



Entergy®

THE POWER OF PEOPLESM

Customer Installation Standards for Electric Service

Effective June 1, 2008

A transition period will exist from June 1 through December 31, 2008 in which installations may be approved and connected as long as they meet either the 2005 or the 2008 editions. Beginning January 1, 2009, only the 2008 edition of the Customer Installation Standards will be accepted.

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(Under “for customers” click on your State. On your State webpage, under “your business”, click on Builder Standards)

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2008 Issue

2008 Entergy Customer Installation Service Standards (CIS) Summary of Major Changes from 2005 Edition

Entergy should be consulted on all Commercial Services and service over 200 amps.

Services for Mobile Home Parks (§4.7) Mobile Home Parks are five or more mobile homes or trailers and accessory buildings on a continuous parcel of land used by its occupants or owners. These parks shall be served at a common point as shown in drawings SS4.7-1, SS4.7-2 and SS4.7-3. The park management shall be responsible for running service from the disconnect beyond the 120/240 volt Entergy meter to the individual trailers.

The reduced clearances are for residential buildings only per NESC Table 232-1 (§7.3).

All Junction boxes must be UL listed and Company approved. (§8.7.1)

Meters (§ 11)

- Drawings to comply with NEC 300.34 Conductor Bending Radius, drawings to greater specify meter bases for underground feed services have been added. (Drawing SS11.8-2)
- Drawings illustrating the platform and stairs requirements for elevated meters have been added. (Drawings 11.7-1 & 2)
- On combination meter/ breaker boxes, the wires behind the breakers and the Company wires shall be secured behind separate barriers. Company personnel shall have access to Company wires without exposing the wires behind the breakers. (§11.1.2.3)
- Horn bypasses and similar devices are not allowed. (§11.1.2.4)
- Service entrance wires shall enter and stay opposite of the by-pass switch. (§11.1.2.4)
- Load and supply wires shall not cross in the meter socket. (§11.1.2.7)
- Any commercial 100 amp service such as billboards and other non-critical small commercial services should consult with the Company. (§11.1.2.4)
- Instrument transformer back plate is in addition to the back wall of the enclosure and shall be metal or ¾" plywood. (§11.1.3)
- Instrument enclosures are required to have a hinged front cover. (§11.1.3)

Termination of Customer's Conductors in Company Transformers (§13.4)

- For loads where parallel phase and neutral service entrance conductors are installed, the Customer shall consult with the Company early in the design phase to determine how many and sizing of conductors that may be brought out for their system.
- Pads mount transformers 500 kVA or smaller can accept eight conductors per phase, 750kva and larger can accept twelve conductors per phase.
- For underground service, bus duct or a Customer furnished Company approved junction box should be required for loads that exceed the number of conductors the Company can accept.

Customer Owned Generators (§12) If the generator is or will be connected to the building circuits at the same time the circuits are connected to the Company or the Customer wants to operate in parallel referred to Company's policy on Connecting Electric Generators to the Entergy Distribution System, and/ or Net Metering Facilities Safety and Performance Standards which can be obtained by calling 1-800-ENTERGY. The Customer shall consult the Company early in the design phase.

Specific 480V applications involving ballparks, oil fields and irrigation pumps require a disconnect ahead of the meter and an over current device on the load side of the meter (§13.8.1)

Power Quality (§ 16) Due to rapid changes in Power Quality Issues and measurement technology, most Power Quality Standards for Electric Service have been removed from this document and set up as its own Standard. This Standard will be available on the web at the same location as the Customer Installation Standards.

Entergy Customer Installation Standards

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Section 1 Foreword, General Information, and Terms

1.1 Purpose

The information contained in this book is presented for use in planning electrical wiring and apparatus installations intended for connection to the Entergy power lines. Current procedures, practices and requirements, adopted by the Entergy companies to assure economical and satisfactory service to Customers, consistent with the most recent version of the National Electrical Safety Code (NESC), are set forth and discussed herein. (Note: Any statement concerning the National Electrical Code (NEC) refers to Customer owned facilities.) Any mention of the NESC or the NEC indicates the basic provisions that are considered necessary for safety. **To the extent that Entergy's standards are more stringent than provisions of the NESC or NEC, Entergy's standards must be satisfied.** Specific information regarding procedures that are required or are available only in specific areas can be found at the end of the book. This book is limited to information considered essential in planning installations which are adequate and satisfactory for the many uses and conveniences of electric service. If the total service requested is over 200 Amps, contact the Company

1.2 Service Contracts, Terms and Conditions

The following documents are not included in the Service Standards:

- (1) Service Regulations (or Terms and Conditions) which prescribe the rules, obligations, and liabilities of the Company in providing service and the Customer in receiving electric service;
- (2) Rate Schedules (or tariffs) which set forth the price, periods of taking, and payment terms for electric service;
- (3) Service Agreements wherein the Customer and the Company agree to specific quantities and type of service.

The Company's currently approved Service Regulations, Rate Schedules, Service Agreements, and other forms are available by contacting the Company. The Customer should contact the Company early in the design phase of a project for information concerning the terms and conditions of service.

1.3 Service Standards Availability and Revisions

The 2008 Edition Service Standards are issued in an electronic format on the Entergy web page. To get there go to www.entergy.com. Under "for customers" click on your State. On your State webpage, under "your business", click on Builder Information. Another important reference is the Power Quality Standards for Electric Service which is at the same location on the Entergy web page.

These Service Standards will be revised from time to time as new methods and improved equipment become available. This book may be re-issued or updated on January 1 every year. Changes of policy made after the publication date, will be in effect despite the fact that they will not be in the document. These changes of policy will be available upon request. If the issue date is not the current year, contact the Company or go to the website to determine if yours is the current edition or to obtain supplementary information. To acquire the Service Standards in a book go to the website or contact the Company.

1.4 How to Interpret and Apply the Standards

When reading the standard, check out the key words (verbs):

Shall: Any rule using the word “shall” is strictly enforced. If the rule or drawing shows a reference to the NEC or the NESC, then the rule is a requirement of that particular code. If the rule or drawing doesn’t have a code reference, then it is an Entergy rule that exceeds the minimum requirements of the NEC or NESC.

Should: Any rule using “should” carries the idea that options exist, but that the rule contains the best engineering expertise as written. This rule could be less strictly enforced than the “shall” rule.

Recommend: Any rule using “recommend” has several options, but the Company would like for the Customer to use the one given. “Recommend” is never used where safety is an issue.

May: Any rule using “may” is allowed by the Company. It’s the Customer’s option.

1.5 General Terms Used in Service Standards

Agreement for Service: See "Application".

Application (or Agreement for Service or Contract): The agreement between the Company and the Customer under which service is taken. Until a written agreement for service has been signed, service rendered by the Company is subject to the provisions of the Company's Service Regulations and applicable rate schedule. The provisions of the Company's standard application for service will be presumed to apply. The supplying and taking of such service shall constitute an Agreement for Service.

Authorities (having jurisdiction) (AHJ): The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure. The basic role of an AHJ is to verify that an installation complies with the National Electric Code.

Company: Entergy Corporation, its operating subsidiaries, officers, agents or employees.

Company Designated Underground Areas: Those portions of the Company's service area, defined by the Company, where overhead service is not available. This includes concentrations of commercial buildings with large loads that are not practical to serve with overhead facilities.

1.5 General Terms Used in Service Standards - Continued

Company's Installation: In general, all the wires, devices, or apparatus on the Company's side of the point of delivery. Some equipment, such as devices installed for metering electric consumption or for demand side management, may belong to the Company, yet be installed on Customer's side of the point of delivery.

Company Pole: Includes Company owned poles and poles occupied by the Company under joint use agreements.

Company Specifications: The particular details developed by the Company as its standard, which may include specifications of manufacturers and regulatory bodies having jurisdiction.

Conduit System: Any combination of duct, conduit, conduits, manholes, handholds, and vaults joined to form an integrated whole.

Contract: See "Application".

Customer: An individual, firm, partnership, association, corporation, organization, or governmental agency who is taking service as defined by regulatory authorities.

Customer's Installation: In general, all the wires, appliances, devices or apparatus of any kind or character on the Customer's side of the point of delivery except the meters, metering devices and facilities of the Company that may be located on the Customer's side of the point of delivery. The Customer's wiring and electrical equipment within or on the premises shall be installed and maintained in accordance with all effective building and wiring codes, and local laws and ordinances.

Demand: The kW or kVA, as shown or computed from the readings of the Company's demand meter installation, for the interval of the Customer's greatest use between readings. (This is also known as maximum demand.)

Easement: An interest in land owned by another that entitles its holder to a specific limited use (The Company's right-of-way is an easement.)

Electric Service: See "Service".

Emergency Service: An additional, separate service, when required by regulatory authorities, for exit or emergency lighting, fire pumps, or to satisfy other safety regulations.

Inaccessible Area: Any area, as designated by Company, which would be difficult to enter for the purpose of conducting normal or emergency operations or maintenance.

1.5 General Terms Used in Service Standards - Continued

Load: The amount of electric power delivered or required at any specified point or points on a system.

Mandatory Rules: The rules of the Service Standards which are characterized by the use of the word "shall."

Meter: A device or devices together with auxiliary equipment used for measuring any of the following: apparent, real, and reactive power and/or energy, which are supplied to any Customer at a single point of delivery.

Mobile Home or Trailer Park: A continuous parcel of land that is used for the accommodation of five or more occupied mobile homes or trailers with individually metered service and its accessory buildings or structures for the exclusive use of its occupants or owners. A parcel is a unit of land under unified ownership (with or without buildings).

National Electrical Code (NEC): The code adopted by the National Fire Protection Association, Inc (NFPA) and American National Standards Institute (ANSI) as advisory information on the installation of electric facilities on private property. It is offered for the use in law and regulatory purposes in the interest of life and property protection.

National Electrical Safety Code (NESC): The code adopted by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and the American National Standards Institute (ANSI) in order to bring consistency and safety to the design, construction, operation and use of electric supply and communications installations.

Network Areas: Those designated portions of the Company's service area which include concentrations of commercial buildings, and which are typically supplied by a secondary network underground distribution system.

Point of Delivery: (also called "Point of Common Coupling) the physical location where the Customer's service terminals or wires are joined to the Company's facilities or such other point specifically designated by written agreement.

Power Quality Standard for Electric Service: This Standard describes the Power Quality requirements of Entergy. The Power Quality Standard for Electric Service is issued in an electronic format on the Entergy web page. This Standard can be accessed electronically at www.entergy.com. Under the link "for Customers" click on your State. On your State webpage, under "your business", click on Builder Information.

General Terms Used in Service Standards – Continued

Public Property: Property dedicated to public use such as streets, alleys, canals, roadways, and highways. This does not include schools, parks, public housing, gyms, playgrounds, public buildings, etc., which are considered Customer premises.

Rigid Metal Conduit: A raceway specially constructed for the purpose of the pulling in or the withdrawing of wire or cable after the conduit is in place and made of metal pipe of standard weight and thickness permitting the cutting of standard threads.

Rigid Non-metallic Conduit: Gray polyvinyl chloride (PVC), schedule 80 or schedule 40, tube for enclosure of electrical wires and cables which includes associated equipment such as adapters, cable enclosures, couplings, junction boxes, pull boxes, etc., as required for a complete enclosure system. (Schedule 80 PVC shall be manufactured per NEMA TC-2 standard.)

Service (or Electric Service): The availability of electric power and energy to the Customer, regardless of whether any power and energy is actually used. Supplying of service by the Company consists of its maintaining at the point of delivery the approximate nominal voltage and frequency by means of facilities adequate for supplying the Customer's contracted load.

Service Conductors: The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied.

Service Drop: The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure.

Service Entrance: The Customer owned equipment for connecting to the service conductors or the service entrance conductors.

Service Entrance Conductors:

1. Overhead System: The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where it is joined by tap or splice to the service drop.
2. Underground System: The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

Shall: The highest degree of requirement, no other options exist when shall is used. (Also see 1.4)

Type of Service: The electrical or physical attributes of the service such as voltage, phase, frequency, transformer connection, number of wires, overhead or underground installation, etc.

Underground Service: The underground cable installation which connects the Company's distribution system to the Customer's service entrance conductors, or to the line side lugs of the meter socket.

1.6 Electrical Terms Used in Service Standards

Ampere: The unit of measurement of the rate of flow of electricity. It is the unit of current produced in a circuit by one volt acting through a resistance of one ohm.

Btu (British Thermal Unit): The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. Capacity of air conditioning, heating, or heat content of fuel, etc. is measured in Btu. Btu/h is the rate of heat change - Btu per hour.

Current: The rate of flow of electricity usually measured in amperes. The Company supplies alternating current (AC) and will not supply direct current (DC).

Energy: The total work done as distinguished from the rate of doing work (power), usually measured in kilowatt-hours. Its amount depends upon the power and the time that the power is taken. For instance, a power rate of one kilowatt maintained for one hour is one kilowatt-hour of energy.

Hertz: Unit of frequency in Cycles per second For example, the Company furnishes 60 Hertz alternating current.

Horsepower: A unit of power, equal to a rate of 33,000 foot pounds of work per minute. Motors are normally rated in horsepower to indicate the mechanical power they are designed to produce. One horsepower equals 746 watts. Motors require 746 watts input, plus losses, for each horsepower output.

Kilovolt-ampere: (kVA) 1,000 volt amperes, the unit of apparent power, volts times amperes, which is comprised of both real and reactive power.

Kilowatt: (kW) 1,000 watts.

Kilowatt-hour: (kWh) A quantity of electrical energy - equal to 1000 watts used continuously for one hour, or 100 watts used continuously for ten hours, or some other equivalent.

Number of Phases: See "Phase".

Ohm: The unit of measurement of electrical resistance or impedance. It is that resistance through which one volt will produce a current of one ampere.

1.6 Electrical Terms Used in Service Standards - Continued

Phase (or Number of Phases): Term which designates characteristics of alternating current. It is a term used in the electric industry relating to the characteristics of the electrical service available or supplied at a given location or required for the operation of a given electrical device. Single phase is normally supplied for residences and small power Customers and three phase is supplied for larger power Customers.

Power: The time rate of doing work, generating, transferring, or using electric energy, usually expressed in kilowatts (kW).

Power Factor: The ratio of real power (kW) to apparent power (kVA) for any given load and time. Normally, power factor is expressed as a ratio and stated as a percentage.

Reactive-kilovolt-amperes: (kVAR) (rkVA) (kilovar) The product of the applied voltage and the magnetizing or charging current, divided by 1,000. Reactive-kilovolt-amperes do no work but must be supplied to magnetic equipment, such as motors. Generators or capacitors supply it.

Sag (Voltage sag): A decrease in RMS voltage at the power frequency for duration of 0.5 cycles to 1 minute. Typical values are 0.1 to 0.9 per unit.

Volt / Voltage: A unit of electrical pressure or potential or electromotive force which if applied to a load of one ohm resistance will cause a current of one ampere to flow. Primary distribution and transmission voltages are usually designated in kilovolts (kV). One kilovolt is equal to 1,000 volts.

Watt: An electrical unit of power. Electrical appliances and lamps are rated in watts to indicate their capacity or rate of using power for doing work. A 100 watt lamp used 10 hours will use one kilowatt-hour (kWh) of energy (1,000 watt-hours). Likewise a household iron rated at 1,000 watts will use one kilowatt-hour in one hour.

Section 2 Safety: Customer's Service Obligations and Protection

2.1 Safety

Safety is paramount. If the Company believes, based upon observation, information or experience that danger to the public or to an individual exists, work shall stop until such danger is remedied.

2.2 Code Requirements

The data contained herein is intended to conform with and be supplementary to recognized codes or rules and regulations of the authority having jurisdiction over the installation. In all cases, those codes or rules and regulations shall govern, regardless of possible conflict in the expressed or implied meaning of the contents of this book. The contents are intended to be consistent with the principles of the NEC on the Customer's side of service and generally consistent with the NESC on the Company side. Compliance with the minimum requirements of the NEC will provide the Customer with what is considered a minimum standard for appropriate use of electricity. **Any difference from the NEC is intended to provide better service than required by the minimum standards of the Code.**

2.3 Distance Requirements for Customer Structures

The construction of any structure near, under or over electrical facilities may cause a code and / or safety violation and be an encroachment on Company right of way. Consult the Company concerning all clearances

Permanent or temporary structures shall never be located within 10 feet (measured horizontally) of the Company's aboveground electrical facilities.

The Company will not allow the placement of electrical service near, over or under a pool nor permit the construction of a pool over or under electrical facilities. (also see drawings **SS7.2.1** (Overhead) and **SS8.6.6** (Underground) and Consult the Company).

2.4 Working in Close Proximity to the Company's Facilities

Customers should use extreme caution to avoid contact when working in the proximity of the Company's overhead or underground conductors or other electric facilities to prevent injury and to prevent damage to either the Company's or the Customer's equipment. **State Law prohibits unauthorized persons from working, including moving equipment, within ten feet of any high voltage overhead electric utility line.**

If any unauthorized person intends to work within 10 feet of any high voltage overhead line, the person responsible for the work to be done must notify the owner or operator of the high voltage overhead electric utility line not less than forty-eight hours prior to commencing work. Please note Transmission level voltage require greater clearance.

2.4 Working in Close Proximity to the Company's Facilities (cont.)

Work shall be performed only after satisfactory mutual arrangements have been completed between the owner or operator of the high voltage overhead electric utility line and the person responsible for the work to be done.

To notify Company that you intend to work within ten feet of a high voltage overhead electric utility line owned or operated by it, please call 1-800-ENTERGY (1-800-368-3749) not less than 48 hours prior to commencing work..

The Company shall be consulted for location of the Company's conductors and electrical facilities before operating equipment near the Company's facilities. In locations with underground facilities, the Customer shall notify One Call at 1-888-258-0808 not less than 48 hours prior to commencing work and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all electric facilities.

2.5 OSHA Working Requirements

OSHA (Title 29 of the Code of Federal Regulations, Section 1926.550 (a) (15)) requires that all operators of equipment maintain a minimum of 10 feet of radial clearance from energized electrical facilities. Please note Transmission level voltage require greater clearance.

2.6 Lightning and Other Surge Protection

Surge arrester protection by the Customer is not required for services under 600 Volts. With the proliferation of electronic home entertainment equipment and appliances, however, the Company suggests that the Customer consider installing surge protection. It shall be installed on the load side of the meter, and shall not be connected to the service drop conductors or to the service entrance conductors. The surge protection should be installed as closely as possible to the device to be protected.

Customers with services above 600 Volts should install surge arrestors. Consult the NEC Article 280, a licensed, professional engineer, or the manufacturer of protective equipment.

2.7 Public Sign Clearance

Clearances of signs from conductors shall meet or exceed the clearance requirements set forth in the National Electrical Safety Code. Article 234C.

2.8 Attachments to Company Poles

Attachments to Company poles are normally not allowed. Attachments may be made only with approval of the Company. If an attachment is allowed, an attachment agreement shall be signed, and the agreement will set forth any charges. All allowed attachments are to be made under the supervision and to the satisfaction of the Company. All allowed attachments shall be made in accordance with the specifications of authorities having jurisdiction, where applicable. Consult the Company for details.

Section 3 Information for Providing Electric Service

3.1 Application for Service

A Customer may apply for service by contacting the Company by phone at 1-800-ENTERGY (1-800-368-3749).

(Note: Service rendered by the Company is subject to the provisions of the Company's Service Regulations and applicable rate schedule. The supplying and taking of such service shall constitute an Agreement for Service if no written agreement for service or application for service has been executed.)

3.2 Pre-Installation Information

The Company can expedite service connection and minimize cost to both the Customer and the Company if the Customer consults the Company before the design phase of the installation has begun. Architects, Builders, Contractors, Developers, Engineers, Electricians, or Owners are urged to consult the Company for information regarding the availability and type of service, and location of the service drop, service entrance, and meter. The Company is not responsible for the cost of replacing any of the Customer's facilities that do not meet the requirements for service. Connection to the Company's electric system is not available prior to approval by the Company. The approval process may include the acquisition of permits and/or inspections by the authorities having jurisdiction.

3.3 Alterations to Existing Service

The Company's facilities, including meters, transformers, and other equipment, are sized and installed to satisfy the Customer's requirements at the time the service is initiated and is based on information supplied by the Customer. Consulting with the Company regarding any change in the Customer's requirements is recommended. It is essential that the Customer give notice to the Company of any substantial additional load (e.g., a large motor) that is to be connected to the electric system. The Customer should not proceed to make these additions until after the Company has notified them that it can either supply the increased load or the conditions under which the increased load can be served. The Company is not liable for any damages incurred by the Customer connecting additional equipment without notice to the Company. Under no circumstances shall any service drop wire, meter or metering equipment belonging to the Company be disconnected, removed, or relocated unless authorized by the Company. This authorization requires advance notification. The Company may require the replacement of the Customer's obsolete equipment at the service entrance or relocation of the service entrance to a more accessible area prior to providing the requested service.

The construction of pools, decks, fences or any structure near, under or over electrical facilities may cause a code and / or safety violation and be an encroachment on Company right of way. Consult the Company concerning all clearances.

3.4 Required Information for New Service or Alteration to Service

The Customer **shall** furnish the following information to Company for any new service, or alterations to existing service, desired by the Customer:

1. Exact location(s) of premises, including street address if available, where service is desired.
2. 911 address if different than street address
[Note: 911 address or other address if no 911 address is available shall be posted near the location where the meter is to be installed.]
3. If location is new, with no established address, have street or road name and good directions to service location.
4. Name of city if service location is within an incorporated city limits.
5. Billing address and name.
6. Home phone, work phone and mobile phone if applicable.
7. Permitting requirements, if any
8. Type of service (including service voltage), equipment rating, and amount of electrical load to be installed.
9. Total motor load (to include size(s) of largest motor(s), starting current(s), NEMA letter or code) and rated voltage.
10. General characteristics of equipment to be driven by motors.
11. Date new electric service or alterations to existing service are needed.
12. Desired point of delivery or service entrance location. (Sketch may be required.)

(Note: For residential applications the Customer will be asked to provide both his or her social security number and the place of employment, as well as the social security number and place of employment of their spouse or roommate.)

Upon receipt of the above information, the Company will advise the Customer as promptly as possible concerning installation or modification of the Customer's electric service.

The Customer shall install and maintain the Customer's wiring and electrical equipment within or on the premises, in accordance with building and wiring codes, laws and local ordinances that are in effect.

The Company reserves the right to refuse to connect its service if the Customer's installation does not meet either

- The Company's requirements,
- Codes or
- rules and regulations of the authority having jurisdiction over the installation.

The Company will not be responsible, in any way, for any defect in the Customer's wiring, equipment, or for damages that may result from such defects. (Note: The Company may refuse service for other than technical reasons.)

The Company (or the Company's contractor) shall make the connection at the point of delivery. In special cases the Company may authorize the Customer's contractor to make this connection. This authorization shall be obtained before any connections are made directly to the electric system. This requirement does not preclude the Customer's contractor or electrician from installing meter

sockets, metering transformers, or other equipment when furnished by the Company.

3.5 Connection of Service

3.5.1 General Comments

The Company desires to provide connection of service in conformation with the Customer's request. Timeliness of connection may depend on the Customer being present when the Company representative is at the site. The procedures for energizing the service are explained in the following paragraphs.

3.5.2 Residential Self-Contained Meters

The Customer should contact the Company to schedule an appointment for the connection of the service and be on the premises if possible. If the Customer is not on the premises, the service may not be energized. If an outside main breaker or disconnect switch is available, the switch shall be placed in the "off" position and the meter installed. The switch shall be left in the "off" position and the Customer would then be responsible for putting the switch in the "on" position.

3.5.3 Commercial and Industrial Self-Contained Meters and All Three Phase Services & Single Phase Transformer Rated Services

It is recommended that the Customer or the Customer's representative be present for energizing commercial and industrial self-contained meters and all three phase services and single phase transformer rated services. If the Customer is not on the premises and if an outside main breaker or disconnect switch is available, the switch will be placed in the "off" position and the meter installed. The switch will be left in the "off" position and the Customer shall be responsible for putting the switch in the "on" position. For self-contained metered service, if no breaker or disconnect is available, the meter will not be installed. For transformer rated metered service, if no breaker or disconnect is available, the Company will not energize the service drop. The Customer should then contact the Company to schedule an appointment for the connection of the service.

Section 4 Types of Service

4.1 General Characteristics

The electric service furnished by the Company is 60 Hertz alternating current, single and three phase.

4.2 Generally Available Types of Service

The type of service (number of wires, phase, and voltage) furnished by the Company depends on two factors

1. the voltage available near the service location and
2. the type of service which in the Company's judgment can most economically be made available to serve the nature, size, and location of the Customer's requirements.

The voltages and number of phases generally furnished are listed in Table 4.2-1 by nominal service voltages. However, a particular type of service may or may not be available at a given location. Therefore, during the Customer's design phase, the Company shall be consulted for availability and terms and conditions regarding the type of service desired.

Table 4.2-1. Generally Available Standard Transformations of Electric Service

	Types of Service	Typical Loads Served
1.	1 phase - 120/240 volts – 3 wire	Residential and other small loads
2.	3 phase delta - 120/240 volts - 4 wire (Consult Company for availability on 35 kV systems.)	Loads with both single and three phase requirements not exceeding 1,000 kVA <ul style="list-style-type: none"> • Open delta - For small three phase loads normally 40-60Hp max • Closed delta - Single phase load shall be 20% or less of total for loads between 300 and 1,000 kVA
3.	3 phase wye - 120/208 volts - 4 wire	Three phase loads from 50 kVA to 1,000 kVA
4.	3 phase wye - 277/480 volts - 4 wire	Loads between 100 kVA and 3,000 kVA
5.	3 phase wye - 2400/4160 volts - 4 wire	Contact Company for minimum load requirements
6	Service Voltages within Network grid systems	Refer to Section 8.8

Notes:

- For specific information on voltage transformations, consult the Company or the rate schedules. Refer to Table 5.4-2 for allowable motor sizes for various voltages.
- Items 1-4 are further described in NEC250.20B
- Five wire service is prohibited (NEC250.20 & NEC250.24). The neutral must be grounded at the meter enclosure or for multiple services as shown in the drawings in this book.

Table 4.2-1 does not include all types of service available. The Company also offers electric service at primary distribution voltages and at transmission voltages. Normally, the voltages offered at a given location are restricted to readily available voltages. Contact the Company for further information on the availability of all

distribution voltages not listed in Table 4.2-1 and for availability of all transmission voltages.

4.3 Availability of Three Phase Service

It is the Company's policy to allow the Customer the widest selection of service types consistent with sound operation and with the type of service desired to best suit the electrical requirements. However, there are locations in the Company's service area where, for practical considerations, the selection must be limited. The Company has many areas in which three-phase facilities are not available. In these areas, the Customer may be required to pay the incremental cost of providing three-phase service. The cost of providing such facilities may be prohibitive in relation to the value of three-phase service to the Customer. Therefore, the Customer should contact the Company to determine if any charges are associated with the desired service prior to making any decision concerning the purchase of electrical equipment.

4.4 Facilities for Highly Fluctuating or Special Loads

The Company normally provides facilities adequate to serve reasonably stable loads. Highly fluctuating loads such as welders, X-ray machines, and motors with unusual or frequent starting requirements, may cause the facilities normally provided to be inadequate. Highly fluctuating loads may interfere with other Customers' electric service. In some instances, the most practical solution to these problems may be the installation of additional facilities to serve the Customer. Should the Company need to install such additional facilities, the Customer will be required to pay for them. Consult the Standard for Electric Service (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.)

4.5 Temporary Service

The Company provides many types and classes of temporary service that may be available at the location for construction work, traveling shows, etc. The Customer shall provide adequate protective devices for all temporary services. Customer installed poles to be used for temporary service shall be treated. Overhead temporary service poles are typically set no more than 75 feet from the nearest Company pole. See [Drawing SS4.5-1](#) for a typical structure for temporary service from an overhead source. See [Drawing SS4.5-2](#) for a typical structure for temporary service from an underground source. The Company will specify the temporary service pole location for either overhead or underground service. Specific terms and conditions under which temporary service will be provided may be obtained from the Company. When air conditioned or electrically heated construction trailers are to be served please see Section 4.6 below or consult the Company.

4.6 Services for Individually Located Mobile Homes and Travel Trailers

Requirements for electrical service for individually located mobile homes and travel trailers differ from other types of service. Provisions shall be made for connecting a mobile home feeder assembly by a permanent wiring method. Customer feeder conductors shall consist of either a factory-installed listed cord or a permanently installed feeder consisting of four, insulated, color coded conductors (NEC 550-33). For information on the location of meter service, see **Drawing SS4.6-2** and **Drawing SS4.6-4**.

For mobile homes installed in locations other than in a mobile home park, see **Drawing SS4.6-1** and **Drawing SS4.6-2** for a typical meter service installation from an overhead source and **Drawing SS4.6-3** and **Drawing 4.6-4** for a typical meter service installation from an underground source.

4.7 Services for Mobile Home Parks

Mobil Home Parks are five or more mobile homes or trailers and accessory buildings on a continuous parcel of land used by its occupants or owners. These parks shall be served at a common point as shown in drawings SS4.7-1, SS4.7-2 and SS4.7-3. The park management shall be responsible for running service from the disconnect beyond the 120/240 volt Entergy meter to the individual trailers.

On overhead service from Entergy, Entergy shall have exclusive use of the pole where the point of common connection is. Entergy recommends the Park use underground feeders to individual trailers to avoid the hazards of tall trailers contacting electric lines. If the Park wishes to distribute the electricity overhead it must use a separate pole from the Entergy feed pole. Consult the NEC for overhead clearances and underground construction on Customer owned lines.

