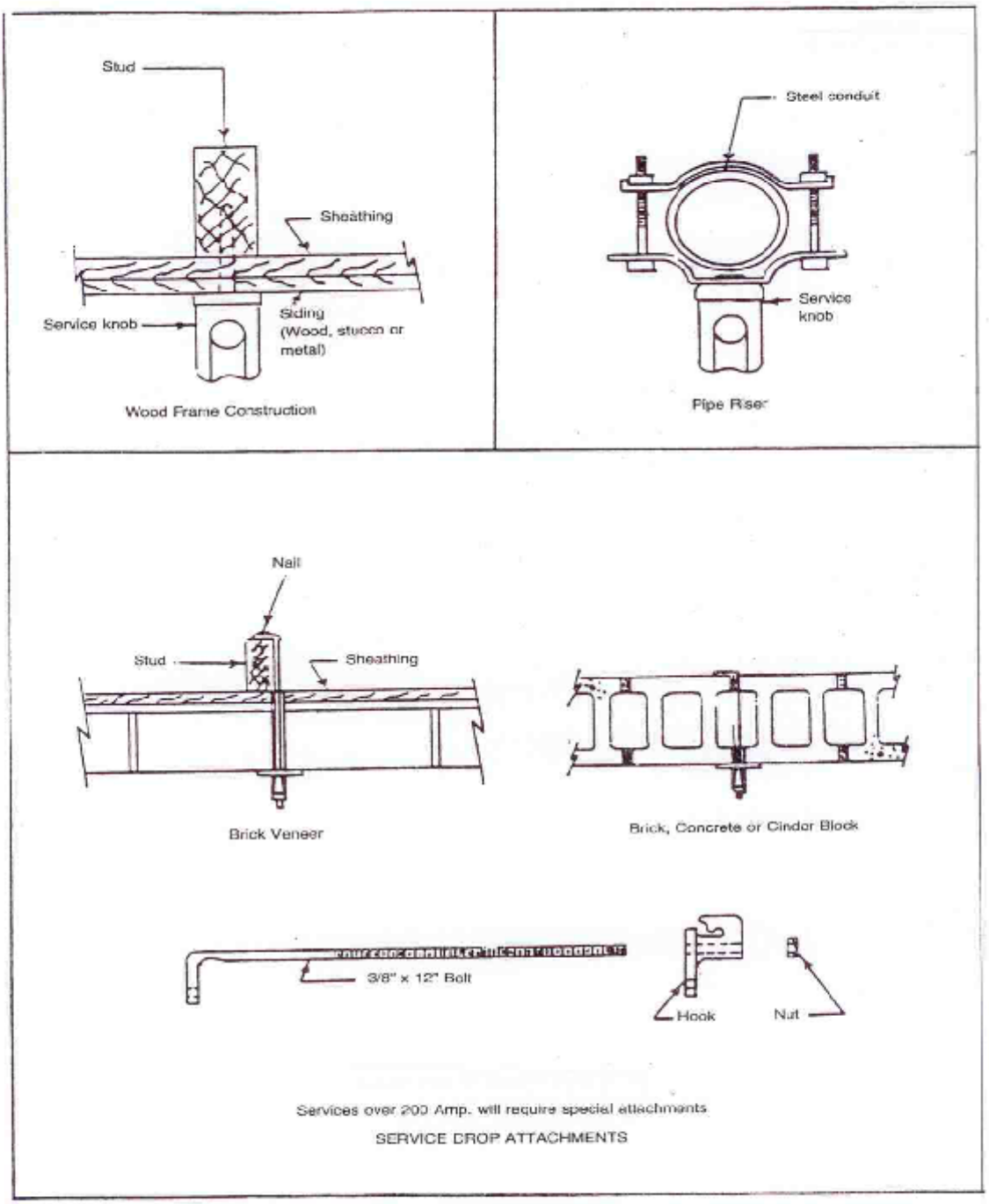
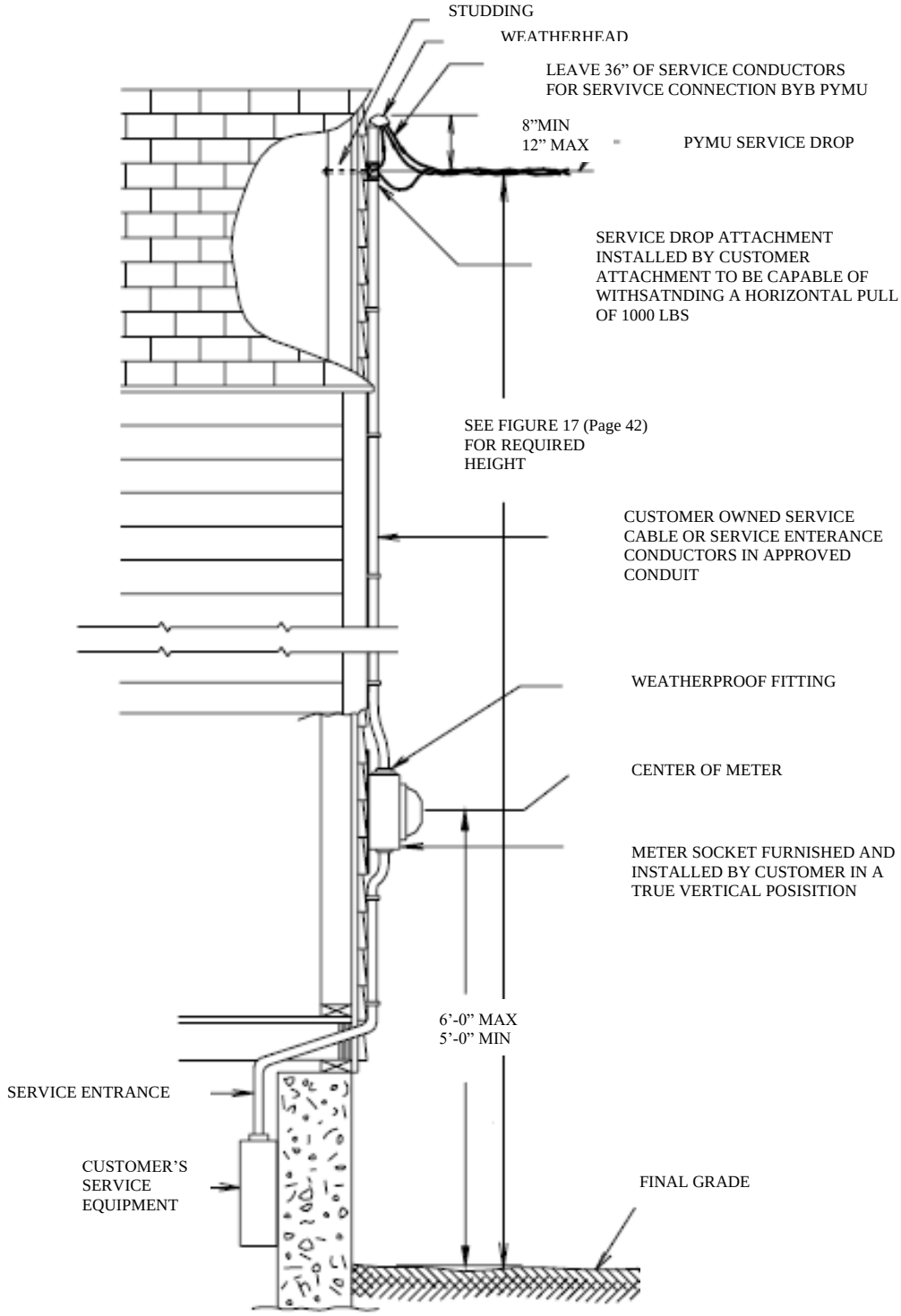