4.8 Central Service Poles or Load Center Distribution Pole for a Farmstead

For farm and other Customers who have two or more points of utilization at contiguous locations and where it is more practicable to deliver service at a central service pole on the Customer's property than at a building, the Company will deliver service under the following conditions:

1. Central service pole will be installed, owned, and maintained by the Customer. Refer to. Drawing SS4.8-1.
2. No foreign objects such as television masts, bird boxes, etc. will be allowed on the pole.
3. The Company will connect its service wires to the Customer's service entrance conductors on the central pole, this point of connection being the point of delivery of service.
4. Customer will install service entrance (or meter loop) and fused switch or circuit breaker (all to be owned by the Customer) on central service pole.
5. The wires extending from the central service pole to the Customer's buildings or points of utilization will be a part of the Customer's installation and will be installed and maintained by the Customer.

4.9 Apartment Building Service

Where apartment buildings are contemplated, the Company should be contacted before plans are drawn, in order that adequate service can be made available to the prospective tenants.

4.10 Vertical Distribution System

The Company will not install, own or maintain a vertical distribution system in multi-story buildings. Consult the Company.

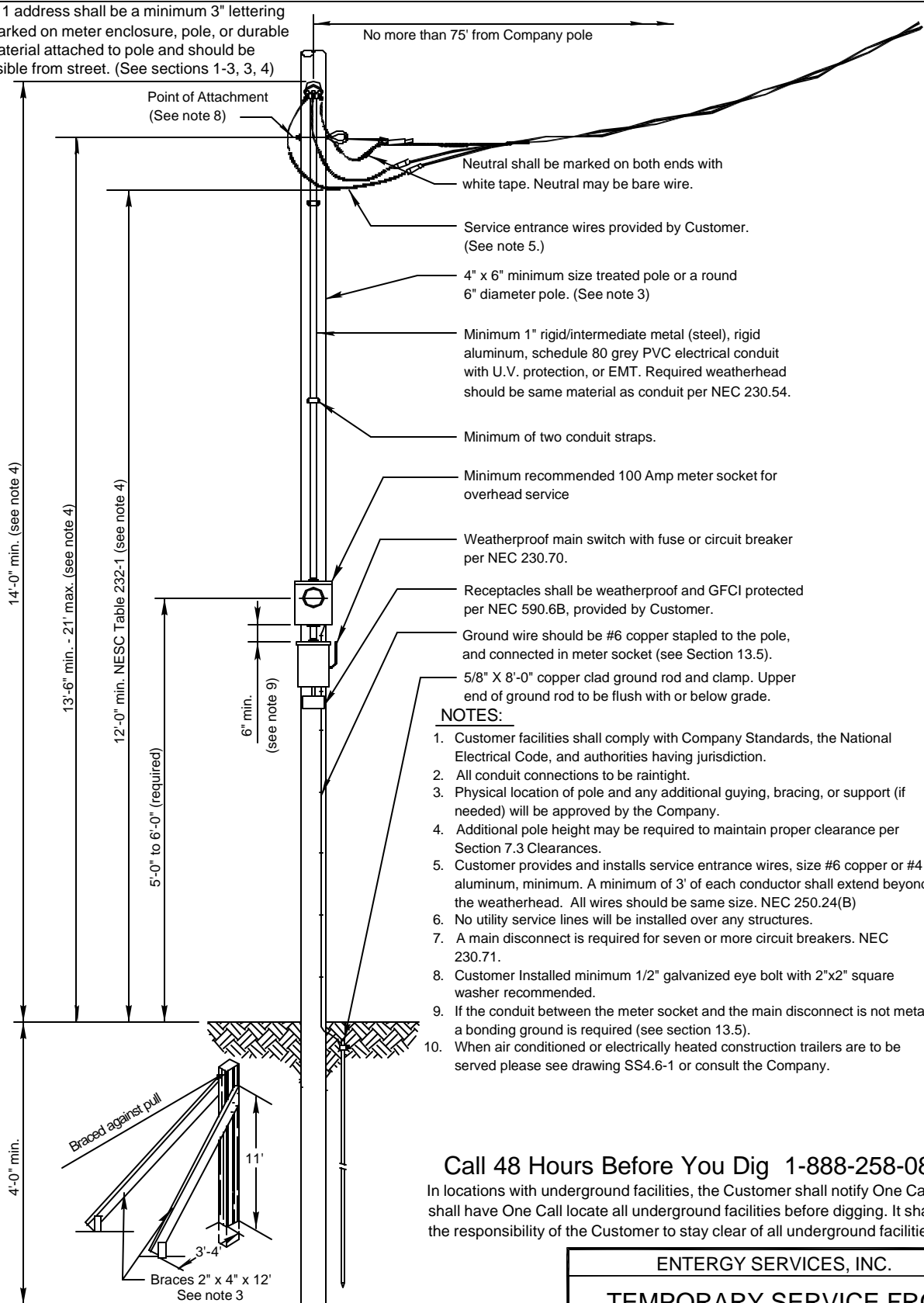
4.11 Service to Marinas and Boat Docks

The Company will provide electric service to marinas and boat docks. These electric services shall terminate at a point above the expected high water level on land designated by the Company. The height of the meter may be increased to accommodate flood plains. At all times Customer shall furnish a permanent four foot by four foot platform five to six feet below the center of the meter with permanent railings and stairs leading up to it. Consult the Company for the exact location and other details. A disconnect switch shall be installed at the point of delivery. All underground served installations will have a junction box before the disconnect as the point of delivery (see Section 8.7.1). With the exception of the meters, the Customer shall own, install, and maintain all facilities beginning at the point of delivery. Meters will be owned by the Company but may be installed near each boat slip. The Customer's facilities shall meet all requirements in NEC Article 555 and any other referenced code.

4.12 Buildings Built over Water

The Company will provide electric service to buildings built over water terminating at a location on land that will be designated by the Company. The height of the meter may be increased to accommodate flood plains. At all times Customer shall furnish a permanent four foot by four foot platform, five to six feet below the center of the meter with permanent stairs leading to it and with permanent rails around the platform and steps. Consult the Company for the exact location and other details. As a minimum, the point will be located above the 100-year flood plain elevation. A disconnect switch shall be installed at the point of delivery. All underground served installations will have a junction box before the disconnect as the point of delivery (see Section 8.7.1). With the exception of the meters, the Customer shall own, install, and maintain all facilities beginning at the point of delivery. The Company will own the meters. The Customer's facilities shall meet all requirements in NEC and any other referenced code.

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. All conduit connections to be raintight.
3. Physical location of pole and any additional guying, bracing, or support (if needed) will be approved by the Company.
4. Additional pole height may be required to maintain proper clearance per Section 7.3 Clearances.
5. Customer provides and installs service entrance wires, size #6 copper or #4 aluminum, minimum. A minimum of 3' of each conductor shall extend beyond the weatherhead. All wires should be same size. NEC 250.24(B)
6. No utility service lines will be installed over any structures.
7. A main disconnect is required for seven or more circuit breakers. NEC 230.71.
8. Customer Installed minimum 1/2" galvanized eye bolt with 2"x2" square washer recommended.
9. If the conduit between the meter socket and the main disconnect is not metal, a bonding ground is required (see section 13.5).
10. When air conditioned or electrically heated construction trailers are to be served please see drawing SS4.6-1 or consult the Company.

Call 48 Hours Before You Dig 1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENERGY SERVICES, INC.

TEMPORARY SERVICE FROM AN OVERHEAD SOURCE

APPROVED BY: JDS DATE: April 1998

CHECKED BY: LKE SCALE: None

DRAWN BY: WINK-AJC

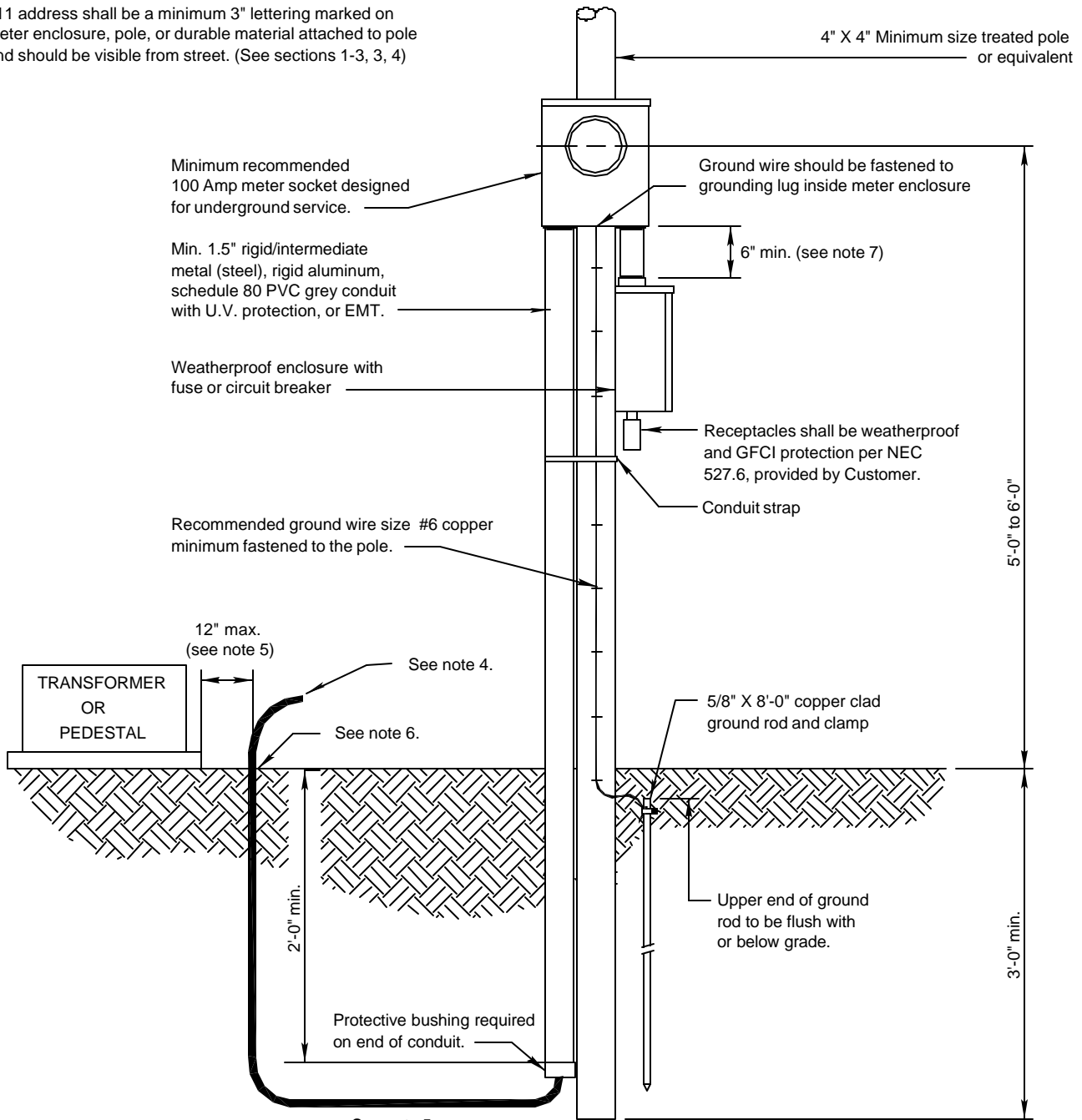


No. SS4.5-1

PLOT 1=1 SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:
5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Customer provides minimum wire size of #6 copper or #4 aluminum.
3. All conduit connections to be weatherproof.
4. Service wire suitable for direct burial to be furnished, installed and maintained by Customer. Customer to tail out enough service wire to reach inside of pedestal or transformer.
5. Customer to trench to within 12" of pedestal or transformer. **Minimum** depth of trench 24".
6. Location of Customer's underground cables shall be visibly marked by Customer prior to Company energizing service.
7. If the conduit between the meter socket and the main disconnect is not metal, a bonding ground is required (see section 13.5).
8. When air conditioned or electrically heated construction trailers are to be served, please see drawing SS4.6-3 or consult the Company.

**Call 48 Hours Before You Dig
1-888-258-0808**

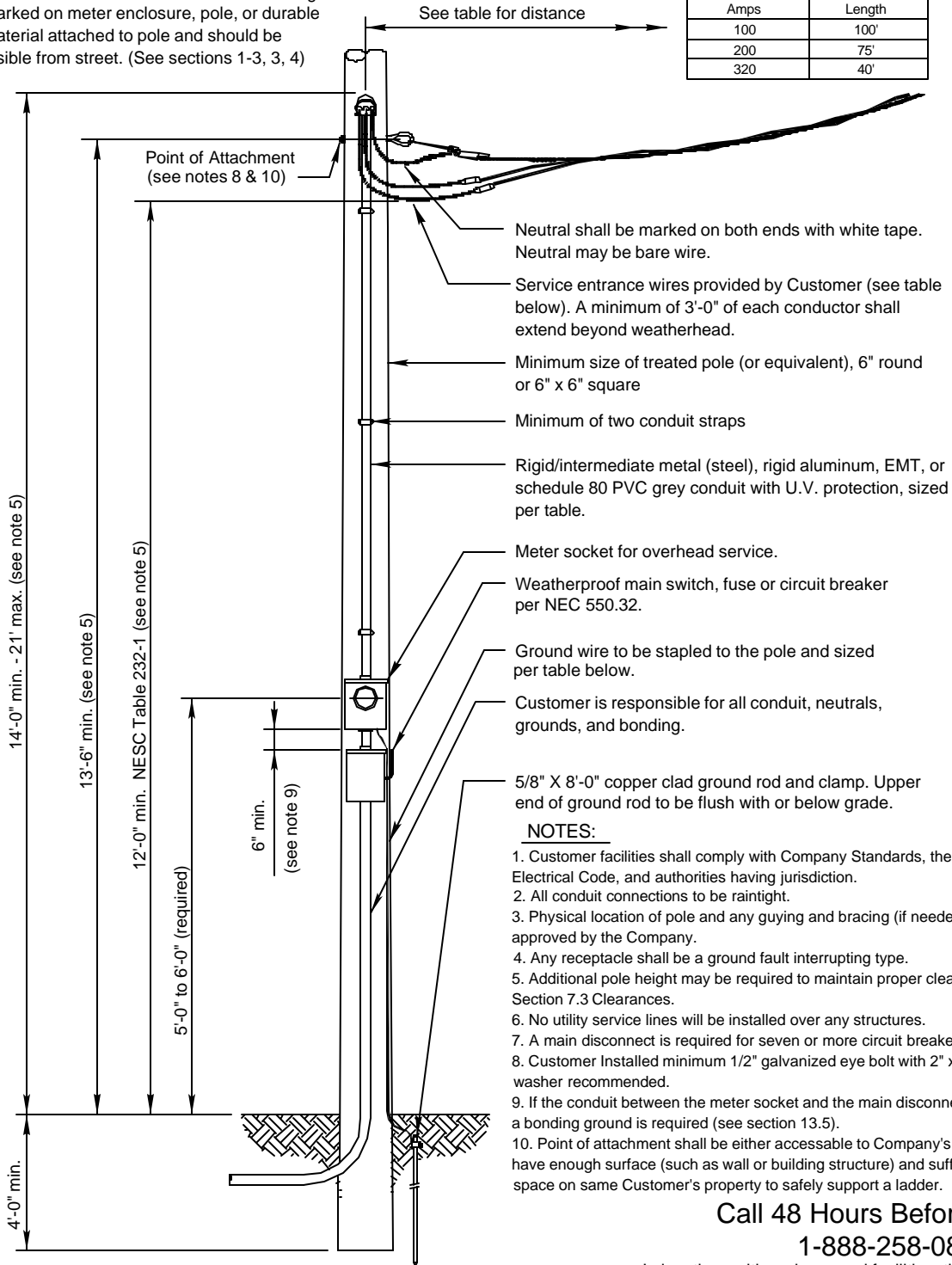
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
TEMPORARY SERVICE FROM AN UNDERGROUND SOURCE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: None
DRAWN BY: WINK-AJC	
No. SS4.5-2	
PLOT 1=1 SH. 1 OF 1	

4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'



- NOTES:**
1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
 2. All conduit connections to be raintight.
 3. Physical location of pole and any guying and bracing (if needed) will be approved by the Company.
 4. Any receptacle shall be a ground fault interrupting type.
 5. Additional pole height may be required to maintain proper clearance per Section 7.3 Clearances.
 6. No utility service lines will be installed over any structures.
 7. A main disconnect is required for seven or more circuit breakers. NEC 230.71.
 8. Customer Installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended.
 9. If the conduit between the meter socket and the main disconnect is not metal, a bonding ground is required (see section 13.5).
 10. Point of attachment shall be either accessible to Company's bucket truck or have enough surface (such as wall or building structure) and sufficient ground space on same Customer's property to safely support a ladder.

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	1.5"	#2	#4	#6 *
200 Amp	2"	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

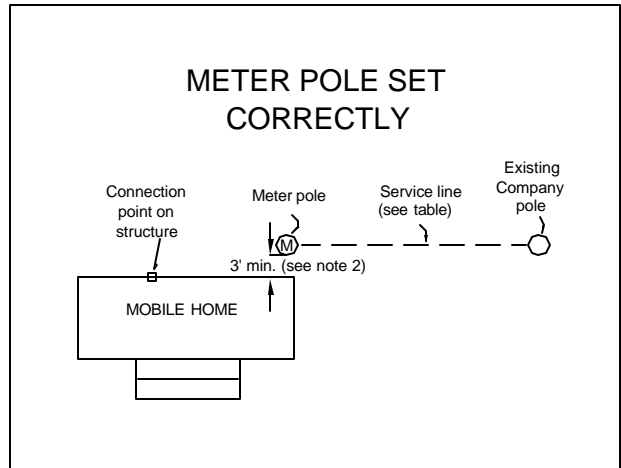
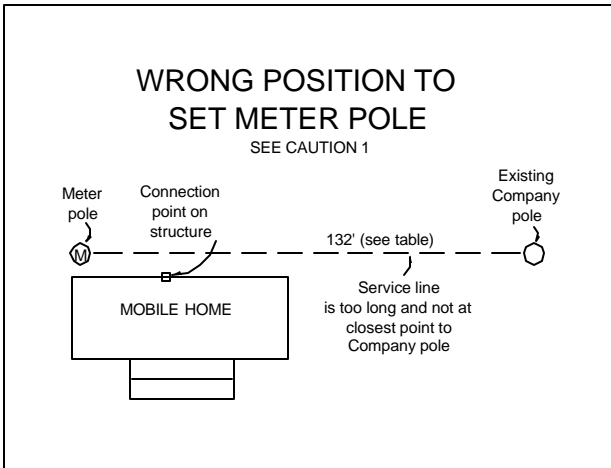
See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire

* Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)

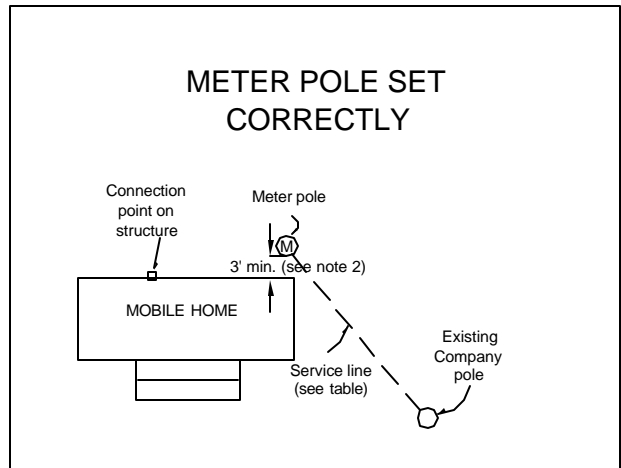
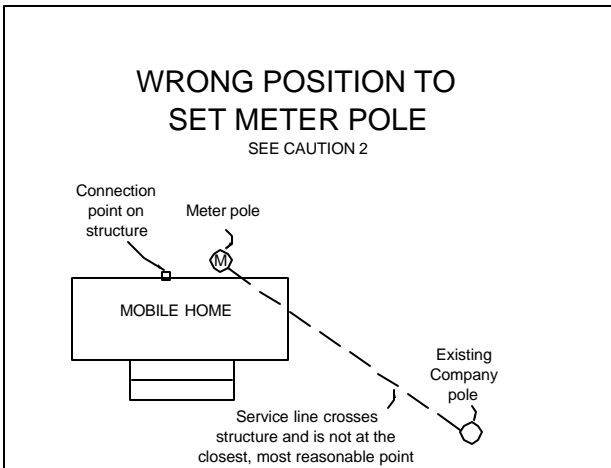
** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

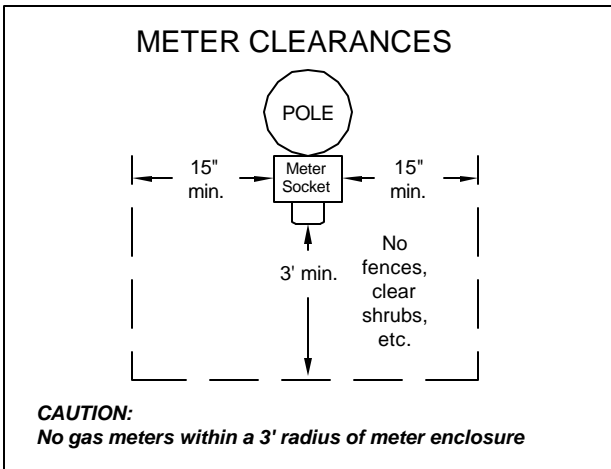
ENTERGY SERVICES, INC.			
SERVICE TO PERMANENT LOCATION FROM AN OVERHEAD SOURCE			
APPROVED BY:	JDS	DATE:	APRIL 1998
CHECKED BY:	LKE	SCALE:	None
DRAWN BY:	WINK-AJC		
		No.	SS4.6-1
PLOT	1=1	SH.	1 OF 1



CAUTION 2: When placing the meter pole, remember the Company service cable can not go over the top of the mobile home. If there is not a clear path to the meter pole, this will require the Company to install an additional pole. This may involve additional cost, (typically \$500 or more) to the Customer.



CAUTION 1: See table for maximum recommended distance. Longer lengths may require Company to install an additional pole. This may involve additional costs (typically \$500 or more) to the Customer.



Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

Notes:

- Customer facilities shall comply with Company Standards, the NEC, and authorities having jurisdiction.
- Meter pole shall be more than 3' from the mobile home (see Drawing SS7.2-1 Meter Clearances).
- The Customer is responsible for clearing and maintaining all right of way.
- See table for maximum recommended distance of service.

3	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

ENTERGY SERVICES, INC.	
Overhead Service Details for Single Mobile Home Installation	
APPROVED BY: JRH	DATE: March 1999
CHECKED BY: LKE	SCALE: None
DRAWN BY: JR1	
No. SS4.6-2	
PLOT 1=1	SH. 1 OF 1

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

Meter socket designed for underground service.

Rigid/intermediate metal (steel), rigid aluminum, EMT, or schedule 80 PVC grey conduit with U.V. protection.

Weatherproof enclosure with fuse or circuit breaker

Ground wire to be fastened to the pole and sized per table below.

Threaded coupling, adapter, or sleeve as appropriate (above ground)

6" max.

Protective bushing required on end of conduit unless complete conduit system is used.

2'-6" min.

36" Radius - Factory Bend (If PVC, sched. 80 required)

For location of pole consult the Company.

Minimum 6" round or 4" x 6" treated pole or equivalent

6" min. (see note 5)

Customer is responsible for wiring to the meter, all conduit, neutrals, grounds, and bonding.

Conduit strap

5/8" X 8'-0" copper clad ground rod and clamp

Upper end of ground rod to be flush with or below grade.

5'-0" to 6'-0"

3'-0" min. pole depth

NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. All conduit connections to be raintight.
3. When installing conduit system, Customer shall extend conduit to pole or underground system. Consult the Company for details. (See drawings SS8.6-2 and SS8.6-3).
4. Location of underground cables shall be identified prior to digging.
5. If the conduit between the meter socket and the main disconnect is not metal, a bonding ground is required (see section 13.5).

Minimum Customer Wiring Size - Family Residence Single Phase

METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	2"	#2	#4	#6 *
200 Amp	2.5" ***	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire

* Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)

** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)

*** Arkansas locations only allows 2"

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

Call 48 Hours Before You Dig
1-888-258-0808

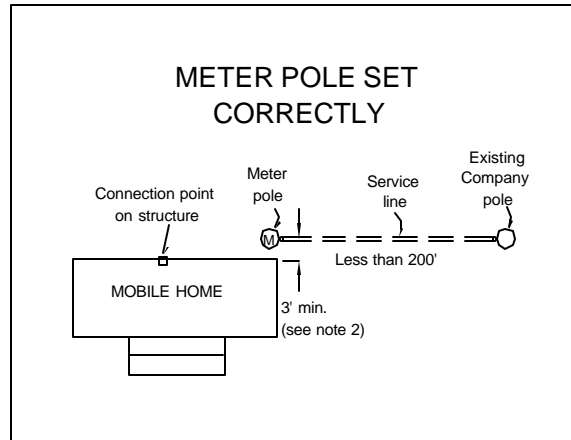
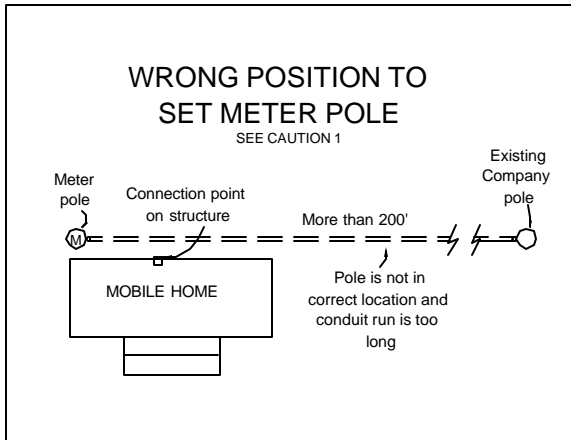
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.

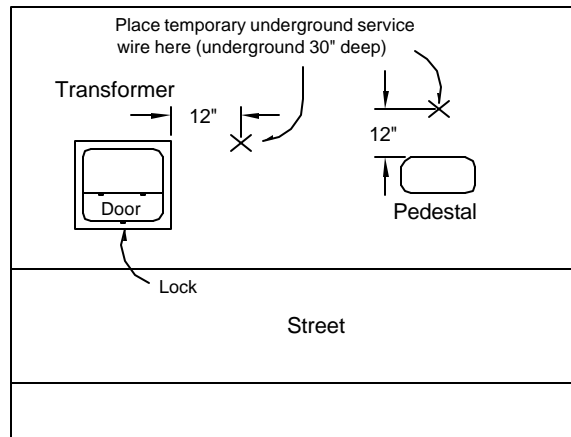
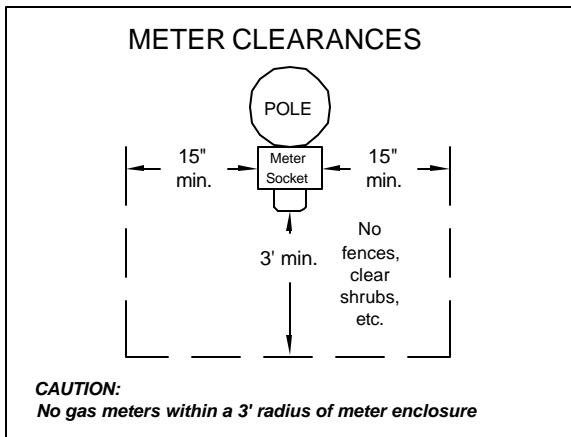
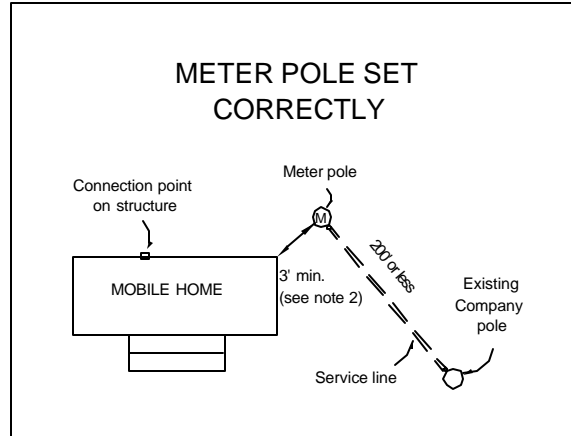
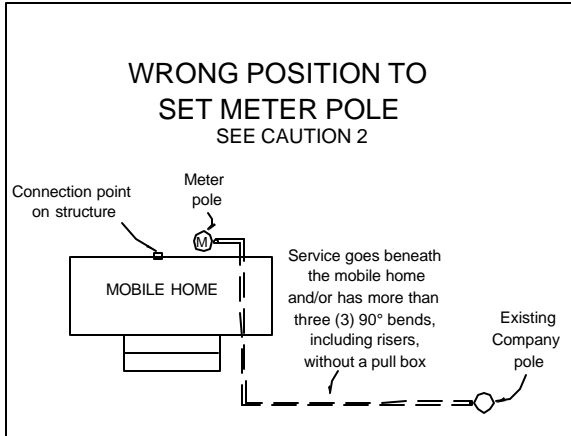
DETAILS FOR TYPICAL SINGLE PHASE UNDERGROUND SERVICE TO A MOBILE HOME

APPROVED BY: JDS	DATE: APRIL 1998
CHECKED BY: LKE	SCALE: 3/4"=1'-0"
DRAWN BY: WINK-AJC	
No. SS4.6-3	
PLOT 1=1	SH. 1 OF 1





CAUTION 1: Maximum length is 200'. For longer lengths contact the Company (see note 3). This may involve additional costs to the Customer.



CAUTION 2: For a conduit installation having more than three (3) 90° bends, including bends in conduit on meter pole and utility pole, an approved pull box may be required (see note 3). This may involve additional cost to the Customer. Company owned or maintained underground service shall not be installed beneath a mobile home or any other structure (see note 4).