FIGURE 2

SERVICE ENTERANCE TO RESIDENCE OR SMALL COMERICAL BUILDING



GROUNDING TO BE AS REQUIRED IN FIGURE 14

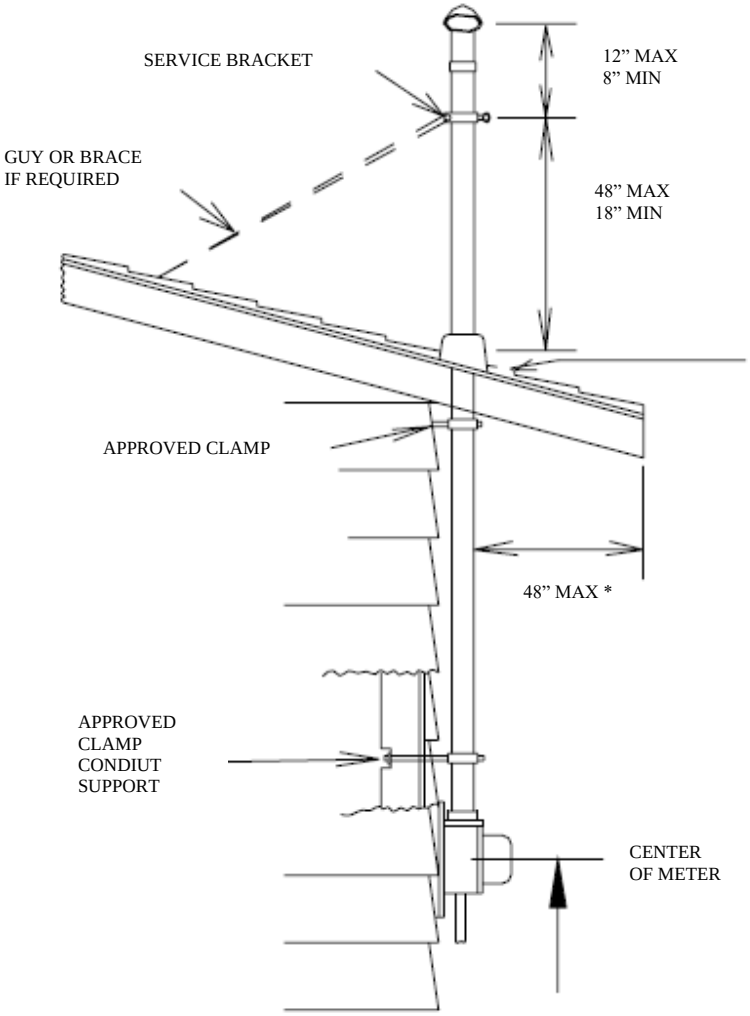
FIGURE 3

DETAILS OF RISER AND SERVICE ATTACHMENT
LOW BUILDINGS – RANCH HOUSES

TRIPLEX CONDUCTORS	MAXIMUM UNBRACED LENGTH FROM FLASHING TO CONDUNCTOR						
	**			RIGID AL. CONDUIT			
	2”	2-1/2”	3”	2-1/2”	3”	3-1/2”	4”
#2	28”	48”	48”	24”	39”	48”	48”
1/0		25”	40”	--	18”	18”	34”

IF ABOVE DIMENSIONSARE EXCEEDED THE RISER MUST BE BRACED

** INTERMEDIATE METALLIC CONDUIT OR GALVANIZED RIGID CONDUIT



THE RISER SHALL BE CAPABLE OF WITHSTANDING A HORZONTAL PULL OF 1000 LBS

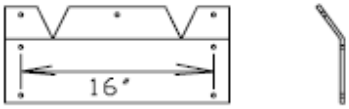
CONCEALED RISERS ARE NOT ACCEPTABLE

* IF THE ROOF OVERHANG EXCEEDS 48” THE MIN DIMENSION FROM THE LOWER CONDUCTOR BECOMES 3 FEET SEE NEC ARTICLE 230

GROUNDING TO BE AS REQUIRED IN FIGURE 14

6’-0” MAX
5’-0” MIN

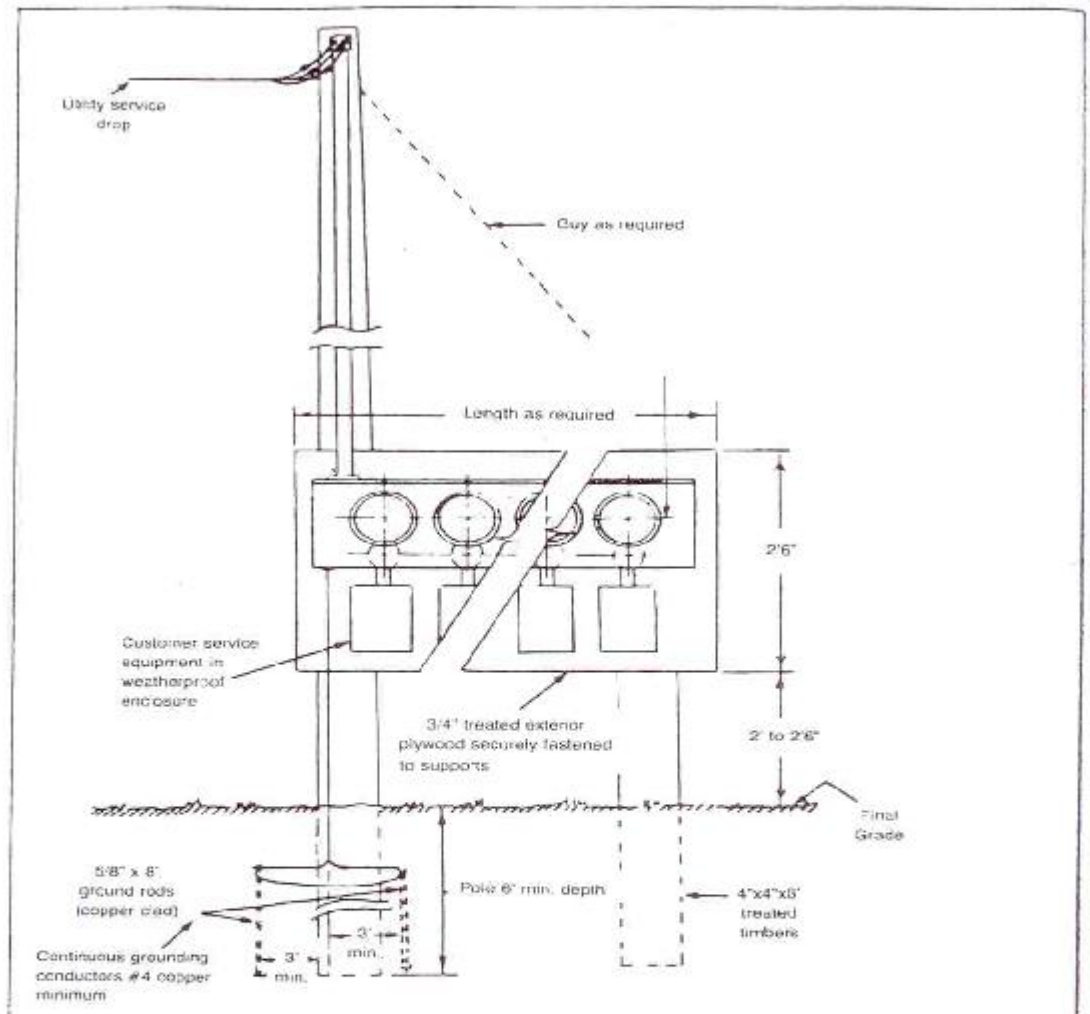
(HEIGHT ABOVE GROUND)



“ANCHOR EASY” PLATE MOUNTS
ON ROOF UNDER SHINGLES
(PROVIDES GUY ATTACHMENT)

FIGURE 4

MULTIPLE METER INSTALLATION



Pole to be treated in accordance with EEI specifications TD 100 or TD 102 Minimum Pole Class 7. See Section IV, Paragraph 9 of this booklet for clearance.

Pole must be adequately supported to withstand 1000 lbs. horizontal pull at the point of service drop attachment.

Installation also approved for underground use with service entrance similar to diagram VIII.

Installation shall meet requirements of the National Electrical Code.

FIGURE 5

TYPICAL METER LOCATIONS

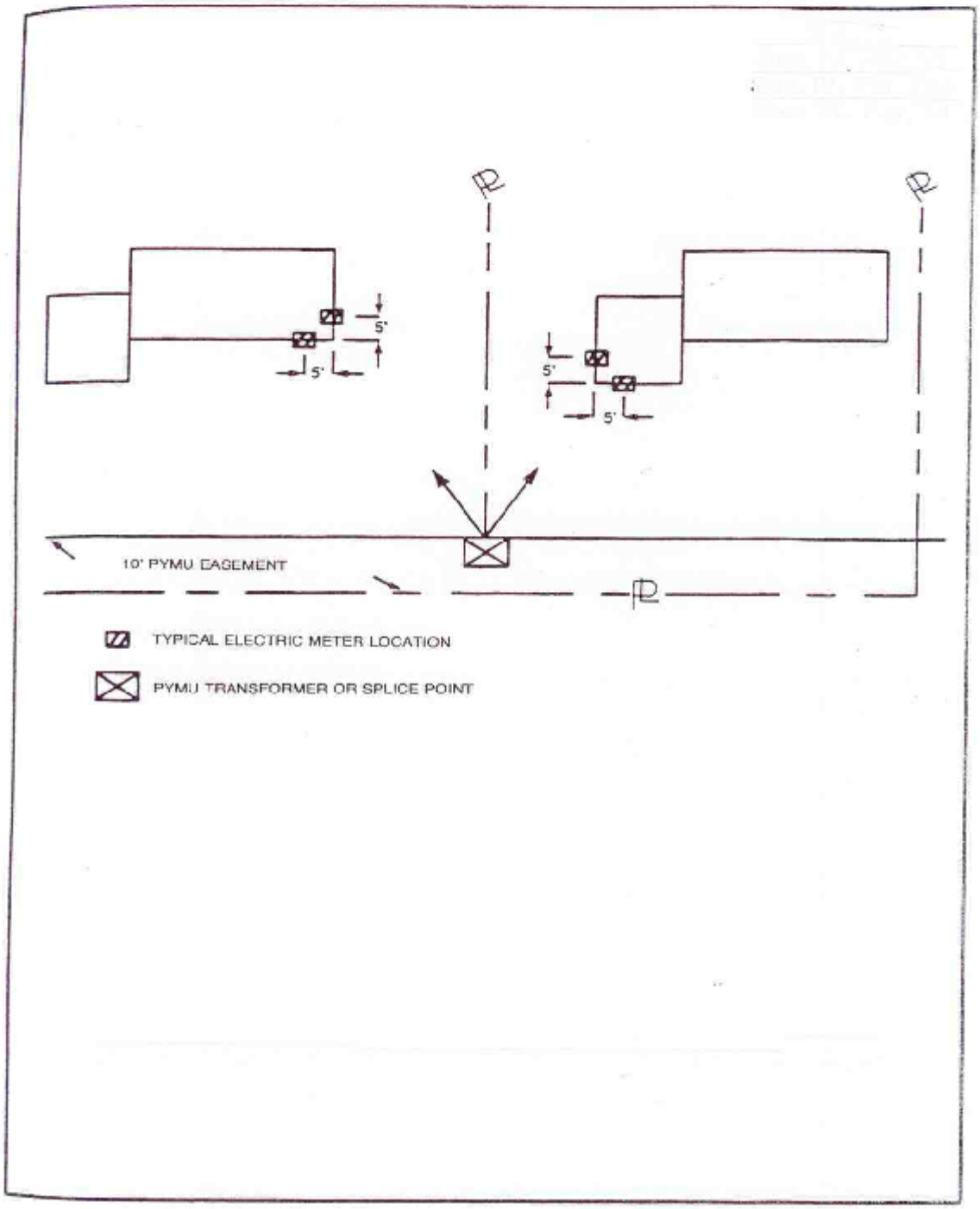
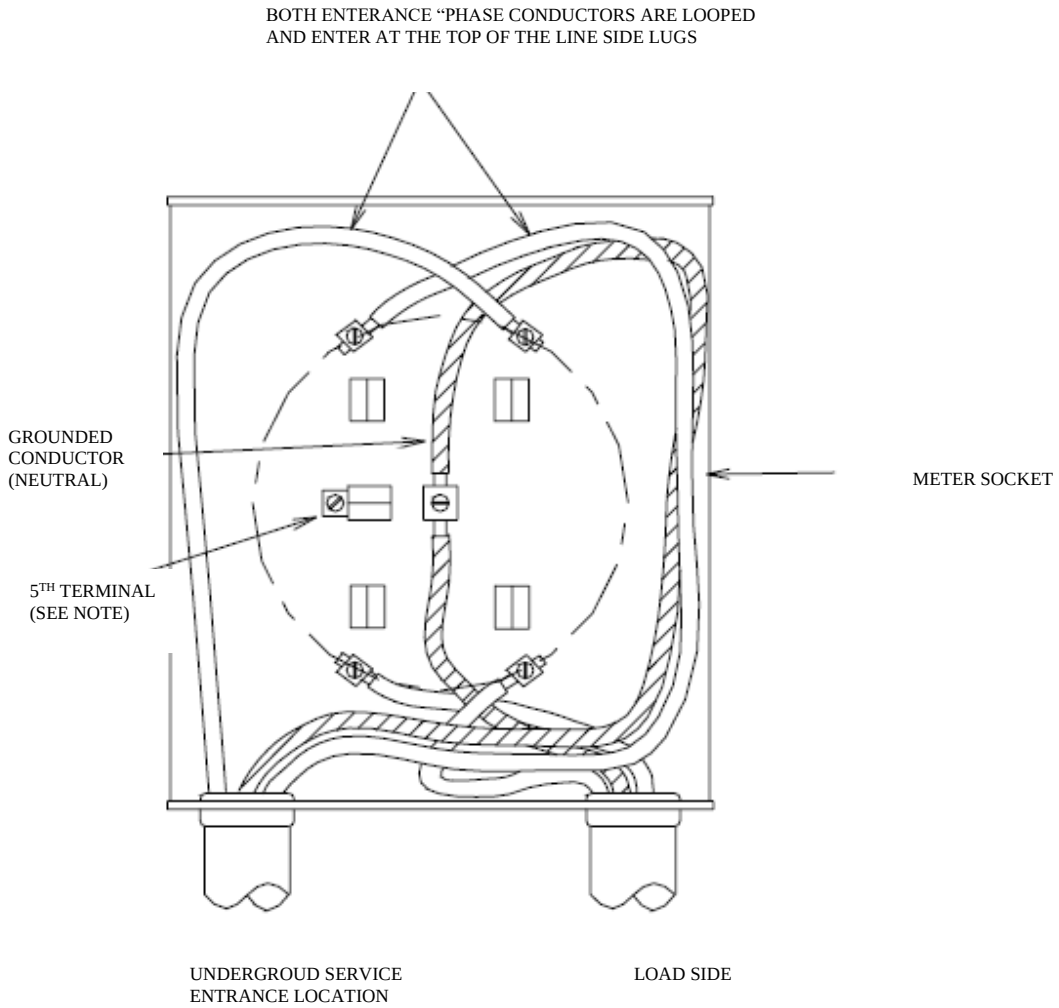


FIGURE 6

METER SOCKET WIRING
FOR UNDERGROUND SERVICE



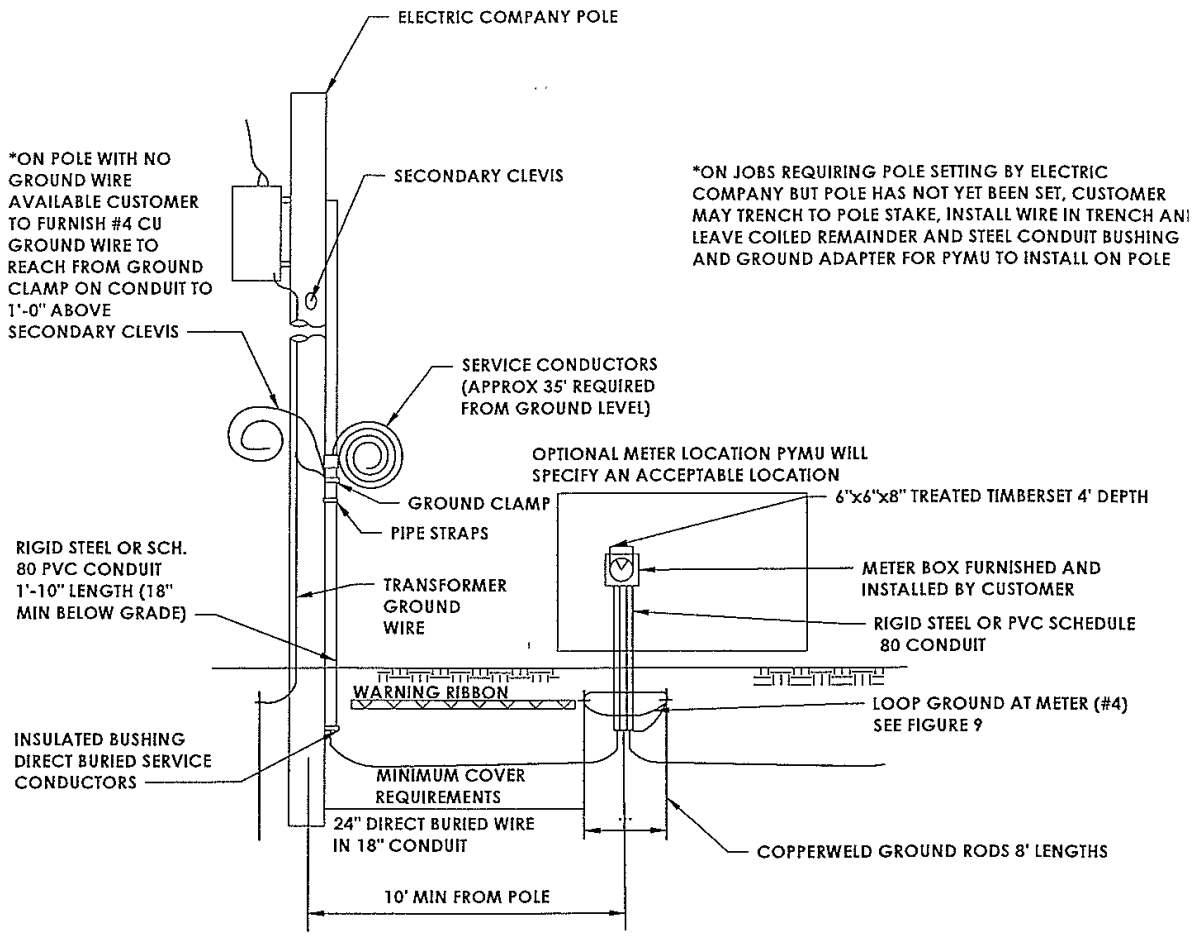
LOOPING OF THE CONDUCTOR AS SHOWN MINIMIZES DAMMAGE TO CABLE AND STRESS ON CONNECTIONS

NOTE:
5TH TERMINAL WILL BE PROVIDED FOR 120/208 VOLT SERVICE AND MUST BE GROUNDED

5TH TERMINAL WILL ALSO BE PROVIDED FOR 120/240 VOLT SERVICE WHERE THE 5TH TERMINAL IS USED FOR LOAD CONTROL AND MUST NOT BE GROUNDED