Notes:

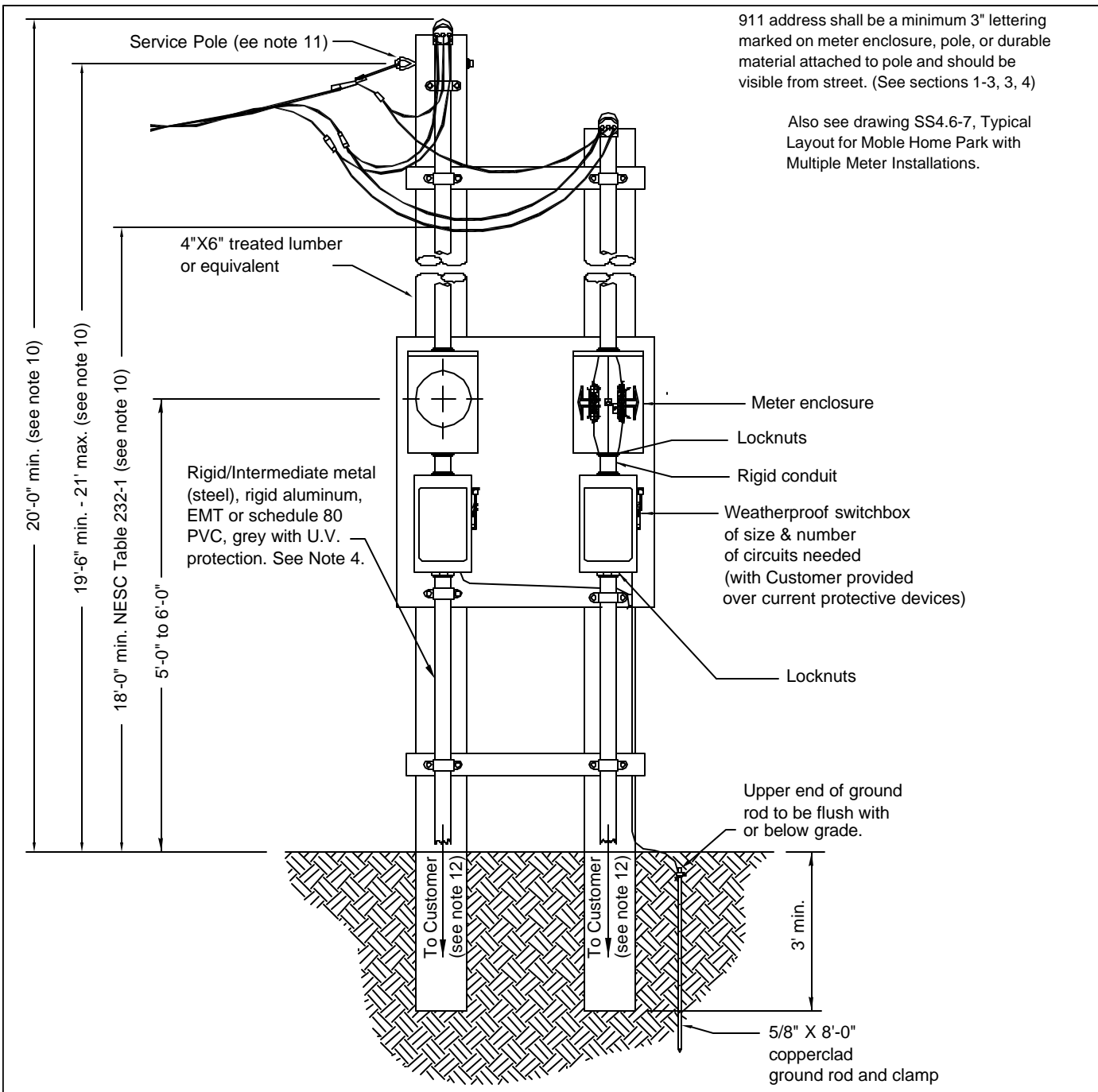
- Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
- Meter pole shall be more than 3' from the mobile home (see drawing SS8.6-6 Meter Clearances).
- It is recommended that the Customer contact the Company prior to the installation of the conduit system.
- Company owned or maintained underground service shall **not** be installed beneath a mobile home or any other structure.
- The Customer is responsible for clearing and maintaining all right of way.

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.			
Underground Service Details for Single Mobile Home Installation			
APPROVED BY:	JRH	DATE:	March 2002
CHECKED BY:	LKE	SCALE:	None
DRAWN BY:	DAT		
Entergy		No. SS4.6-4	
PLOT	1=1	SH.	1 OF 1

2	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT		
1	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT		
NO.	DATE:	REVISION	BY:	APPR:	



911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

Also see drawing SS4.6-7, Typical Layout for Mobile Home Park with Multiple Meter Installations.

Notes:

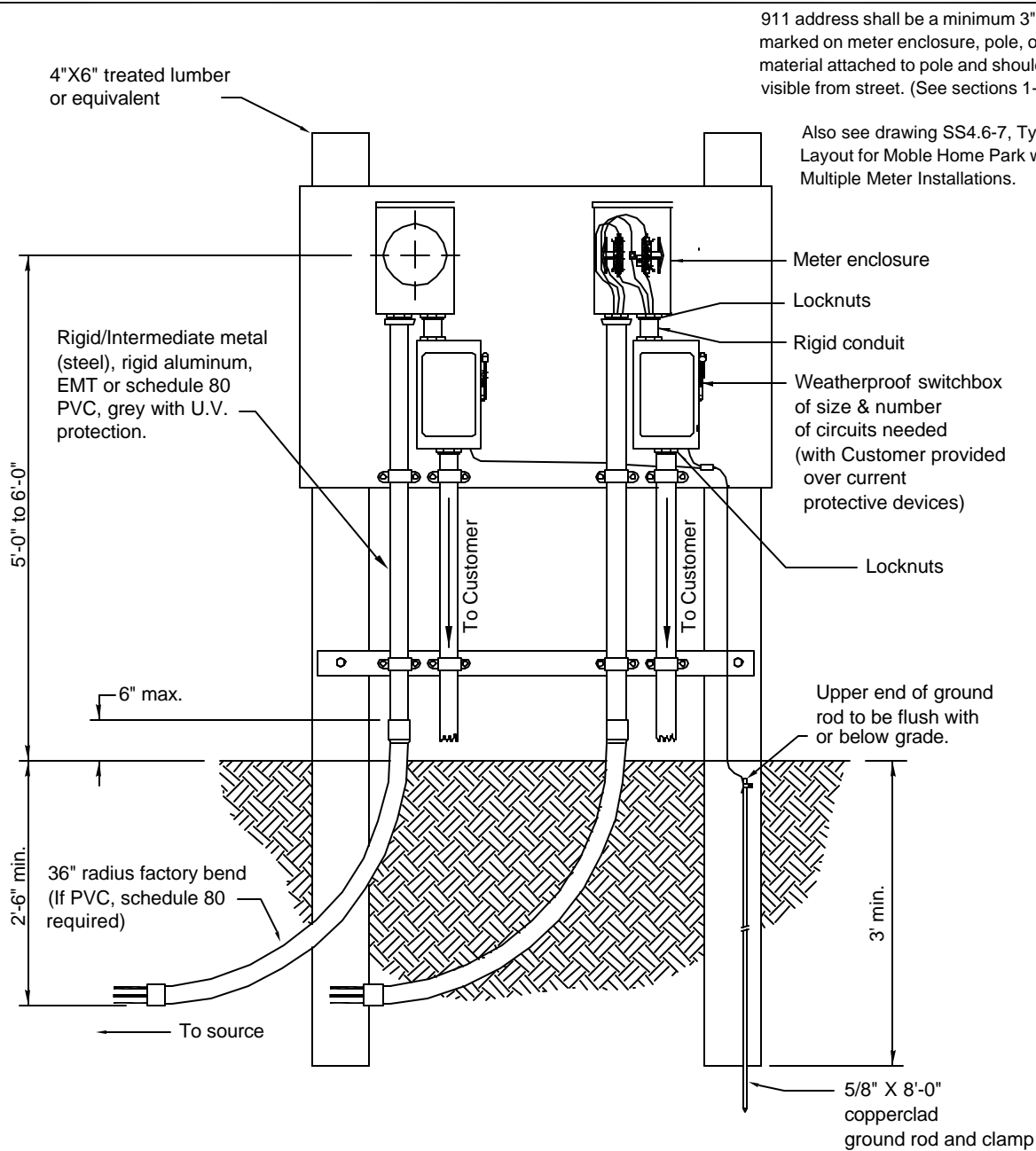
1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Size of conduit to be determined by the Company.
3. This installation applies to two (2) or more meters at one location. Maximum six (6) meters allowed per installation (3 per side).
4. See sections 5.6 and 8.9 for additional information on mobile home parks.
5. Each meter and disconnect shall be plainly marked to designate unit served.
6. The Customer shall install 80lb test non-metallic (manila or grass) pull line or bull tape in the conduit.
7. All material shall be suitable for outdoor use.
8. Equipment to be installed at a location designated by the Company.
9. If a current transformer (CT) installation is required, see SS11.8-3.
10. Additional pole height may be required to maintain proper clearance.
11. Customer Installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended. Service Pole for service wires from Company to meter only.
12. If Customer decides to distribute overhead, a separate pole from Service Pole shall be used.

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
Multiple Meter Installation For Mobile Home 120/240 Volt Overhead Service	
APPROVED BY: JRH	DATE: 10/30/06
CHECKED BY: JED	SCALE: NONE
DRAWN BY: dtaylo5	
No. SS4.7-1	
Entergy	PLOT 1=1 SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:



911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)


Also see drawing SS4.6-7, Typical Layout for Mobile Home Park with Multiple Meter Installations.

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Size of conduit to be determined by the Company.
3. This installation applies to two (2) or more meters at one location. Maximum six (6) meters allowed per installation (3 per side).
4. See sections 5.6 and 8.9 for additional information on mobile home parks.
5. If a current transformer (CT) installation is required, see SS11.8-3.
6. Each meter and disconnect shall be plainly marked to designate unit served.
7. The Customer shall install 80lb test non-metallic (manila or grass) pull line or bull tape in the conduit.
8. All material shall be suitable for outdoor use.
9. Equipment to be installed at a location designated by the Company.

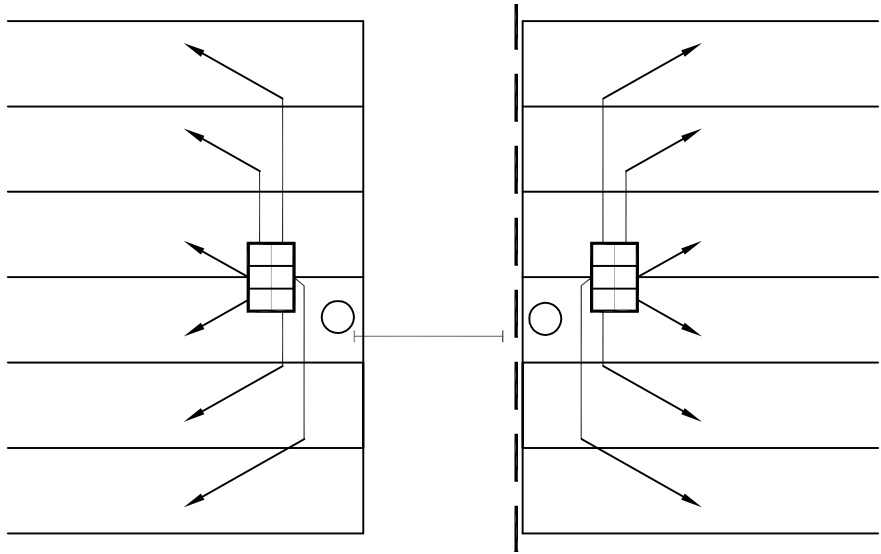
ENTERGY SERVICES, INC.			
Multiple Meter Installation For Mobile Home 120/240 Volt Underground Service			
APPROVED BY:	JRH	DATE:	10/24/06
CHECKED BY:	JED	SCALE:	NONE
DRAWN BY:	dtaylo5		
		No. SS4.7-2	
PLOT	1=1	SH.	1 OF 1

NO.	DATE:	REVISION	BY:	APPR:

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

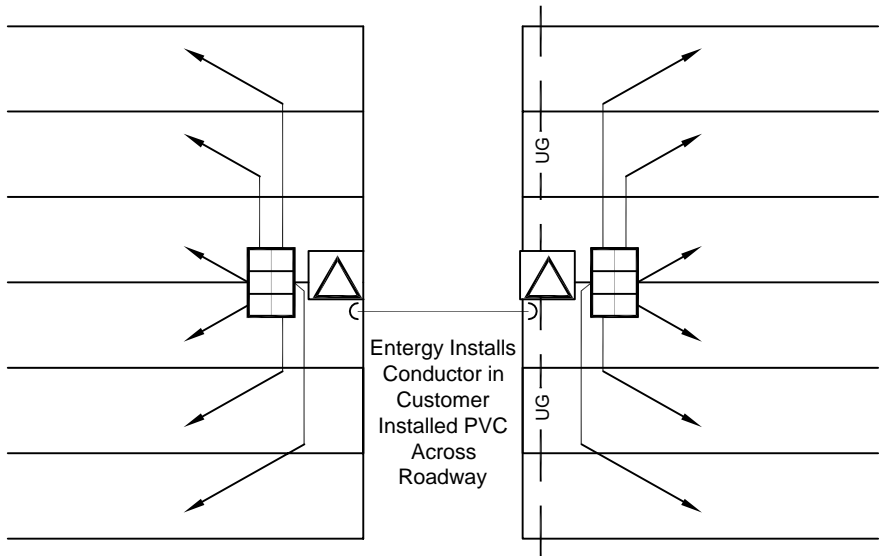
Typical Overhead Layout for Mobile Home Park

For details on overhead layout for mobile home parks, see drawing SS4.7-1



Typical Underground Layout for Mobile Home Park

For details on underground layout for mobile home parks, see drawing SS4.7-2



Legend

- Utility Pole
- Entergy Padmount Transformer or Pedestal
- Multiple meter installation by Developer
- Trailer wiring from meter by developer
- UG --- --- Underground Primary Cable
- Overhead Primary Cable

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.

**Typical Layout for
Mobile Home Park with
Multiple Meter Installations**

APPROVED BY: JRH	DATE: 11/9/06
CHECKED BY: JED	SCALE: NONE
DRAWN BY: dtaylo5	

No. SS4.7-3

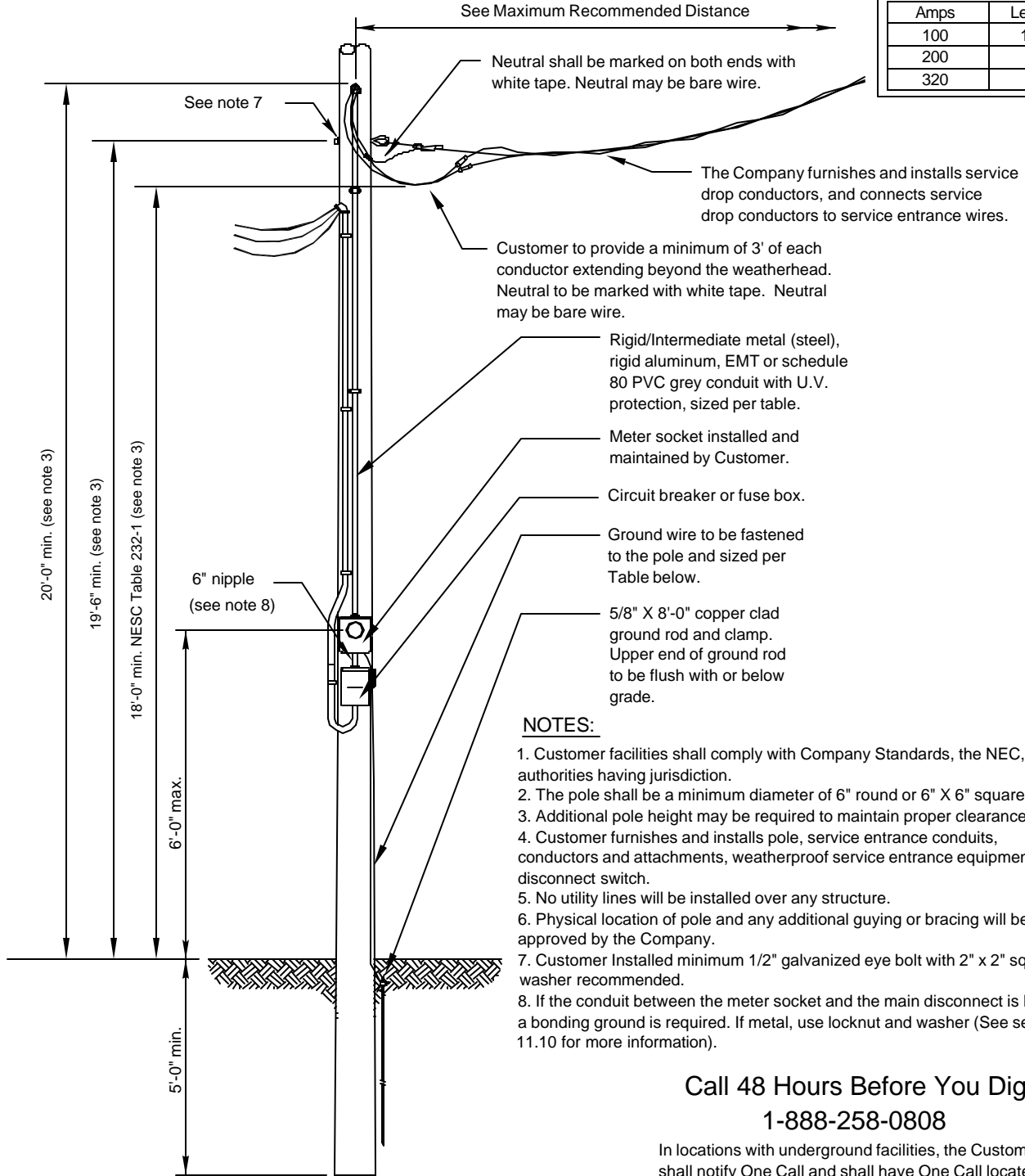
Entergy

PLOT 1=1	SH. 1 OF 1
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NO.	DATE:	REVISION	BY:	APPR:

911 address shall be 3" lettering marked on pole or on durable material attached to pole.

Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'



NOTES:

1. Customer facilities shall comply with Company Standards, the NEC, and authorities having jurisdiction.
2. The pole shall be a minimum diameter of 6" round or 6" X 6" square.
3. Additional pole height may be required to maintain proper clearance.
4. Customer furnishes and installs pole, service entrance conduits, conductors and attachments, weatherproof service entrance equipment, and disconnect switch.
5. No utility lines will be installed over any structure.
6. Physical location of pole and any additional guying or bracing will be approved by the Company.
7. Customer Installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended.
8. If the conduit between the meter socket and the main disconnect is PVC, a bonding ground is required. If metal, use locknut and washer (See section 11.10 for more information).


**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

CUSTOMER INSTALLATION MINIMUM WIRING SIZE FOR SINGLE FAMILY DWELLING

METER SIZE	CONDUIT SIZE	ALUMINUM (INSULATION PER NEC)	COPPER (INSULATION PER NEC)	NEUTRAL WIRE SIZE	GROUND WIRE SIZE
100 Amp	1.5"	#2	#4	same as phase	#6 Cu
200 Amp	2"	4/0	2/0	same as phase	#4 Cu
320 Amp	3"	500 kcm	350 kcm	see NEC	#2 Cu

4	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

ENTERGY SERVICES, INC.	
TYPICAL INSTALLATION - CENTRAL SERVICE POLE (FARMS & MULTIPLE SERVICE DROPS)	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS4.8-1	
	PLOT 1=1 SH. 1 OF 1

Section 5 Voltage Categories and Customer Equipment

5.1 General Comments

Sections 4 and 5 describe the types of service generally furnished for specific uses. General descriptions of available voltages for different size loads are also given. When a Customer wants a type of service from the Company that would not normally be made available, the Customer shall consult with the Company prior to planning the installation. If providing the type of service desired is possible, the Company will inform the Customer of the terms and conditions. Any type of service or voltage not defined as the Company's standard voltage may be supplied only after specific written approval is obtained from the Company.

5.2 Voltages for Lighting

The recommended service voltage for lighting is 120 volts. Customers served by higher voltages may use 208, 240, 277, or 480 volts for lighting. Where the lighting voltage is different from the voltage supplied by the Company, the Customer will install and maintain suitable transformers on the Customer's side of the point of delivery.

5.3 Voltages for Heating

The recommended voltage for space and water heating is either 208 or 240 volts, depending on the service voltage. Heating equipment operated at the Customer's service voltage should be designed for operation at that voltage. Higher voltages, as available, may be used for larger loads. Resistance furnaces or ovens rated 30 kVA or larger should be three phase. Consult the Company for service to arc furnaces. Consult the Company for service to residential furnaces or ovens rated 30 kVA or higher prior to purchase of equipment.

5.4 Voltages for Motors

Consult the Company for availability of voltages for motors over 7½ horsepower. Motors may be connected to a 240-volt single-phase service when they are no larger than 7½ horsepower. Motors over 7½ horsepower should be connected to 240 volts three phase (or other available voltage of 208 volts or higher) where the Customer has a three phase service.

The Company may require that a motor over 7 ½ horsepower be served by single-phase service where three-phase service is not available unless the Customer is willing to pay for installing three-phase service.

Three-phase service will not normally be furnished for individual motors less than 7½ horsepower. Any exceptions will result in the Customer paying for the additionally required facilities. Table 5.4-2 offers a general guide for selection of motor voltages for various horsepower ratings, except as may be otherwise determined in consultation with the Company.

Table 5.4-2 General Guide for Service to Motors

Total Connected Motor Load (hp)	Size of Largest Individual Motor (hp)	Minimum Voltage and Phase
Up to 5	1	120 volts 1 phase
5 – 50	5	240 volts** 1 phase
7.5 – 150	30*	208 or 240 volts 3 phase
50 - 4,000	30*	480 volts 3 phase
300 and above	Over 30*	2,400 & up volts 3 phase

Note: Consult the Company before commitments are made for all three-phase motors over 30 hp. and for any motor that may have requirements not suited for the available service type.

- * Motors larger than these sizes may be allowed under certain conditions. The use of larger motors will usually require the use of auxiliary starting devices and other special equipment. Refer to Section 14.5, Motor Starting, for allowable starting currents for motors, and Section 14.5.4, Motor Starting and Control Equipment, for the requirements for auxiliary starting devices. Consult the Company before designing any use of motors which:
 - o exceed 30 hp and are three phase
 - o exceed the sizes listed in Table 5.4-2
- ** The standard voltage in network areas may be 208V, single phase.

5.5 Voltages for Welders, Elevators, Hoists, Electronic Transmitters, X-Ray Machines, and Other Miscellaneous or Special Equipment

Various voltages may be available for welders, elevators, hoists, electronic transmitters, x-ray machines, and other miscellaneous or special equipment. The Company shall be consulted before the Customer purchases welding equipment, elevator, or any apparatus with highly fluctuating load characteristics. In some instances, the most practical solution to problems associated with fluctuating loads may be the installation of additional facilities to serve the Customer. Should the Company install such additional facilities; the Customer will be required to pay for them. Consult the Power Quality Standards for Electric Service. See Section 1.5 "General Terms Used in Service Standards" (page 10) for the Internet location.

5.6 Voltages for Overhead or Underground Residential Areas Including Manufactured Homes, Mobile Home Parks, Trailer Parks, and Individually Located Mobile Homes

Customers in residential areas, including manufactured homes, mobile home parks, trailer parks, and individually located mobile homes, with either overhead or underground facilities will be served at 120/240 volts, single phase. Should three-phase service be required for a specific Customer, consult the Company for availability and added cost of providing three-phase service before commitments are made.

5.7 Voltages for Loads Served from Network Area

Customers in network areas typically will be served at 120/208 volts, single phase, two or three wire, or three-phase, four wire. In some networks, 277/480-Volt service may be available. In Mississippi and Arkansas 125/216 Volt service may be available. Individual loads 300 kVA or more may require installation of transformers in a vault on the Customer's premises. Contact the Company to arrange for such an installation, to learn what voltage is available, or to request service at another voltage.

Section 6 Services Introduction

6.1 General Comments

The Company will designate the location of the point of delivery or attachment of the service to the Customer's premises, taking into consideration the shortest distance to the Company's distribution facilities, crossing adjacent property of others, and location of meter for reading and servicing. The cost to the Customer for electric facilities will be minimized by the Customer contacting the Company for the point of delivery location during the Customer's project design phase. The service may be installed overhead or underground depending on the Customer's preference and/or the facilities available in the area of the premises to be served. Consult the Company for the cost and conditions for underground service.

All electric service required on the Customer's premises shall be delivered and metered by the Company at one point of delivery, except where a second separated service is required for exit or emergency lighting, fire pumps, or other safety regulations.

The Company's service will not be energized until the Customer's installation has been inspected and approved by the authorities having jurisdiction and all obligations due the Company have been satisfied.

Service for loads over 200 amperes may require individual attention. Consult the Company for information and specifications.

6.2 Right-of-Way for Service Facilities

The property owner(s) will grant, at no cost to the Company, right-of-way suitable to the Company for the installation of the Company's facilities. The Company will provide a written right-of-way permit document for execution by the property owner(s). The Company may require the Customer's assistance in obtaining right(s)-of-way from adjacent property owner(s).

The Company shall also be provided, at no cost, written agreements covering proper easements if

1. primary facilities are installed on private property,
2. secondary facilities are to be installed on the Customer's premises that could serve one or more Customers on adjoining properties,
3. facilities cross over or under private property, such as, cross country, adjoining highways and roadways, within subdivisions, etc., and
4. facilities are constructed within the confines of a highway or roadway that exists by virtue of servitude only.

All parties, i.e., in fee land owner(s), grantee(s), shall give their consent.

6.3 Initial Clearing of Property for Right-of-Way

The Customer requesting a new service is responsible for the cost of preparing the initial right-of-way. The Customer may perform the clearing as instructed by the Company on all property owned by the Customer. In areas where side trimming is needed after the Customer completes the groundwork, the Company will trim only those trees the Customer cannot trim. The Customer will be responsible for removal of all debris. At the Company's option, the Company may clear the right-of-way and be reimbursed by the Customer. For additional details covering underground installations, refer to Section 8.3, Initial Clearing of Property for Service.

6.4 Relocation of Company's Facilities

The Company will move or relocate the Company's facilities where practical to do so at the request of the Customer. The Customer may be required to provide consideration (i.e., payment, furnishing of installed facilities, etc.) in exchange for the relocation.

Section 7 Overhead Service

7.1 General Comments

Consult the Company for the closest and most reasonable location for the service drop attachment. Ordinarily, only one type of service and one service drop is permitted to the Customer's premises. The Company will normally make connection to the Customer's service entrance conductors. Connection shall be made only after the Customer's wiring has passed inspection and has been approved by the authorities having jurisdiction. From the point where the Company's overhead service drop terminates, the Customer shall install service entrance wires to the meter socket and service entrance switch or circuit breaker panel in accordance with the requirements of the NEC, NESC, or other authorities having jurisdiction.

Not less than three feet of each conductor of the service entrance cable or wires shall be left extending beyond the weather head for connection to Company's service drop. For polyphase services, like phases shall be appropriately identified and marked. Neutrals shall be marked with white tape on both ends. Neutrals may be bare wire. The Company will make the connection(s). Refer to **Drawing SS7.1-1** and **Drawing SS7.1-2** for overhead residential installations.

It is the Customer's responsibility to ensure that like phases are appropriately marked and connected together on the line side and the load side of the metering equipment.

7.2 Point of Attachment

The point of attachment

- shall be provided by the Customer for the Company's service drop to the Customer's premises,
- shall be of sufficient height to permit the Company's service drop to conform to the requirements of the National Electrical Safety Code and any other controlling codes, ordinances, or orders of authorities having jurisdiction,
- shall not exceed 21 feet in height from final grade to attachment point for residential services, and shall be either accessible to Company's bucket truck or have enough surface (such as a wall or building structure) and sufficient ground space on same Customer's property to safely support a ladder,
- shall have a clear line of sight to the pole from which the service wire is or will be attached,
- shall not have any other attachments (such as telephone, cable, Internet) as per NEC 230.28.

Also see Section 11.5 Location of Meter Installations.

7.2 Point of Attachment – Continued

The Customer may be required to install a service extension or a metal riser pole. When a service extension or metal riser extends above the roof, the point of attachment and clearances above the roof shall conform to the National Electrical Code or other controlling codes. Where a service mast is used for the support of service drop conductors it shall be of adequate strength and supported by braces or guy wire to withstand safely the strain imposed by these drops and be no higher than 60" higher than the roof. Where the raceway type service mast is used, all raceway fittings shall be identified for use with service mast. Rain type service head shall be used at the point of connection to service drop conductors.

For temporary overhead service refer to Section 4.5, Temporary Service, and **Drawing SS4.5-1**. For permanent service, see **Drawing SS7.1-1** and **Drawing SS7.1-2**.

7.3 Clearances

The point of attachment of the service drop (150 volts line to ground or less) shall be high enough to allow for the service drop conductors to have the following minimum clearances at their lowest point (To allow for typical cable sag, point of attachment is usually 1 1/2 -2 ft higher than minimum clearance below- consult the Company):

1. 12 feet over areas of pedestrian traffic, residential driveways, and commercial areas not subject to truck traffic
2. 18 feet over roads, streets, alleys, non-residential driveways, and other areas subject to truck traffic.