FIGURE 7

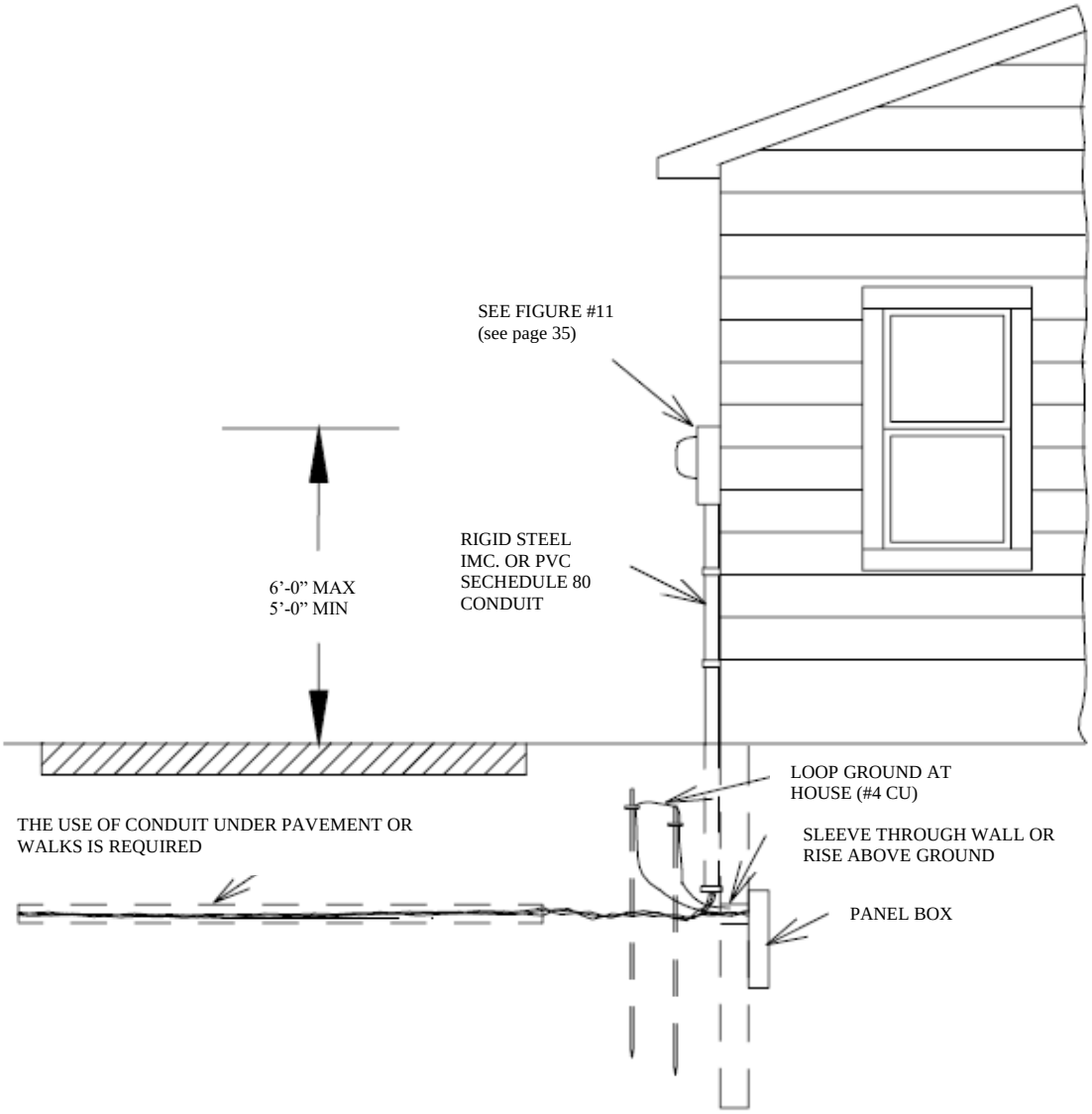
UNDERGROUND SERVICE CONNECTIONS FROM OVERHEAD LINES



NOTE:
1. IF SERVICE FROM RISER TO METER BOX IS COMPLETELY IN CONDUIT DUCT SEAL OR A WEATHERHEAD IS NEEDED.

FIGURE 7

UNDERGROUND SERVICE CONNECTIONS FROM OVERHEAD LINES



Where necessary to prevent physical damage to direct buried conductors from rocks, slate, vehicular traffic, etc., direct buried conductors shall be provided with supplementary protection such as sand, sand and suitable sleeves or other PYMU approved means.

FIGURE 8

UNDERGROUND SERVICE CONNECTION FOR RESIDENITAL DEVELOPMENTS

THE SERVICE CABLE AND CONDUIT (IF USED) ARE NOT TO BE INSTALLED CLOSER THAN TWO (2) FEET FROM THE TRANSFORMER OR HANDHOLE LOCATION

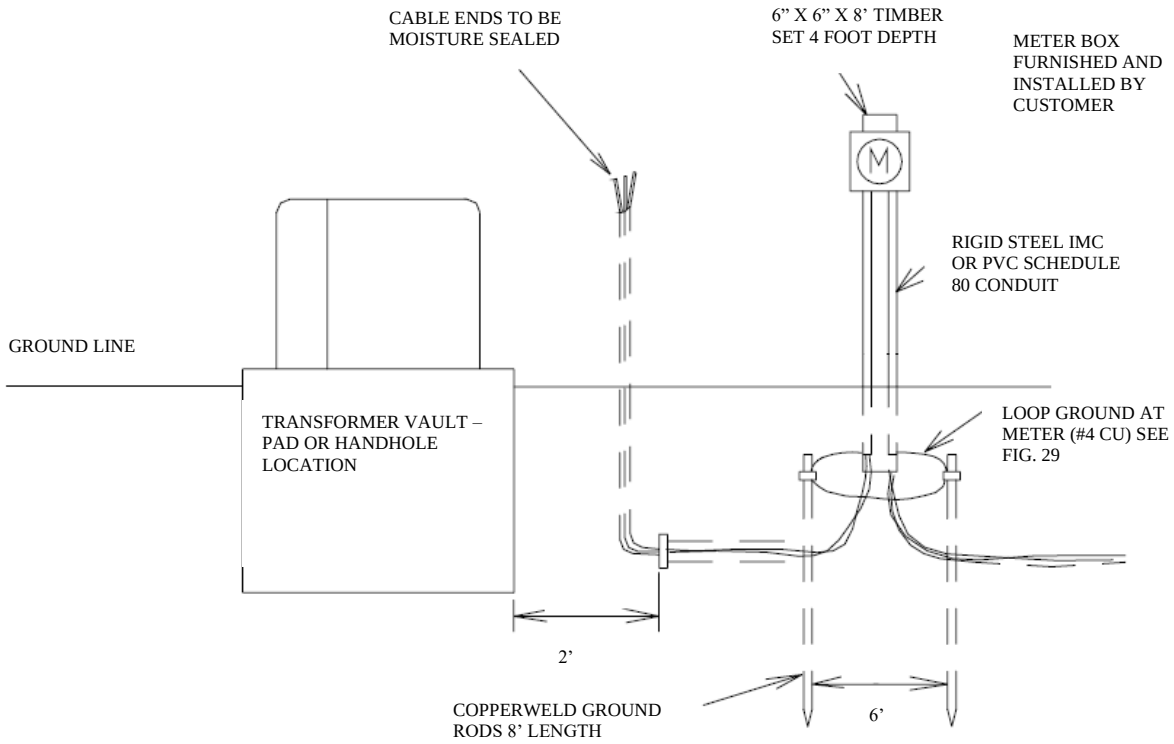
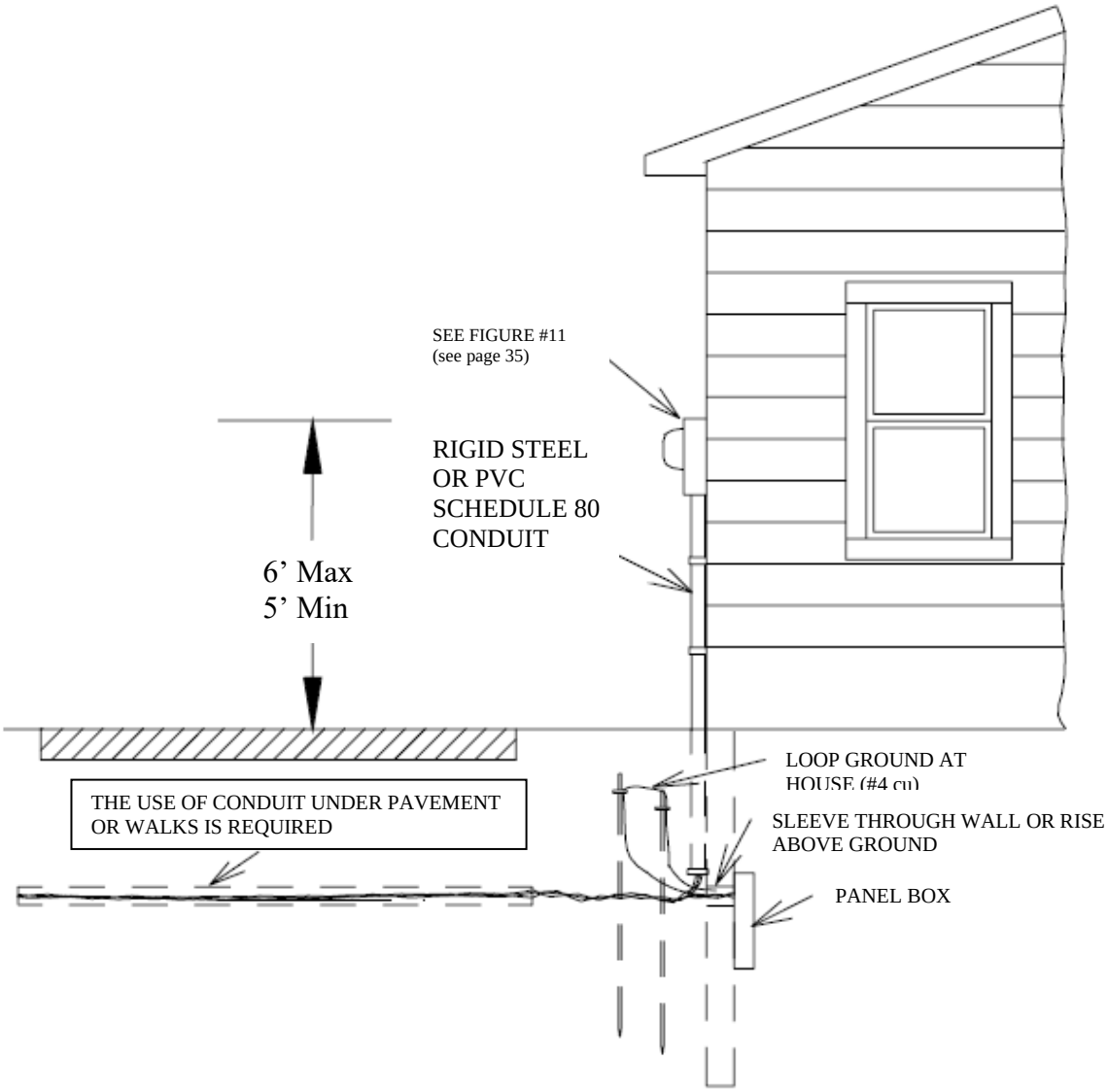


FIGURE 8

UNDERGROUND SERVICE CONNECTION FOR RESIDENITAL DEVELOPMENTS



Where necessary to prevent physical damage to direct buried conductors from rocks, slate, vehicular traffic, etc., direct buried conductors shall be provided with supplementary protection such as sand, sand and suitable sleeves or other PYMU approved means.

FIGURE 9

TYPICAL METER PEDESTAL

SHOWN WITH TYPICAL SERVICE EQUIPTMENT FOR MOBILE HOME WITH WIREING 100, 150, OR 200 AMP

METER INSTALLATION ONLY **NOT FOR MOBILE HOME USE**.

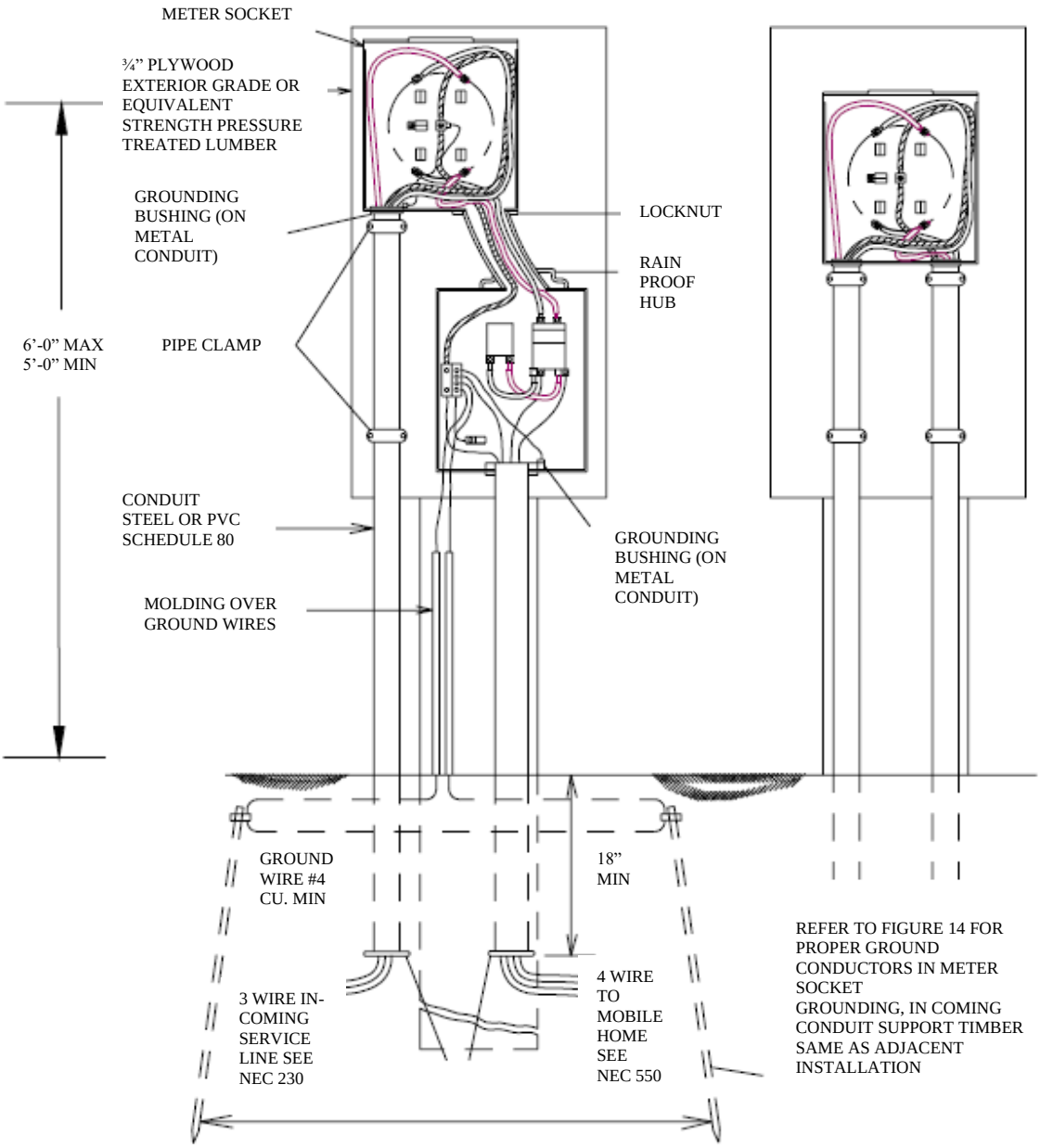
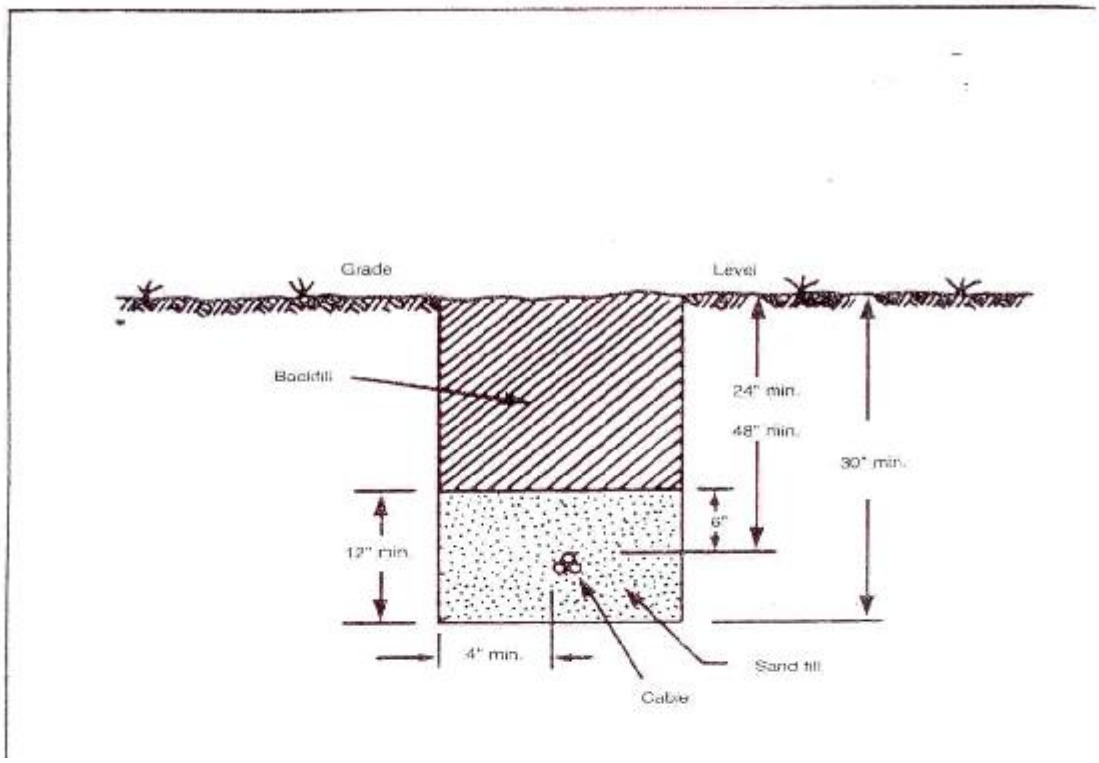


FIGURE 10

UNDERGROUND TRENCH SPECIFICATIONS



Note: All underground direct buried services shall be buried and installed in a 12” (minimum) thick bed of sand as shown in the above drawing. The direct buried cable shall be centered in the sand layer. Place 6” of well-tamped sand in the trench bottom. Install the cables and place the top 6” of sand, tamping the top layer as well as possible without the use of machine compaction. Machine compaction should not be used within 6” of the cable. The sand fill must be free of any materials that may damage the cable. Care must be observed not to pierce the sand layer with stones or any other sharp objects. The trench spoil may then be carefully placed on top of the sand. Neither smooth, rounded rocks larger than 12” in any dimension nor angular rocks (rocks with sharp corners or points) larger than 6” in any dimension shall be allowed in any of the backfill. If the existing spoil is not suitable, suitable backfill must be provided by the customer.