Where the height of a residential **building** does not permit service drops to meet these values, the clearances may be reduced to the following (see NESC Table 232-1):

150V or less to ground	For residential driveways only	Spaces accessible to pedestrian traffic only
Insulated Service drops	12	10
Insulated drip loops	10	10

The point of attachment shall never be installed so the service drop would extend over a swimming pool or any other permanent or temporary structure. See section 2.3 Distance Requirements for Customer Structures for swimming pool clearances.

The construction of any structure near, under or over Company lines may cause a code and / or safety violation. Consult the Company concerning all clearances.

7.4 Length of Service Drop

The clearance of the unsupported length of the service drop from the Company's facilities to the first point of attachment will in no case violate the clearances given in previous Section. The allowable unsupported length of a service drop shall depend on wire sizes as shown in the table on [Drawing SS4.6-1](#), [Drawing SS4.6-2](#), [Drawing SS7.1-1](#), [Drawing SS7.1-2](#) and [Drawing SS7.7-1](#). Other significant factors and conditions at the Customer's property may affect these standard lengths. Consult the Company for length limitations.

7.5 Method of Attachment

The service drop will be attached to the building or approved extension by suitable means supplied by the Customer. The Customer shall provide suitable reinforcement or backing for secure mounting of attachment fittings and adequate anchorage of the service drop as well as at the appropriate height with the appropriate separation. Refer to [Drawing SS7.1-1](#) or [Drawing SS7.1-2](#) for residential installations.

7.6 Extension of Overhead Distribution Facilities

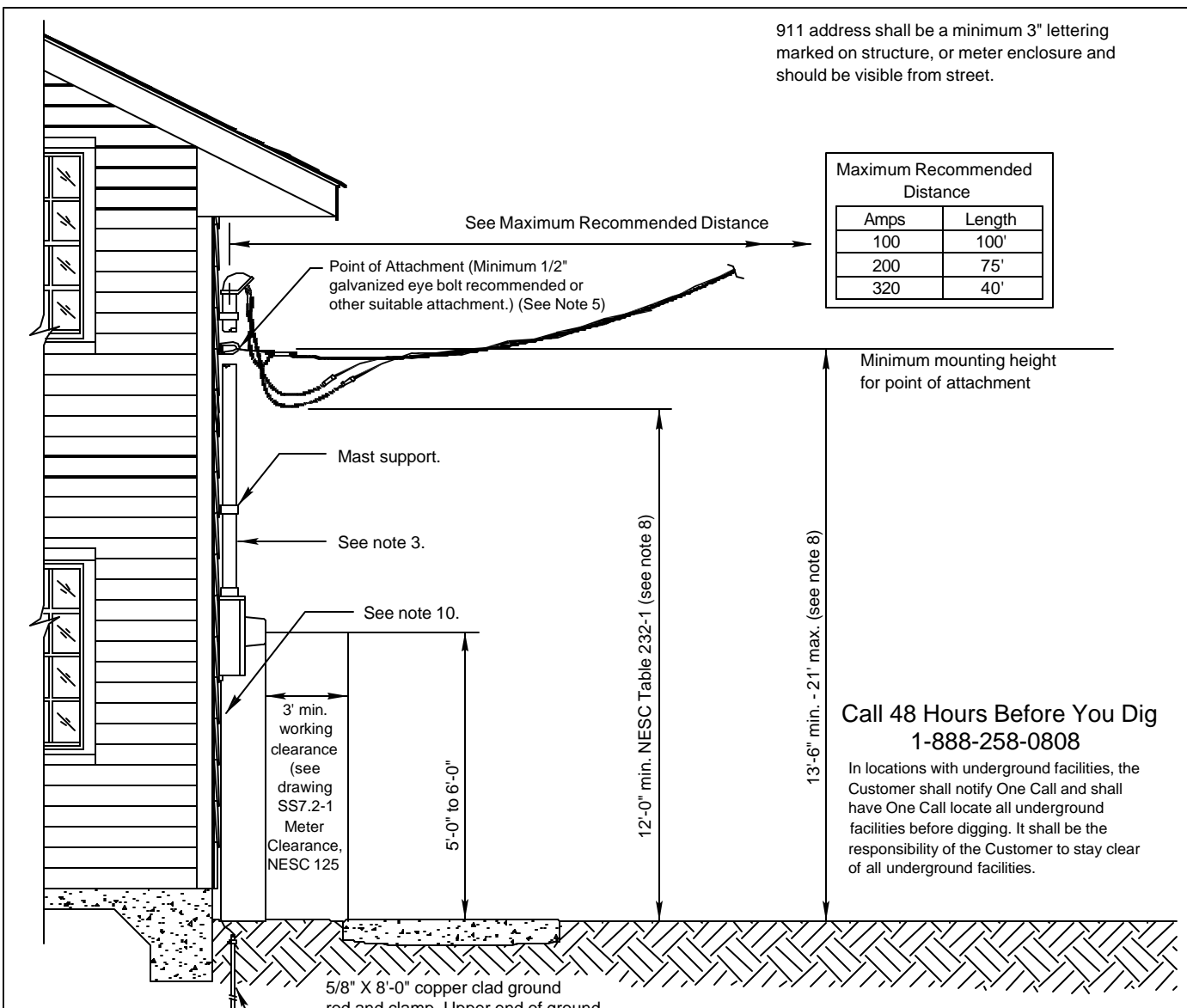
The Company standard for overhead distribution facilities is installation on front lot easement. Consult the Company early in the design phase for more information on other options.

A Customer's service location may require the Company to incur expense greater than normally allowed in providing the service. Extension of primary overhead distribution lines, relocation of Company facilities or removal of Company facilities are examples of situations which occur. When such a situation exists, the Company may require payment from the Customer in addition to the amount normally charged. For complete details on payment options, consult the Company's policy for extension of overhead electric distribution facilities.

7.7 480 Volt Metered Service

A 480 Volt service with a self-contained meter shall have a disconnect switch on the line side of the meter. Refer to Section 13.8.1, Disconnecting Means for Services Less Than 600 Volts. Also refer to [Drawing SS7.7-1](#) and [Drawing SS11.8.4](#)

911 address shall be a minimum 3" lettering marked on structure, or meter enclosure and should be visible from street.



Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

NOTES:

- Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
- Buildings or other facilities shall not be constructed under existing Company supply lines, nor shall any Company supply lines pass over existing buildings or facilities.
- Rigid/intermediate metal (steel), rigid aluminum, EMT, or schedule 80 PVC gray conduit with U.V. protection sized per table. Weatherhead should be of the same material as the conduit.
- A minimum of 3'-0" of each conductor shall extend from the top of the service mast. The neutral shall be marked with white tape on both ends and may be bare wire.
- Customer shall supply and install point of attachment.
- Main breaker should be within 2'-0" of meter. Outside wall is recommended.
- Customer shall install meter socket.
- Additional height may be required to maintain clearance. Point of attachment can be no higher than 21'.
- Minimum 3 ft. clearance between electric meter and gas meter.
- Ground wire may be attached to wall (see Section 13.5).
- Any Service greater than 200 amps, consult the Company.
- Point of attachment shall be either accessible to Company's bucket truck or have enough surface (such as wall or building structure) and sufficient ground space on same Customer's property to safely support a ladder.

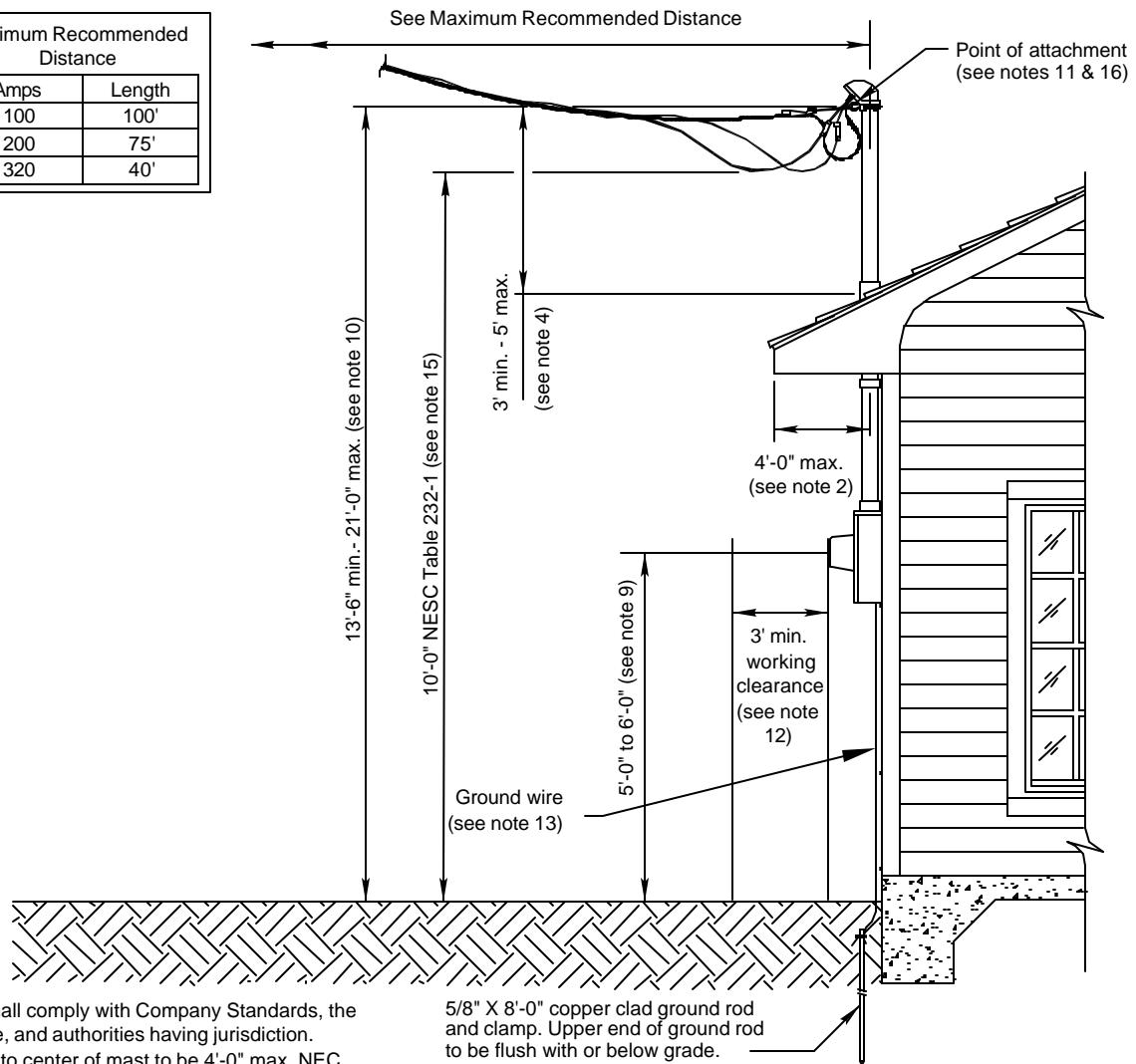
METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	1.5"	#2	#4	#6 *
200 Amp	2"	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire
 * Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)
 ** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

ENTERGY SERVICES, INC.	
TYPICAL PERMANENT OVERHEAD RESIDENTIAL SERVICE #1	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: 1/8"=1'-0"
DRAWN BY: WINK-AJC	
No. SS7.1-1	
PLOT 1=1 SH. 1 OF 1	

Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'



NOTES:

- Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
- Distance from fascia to center of mast to be 4'-0" max. NEC 240.24A.
- Buildings or other facilities shall not be constructed under existing Company supply lines, nor shall any Company supply lines pass over existing buildings or facilities.
- Only rigid metal or IMC conduit can be used above the roof.
- A minimum of 3'-0" of each conductor shall extend from the top of the service mast. The neutral shall be marked with white tape at both ends. Neutral can be bare.
- Customer shall supply and install point of attachment.
- Main breaker should be within 2'-0" of meter. Outside wall is recommended.
- Guying or bracing may be required. NEC 230.28.
- Customer shall install meter enclosure.
- Additional height may be required to maintain clearance. Point of attachment can be no higher than 21'. Exception: Point of attachment may be reduced to 11'-6" if all traffic under wire does not exceed 8'-0" height.
- No telephone or cable attachment allowed on mast. NEC 230.28.
- Minimum 3 ft. clearance between electric meter and gas meter. See Section 11.3
- For grounding information see section 13.5.
- Any Service greater than 200 amps, consult the Company.
- 10'-0" minimum height to bottom of drip loop when all traffic under wire does not exceed 8'-0" height. (See Section 7.3).
- Point of attachment shall be either accessible to Company's bucket truck or have enough surface (such as wall or building structure) and sufficient ground space on same Customer's property to safely support a ladder.

5/8" X 8'-0" copper clad ground rod and clamp. Upper end of ground rod to be flush with or below grade.

Minimum Customer Wiring Size - Family Residence Single Phase				
METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	2"	#2	#4	#6 *
200 Amp	2"	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

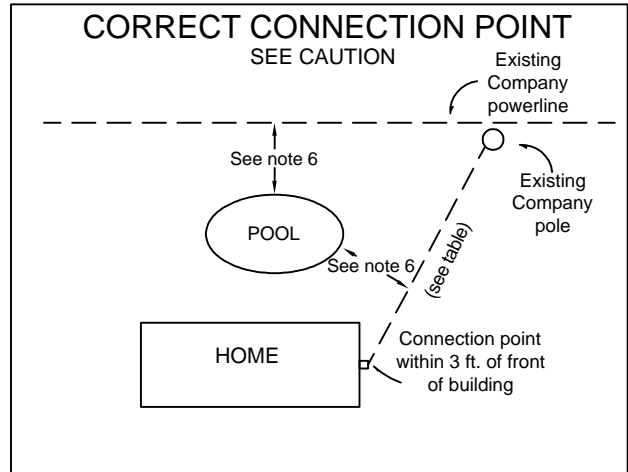
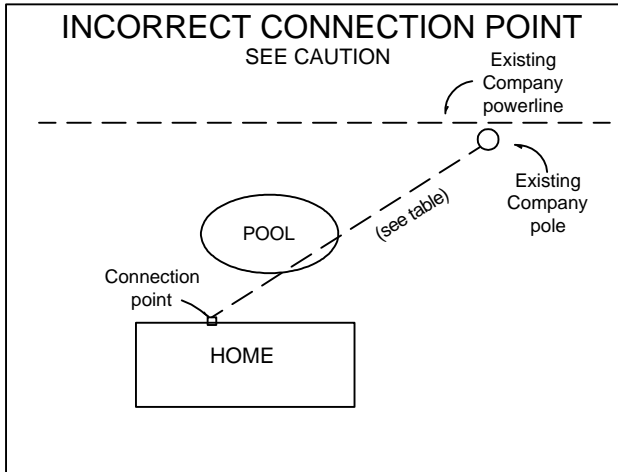
See NEC 310.15(B) (6) - phase conductors; NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire
 * Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)
 ** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)

Call 48 Hours Before You Dig
1-888-258-0808

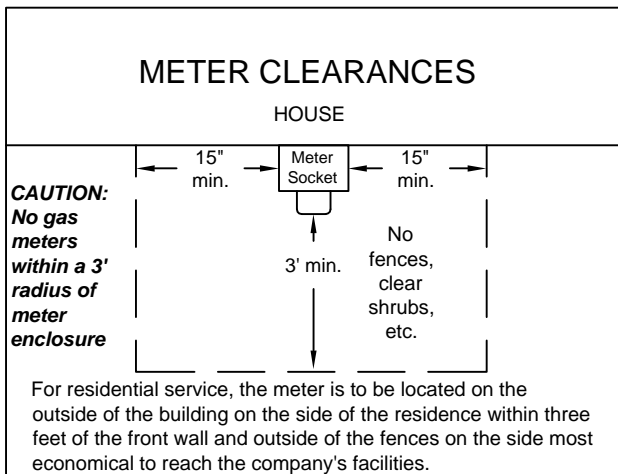
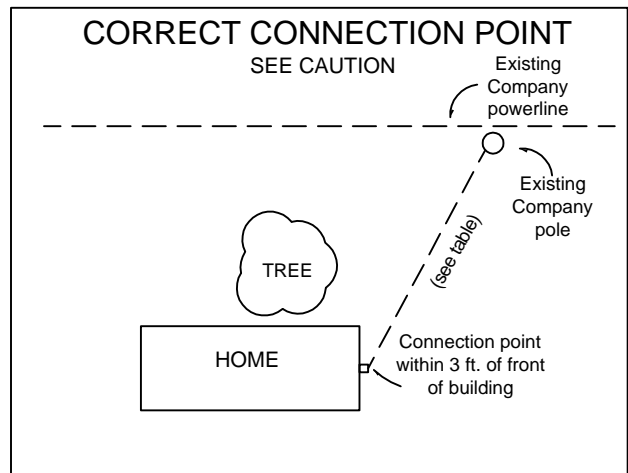
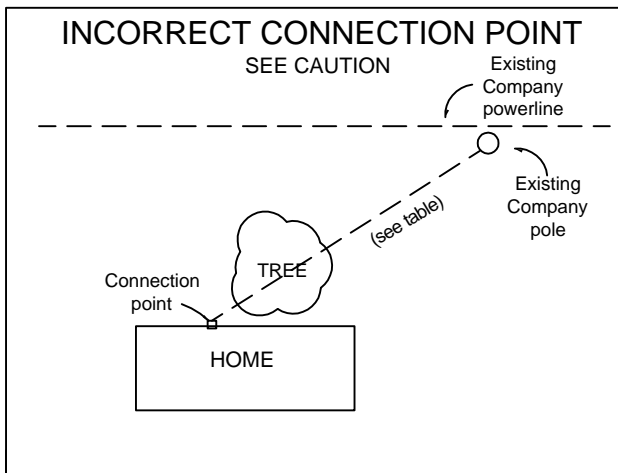
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
TYPICAL PERMANENT OVERHEAD RESIDENTIAL SERVICE #2	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: None
DRAWN BY: WINK-AJC	
No. SS7.1-2	
PLOT 1=1 SH. 1 OF 1	

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	



The Company will not install an electrical facility over a pool, shed, or deck.



CAUTION :
Connection points, when such obstructions interfere with an overhead service, may need to be moved or converted to underground (if possible), at the customers expense.

TABLE	
Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

Notes:

1. NEVER build anything under or over existing electrical lines or facilities. Check with the Company for clearances.
2. **Contact Company for clearances prior to pool construction** (NESC Table 234-2 & NEC 680.6).
3. See Section 11.5 for Meter Location.
4. Connection point shall be pre-approved by the Company.
5. See TABLE for maximum recommended service lengths. Longer lengths than those in the table may require the Company to install an additional pole. This may involve additional cost (typically \$500 or more), to the customer.
6. The Customer is responsible for clearing and maintaining all right of way.

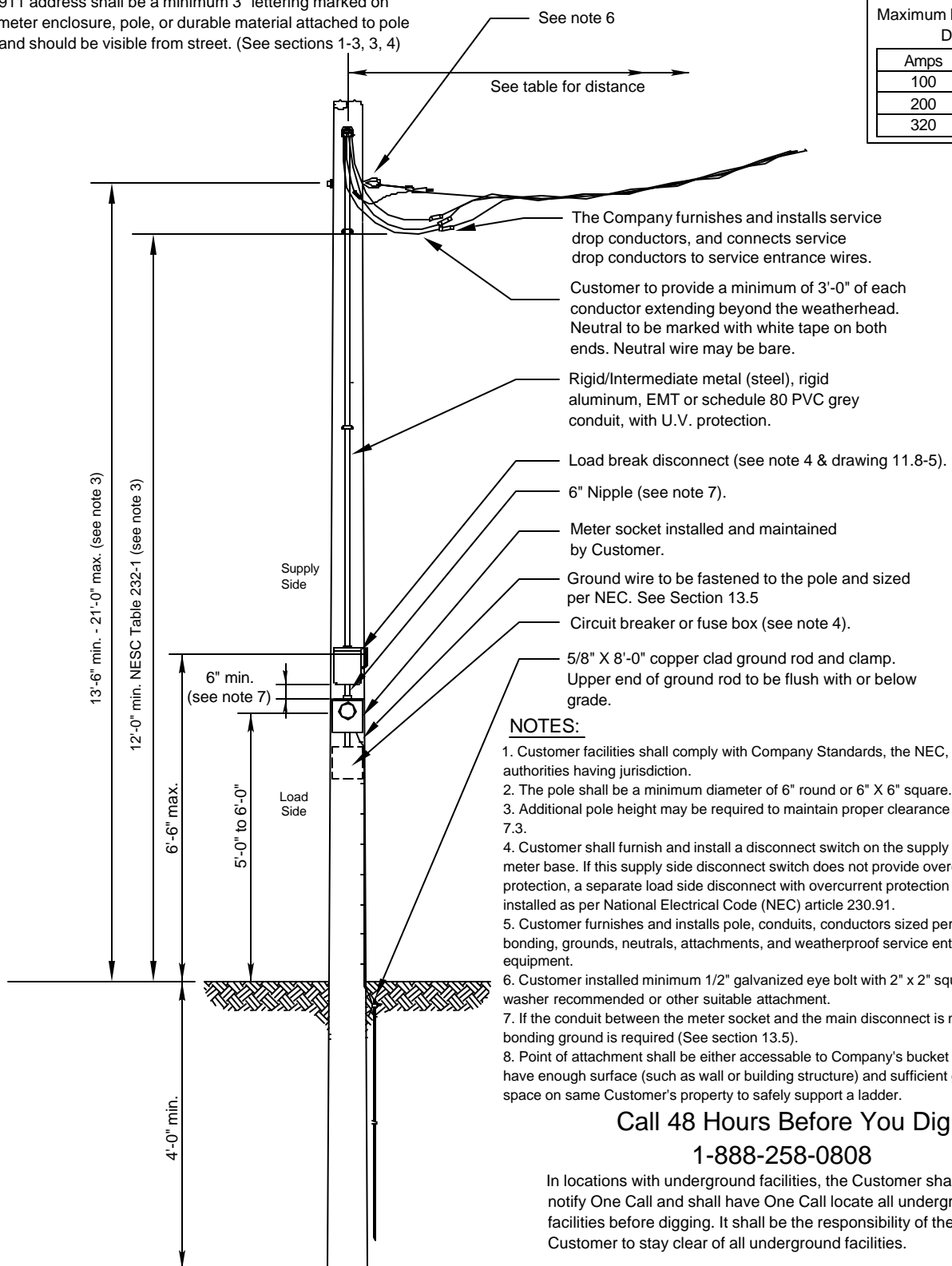
ENTERGY SERVICES, INC.	
Overhead Service Installation Details	
APPROVED BY: JRH	DATE: April 2002
CHECKED BY: LKE	SCALE: None
DRAWN BY: DAT	
No. SS7.2-1	
PLOT 1=1	SH. 1 OF 1

2	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:



911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

Maximum Recommended Distance	
Amps	Length
100	100'
200	75'
320	40'



- See note 6
- See table for distance
- The Company furnishes and installs service drop conductors, and connects service drop conductors to service entrance wires.
- Customer to provide a minimum of 3'-0" of each conductor extending beyond the weatherhead. Neutral to be marked with white tape on both ends. Neutral wire may be bare.
- Rigid/Intermediate metal (steel), rigid aluminum, EMT or schedule 80 PVC grey conduit, with U.V. protection.
- Load break disconnect (see note 4 & drawing 11.8-5).
- 6" Nipple (see note 7).
- Meter socket installed and maintained by Customer.
- Ground wire to be fastened to the pole and sized per NEC. See Section 13.5
- Circuit breaker or fuse box (see note 4).
- 5/8" X 8'-0" copper clad ground rod and clamp. Upper end of ground rod to be flush with or below grade.

- NOTES:**
1. Customer facilities shall comply with Company Standards, the NEC, and authorities having jurisdiction.
 2. The pole shall be a minimum diameter of 6" round or 6" X 6" square.
 3. Additional pole height may be required to maintain proper clearance per Section 7.3.
 4. Customer shall furnish and install a disconnect switch on the supply side of the meter base. If this supply side disconnect switch does not provide overcurrent protection, a separate load side disconnect with overcurrent protection shall be installed as per National Electrical Code (NEC) article 230.91.
 5. Customer furnishes and installs pole, conduits, conductors sized per NEC, bonding, grounds, neutrals, attachments, and weatherproof service entrance equipment.
 6. Customer installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended or other suitable attachment.
 7. If the conduit between the meter socket and the main disconnect is not metal, a bonding ground is required (See section 13.5).
 8. Point of attachment shall be either accessible to Company's bucket truck or have enough surface (such as wall or building structure) and sufficient ground space on same Customer's property to safely support a ladder.

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
TYPICAL SELF-CONTAINED 277V/480V INSTALLATION (320 AMPS OR LESS)	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS7.7-1	
	PLOT 1=1 SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

Section 8 Underground Service and Installations

8.1 General Comments

Economic, physical and technical considerations normally dictate the use of overhead distribution facilities in the Company's operating area. Customer may either elect or be required to take underground electric service. The Customer will be required to pay the additional cost, if any, in excess of the cost of an overhead system. Consult the Company.

Single-phase underground service will normally be 120/240 volts, three wire. The service from three phase pad mount or vault type transformers should be restricted to 120/208Y or 277/480Y volts, four wire. The Company's typical installation includes a pad mount transformer. Occasionally, other type transformers may be required. Consult the Company for details.

8.2 Ownership of Facilities

The Company will generally own and operate all facilities on the Company side of the point of delivery. The Company will own metering equipment and selected equipment located in vaults. Specific ownership requirements for residential and non-residential installations can be found in Section 8.6, Requirements for Obtaining Underground Residential Service, and Section 8.7, Requirements for Commercial, Industrial, and Other Non-Residential Underground Service.

8.3 Initial Clearing of Property for Service

The Customer

- requesting a new service is responsible for preparing the initial right of way.
- Shall notify One Call 48 hours before digging and shall have One Call locate all underground facilities before digging. (Call 1 -888- 258-0808 or consult telephone directory for phone number of local One Call.)
- shall be responsible for performing all grubbing and clearing as instructed by the Company on all property owned by the Customer
- will be responsible for removal of all debris shall bring the easement to final grade prior to any installation of facilities by the Company
- Shall be responsible for costs associated with raising, lowering or relocating facilities due to changes in the surface grade after installation of the Company's facilities.

At the Company's option, the Company may prepare the right-of-way and will be reimbursed by the Customer

8.4 Agreement for Underground Service

The Customer may be required to execute an agreement that will set forth ownership and maintenance responsibilities, characteristics of the services covered, and any financial arrangements. An agreement may also be required with the individual Customer in order for the Company to provide underground service.

8.5 Specification Requirements

All facilities, which the Company will own and operate, shall be installed either by the Company or to the Company's specifications. The Company will not accept ownership of any underground facilities that do not meet the Company's specifications.

8.6 Requirements for Obtaining Underground Residential Service

8.6.1 General Comments

Underground residential service may be available from either overhead or underground facilities. The Customer shall provide, install, own and maintain the conduit from the meter socket (minimum size D 4 1/8" X W 11" X H 15 1/2") flush against the wall, down to a point thirty inches (30") below ground in accordance with Company specifications. A 36" bend will be required See Section 8.10.2.2 and **Drawings SS8.6-2 and SS8.6-7**. Installation of the conduit through the footings shall conform to the requirements of **Drawing SS8.6-4**. (Note: The foundation may be required to have a blocked out area for conduit in order for conduit to be flush with wall when installed.) Consult the Company for information if conflict arises.

Typically, the Customer pays for all costs above the value of an overhead service installation. The Customer may have the option to either (1) have the Company install the complete service or (2) do part of work. Contact the Company for details.

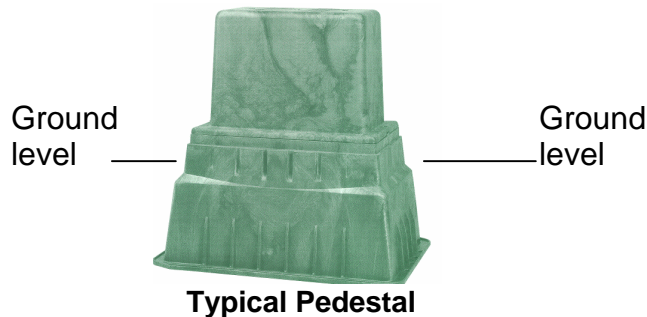
When a complete conduit system is used, the Customer shall provide a continuous run of conduit with a minimum size of 2.5" (except in Arkansas where 2" is the minimum) for 200 ampere single phase service. See **Drawing SS8.6-3** for underground service from an overhead source and **Drawing SS8.6-2** for an underground service from an underground source. **Drawing SS8.6-1** contains additional requirements for conduit. Conduit is always required in places with restricted access, (under or potentially under concrete driveways, sidewalks, patios, flowerbeds, etc.) and in many locales with soil subsidence or other restrictive conditions, consult the Company for details. **Drawing SS8.6-5** shows conduit encased in concrete when such an installation is required. Consult the Company for details. The Company shall furnish and pull the underground conductors in the conduit system. **Refer to Section 8.10, Conduit, for more information.**

8.6.2 Underground Electric Service for New Residential Subdivisions

Contact the Company at the earliest date possible so that,

1. the Company can plan the distribution system, design any applicable street lighting feed points or other lighting systems, determine the meter and service locations, and
2. Agreement can be reached on the manner of paying the additional cost, if any, in excess of the cost of any overhead system.

Underground facilities will be installed on the front lot easement with pad mount transformers and pedestals where needed. Easements for underground facilities shall be described on Company's right-of-way agreement forms and furnished to the Company as outlined by Company policy and/or on dedicated recorded plat. Refer to Section 6.2, Right-of-Way for Service Facilities.



Customers within an underground subdivision adjacent to an overhead distribution system may be served with an underground service from the overhead system.

8.6.3 Underground Service from an Underground Distribution System.

A residential Customer may elect or be required to take electric service through an underground service from an underground distribution system and will be required to pay in some manner the additional cost, if any, in excess of the cost of an overhead system.

8.6.4 Underground Service from Overhead Distribution System

The Customer may elect or be required to take service through an underground service from an overhead distribution system and will be required to pay in some manner the additional cost, if any, in excess of the cost of an overhead service.

New Customers in new residential areas taking underground service will be required to pay the additional cost, if any, in excess of the cost of an overhead service. The cost of the underground service is the installed cost of the cable plus conduits, and pedestals, if required. Consult the Company for information on situations that require a conduit system.

8.6.4 Underground Service from Overhead Distribution System (Continued)

In general, a pedestal is not required when a Customer is taking underground service from an overhead system. Pedestals are normally required when two or more Customers are taking underground service from the same pole in an overhead distribution system.

Two or more conduits may be installed on the same pole in accordance with the limitations in the Section 8.10.2.1, Conduit Installation General Comments, with the approval of the Company. The conduit for the pole shall be provided by the Customer and installed by the Company. The elbow at the base of the pole and adjacent to the house shall be provided and installed by the Customer. Refer to Section 8.10.2.2, Conduits Used In Residential Underground Installations. The cost of the pedestal and riser installation may be divided among the Customers to be served from those facilities or be paid for by the Developer.

8.6.5 Underground Service Replacing Existing Overhead Service

An existing Customer served with an overhead service may request the removal of the overhead service and installation of a new underground service. If the existing service is of adequate size to serve the load, the Customer is responsible for paying the total estimated cost of the job plus the removal cost less salvage. Where the existing service is not adequate to serve the increased load, the Customer shall pay the difference between the estimated cost of an underground service and a new overhead service. Consult the Company for information and specifications.

8.7 Requirements for Commercial, Industrial, and Other Non-Residential Underground Service

8.7.1 Junction Box Requirements

If the Company owns the service, the Customer shall supply a UL listed Company approved junction box or a UL listed Company approved alternative with a locking mechanism to secure it suitable for a Company padlock. Junction boxes used for various situations are shown in [Drawing SS11.6-3](#), [Drawing SS11.6-4](#), [Drawing SS11.6-5](#), [Drawing SS11.8-3](#), and [Drawing SS11.8-4](#). The Customer shall supply UL listed connectors inside, which will be the point of common coupling between Company and Customer. These connectors shall be sized no less than 125% of continuous load, plus 100% of the non-continuous load. Any ampacity adjustment shall be made in accordance with the terminal rating requirements of Section 110.14 of the 2002 NEC. Connectors shall be suitable for both copper and aluminum. Insulated multi connector block or bus bar type shall be used. Bus bar type shall be fastened to the back of junction box. A durable marking for color or word coding shall be installed. The neutral conductor shall have a white marking or a suitable identifying mark. The next section of the terminals shall have color suitable for applicable voltage. Plastic anchors are not allowed.

When the Customer provides, owns, installs & maintains the secondary wire to the Company's transformer, a Junction box is not required. Consult the Company for the requirements in your area.

Table 8.7.1-1: Guideline for Junction Box Use with Multiple Circuits

No of conductors allowed per phase		Box Dimensions		
Customer	Company	Depth	Width	Height
(2)#250-500 Cu or less	(2)A366-A500 or less	12"	30"	36"
(3) #500Cu	(3)A500-A750	15"	48"	48"

For larger sizes consult the Company

8.7.2 Underground Service from Underground Systems

Underground secondary service from an underground distribution system may be provided to non-residential Customers. It is the responsibility of the Customer to install, own, and maintain the transformer / equipment pad or vault. This includes both single and multi-meter installations. See **Drawing SS8.7-1** and **Drawing SS11.6-5**.

Any underground primary conductors required to serve the Customer will be owned by the Company. The Customer shall pay the difference between the cost of the Company's underground facilities and the cost of the Company's overhead facilities, if any, to serve the load. Refer to Section 8.10.2.3, Conduit Used In Commercial, Industrial, and Other Non-Residential Underground Installations, to Section 8.11.3, Conductors Used in Underground Non-Residential Installations, to Section 8.14, Transformers Used In Underground Installations, and to Section 10.5, Transformer Vaults. Consult the Company for additional information, specifications, and contract forms for underground installations.

8.7.3 Underground Secondary Service from Overhead Systems

Underground secondary service from an overhead distribution system may be provided to non-residential Customers. The Company will install any conduits and conductors to be attached to its poles. Refer to Section 8.10, Conduit and Section 8.11.3, Conductors Used in Underground Non-Residential Installations. Consult the Company for additional information, specifications, and contract forms for underground installations.

8.8 Underground Service from an Underground Network

Specific portions of the distribution system in downtown areas with highly concentrated loads have been designated as Underground Network Areas. Area boundaries may be obtained from the Company. Service for individual loads up to 300 kVA may be provided directly from the secondary system. Voltages available are single phase, two or three wire, and three phase, four wire, and 120/208 volts. In some networks, 277/480-Volt service may be available. In Mississippi and Arkansas 125/216 Volt service may be available. Consult the Company for available voltage at specific locations. Larger loads may require installation of one or more transformers, which shall be located in a suitable vault furnished by the Customer. The Company and authorities having jurisdiction shall approve the vault and its location. Contact the Company to arrange for such an installation or to arrange for service at other voltages.

The location of the point of termination of the service run shall be approved by the authorities having jurisdiction and by the Company. Consult the Company for service requirements.

8.9 Underground Electric Service for Mobile Home Parks

The Company will provide underground electric service to approved Mobile Home Parks. The Customer shall pay the difference between the overhead and the underground systems. (Approved Mobile Home Park shall mean one that is permanent, rather than temporary, and shall have permanent central water and sewage systems.)

Other than in a mobile home park, service to individual mobile homes will be made at individually installed meter pedestals. The Customer shall supply the pedestal. Consult the Company for information. See **Drawing SS4.6-3** and **Drawing SS4.6-4** for details.

Also see Section 4.6 Services for Individually Located Mobile Homes and Travel Trailers and Section 4.7 Services for Mobile Home Parks.

8.10 Conduit

8.10.1 General Comments

Conduit is always required in places with restricted access, (under or potentially under concrete driveways, sidewalks, patios, flowerbeds, etc.) and in many Networks due to local soil, underground congestion of pipes or other utilities service lines, or other conditions, consult the Company for details. The conduit may be rigid/ intermediate metal steel, rigid aluminum, Schedule 40 PVC or Schedule 80 PVC in appropriate applications. All conduits shall be of such size and type to meet the requirements of the Company and the Company specifications for the selected cable to serve the Customer. All bends and elbows shall be a minimum 36" radius. The Customer's anticipated future load requirements should also be considered when sizing cable and conduit to serve the Customer's present requirements.

8.10.2 Installation

8.10.2.1 General Comments

All conduits shall be installed according to Company requirements. Normally, conduits on a Company owned pole will be limited to one. More than one conduit may be allowed in certain circumstances, with prior Company approval Customers requesting additional conduits may be required to provide a separate support structure for the conduits and a suitable attachment point for the Company owned overhead service conductors. When more than one conduit is allowed, they shall be installed adjacent to each other, and not cover more than one quarter of the pole circumference. At Company's option an above ground pedestal may be installed to accommodate additional services.

Due to the quality of the soil in some portions of the Company's service area, concrete around the conduit may be required. If concrete encased conduit bends are required at the base of the pole, the concrete shall be formed to prevent its touching the pole and a fibrous separator is required between the pole and the concrete.

8.10.2.2 Conduits Used in Residential Underground Installations

Services installed in conduits for residential Customers shall conform to **Drawing SS8.6-2** or **Drawing SS8.6-3**. Also see **Drawing SS8.6-1**. The Customer shall install the conduit at a minimum depth of 30 inches, with the end of the elbow coming up at a point 7 inches from the base of the pole for service from an overhead source. The Customer shall install the conduit to a point 24 inches from the side of the transformer pad for service from an underground source. The Customer shall mark the end of the cable or conduit by a stake or other agreed upon method.

In general, the conduits shall be installed such that when the conduit run has more than three 90-degree bends, including riser bends, (riser bends shall be 36 inches in radius), and the Customer shall install a pull box. The pull box shall be of a design that conforms to Company specifications. It shall be installed as advised by the Company. Also consult the Company when conduit or cable length runs exceed 200 feet. A pull box may be needed when conduit runs exceed 200 feet. Long cable runs may also require bigger cable and conduit to compensate for voltage drops.

When the source is an overhead system, the Customer shall supply the conduit riser in accordance with Company specifications. The Company will install the riser on the pole. The Company will pull the conductors in the conduit system.

When two or more services originate from one Company pole having overhead facilities, means of accommodating multiple services may be installed by the Company. Refer to Section 8.6.4.

8.10.2.3 Conduit Used in Commercial, Industrial, and Other Non-Residential Underground Installations

The proposed load, cable sizes and conduit sizes should be given consideration when determining the pulls and lengths of conduit run. The elbow radius for all conduit sizes will be 36 inches. The Company shall specify the number, design and location of pull boxes and total length of conduit runs to be installed. If pull boxes are required, they shall be of sufficient strength, as approved by the Company, to support all expected loads that may be imposed on the structure, including local traffic. All spare conduits, if necessary, will conform to the requirements set forth in Section 8.10.4, Spare Conduits. See **Drawing SS8.7-1** for a typical primary service to a single pad mount transformer serving commercial or industrial Customers. Table 8.10-3 contains a recommended conduit guide for approved conductor sizes.

Table 8.10-3: Recommended Conduit Guide for Typical Underground Conductor

Primary Conductors

Size	Voltage	One Cable	Three(3) Cables
#2 Al	15kV	2"	4"
1/0 Al		2"	4"
4/0 Al		2"	5"
750 Al		3"	6"
750 Cu		3"	6"
#1 Al	25kV	2"	5"
2/0 Cu		3"	5"
750 Al		3"	5"
750 Cu		3"	5"
1/0 Al	35kV	3"	5"
750 Al		3"	6"
750 Cu		3"	6"

Secondary Conductors,

#4 Al Triplex	2.5" (2" in Arkansas only)
1/0 Al Triplex	2.5" (2" in Arkansas only)
4/0 Al Triplex	2.5" (2" in Arkansas only)
350 Al Triplex	3"
500 Al Triplex	3"
750 Al Triplex	5"
1000 Al Triplex	5"
1/0 Al Quad	3"
4/0 Al Quad.	3"
350 Al Quad.	3"
500 Al Quad.	4"
750 Al Quad.	5"
1000 Al Quad.	5"

*The recommended conduit size conforms to the Company standards for conduit used on the Company system. Consult the Company during the design process to ensure that the proposed conduit system meets Company requirements.

8.10.3 Types of Conduit

8.10.3.1 General Comments

All conduits shall be rigid/intermediate metal steel, rigid aluminum, and/or rigid nonmetallic conduit with an U. L. label. Local Building Codes may be restrictive in the type(s) of conduit permitted. Consult authorities having jurisdiction before choosing conduit material.

8.10.3.2 Rigid/Intermediate Metal Conduits

Rigid intermediate metal steel and rigid aluminum conduits (with a U. L. label) may be used. Rigid aluminum conduit (with a U. L. label) can be used above grade only. In certain cases, when steel conduit is used below final grade, it shall be completely

encased in a minimum of 4" of red concrete according to **Drawing SS8.6-5** or wrapped with a material approved by the Company to provide corrosion protection.

8.10.3.3 Rigid Nonmetallic Conduits

Rigid Polyvinyl Chloride (PVC), Schedule 80, (with a U. L. label), may be used as a conduit riser, where building codes permit, under the meter socket, and as primary, secondary, and service risers on distribution poles. Rigid nonmetallic conduits may be used in inaccessible areas and below final earth grade. Generally, nonmetallic conduit installed below grade shall be at least Schedule 40 PVC (with a U. L. label). In certain cases, concrete encasement may be required according to **Drawing SS8.6-5**.

8.10.3.4 Conduit Fittings

Conduit fittings to join the continuous lengths of conduits and to join the continuous lengths to bends of the same material shall be of the same material as the conduits and shall be U. L. approved and meet Company specifications. Fittings to join rigid nonmetallic conduit to rigid metal or intermediate metal conduit at transitions such as from below grade to above grade shall be U. L. approved and meet Company specifications.

8.10.4 Spare Conduits

The Company recommends the installation of spare conduits. Spare conduits will conform to all conduit requirements as set forth in these Service Standards.

In cases where the primary system is three phase and radially fed, a minimum of one spare elbow shall be installed with the primary conduit in the transformer pad, vault or socket when a complete spare conduit system is not provided. See Section 10, Transformers for further explanation of transformer installations.

8.11 Conductors

8.11.1 General Comments

The Company will generally own and operate all conductors on the Company side of the point of delivery. If the Company's facilities do not exist to serve the Customer's load, the Customer shall be required to pay for the difference between the cost to extend the line as an overhead distribution facility and the actual cost to install underground facilities. Specific requirements are defined in the Company's line extension policy. Consult the Company for details.

8.11.2 Conductors Used in Underground Residential Installations

Normally conductors installed for permanent service to single residences shall be 4/0 aluminum. Installations shall conform to Section 8.10, Conduits Used in Residential Underground Installations.

8.11.3 Conductors Used in Underground Non-Residential Installations

The maximum size conductor inside a single-phase transformer cabinet is 500 kcmil. The maximum size conductor inside a three-phase transformer cabinet is 1000 kcmil. **Consult the Company in advance for consideration of requirements that exceed these limitations or where parallel of Conductors**

are required. More information is available in Section 13.4, Service Entrance Conductors.

8.12 Termination of Customers' Conductors in Company's Transformers

The Company shall furnish terminals for secondary conductors when Company's standard, sized to ampacity, conductors are used. The Company will normally bolt all terminals to the connectors of the transformer. The phasing and proper conductor length will be the responsibility of the Customer regardless of who installs the terminals or bolts the terminals to the transformer connectors. More information is available in Section 13.4, Service Entrance Conductors

8.13 Metering for Underground Service

The meter installation shall be located outside of a building or structure. Refer to Section 11.5, Location of Meter Installations. Disconnect switches or a main breaker panel shall be mounted within 2 feet of the side of the meter socket. Prior approval shall be obtained from the Company for the installation of any service equipment directly below the meter sockets. Also see NEC 230.70.

If a single transformer-rated metering installation is to be used in connection with a three-phase pad mount transformer installation, the meter will typically be installed on the pad mount transformer. Special metering options may be available with approval of the Company. The Customer shall bear the additional cost made necessary by the special metering options.

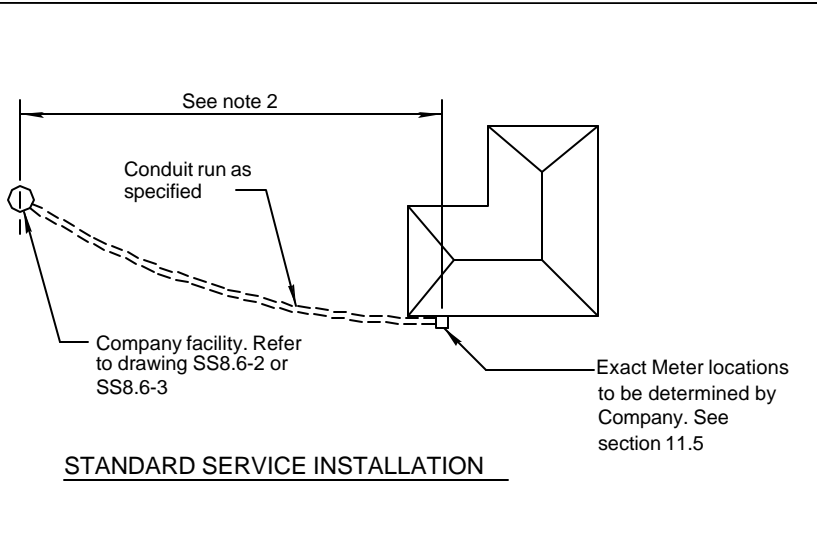
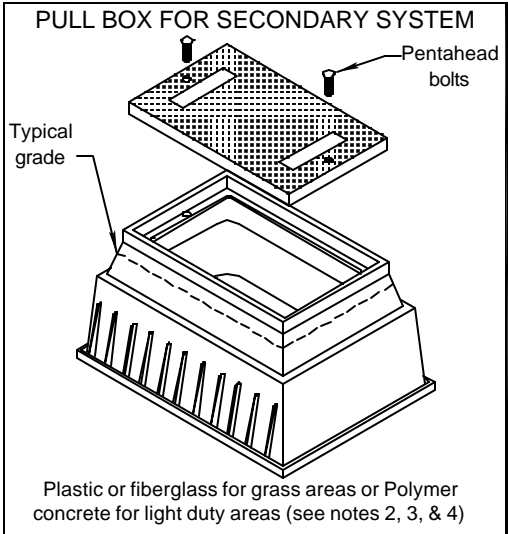
8.14 Transformers Used in Underground Installations

8.14.1 General Comments

The Company will generally own and operate all transformers on the Company side of the point of delivery. Pad mount transformers shall be installed in accordance with Company specifications. Vaults, enclosures, etc. (when used) will be at Customer's expense and shall conform to Company specifications. See Section 10, Transformers Vaults and Substations. Consult Company for specific details.

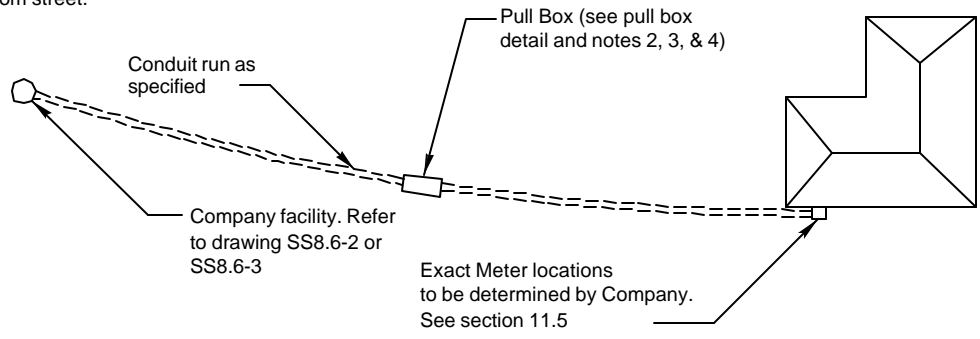
8.14.2 Transformer Pads or Slabs

The Company will generally furnish single-phase transformer pads. Three phase transformer pads / slabs shall be provided by the Customer, and shall conform to Company specifications. When supporting foundations are needed for the transformer installation the Customer will be responsible for the design of the supporting foundation and for obtaining approval of the design by the Company. Consult the Company.



STANDARD SERVICE INSTALLATION

911 address shall be a minimum 3" lettering marked on structure, or meter enclosure and should be visible from street.



STANDARD SERVICE INSTALLATION WITH PULL BOX

- Notes:
1. Customer facilities shall comply with Company Standards, the NEC, and authorities having jurisdiction.
 2. Customer shall consult with Company for location and type of pull box for any length over 200'.
 3. If more than three 90° bends (including riser bends and regardless of length) are required in any run, consult the Company.
 4. Pull box shall be installed at a 90° bend or the center of run and be of sufficient strength to support probable local traffic (consult Company for box in areas with traffic or trucks driving over boxes). Recommended size: 17" W X 30" L X 18" D.
 5. The Customer shall bear the cost of conduit and its installation.
 6. See table for conduit diameter.
 7. The Customer shall install 80lb non-metallic (manila or grass) pull line or bull tape in the conduit. Conductor normally supplied by Company.
 8. Underground service conduit shall be separated from telephone, cable, or water facilities by not less than 3" of concrete, 4" of brick masonry, or 12" of well tamped earth and 18" of well tamped earth for gas facilities (NESC 320.B.2 and NESC 354.A.2).
 9. Conduit shall bear the U.L. label, either rigid nonmetallic (schedule 80 PVC above ground, schedule 40 below grade, gray only) or rigid /intermediate metal conduit (aluminum not permitted below grade). If metal conduit is used below grade, corrosion protection shall be provided.
 10. Conduit required in restricted areas.
 11. Additional details are found in other drawings SS8.6-2, SS8.6-3, SS8.6-4 and SS8.6-5.

CONDUIT SIZE REQUIRED	
TRIPLEX CONDUCTOR SIZE (AWG)	CONDUIT DIAMETER
1/0 4/0	2.5"
1/0 4/0*	2" Arkansas only
350 kcm	3"

* ARKANSAS ONLY

**Call 48 Hours Before You Dig
1-888-258-0808**

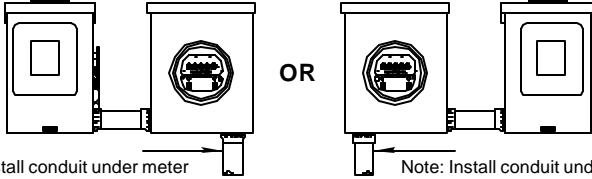
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
TYPICAL CONDUIT SYSTEM REQUIREMENTS FOR SINGLE PHASE CUSTOMER UNDERGROUND SERVICE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS8.6-1	
Entergy	
PLOT 1=1	SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTIONS GROUP RECOMMENDATIONS	MCC	

CONDUIT PLACEMENT

Meter socket shall be designed for underground service installed and maintained by Customer (Meter enclosure minimum required size is 4 1/8" D x 11" W x 15 1/2" H). Main breaker should be within 2'-0" of the meter. Outside wall recommended.



Note: Install conduit under meter socket on opposite side of switch

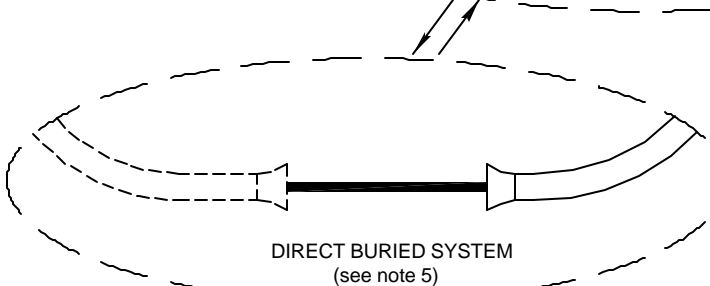
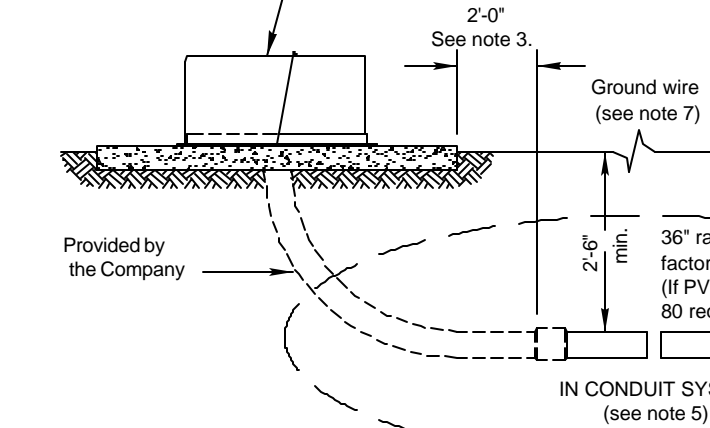
Note: Install conduit under meter socket on opposite side of switch

911 address shall be a minimum 3" lettering marked on structure, or meter enclosure and should be visible from street.

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

Pad mount transformer or secondary pedestal (furnished and installed by Company)



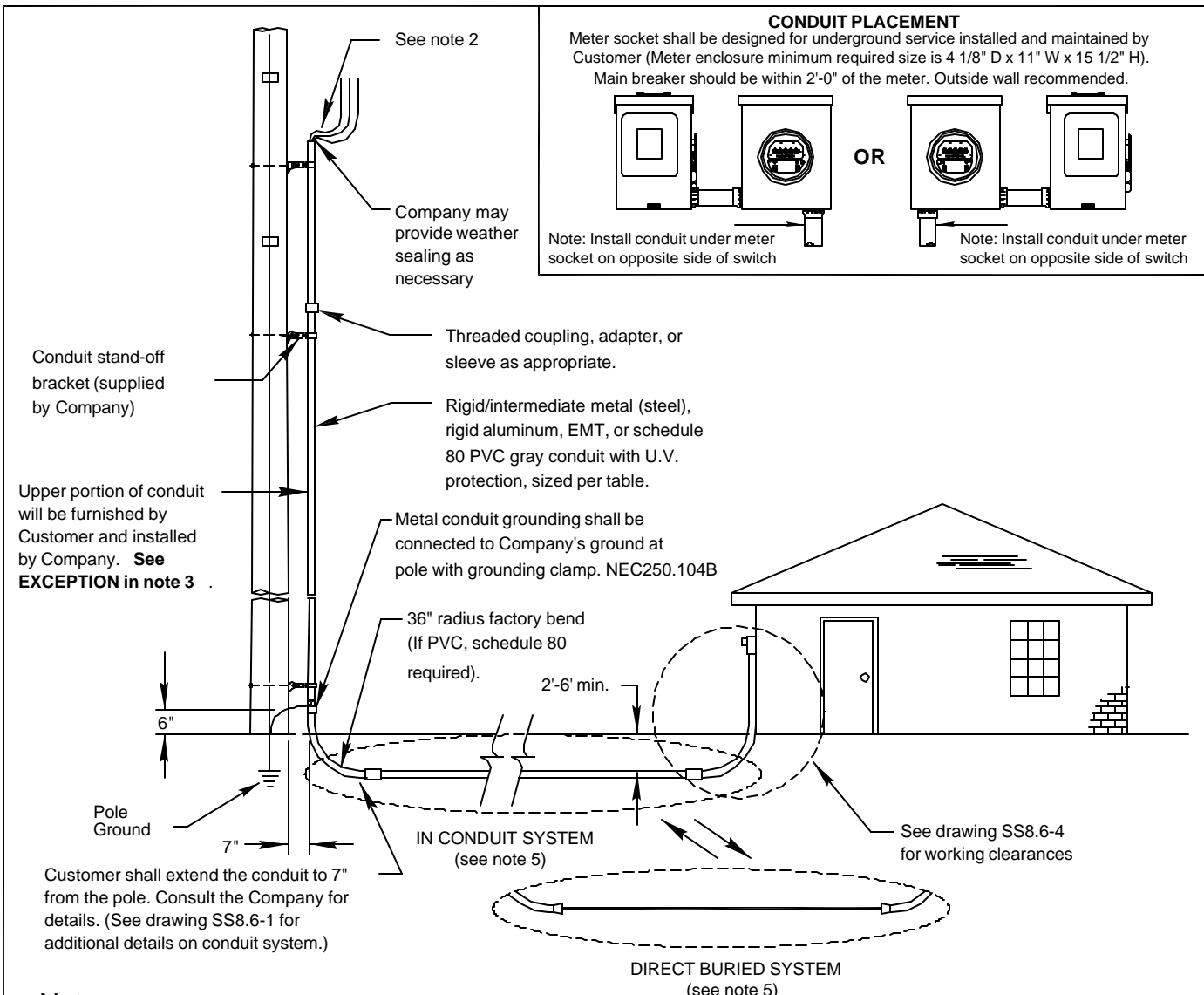
- NOTES:**
- Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
 - Meter enclosure shall be installed and maintained by the Customer.
 - Conduit system shall be installed to within 2'-0" of the transformer pad or secondary pedestal. End of conduit to be sealed and location marked. Consult Company for specific location.
 - The Customer shall install 80lb non-metallic (manila or grass) pull line or bull tape in the conduit. Conductor normally supplied by Company.
 - Consult a Company Representative for required system in your area.
 - See drawing SS8.6-6 for equipment work clearance.
 - For grounding information see section 13.5.

Minimum Customer Wiring Size - Family Residence Single Phase				
METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	2"	#2	#4	#6 *
200 Amp	2.5" ***	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire
 * Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)
 ** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)
 *** Arkansas locations only allows 2"

NO.	DATE:	REVISION	BY:	APPR:
5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

ENTERGY SERVICES, INC.			
PADMOUNT TRANSFORMER OR SECONDARY PEDESTAL SERVING A CUSTOMER			
APPROVED BY:	JDS	DATE:	April 1998
CHECKED BY:	LKE	SCALE:	3/8"=1'-0"
DRAWN BY:	WINK-AJC		
		No. SS8.6-2	
PLOT	1=1	SH.	1 OF 1



Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. See sec. 8.6.4 & 10.2.1 for information on multiple conduit installations on Company poles.
3. The Company will install the Customer supplied riser material up the pole. The Customer shall supply enough conduit to extend up the pole to a point 50" above the Telephone Co.'s and/or Cable TV Co.'s cable. When these minimum conditions cannot be satisfied, the Customer shall consult the Company. The Customer shall secure the riser material at the meter entrance for installation by the Company. **(EXCEPTION: In Arkansas the conduit for the riser is supplied by the Company)**
4. The Customer shall install 80lb. non-metallic (manilla or grass) pull line or bull tape in the conduit. Conductors normally supplied by Company.
5. Consult a Company Representative for required system in your area.

METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	2"	#2	#4	#6 *
200 Amp	2.5" ***	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire
 * Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)
 ** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)
 *** Arkansas locations only allows 2"

5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTIONS GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

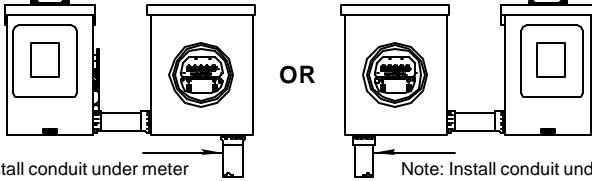
Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.			
TYPICAL SINGLE PHASE RESIDENTIAL UNDERGROUND SERVICE FROM OVERHEAD SOURCE			
APPROVED BY:	JDS	DATE:	April 1998
CHECKED BY:	LKE	SCALE:	NONE
DRAWN BY:	WINK-AJC		
		No. SS8.6-3	
PLOT	1=1	SH.	1 OF 1

CONDUIT PLACEMENT

Meter socket shall be designed for underground service installed and maintained by Customer (Meter enclosure minimum required size is 4 1/8" D x 11" W x 15 1/2" H). Main breaker should be within 2'-0" of the meter. Outside wall recommended.