FIGURE 11

METER PEDESTAL INSTALLATION FOR MOBILE HOME PARK

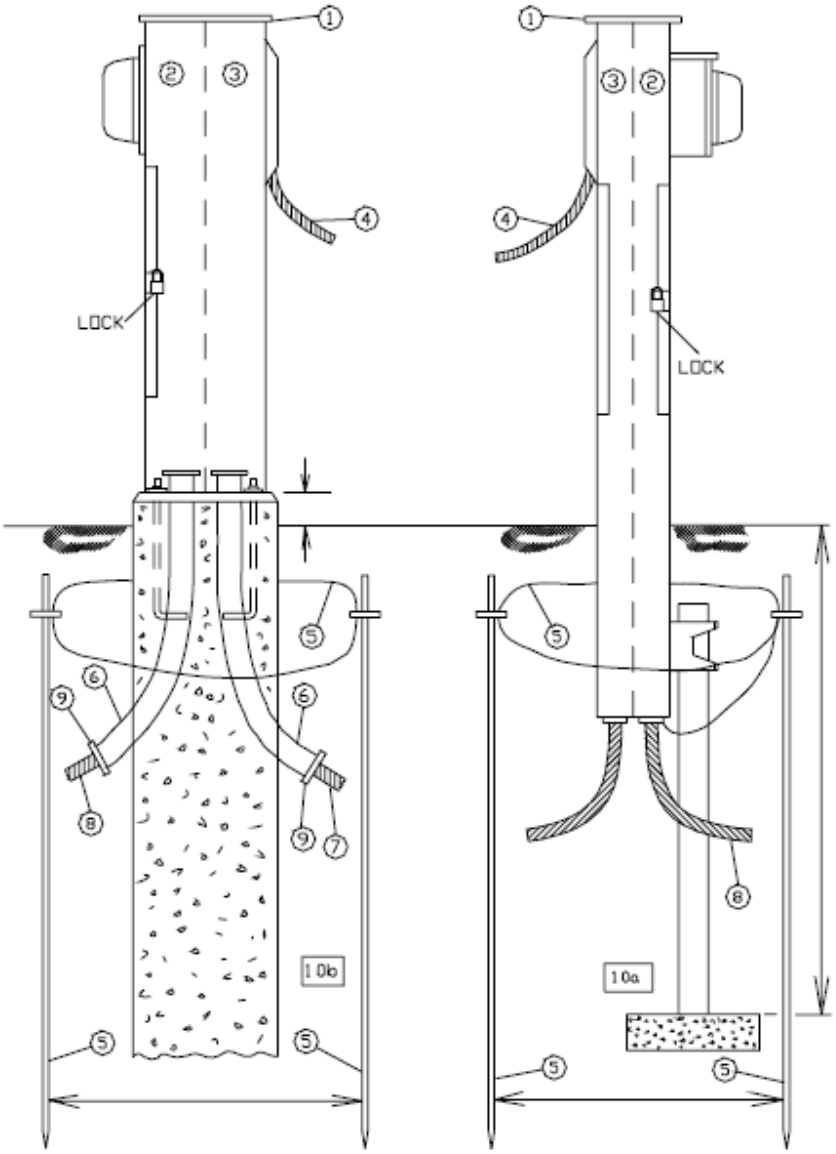


FIGURE 12

MOBILE HOME MULTI METER INSTALLATION
OVERHEAD SERVICE

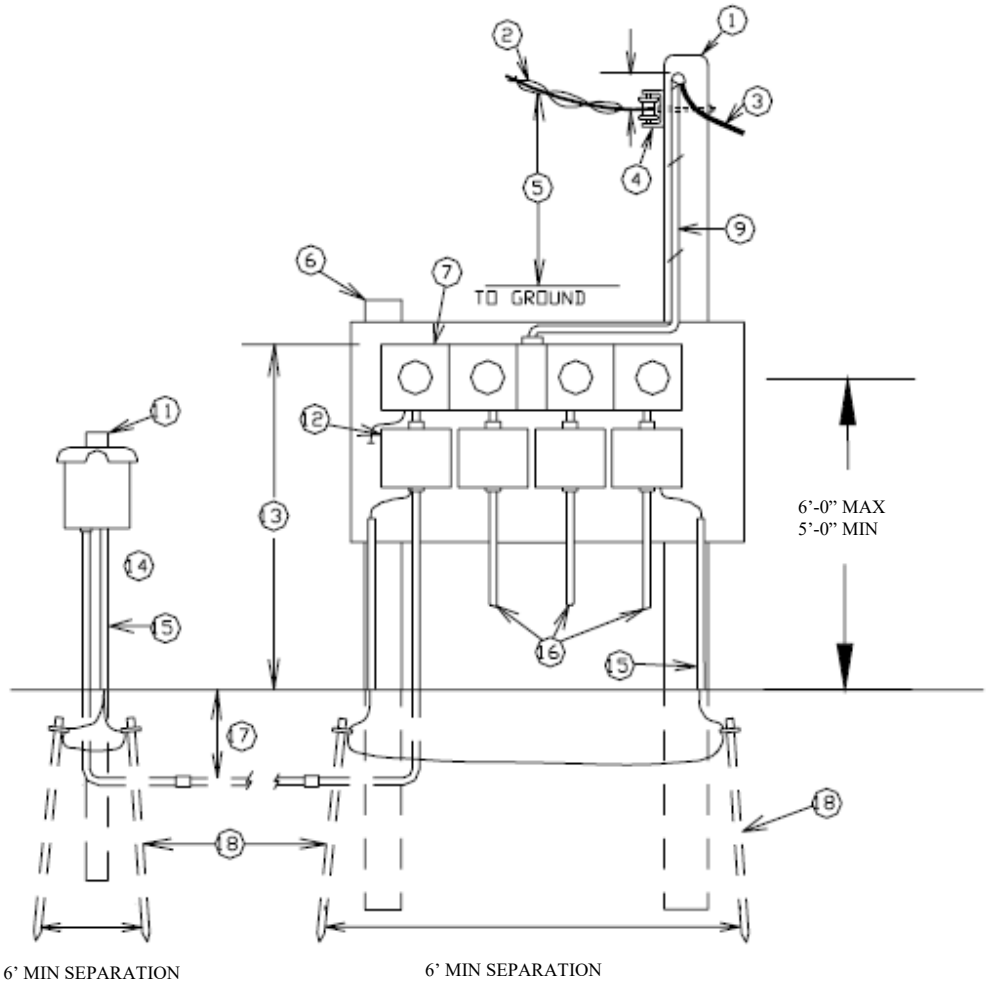


FIGURE 13

MOBILE HOME MULTI METER INSTALLATION UNDERGROUND SERVICE

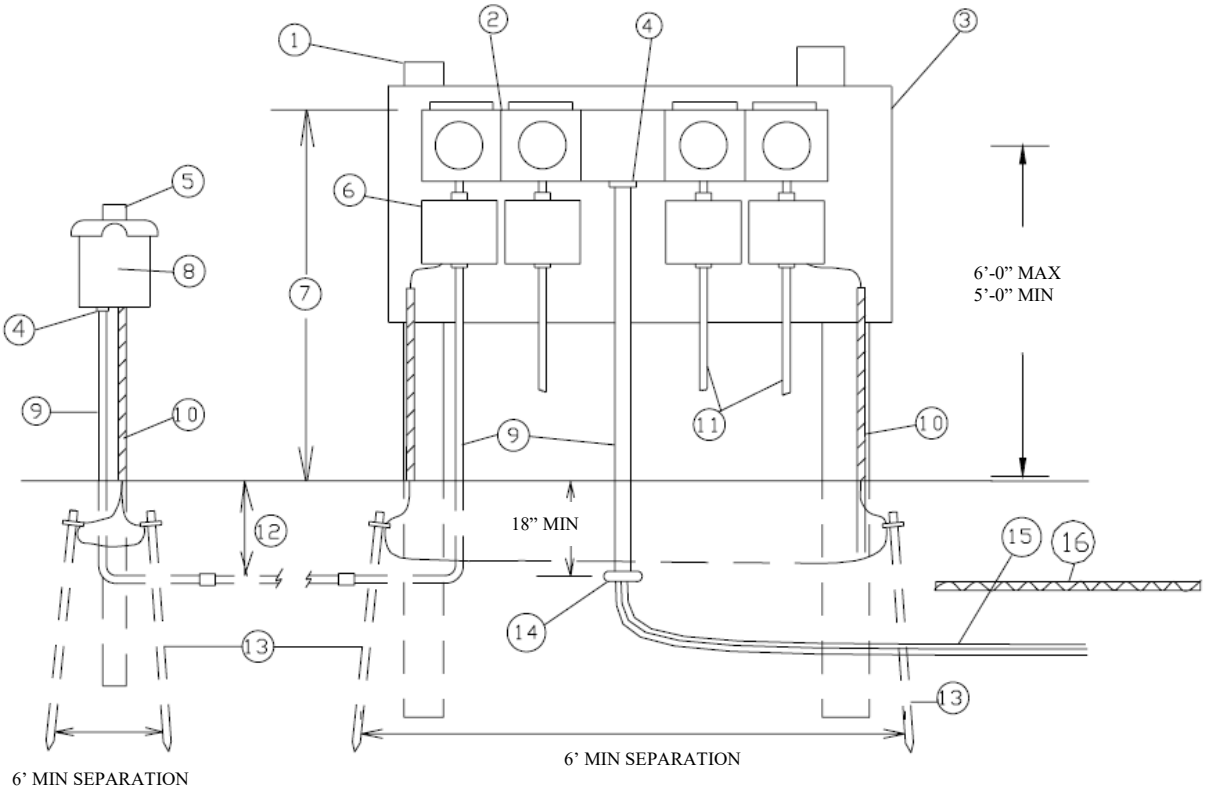
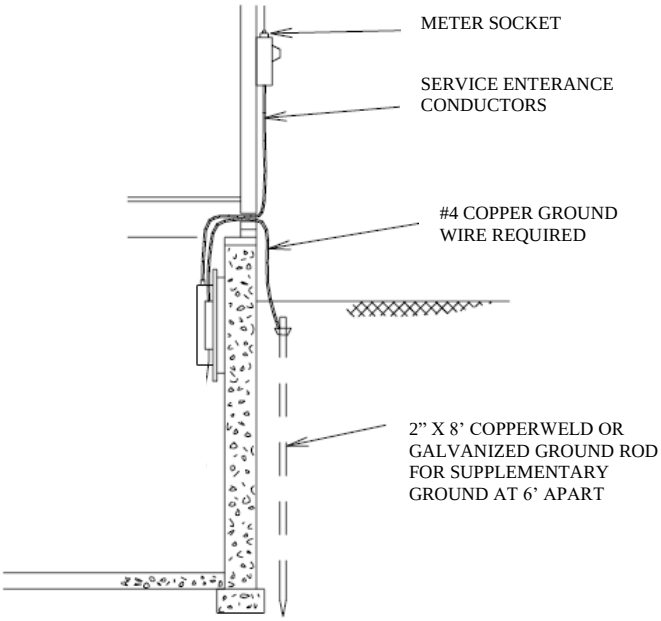


FIGURE 14

GROUNDING