Note: Install conduit under meter socket on opposite side of switch

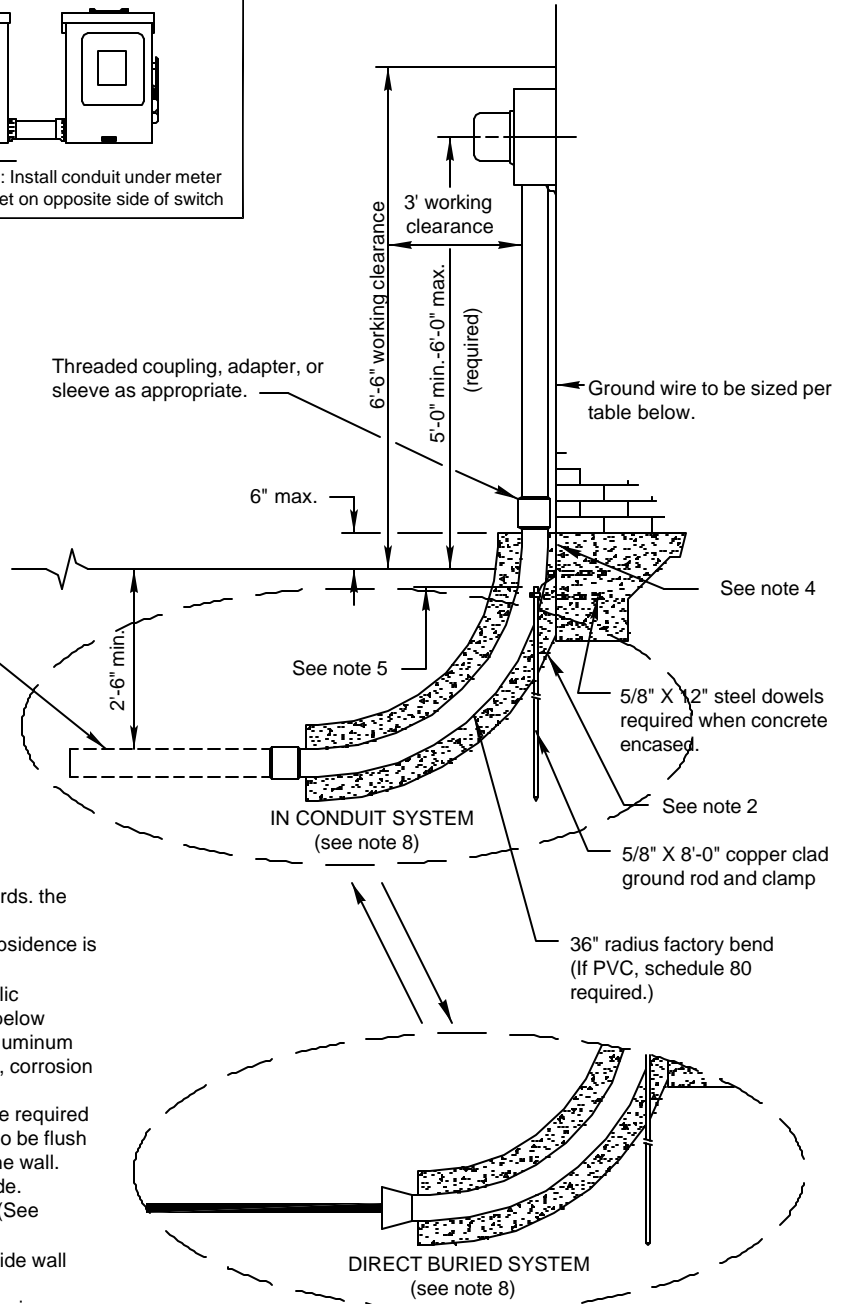
Note: Install conduit under meter socket on opposite side of switch

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

When installing conduit system, Customer shall extend conduit to pole or underground system. Consult the Company for details. (See drawings SS8.6-2 and SS8.6-3)

Threaded coupling, adapter, or sleeve as appropriate.



Notes:

- Customer facilities shall comply with Company Standards, the NEC, and authorities having jurisdiction.
- Concrete encasing on elbow is required where soil subsidence is possible, consult with Company.
- Conduit shall bear the U.L. label, either rigid nonmetallic (schedule 80 PVC above ground and schedule 40 PVC below ground, grey only) or rigid/intermediate metal conduit (aluminum not permitted below ground line). If metal conduit is used, corrosion protection shall be provided.
- Conduit shall be flush with wall. The foundation may be required to have blocked out area for conduit in order for conduit to be flush with wall when installed. Conduit is not allowed behind the wall.
- Upper end of ground rod to be flush with or below grade.
- Conduit required in restricted access or paved areas. (See section 8.6.1)
- Main breaker should be within 2'-0" of the meter. Outside wall recommended.
- Consult a Company Representative for required system in your area.

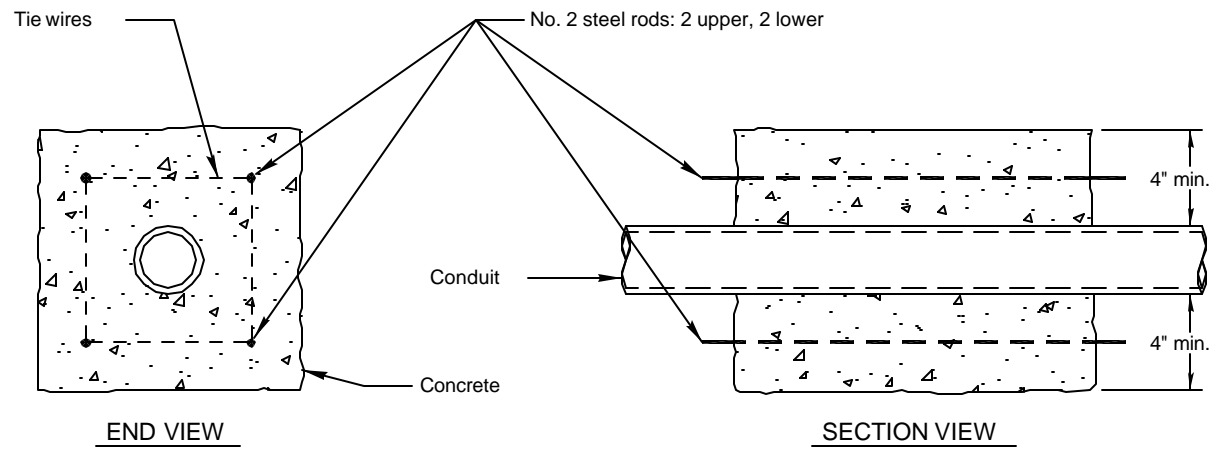
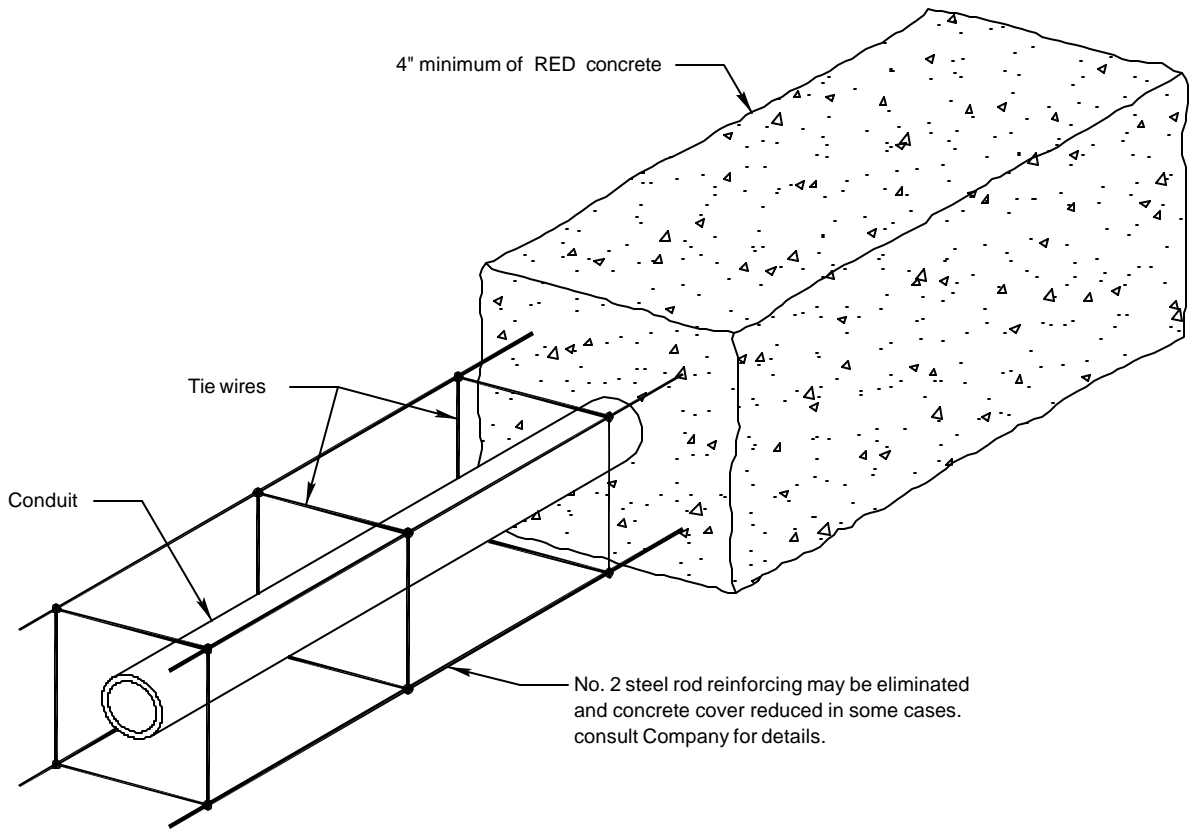
Minimum Customer Wiring Size - Family Residence Single Phase

METER SIZE	CONDUIT SIZE	Current carrying & neutral wire size (per NEC)		GROUND WIRE SIZE
		ALUMINUM	COPPER	
100 Amp	2"	#2	#4	#6 *
200 Amp	2.5" ***	4/0	2/0	#4 **
320 Amp	3"	Consult NEC		

See NEC 310.15(B) (6) - phase conductors: NEC 220.61 - Neutral, and NEC 250.66 - Ground Wire
 * Wire smaller than #6 must be protected from physical damage (see NEC 250.120C)
 ** For sole connection to rod, plate or pipe type electrode #6 AWG Cu is allowed (see NEC250.66A)
 *** Arkansas locations only allows 2"

NO.	DATE:	REVISION	BY:	APPR:
4	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	

ENTERGY SERVICES, INC.			
DETAILS FOR TYPICAL SINGLE PHASE RESIDENTIAL UNDERGROUND SERVICE AT HOUSE			
APPROVED BY:	JDS	DATE:	April 1998
CHECKED BY:	LKE	SCALE:	NONE
DRAWN BY:	WINK-AJC		
		No. SS8.6-4	
PLOT	1=1	SH.	1 OF 1



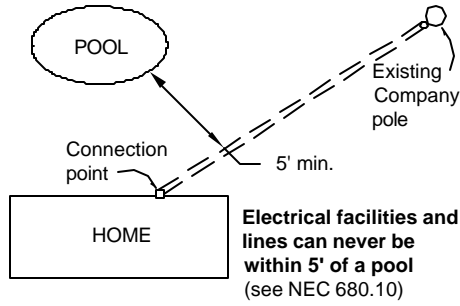
Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

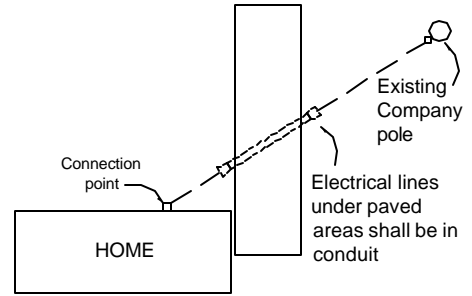
ENTERGY SERVICES, INC.	
TYPICAL DETAIL OF METAL CONDUIT ENCASED IN CONCRETE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: 1 1/2"=1'-0"
DRAWN BY: WINK-AJC	
No. SS8.6-5	
PLOT 1=1	SH. 1 OF 1

2	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

UNDERGROUND CLEARANCE FOR SWIMMING POOL

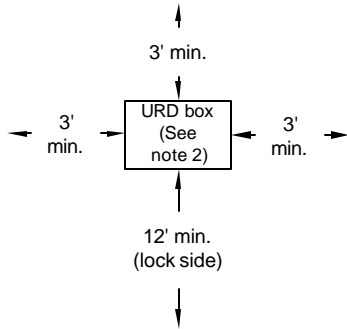


UNDERGROUND REQUIREMENTS FOR PAVED AREAS

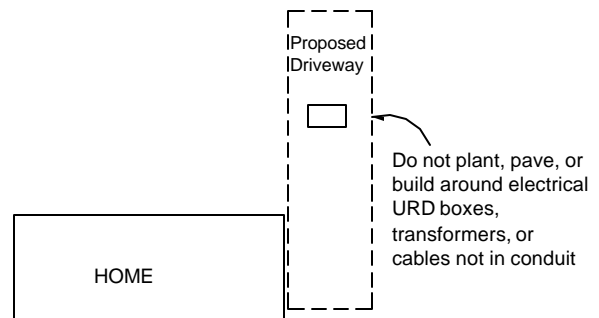


UNDERGROUND FACILITIES CLEARANCES

From shrubs, trees, buildings, fences, decks etc.

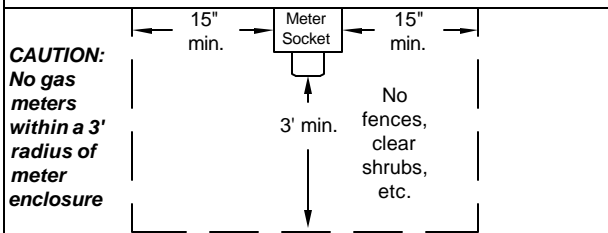


DO NOT BLOCK ACCESS TO ELECTRICAL FACILITIES



METER CLEARANCES

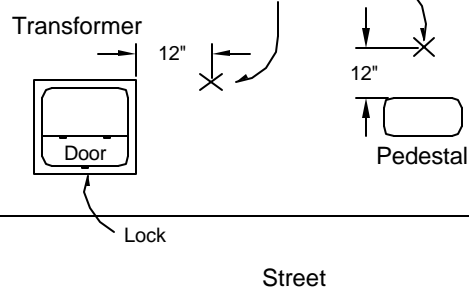
HOUSE



CAUTION:
No gas meters within a 3' radius of meter enclosure

For residential service, the meter is to be located on the outside of the building on the side of the residence within three feet of the front wall and outside of the fences on the side most economical to reach the Company's facilities.

Place temporary underground service wire here (underground 30" deep)



Call 48 Hours Before You Dig 1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

Notes:

1. The Customer is responsible for clearing and maintaining all right of way.
2. Transformers must meet requirements of drawing SS10.1-1

2	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

ENTERGY SERVICES, INC.

Underground Service Installation Details & Clearances

APPROVED BY:	JRH	DATE:	April 2002
CHECKED BY:	LKE	SCALE:	None
DRAWN BY:	DAT		

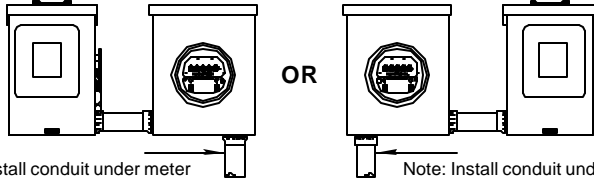


No. SS8.6-6

PLOT 1=1 SH. 1 OF 1

CONDUIT PLACEMENT

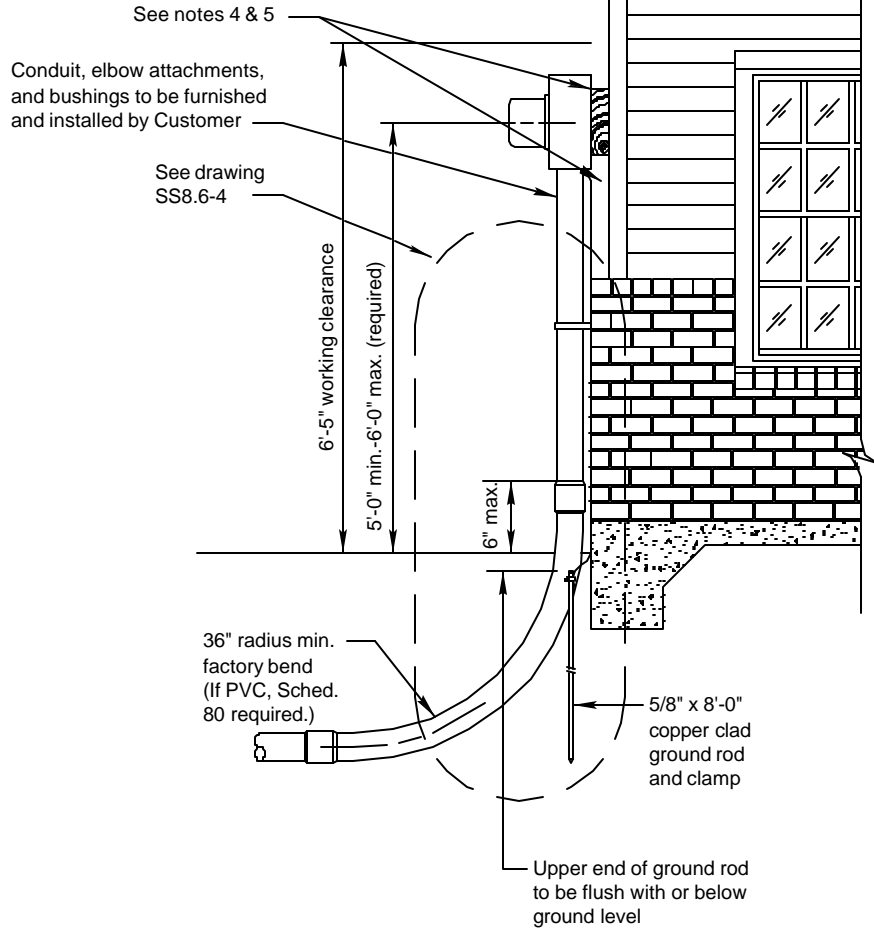
Meter socket shall be designed for underground service installed and maintained by Customer (Meter enclosure minimum required size is 4 1/8" D x 11" W x 15 1/2" H). Main breaker should be within 2'-0" of the meter. Outside wall recommended.



Note: Install conduit under meter socket on opposite side of switch

Note: Install conduit under meter socket on opposite side of switch

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Meter socket shall be installed and maintained by the Customer.
3. The Customer shall install 80lb test non-metallic (manila or grass) pull line in the conduit. Conductor normally supplied by Company.
4. Bends and turns in the conduit to fit the contour of the wall or slab are not permitted. Cable binding may occur in bent conduit, causing failures. Any turns or bends shall have a minimum radius of 3'-0".
5. Spacing material, such as treated wood or metal, to be rigidly and securely attached to structure at a sufficient thickness to keep the conduit to the meter free of bends.

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.

INSTALLATION REQUIREMENTS FOR MIXED SIDING FINISHES ON RESIDENCES

APPROVED BY:	JRH	DATE:	2/05
CHECKED BY:	JED	SCALE:	None
DRAWN BY:	DAT		

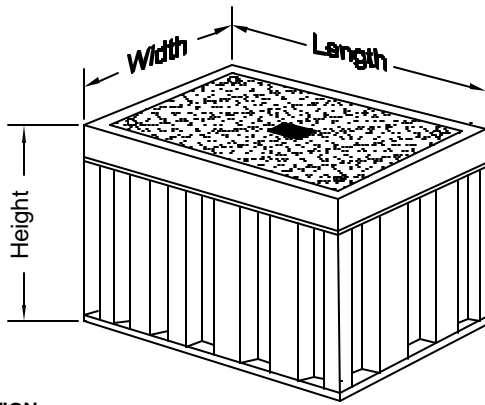
No. SS8.6-7



PLOT 1=1 SH. 1 OF 1

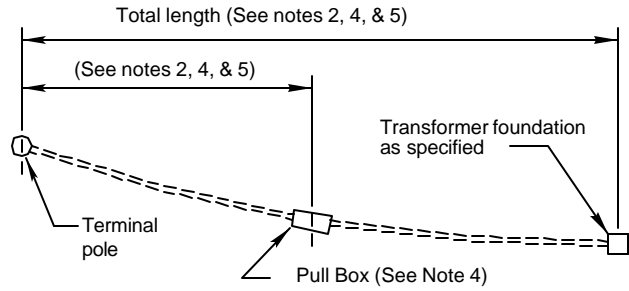
1	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

PULL BOX FOR PRIMARY SYSTEM

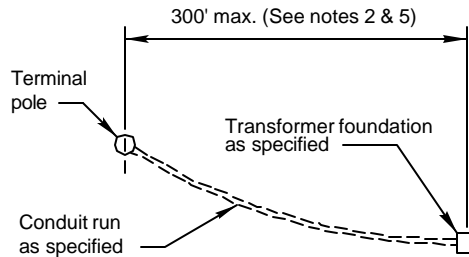


CAUTION:

Pullboxes are typically designed for green spaces or where only accidental or rare light vehicle traffic occurs. Mall parking lots, roads, and other areas should require vaults. Consult the Company before specifying or purchasing any pullbox.



INSTALLATION WITH PULLBOX



STANDARD INSTALLATION

NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. It is recommended that the Customer contact the Company prior to the installation of the conduit system or the transformer foundation.
3. The Customer shall typically bear the cost of conduit and other material and the installation from the terminal pole to the transformer foundation.
4. If more than two 90° bends are required in a 300' run, including riser bends, an approved pull box may be required.
5. The number and location of pull boxes and the total length of conduit run to be installed shall be approved by the Company.
6. If pull boxes are required, they shall be of sufficient strength to support probable local traffic. Consult the Company before specifying or purchasing any pullbox.
7. The Customer shall install minimum 80 lb. non-metallic (manilla or grass) pull line or bull tape in the Customer's conduit. Conductor normally supplied by Company.
8. Conduit below grade shall be separated from telephone, cable, or water facilities by not less than 3" of concrete, 4" of brick masonry, or 12" of well tamped earth and 18" of well tamped earth for gas facilities.
9. Rigid steel elbows may be required.
10. Conduit sizes and elbow radius shall be as shown in table.
11. Conduit shall bear the U.L. label, either rigid nonmetallic (schedule 80 PVC above ground and schedule 40 PVC below ground) or rigid/intermediate metal conduit. (aluminum not permitted below grade). If metal conduit is used below grade, corrosion protection shall be provided.
12. A spare set of conduits is recommended.

CONDUIT TABLE

CONDUCTOR SIZE (AWG)	ONE CABLE	THREE CABLES	ELBOW RADIUS
15,000 VOLT			
#2	2"	4"	36"
1/0	2"	4"	36"
4/0	2"	5"	36"
750 kcm	3"	6"	36"
25,000 VOLT			
#1	2"	5"	36"
2/0	3"	5"	36"
750 kcm	3"	5"	36"
35,000 VOLT			
1/0	3"	5"	36"
750 kcm	3"	6"	36"

Call 48 Hours Before You Dig

1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.

TYPICAL PRIMARY SERVICE TO SINGLE PADMOUNT TRANSFORMER SERVING COMMERCIAL OR INDUSTRIAL CUSTOMER

APPROVED BY: JDS DATE: April 1998

CHECKED BY: LKE SCALE: NONE

DRAWN BY: WINK-AJC



No. SS8.7-1

PLOT 1=1 SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:
4	2/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTIONS GROUP RECOMMENDATIONS	MCC	

Section 9 Miscellaneous Services (Moved to Section 4, Types of Services)

Section Preserved for future use.

Section 10 Transformers, Vaults and Substations

10.1 General Comments

When large concentrated loads or long distances are encountered, it is frequently necessary to install transformers on or in the Customer's property. In such cases, high voltage conductors are taken directly to the vault or transformer. Whether transformers are to be installed outside, on, or in the Customer's property, the Customer shall provide a suitable location. The Customer shall consult the Company regarding the location, size, and construction of the facilities during the design and planning phase. Installations will vary so widely that the Customer shall consult with the Company so that arrangements can be worked out to the benefit of both parties.

In the interest of public safety, it is imperative that all transformers be readily accessible to the Company at any time of the day or night. In all but the most unusual cases, the Customer shall equip each door (or other barrier) between the transformer and the nearest public access with locks that can be opened by the Company. These locks will be provided by the Company and installed by the Customer.

For ready access to unenclosed pad mount transformers, a minimum clearance of three feet from the side and back edges of the pad and twelve feet from the front of the transformer shall be maintained at all times. See **Drawing SS10.1-1** for other restrictions on transformer placement. The Company, at its option, may require a barricade to be installed to prevent damage to the meters or encroachment on the clearances (driveways, parking lots, etc.)

The Company will not energize its facilities until the installation is:

1. made in accordance with manufacturer recommendations and engineering standards,
2. approved by authorities having jurisdiction, and
3. acceptable to the Company.

Adequate access and support to accommodate line trucks or other necessary lifting and hauling equipment shall be provided and maintained by Customer to allow for maintenance, operation or replacement of equipment at all hours.

10.2 Fences, Screen Walls, Decorative Walls

The Company will not construct, reimburse the Customer, or accept ownership and maintenance responsibility of any fences, screen walls, or decorative walls around pad mount transformer installations or vaults. Prior written approval shall be obtained from the Company before the Customer constructs such walls or fences. Adequate space and means of ingress and egress (such as wide removable panels) shall be provided to operate, maintain, remove and replace transformer, metering or other equipment located behind the fence or wall. See **Drawing SS10.1-1**.

10.2 Fences, Screen Walls, Decorative Walls - Continued

The Company will construct or reimburse the Customer and accept ownership and maintenance responsibilities for chain link fences meeting Company specifications which are required for protection around ground type substations.

10.3 Types of Transformer Installations

The Company provides electric service from one of the following general transformer installations:

1. Pole mounted transformers, one or cluster of two or three transformers
2. Two pole transformer platform
3. Ground substations, fenced
4. Padmount transformers,
5. Transformer vaults, usually on the Customer's premises.

10.4 Pad Mount Transformers

Pad mount transformers are generally provided, owned and maintained by the Company for underground service to residential subdivisions, mobile home parks, shopping centers, and commercial and industrial Customers. Consult the Company for requirements and availability in totally underground systems.

For pad-mount transformers in non-residential applications, the Customer will provide the conductors to the transformer secondary terminals.

10.5 Transformer Vaults

Transformer vaults are generally provided, owned, and maintained by the Customer on the Customer's premises and constructed in accordance with the Company's specifications and all applicable codes. Vaults should be located where they can be vented to the outside air without ducts. Vaults shall be provided with suitable hasps for the Company's padlock. These locks will be provided by the Company and installed by the Customer.

The Company will generally provide and install the transformers and primary cables in the Customer's vault. The Customer will provide the transformer vault, service conduits, and extend the service cables into the vault. The cable extensions shall have sufficient length of slack cable for the Company to connect them to its facilities. The meter shall always be located outside the transformer vault.

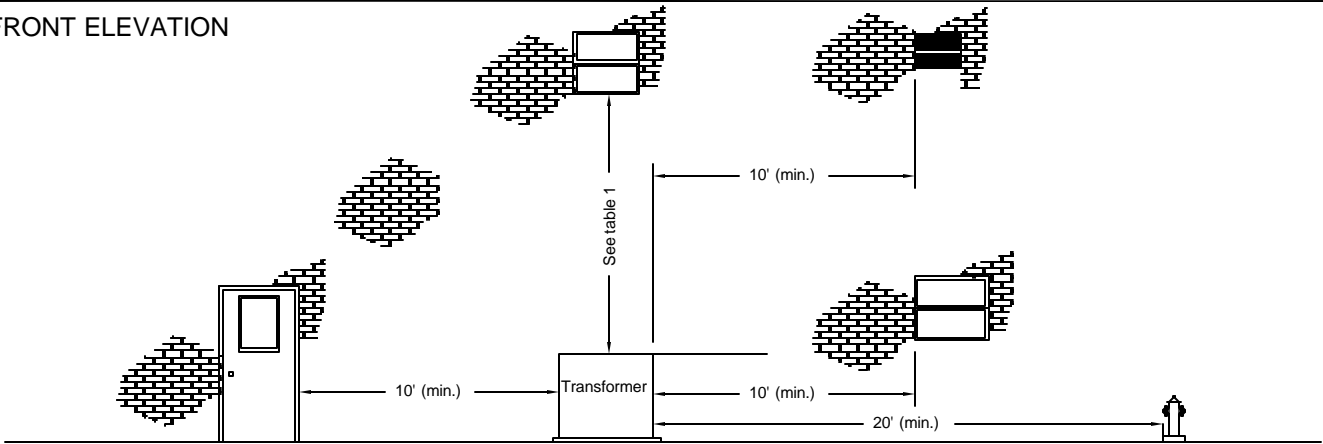
Consult Company so that satisfactory plans and specifications may be worked out for each individual case.

10.6 Termination of Secondary Conductors to Transformers for Non-Residential Services

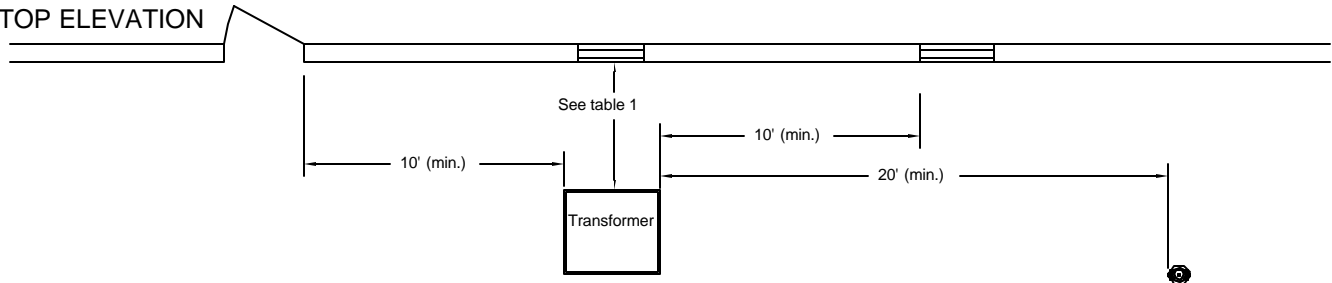
Terminals for secondary conductors shall be installed as provided in Section 8.12, Termination of Customer's Conductors in Company's Pad-Mounted Transformers.

The phasing, sizing and proper length of conductors is the sole responsibility of the Customer. The Customer shall also be responsible for properly marking the phases. The Company will generally make connection of the terminals to the connectors of the transformer.

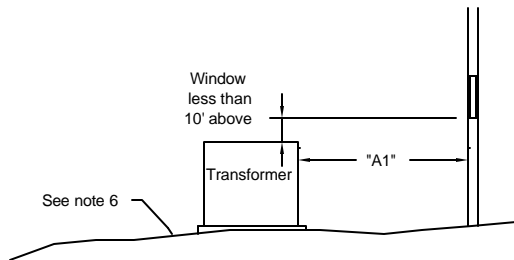
FRONT ELEVATION



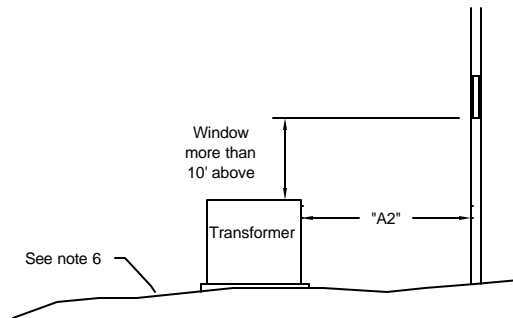
TOP ELEVATION



SIDE ELEVATION
OPTION "A1" in Table 1



SIDE ELEVATION
OPTION "A2" in Table 1



NOTES:

1. The transformer shall be installed so that the front of the unit does not face the building.
2. Adequate passageways to accommodate line trucks or other necessary lifting and hauling equipment shall be provided to allow for maintenance, operation or replacement.
3. No portion of the the building shall extend over the transformer.
4. The 20' minimum dimension to the fire hydrant also applies to fire escapes.
5. The 10' minimum dimension to the doorway also applies to open stairways.
6. Drainage of the area surrounding the transformer shall be away from the building.
7. There shall be no above ground obstructions such as cooling towers, shrubs, plants, or fences, within 12' of the front of the transformer pad or within 3' of the sides or back of the transformer pad.
8. It shall be the Customer's responsibility to comply with any insurance regulations, building codes, and local ordinances affecting the installation.

TABLE 1

STRUCTURES	"A1"	"A2"
STEEL OR MASONRY	10'	3'
WOOD	10'	10'

ENTERGY SERVICES, INC.			
LOCATION OF TRANSFORMERS AND OTHER OIL FILLED EQUIPMENT			
APPROVED BY: JDS		DATE: 04-03-95	
CHECKED BY: LKE		SCALE: NONE	
DRAWN BY: VSS			
		No. SS 10.1-1	
		PLOT 1=1	SH. 1 OF 1

2	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT		
1	8/17/99	REFERENCE DRAWING TO DAS01281	DAT	LKE	
NO.	DATE:	REVISION	BY:	APPR:	

Section 11 Metering Installations and Equipment

11.1 General Comments

11.1.1 Responsible Parties

The metering equipment is usually installed on the Customer's premises (on Customer owned building; pole or structure also see NEC 314.23 *Supports*) as part of the service entrance equipment, therefore provisions shall be made for it in the Customer's installation. The Company will provide, as required, meters, metering transformers, relays, color-coded cable and transformer-rated meter sockets. The type of equipment supplied will depend on the requirements of the applicable rate schedule and the Company's standard practices.

The Customer will be required to provide the Company with information regarding the total connected load. The Customer may be required to provide and / or install the meter socket, metering transformer enclosure and adequate attachments or devices for attaching Company's metering facilities to the building. (This may require running conduit through eaves of roof and other similar necessities that could alter the Customer's building.)

11.1.2 Meter Socket Specifications

1. All meter sockets have a UL label which signifies they meet ANSI C12.7 and UL 414.
2. All meter sockets shall be sealable and in serviceable condition. (The Company recommends socket pans that provide a knockout in the front cover and flange inside for barrel-locking.)
3. On combination meter/ breaker boxes, the wires behind the breakers and the Company wires shall be secured behind separate barriers. Company personnel shall have access to Company wires without exposing the wires behind the breakers.
4. All sockets except residential single phase less than 320 Amps shall have a manual mechanical gang operated bypass switch. Horn bypasses and similar devices are not allowed. Service entrance wires shall enter and stay opposite of the by-pass switch. (Any commercial 100 amp service such as billboards and other non-critical small commercial services should consult with the Company.)
5. The lugs in 320 Amp meter sockets shall accept up to 500 MCM conductors.
6. For 5 terminal meter sockets, the 5th terminal shall be physically secured to the meter socket. It should be relocatable but shall be securely attached to the socket in the proposed operating position.
7. In accordance with all applicable codes, a socket shall be properly installed and used in the application for which it is designed. Load and supply wires shall not cross in the meter socket. Overhead sockets are required in overhead installations and underground sockets are required in underground installations. (Example of an inappropriate application: A three-gang meter socket installed on a duplex apartment building is not acceptable.) Meter pan socket shall be large enough to accommodate

conductor size see NEC 300.34 Conductor Bending Radius. **For meter sockets in underground installations, minimum size shall be D 4 1/8" X W 11" X H 15 1/2 "**. Customer shall properly seal all unused openings on the meter socket assembly.

8. If ring-type sockets are used, Customer shall supply a meter ring to secure the meter in the socket. The ring should be stainless steel.

11.1.3 Meter Transformer Enclosure Specifications

The Company specifies instrument transformer enclosures that accommodate the Company's equipment standards. These standards may differ from manufacturer's specifications if determined only by ampere ratings. Therefore, Customers or their agents should determine the enclosure size based upon the size and number of service conductors as well as ampere ratings. Instrument transformers shall be bolted to the back-plate and each shall be capable of being removed individually. The back plate is in addition to the back wall of the enclosure and shall be metal or 3/4" plywood. All enclosures should be rain-tight (NEMA 3R).

For 600 amps or below or single conductors of 750 MCM or greater and parallel conductors up to and including 500 MCM, the **minimum** requirements are:

Aluminum or 14 gauge G90 steel enclosure, 14"D x 32" W. X 40" H., with a back-plate, front cover that is hinged and sealing latches.

For 600 –800 amps or parallel conductors greater than 500 MCM, the **minimum** requirements are:

Aluminum or 14 gauge G90 steel enclosure, 14" D. X 32" W. x 54" H., with a back-plate, front cover that is hinged and sealing latches.

For 800 amps or parallel conductors greater than 750 MCM contact Company for requirements

Service connections cannot be made in an instrument transformer enclosure.

11.2 Meter Connections and Seals

The Company shall install the meters, seal all meters, and seal all instrument transformer enclosures. Except as noted below, only the Company and its authorized agents are permitted to break or replace a seal, or to remove or change a meter. Under certain conditions, and with specific approval of the Company, authorization may be obtained by a licensed electrical contractor to remove a Company meter seal. The contractor shall obtain approval prior to removing the meter seal, or notify the Company after doing so under unusual circumstances. Any infringement or violation shall be dealt with in accordance with the Company procedure for dealing with meter tampering.

Also see Section 7.7, 480-Volt Metered Service.

11.3 Meter Clearance

Meters and metering equipment enclosures shall be mounted in locations that will provide at least 15 inches clearance on all sides and at least three feet in front. Exceptions to this section must be approved by the Company. Equipment and clearances shall be within Customer's property. See **Drawing SS8.6-6**.

The additional requirements for distance between a gas meter and an electric meter are as follows:

- National Gas Code 2.7.2 Gas Meter Locations (c), Gas meters shall be located at least 3 feet (0.9 m) from sources of ignition.
- Office of Pipeline Safety, Part 192 Minimum Federal Safety Standard. #192.353 Customer meters and regulators: Location (c), which states that each meter installed within a building must be located in a ventilated space and not less than 3 feet (0.9 m) from any source of ignition or any source of heat that may damage the meter.

An electric meter is a possible source of ignition whether located inside or outside of a building.

11.4 Outdoor Meters

An outdoor meter installation is the Company's standard for all new installations and where practicable on rewired installations. (For example, locations inside porches or beneath carports are not considered as being outdoors.) To facilitate reading by both the Customer and the Company and to provide accessibility for testing, the Company requires that outdoor meters be mounted between five and six feet above finished grade.

11.5 Location of Meter Installations

In all cases, the Company designates the meter location. The Company should always be consulted to determine the meter location on any new building or renovation. For residential service, the meter is to be located on the outside of the building on the side of residences within three feet of the front wall and outside of fences on the side most economical to reach the Company's facilities. This location minimizes the Company's required access to the Customer's premises. The Company will endeavor to select a meter location that will be satisfactory and economical for the Customer and at the same time convenient to the Company in providing the necessary connections as part of the service entrance installation. See **Drawings SS7.1-1** and **SS8.6-4**.

Prior written approval of the Company is required to locate the meter other than in the preferred location, and the Customer shall pay any and all appropriate charges. Approval of the Company to locate the meter elsewhere will not be given unless the meter is and will remain readily accessible. Construction of pools, decks, fences or any structure near, under or over electrical facilities may cause a code and / or safety violation and may require relocation of the meter, connection point and/or electrical facility at Customer expense. Consult the Company concerning all clearances.

11.5 Location of Meter Installations (continued)

The meter shall not be installed above or behind any piece of apparatus or machinery. The location should be such as to minimize the possibility of damage from moisture, vibration, dirt, mechanical damage and corrosive or dangerous fumes. The meter shall be in a safe location accessible to the Company at all hours.

In locations where the metering installation is difficult to access, the Company may require at its option, the use of the Customer's telephone line to access the meter for reading and programming.

11.6 Grouping of Meters

When more than one meter is involved, the meters shall be grouped at one location. Therefore, it is important that a meter location be selected which will provide ample space for the meters required. In-group installations, the Customer shall permanently mark both meter loops and service switches. **Permanently attached tags are required.** The lettering on each tag shall be 3/16 inch or larger and be either raised or incised on each tag. Each tag shall be riveted or glued to the meter loop or switch. The tags shall identify the space served by each meter and service switch; and will be for future reference when servicing or repairs are required.

Where the Customer furnishes Ganged Factory Bussed Meter Sockets, the Customer shall check with the Company for approval before purchasing. These shall have provisions for locking each individual meter space. These shall also allow for any one meter to be removed or serviced without disturbing the other meters. The metering installation should be as tamper-proof as possible. It is important that the equipment be of good quality and strength so that corrosion and deterioration will not present security problems.

Where the Company provides underground service, all non-residential underground services for multiple meter arrangements shall terminate in a junction box. See section 8.7 Requirements for Commercial, Industrial and Other Non-Residential Underground Service for details of required junction box. Diagrams of typical meter installations and layout are shown in the drawings listed below.

Drawing No.	Description
SS11.6-1	Typical Multiple Meter (Field Assembled), OH Service.
SS11.6-2	Typical Multiple Meter (Pre-assembled), OH Service.
SS11.6-3	Typical Multiple Meter (Field Assembled), UG Service.
SS11.6-4	Typical Multiple Meter (Pre-assembled), UG Service
SS11.6-5	Typical Multiple Meter Three Phase Service

11.7 Meter Mounting Height

To facilitate reading, resetting and servicing, the preferred mounting height of a single meter or a single row of meters is 5 1/2 feet above the ground to center of the meter(s). It shall not be less than 5 feet and no more than 6 feet above ground to center of the meter(s).

The height of the meter may be increased to accommodate flood plains (see [Drawings SS11.7-1 & SS11.7-2](#)). At all times Customer shall furnish a permanent four foot by four foot (4' X 4') platform, five to six feet below the center of the meter with permanent rails around the platform and steps. Consult Company for details.

Where two meters are mounted vertically on a wall as a gang installation, the upper meter shall be mounted at least 5 1/2 feet to center above ground, and not more than 6 feet to center above ground. The lower meter shall be mounted so as to allow three inches clearance between meter sockets. Where more than two meters are to be installed as a gang installation, they shall be mounted in horizontal rows.

Individually metered apartment complexes may have meters installed in manufactured combination meter enclosure and switchgear assemblies. Such assemblies shall not have more than six horizontal rows of meters. When such assemblies are installed indoors or in enclosures, the center of the highest meter shall not be more than 6 1/2 feet above the floor and the center of the lowest meter shall not be less than 18 inches above the floor or bottom of enclosure. When such assemblies are mounted on the exterior walls of a building, the center of the highest meter shall not be more than 6 1/2 feet above finished grade and the center of the lowest meter shall not be less than 34 inches above finished grade. Assemblies mounted on the exterior walls of a building shall be rain tight. Where more than one meter shall of necessity be mounted vertically on a pole, the top meter shall be mounted no more than 6 feet to center above final grade. Additional sockets shall be mounted to allow three inches clearance between sockets and the center of the lowest meter shall not be less than 34 inches above final grade. The Company, at its option, may require a barricade to be installed to prevent damage to the meters or encroachment on the clearances (driveways, parking lots, etc.)

11.8 Types of Meter Installations

11.8.1 Self-Contained Metering Installations

Normally, residential and small non-residential loads are metered with self-contained meters.

Customers desiring three-phase service with loads above 200 amps should consult the Company concerning availability of self-contained meters. All three phase self-contained meters shall have a meter socket containing a by-pass switch. All three-phase, four wire, 120 V / 240 V self-contained meter installation shall have the high voltage leg clearly and properly identified at the service entrance and connected to the right-hand (line) side of the meter socket. See [Drawing SS11.8-1](#) for wiring diagrams of the most common types of self-contained meters.

11.8.2 Instrument Transformer Installation

When in the Company's judgment the load exceeds the capacity of a self-contained meter (320 Amps), the Company shall provide instrument transformers and a transformer-rated socket. The Company will determine the type of metering to be used.

Unless specified by the Company, an instrument transformer enclosure (as described in Section 11.1.3) is required for all transformer-rated installations. The center of the enclosure shall not be less than eighteen inches above final grade and not more than six feet above grade. All transformer-rated sockets should be no more than 25 feet from the instrument transformer enclosure.

As the requirements involving this installation vary so much, it is not practical to describe requirements covering all installations. The Customer or contractor contemplating an installation of this nature shall consult with the Company as to the number, size, location of and provisions for mounting instrument transformers and metering enclosures. Upon request, the Company will furnish information regarding the type, dimensions and connections of metering equipment to be used. For larger installations it is essential that such information be obtained before wiring plans are completed.

All three phase, four wire 120V/240V transformer-rated installations shall have the high voltage leg clearly and properly identified at the service entrance. If the transformers are mounted horizontally, the high voltage leg should pass through the right-most transformer. If mounted vertically, the high voltage leg should pass through the bottom transformer.

11.8.3 Metering in Underground Network Areas

In underground network applications, special metering solutions are required. Consult the Company before purchasing any material or equipment.

11.9 Primary Metering Installations

Certain installations involve the use of large quantities of power where the Customer intends to use electricity without transformation or finds it convenient to own a distribution system and provide the transformers. In these cases the Company may provide service under one of the three options. (Note: In many cases, the Company does not provide the supporting structure and since each installation is unique, the Customer shall consult with the Company during the design phase of the proposed service.) The three options for furnishing service involving primary voltage delivery or metering are as follows:

1. Primary voltage delivery and metering: All service is delivered and metered at primary line voltage and the Customer owns and maintains all of the service transformers and substation installation, except for the metering equipment.
2. Primary voltage metering and secondary voltage delivery: All service is metered at primary line voltage and the Company owns some or all of the service transformers or substation installation. The Customer takes delivery at the secondary voltage level.

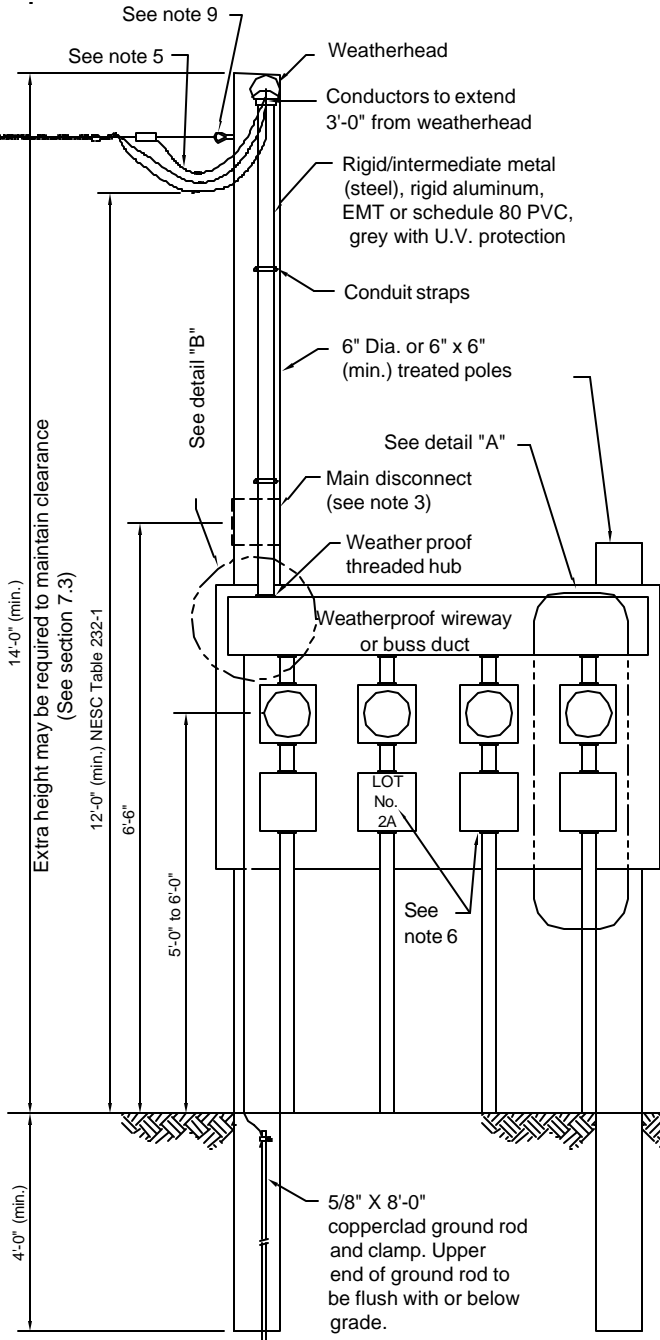
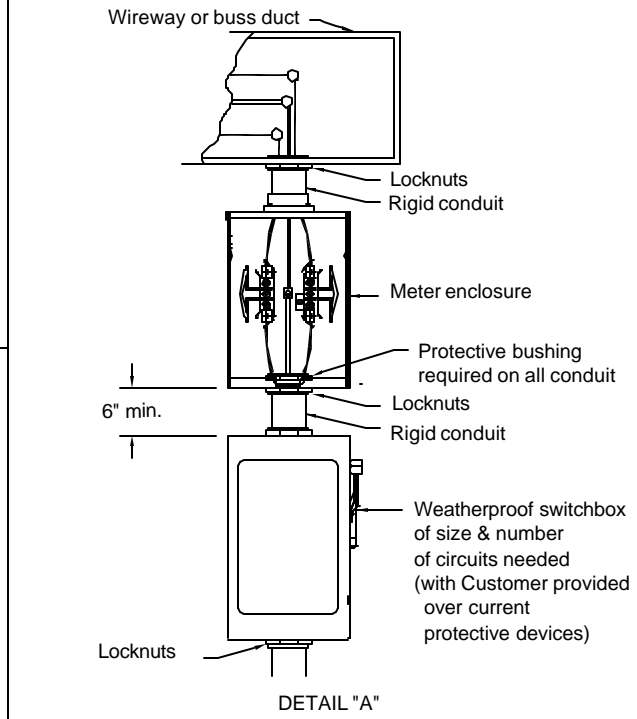
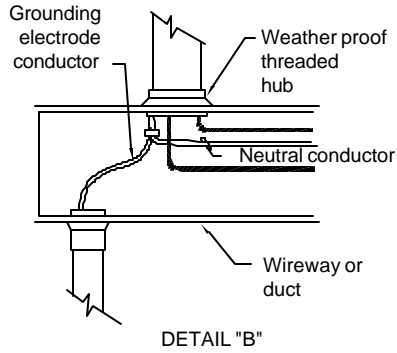
3. Primary voltage delivery and secondary voltage metering: All service is delivered at primary line voltage and the Customer owns and maintains all of the service installation on the Customer's premises, except for the metering installation. The meters are part of the service installation on the Customer's premises, but they are owned and maintained by the Company. Service is metered at the secondary voltage level.

Regardless of the option desired, when the metering installation is located on the Customer's premises, the Customer shall provide a suitable location without cost to the Company. The Customer shall also provide the Company suitable right-of-way over the premises for the Company's overhead primary circuit to the substation or in lieu thereof an underground service for primary voltage may be provided.

11.10 Meter Grounding

Grounding the metering installation is a safety consideration both for the Company and the Customer. The grounding connection shall be made in accordance with NEC Article 250 and any other referenced code and preferably in the meter socket. If the grounding connection is made anywhere other than the meter socket, the Customer shall be responsible for grounding continuity between the point where the grounding is made and the meter socket. (Also see Section 13.5, Grounding of Service Equipment.)

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. See sections 5.6 & 8.9 for additional information on mobile home parks.
3. A main disconnect is required for seven or more disconnects -(National Electrical Code article 230.71(a)). A main disconnect is recommended in all cases for isolation of this disconnect/meter group from any other groups served by the same Company transformer.
4. This installation applies to two (2) or more meters at one location.
5. Company installs, owns, and maintains service and service connectors. Neutral shall be marked with white tape on both ends and may be bare wire.
6. Each meter and disconnect shall be permanently and plainly marked to designate unit served.
7. Protective bushings required on conduits.
8. Company shall make connection at top of weatherhead only.
9. Customer Installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended.
10. All material shall be suitable for outdoor use.
11. Equipment to be installed at a location designated by the Company.
12. If a current transformer (CT) installation is required see SS11.8-2.

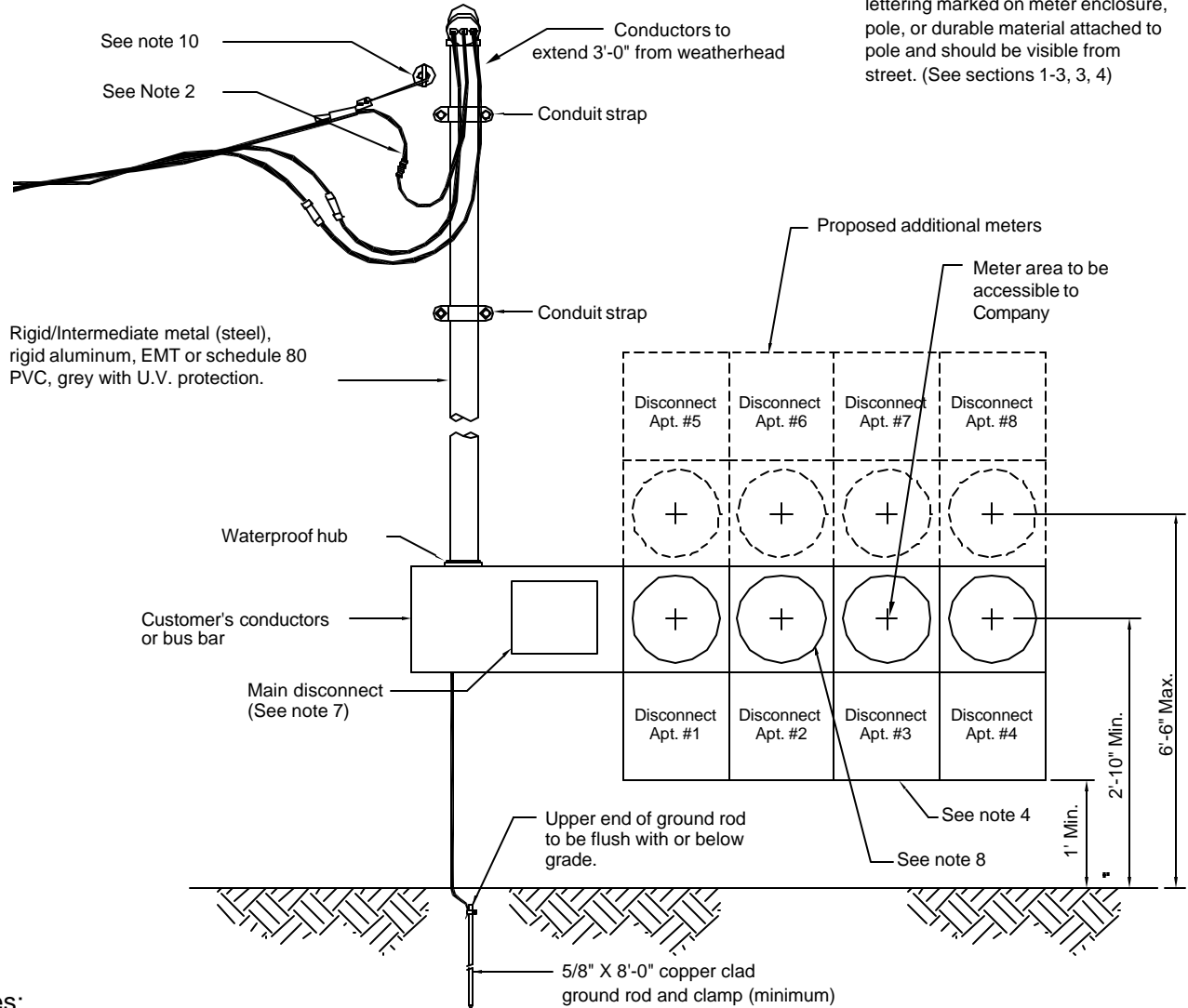
**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CUSTOMER OWNED MULTIPLE METER (FIELD ASSEMBLED) OVERHEAD SERVICE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS11.6-1	
PLOT 1=1 SH. 1 OF 1	

4	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTIONS GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



Notes:

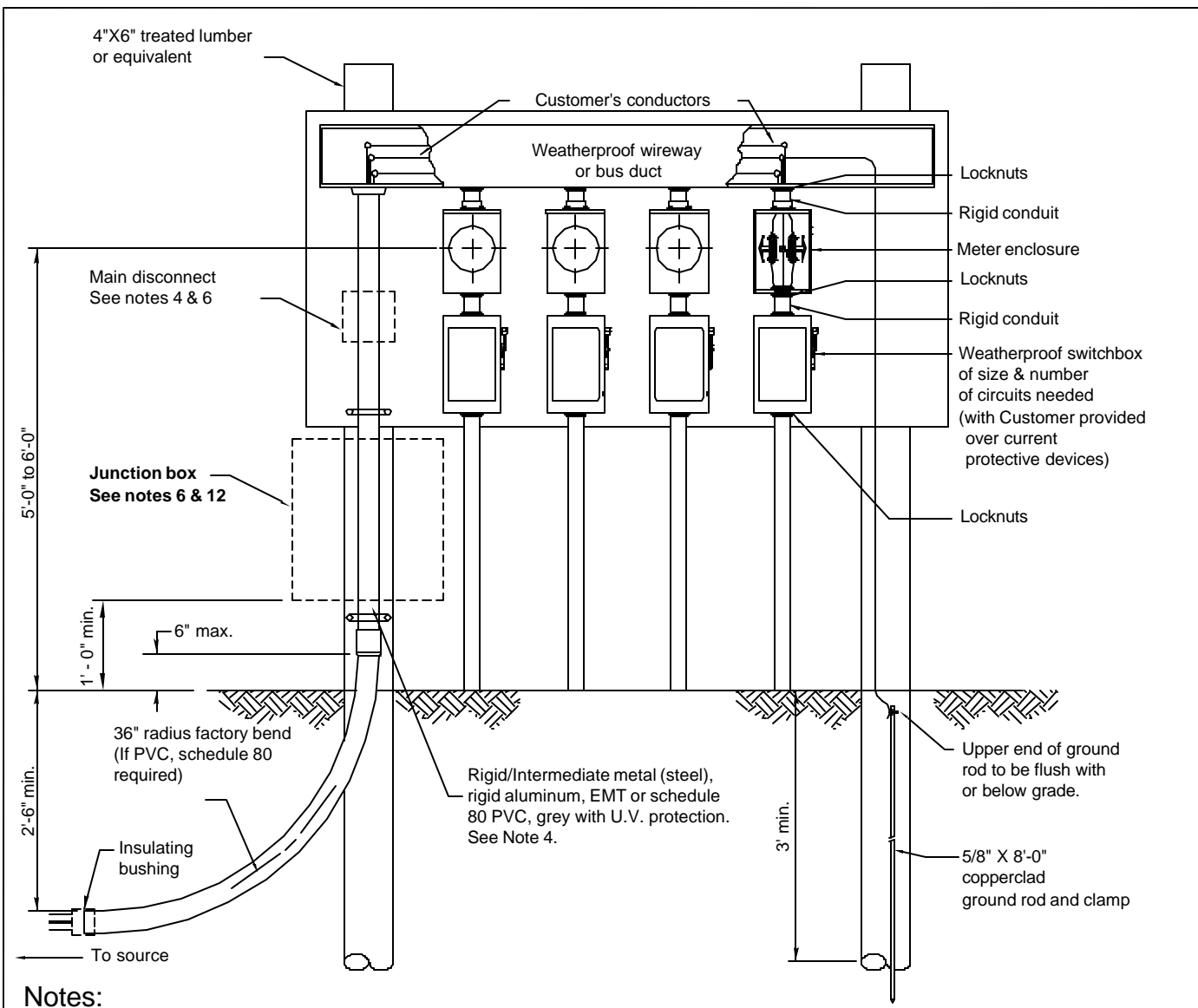
1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. The Company to furnish, install, and maintain connectors and conductors from service pole to this point. Neutral shall be marked with white tape on both ends and may be bare wire.
3. All other material to be furnished, installed, and maintained by the Customer.
4. For identification purposes all meter enclosures will be plainly and permanently marked to designate the particular apartment or office served.
5. Equipment to be installed at a location designated by the Company.
6. If the meters are secured with meter rings or faceplates with sliding/falling latching mechanisms, the rings/latching mechanism shall be capable of accepting both a seal and a lock and shall be constructed sturdy enough to prevent access to meters without first removing seal and lock. The rings/faceplate shall fit well enough to prevent tampering with meters if locking mechanism is secured.
7. A main disconnect is required for seven or more disconnects - (National Electrical Code article 230.71(a)). A main disconnect is recommended in all cases for isolation of this disconnect/meter group from any other groups served by the same Company transformer.
8. Company shall make connection at top of weatherhead only.
9. Each meter should have a separate cover that can be removed for repairs without disturbing other meters.
10. Customer Installed minimum 1/2" galvanized eye bolt with 2" x 2" square washer recommended.
11. Use masonry anchors to secure the meter socket assembly (plastic anchors are not allowed).
12. If a current transformer (CT) installation is required see SS11.8-2.
13. See section 8.7.1 for junction box sizing and Customer supplied connectors.