WHERE METAL WATER PIPE IS IN DIRECT CONTACT WITH EARTH FOR 10 FT OR MORE AND IS ELECTRICALLY CONTINUOUS IN ACCORDANCE WITH NEC SECTION 250



WHERE THE WATER PIPE IS NOT IN DIRECT CONTACT WITH EARTH FOR 10 FT OR MORE AND IS ELECTRICALLY CONTINUOUS IN ACCORDANCE SEE NEC SECTION 250

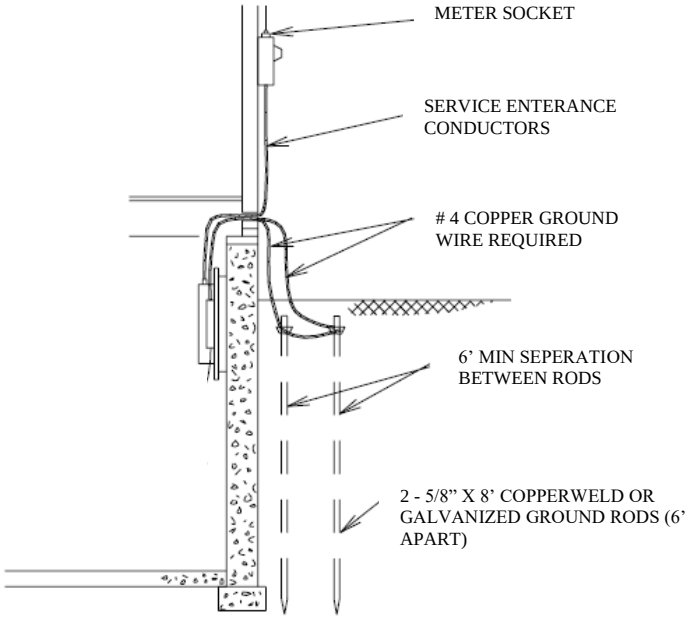


FIGURE 15

TEMPORARY SERVICE MAST

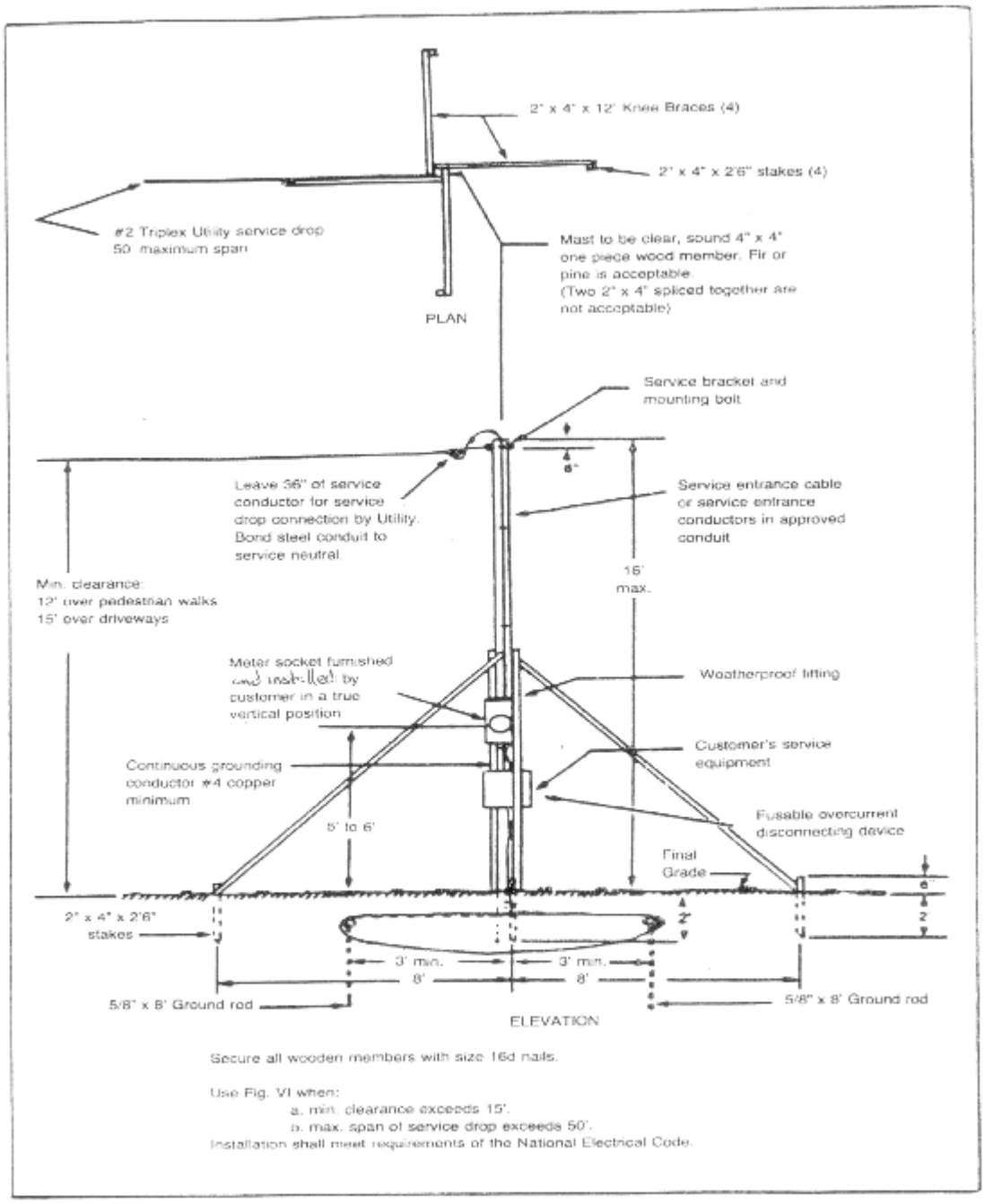
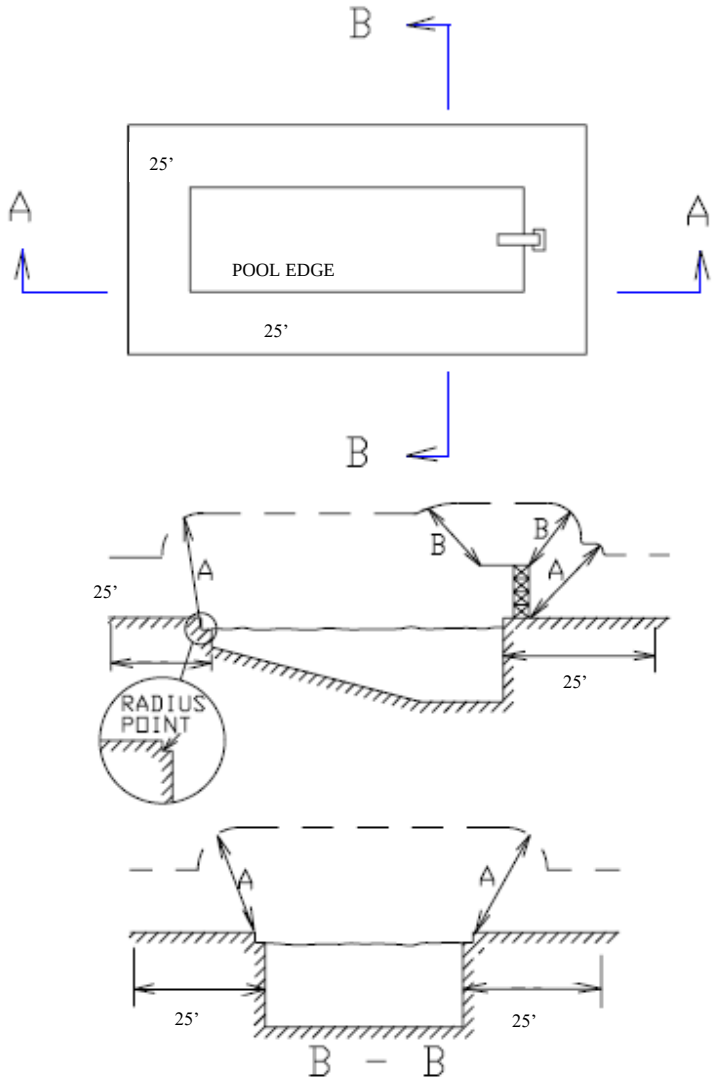


FIGURE 16

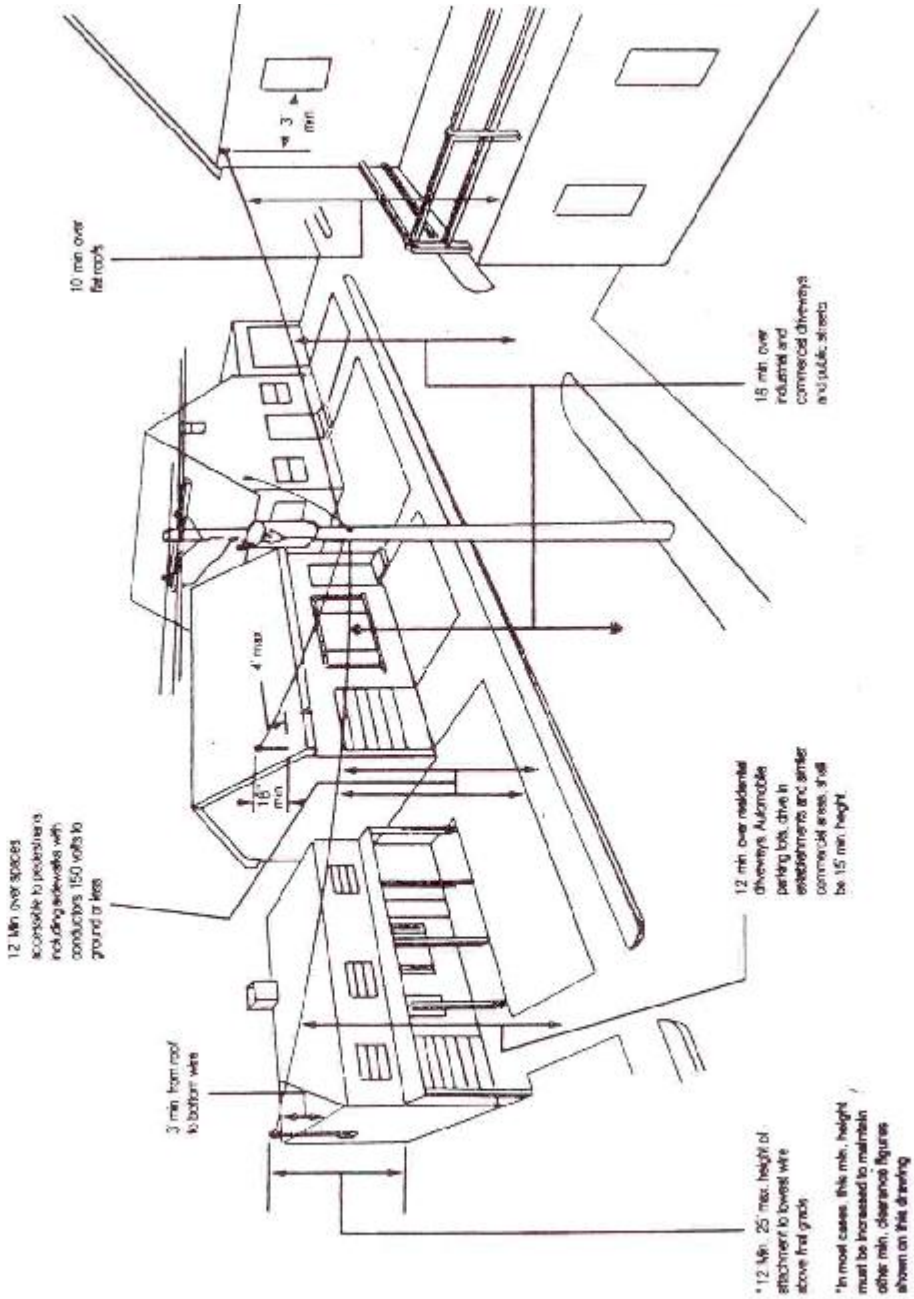
CLEARANCE REQUIRMENTS FOR CONDUCTORS PASSING OVER SWIMMING POOLS OR LAND WITHIN 25 FEET OF THE EDGE OF THE SWIMMING POOL.



	NEUTRALS AND GUYS	CABLED SUPPLY	OPEN SUPPLY LINE CONECTIONS		ALL VOLTAGES PHASE TO GROUND
		0 - 750 V	0 - 750 V	750 – 22KV	
A. CLEARANCE IN ANY DIRECTION FROM EDGE OF POOL BASE OF DIVING PLATFORM OR ANCHORED RAFT	22'	22' 6"	23'	25'	
B. CLEARANCE IN ANY DIRECTION TO THE DIVING PLATFORM OR TOWER	14'	16' 6"	15'	17'	

FIGURE 17

MINIMUM VERTICAL CLEARANCES FOR SERVICE DROPS BELOW 600 VOLTS



MINIMUM VERTICAL CLEARANCE OF SERVICE DROPS BELOW 600 VOLTS

SECTION XVI – PYMU APPROVED METER MOUNTING EQUIPMENT

Manufacturer	Meter Form	Milbank	Cutler Hammer	Siemens/ Landis & GYR
100 amp 4 term 1p3w	2S	CAT# U7487-RL- TG-KK	N/A	N/A
200 amp 4 term 1p3w	2S	CAT# U7040-XL-TG-KK	CAT# UHTRS213CCH	CAT# UAT417-OPRG
2 gang 4 term 1p3w	2S	CAT# U1252-R-KK	CAT# UEHT2R2302UCH	CAT# UA2717-YPRG
3 gang 4 term 1p3w	2S	CAT# U1253-R-KK	CAT# UEHT3R2302UCH	CAT# UA3717-YPRG
4 gang 4 term 1p3w	2S	CAT# U1254-R-KK-EX	CAT# UEHT4R2302UCH	CAT# UA4719-YPRG
5 gang 4 term 1p3w	2S	CAT# U1255-R-KK-EX	CAT# UEHT5R2302UUCH	CAT# UA5719-KPRG
6 gang 4 term 1p3w	2S	CAT# U1256-R-KK-EX	CAT# UEHT6R2302UUCH	CAT# UA6719-KPRG
200 amp 4 term meter main 8 circuits 20 circuits	2S	CAT# U5168-XTL-200-KK U5268-XTL-200-KK	N/A	N/A
320 amp 4 term 1p3w w/bypass	2S	CAT# U2448-X	CAT# UTH4330TCH	CAT# 48104-02RG
200 amp 7 term 3p4w w/bypass(See note 1)	16S	CAT# U7423-RXL	CAT# UETH7213UCH	CAT# 40407-02LL
320 amp 7 term 3p4w w/bypass	16S	CAT# U4013-X	N/A	N/A
20 amp 6 term 1p3w CT (See note 1)	4S	CAT# UC7478-RL	N/A	N/A
20 amp 13 term 3p4w CT (See note 1)	9S	CAT# UC7445-RL	N/A	N/A
7 term test switch (required with meter form 4S) (See note 1)		CAT# TS07-0472	N/A	N/A
10 term test switch (required with meter form 9S) (See note 1)		CAT# TS10-0110	N/A	N/A

note 1 **:** The contractor shall consult with PYMUB before ordering any 3-phase meter sockets