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CUSTOMER OWNED MULTIPLE METER (PRE-ASSEMBLED) OVERHEAD SERVICE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS11.6-2	
PLOT 1=1	SH. 1 OF 1

5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:



Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Size of conduit to be determined by the Company.
3. This installation applies to two (2) or more meters at one location.
4. A main disconnect is required for seven or more disconnects (National Electrical Code article 230.71(a)). A main disconnect is recommended in all cases for isolation of this disconnect/meter group from any other groups served by the same Company transformer. Utility connection shall be made on the line side of main disconnect or junction box.
5. See sections 5.6 and 8.9 for additional information on mobile home parks.
6. When the Customer provides, owns, installs, and maintains the secondary wire to the Company's transformer, a junction box is not required. Consult the Company.
7. Each meter and disconnect shall be plainly marked to designate unit served.
8. The Customer shall install 80lb test non-metallic (manila or grass) pull line or bull tape in the conduit.
9. All material shall be suitable for outdoor use.
10. Equipment to be installed at a location designated by the Company.
11. If a current transformer (CT) installation is required, see SS11.8-3.
12. See section 8.7.1 for junction box sizing and Customer supplied connectors.

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

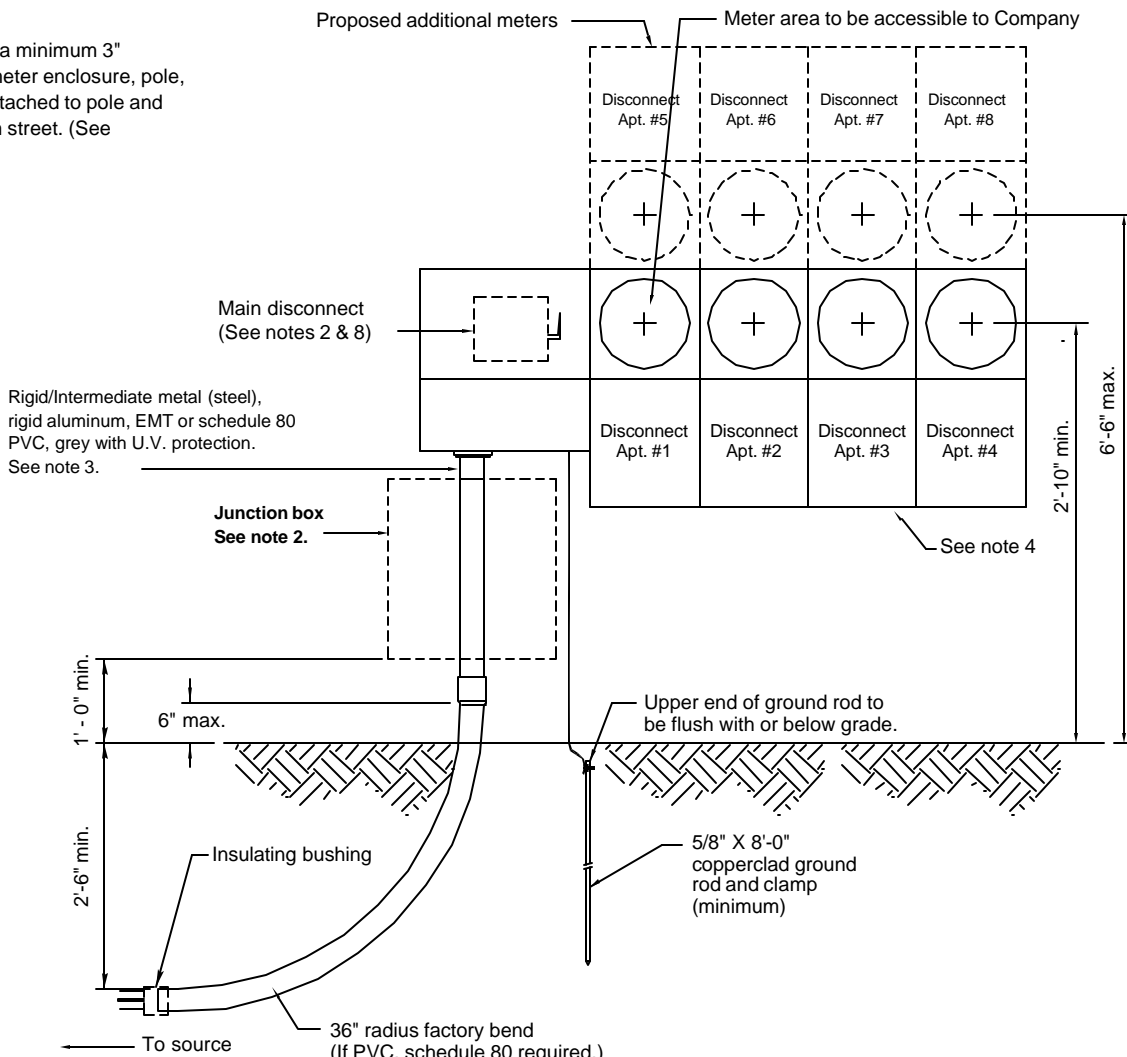
**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CUSTOMER OWNED MULTIPLE METER (FIELD ASSEMBLED) UNDERGROUND SERVICE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS11.6-3	
Entergy	PLOT 1=1 SH. 1 OF 1

5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)




Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. When the Customer provides, owns, installs, and maintains the secondary wire to the Company's transformer, a junction box is not required. Consult the Company.
3. All other material including conduit to be furnished, installed and maintained by the Customer.
4. Each meter and disconnect shall be permanently and plainly marked to designate unit served.
5. Customer to obtain meter location from the Company.
6. Customer to obtain conduit size from the Company.
7. If the meters are secured with meter rings or faceplates with sliding/falling latching mechanisms, the rings/latching mechanism shall be capable of accepting both a seal and a lock and shall be constructed sturdy enough to prevent access to meters without first removing seal and lock. The rings/faceplate shall fit well enough to prevent tampering with meters if locking mechanism is secured.
8. A main disconnect is required for seven or more disconnects -(National Electrical Code 230-71(a)). A main disconnect is recommended in all cases for isolation of this disconnect/meter group from any other groups served by the same transformer. Utility connection shall be made on the line side of main disconnect or junction box.
9. Each meter should have a separate cover that can be removed for repairs without disturbing other meters.
10. The Customer shall install 80lb test non-metallic (manila or grass) pull line or bull tape in the conduit.
11. Use masonry anchors to secure the meter socket assembly (plastic anchors are not allowed).
12. If a current transformer (CT) installation is required, see SS11.8-3.
13. See section 8.7.1 for junction box sizing and Customer supplied connectors.

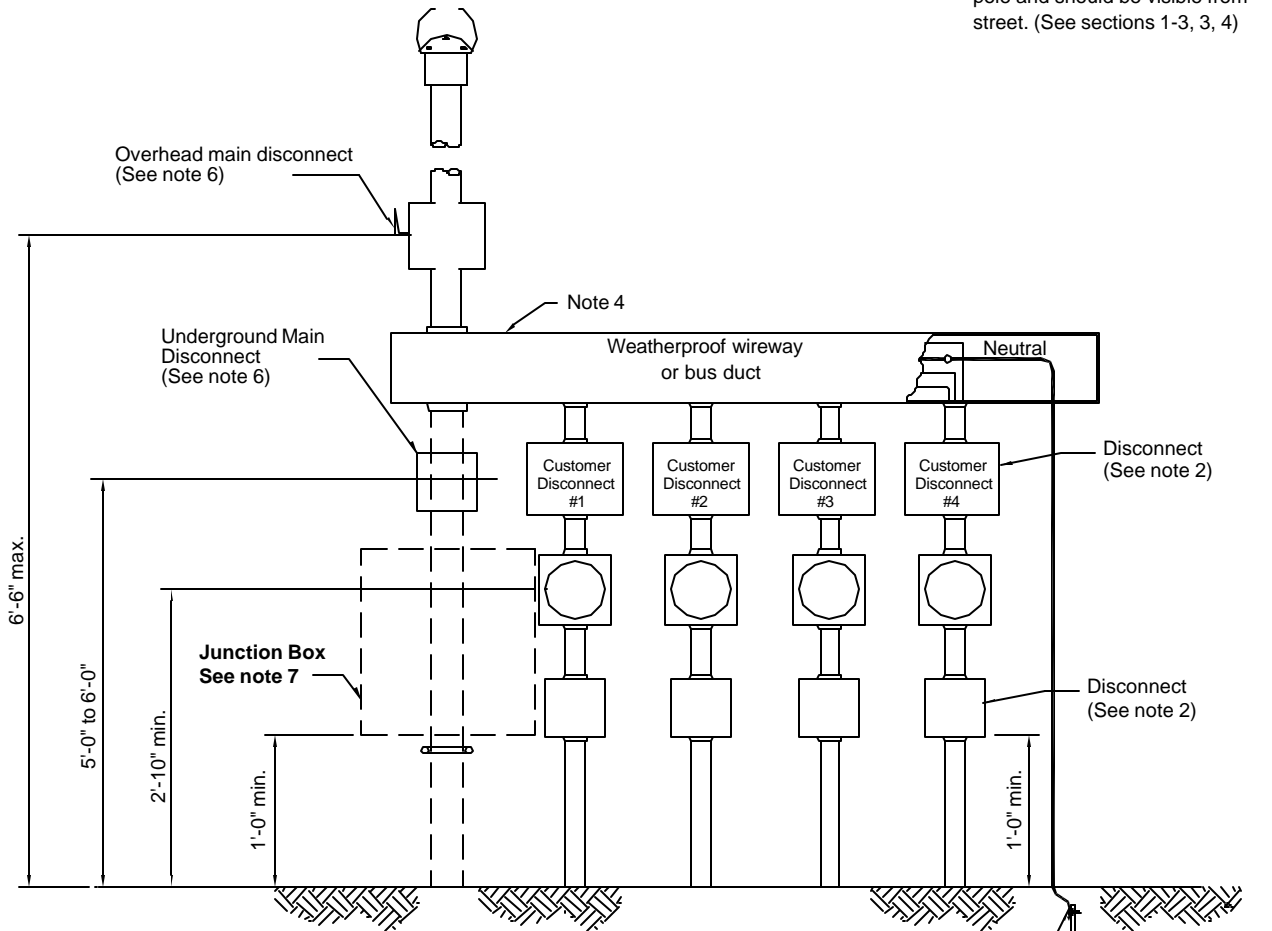
**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CUSTOMER OWNED MULTIPLE METER (PRE- ASSEMBLED) UNDERGROUND SERVICE	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS11.6-4	
	PLOT 1=1 SH. 1 OF 1

5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)



Notes:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. The Customer shall furnish and install a disconnect switch on the supply side of the meter enclosure. If this disconnect does not provide overcurrent protection, a separate overcurrent device shall be installed immediately adjacent thereto in accordance with National Electrical Code article 230.91.
3. For identification purposes all disconnects and meter enclosures will be permanently and plainly marked to designate the particular apartment or office served.
4. This installation applies to two (2) or more meters at one location.
5. This installation can be adapted for underground or overhead service.
6. A main disconnect is required for seven or more disconnects -(National Electrical Code article 230.71(a)). A main disconnect is recommended in all cases for isolation of this disconnect/meter group from any other groups served by the same transformer. Utility connection shall be made on the line side of main disconnect or junction box.
7. When the Customer provides, owns, installs, and maintains the secondary wire to the Company's transformer, a junction box is not required. Consult the Company.
8. When installed as an underground service, the Customer shall install 80lb non-metallic (manila or grass) pull line or bull tape in the conduit.
9. Equipment to be installed at a location designated by the Company.
10. If a current transformer (CT) installation is required, see SS11.8-3
11. See section 8.7.1 for junction box sizing and Customer supplied connectors.

**Call 48 Hours Before You Dig
1-888-258-0808**

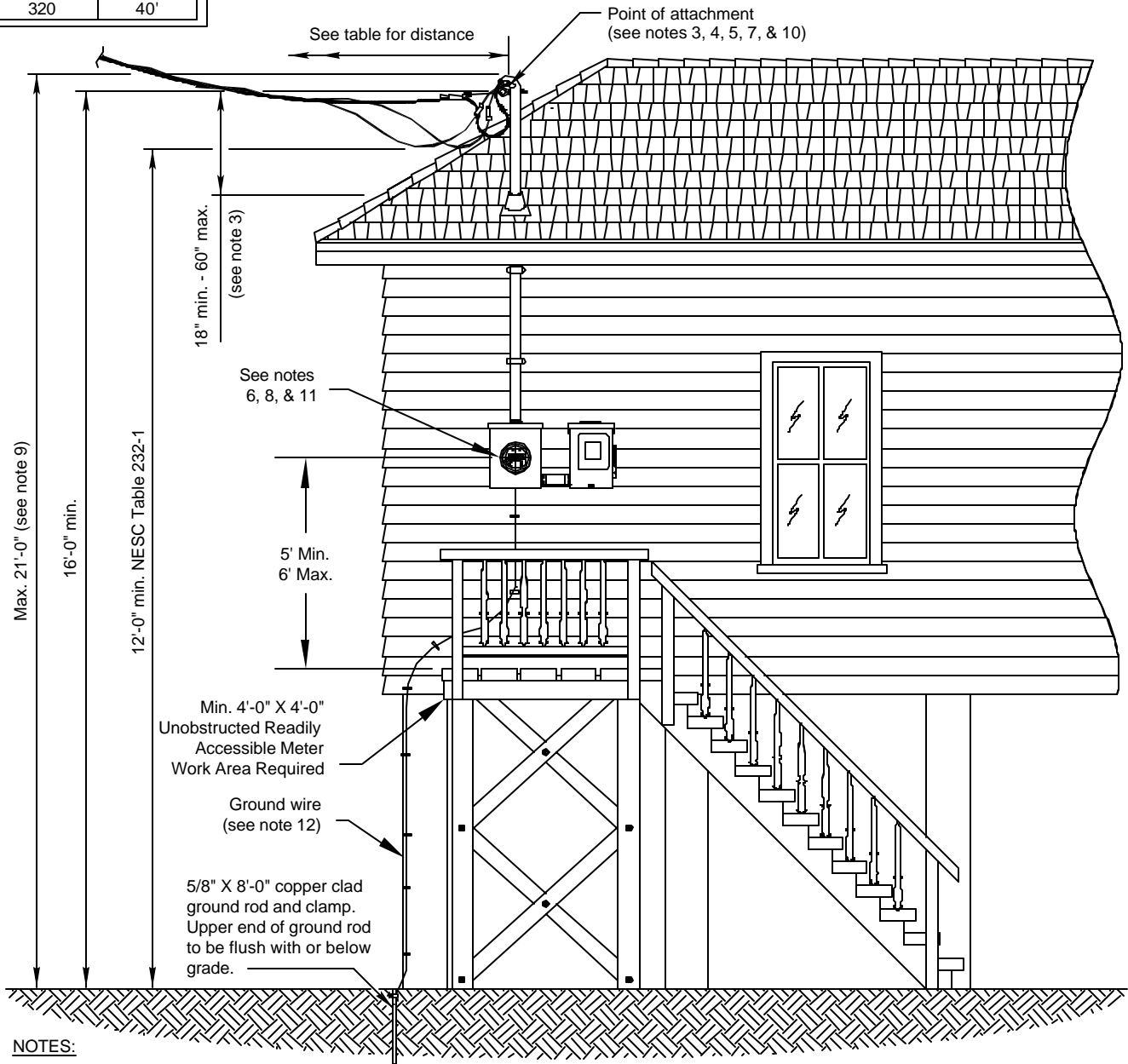
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CUSTOMER OWNED MULTIPLE METER 3Ø 277WYE/480DELTA VOLT SELF CONTAINED METER ARRANGEMENT	
APPROVED BY: JDS	DATE: April 1998
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: WINK-AJC	
No. SS11.6-5	
PLOT 1=1 SH. 1 OF 1	

5	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
4	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
3	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	5/99	UPDATED PER SERVICE STANDARDS TEAM	TKV	
1	6/98	UPDATED PER SOLUTION GROUP RECOMMENDATIONS	MCC	
NO.	DATE:	REVISION	BY:	APPR:

Maximum Recommended Distance

Amps	Length
100	100'
200	75'
320	40'



NOTES:

1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Buildings or other facilities shall not be constructed under existing Company supply lines, nor shall any Company supply lines pass over existing buildings or facilities.
3. Only rigid metal or IMC conduit can be used above the roof.
4. A minimum of 3'-0" of each conductor shall extend from the top of the service mast. The neutral shall be marked with white tape at both ends. Neutral can be bare.
5. Customer shall supply and install point of attachment.
6. Main breaker should be within 2'-0" of meter. Outside wall is recommended.
7. Guying or bracing may be required. NEC 230.28.
8. Customer shall install meter enclosure.
9. Additional height may be required to maintain clearance. Point of attachment can be no higher than 21'.
10. No telephone or cable attachment allowed on mast. NEC 230.28.
11. Minimum 3 ft. clearance between electric meter and gas meter.
12. For grounding information see section 11.3.
13. Any Service greater than 200 amps, consult the Company.

Call Before You Dig

1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.

TYPICAL SINGLE PHASE RESIDENTIAL
FLOOD PLAIN RAISED FOUNDATION
METER ACCESS REQUIREMENTS

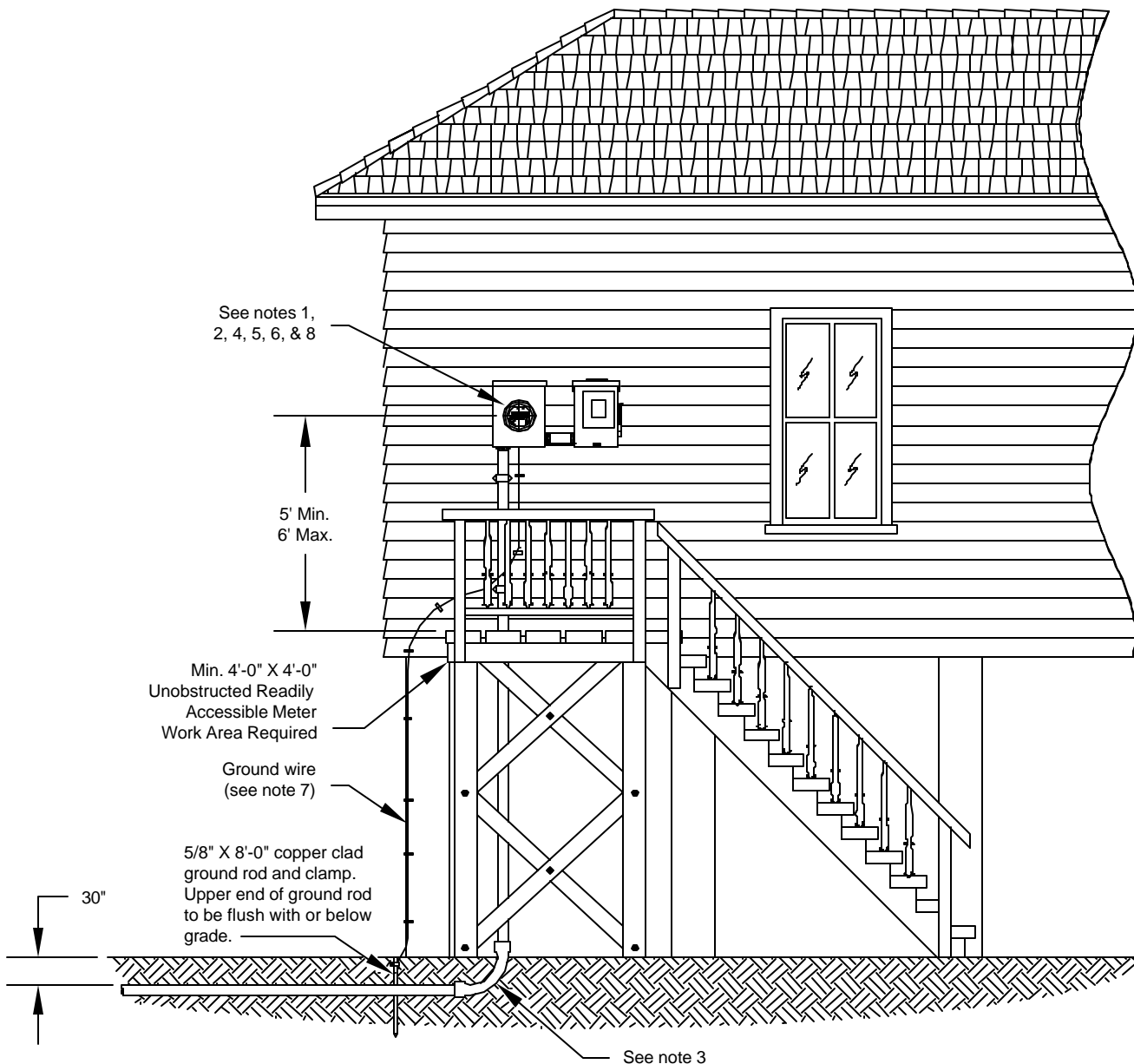
APPROVED BY:	JRH	DATE:	August 2007
CHECKED BY:	JED	SCALE:	NONE
DRAWN BY:	DAT		



No. SS11.7-1

PLOT 1=1 SH. 1 OF 1

NO.	DATE:	REVISION	BY:	APPR:




NOTES:

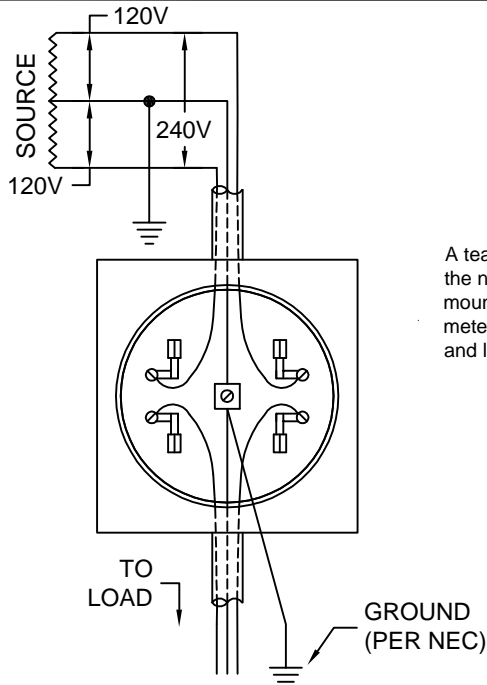
1. Customer facilities shall comply with Company Standards, the National Electrical Code, and authorities having jurisdiction.
2. Buildings or other facilities shall not be constructed over existing Company supply lines, nor shall any Company supply lines pass under existing buildings or facilities.
3. Schedule 80 PVC for elbows and above ground facilities are required. Also see drawings SS8.6-4 & SS8.6-6.
4. Main breaker should be within 2'-0" of meter. Outside wall is recommended.
5. Customer shall install meter enclosure.
6. Minimum 3 ft. clearance between electric meter and gas meter.
7. For grounding information see section 11.3.
8. Any Service greater than 200 amps, consult the Company.

Call Before You Dig
1-888-258-0808

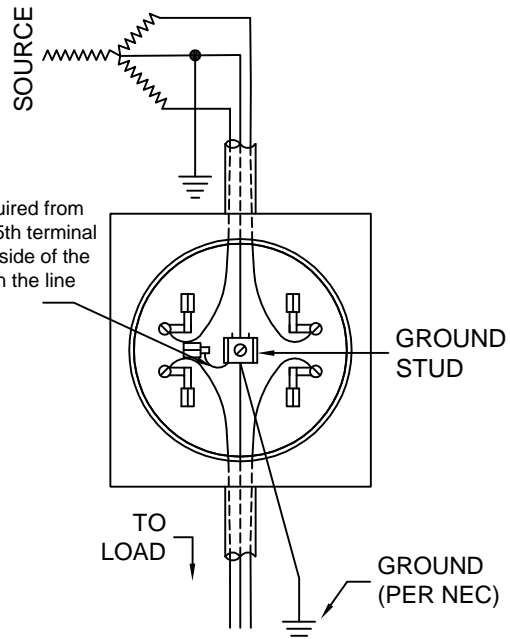
In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.			
TYPICAL SINGLE PHASE RESIDENTIAL FLOOD PLAIN RAISED FOUNDATION METER ACCESS REQUIREMENTS FOR UNDERGROUND FACILITIES			
APPROVED BY:	JRH	DATE:	August 2007
CHECKED BY:	JED	SCALE:	NONE
DRAWN BY:	DAT		
		No. SS11.7-2	
PLOT	1=1	SH.	1 OF 1

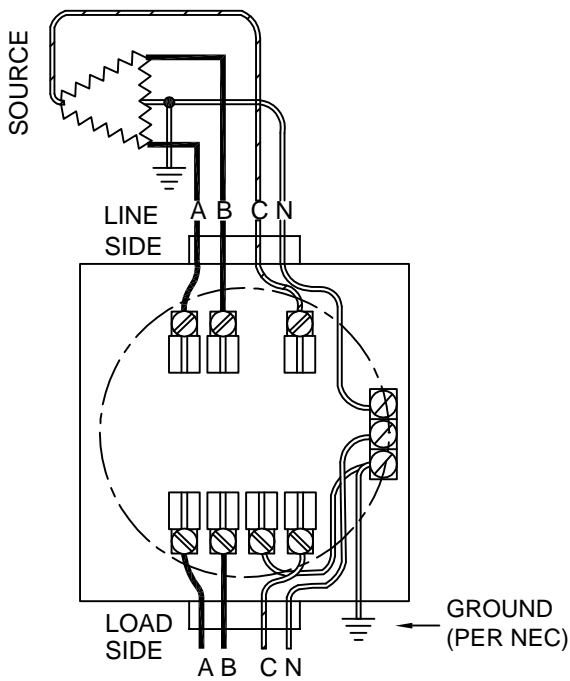
NO.	DATE:	REVISION	BY:	APPR:
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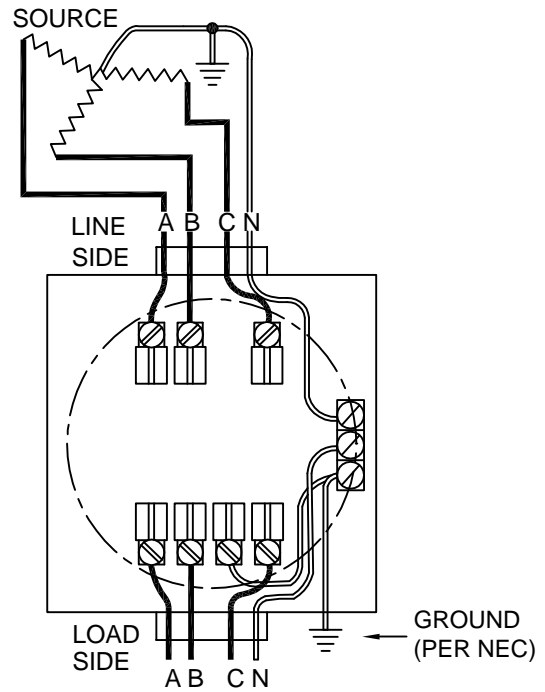
TYPE S DETACHABLE
3 WIRE SINGLE PHASE 120/240 VOLTS



TYPE S DETACHABLE
3 WIRE SINGLE PHASE 120/208 WYE VOLTS



THREE PHASE 4 WIRE DELTA
120 / 240 VOLTS



THREE PHASE 4 WIRE WYE
120 / 208 or 277/480 VOLTS

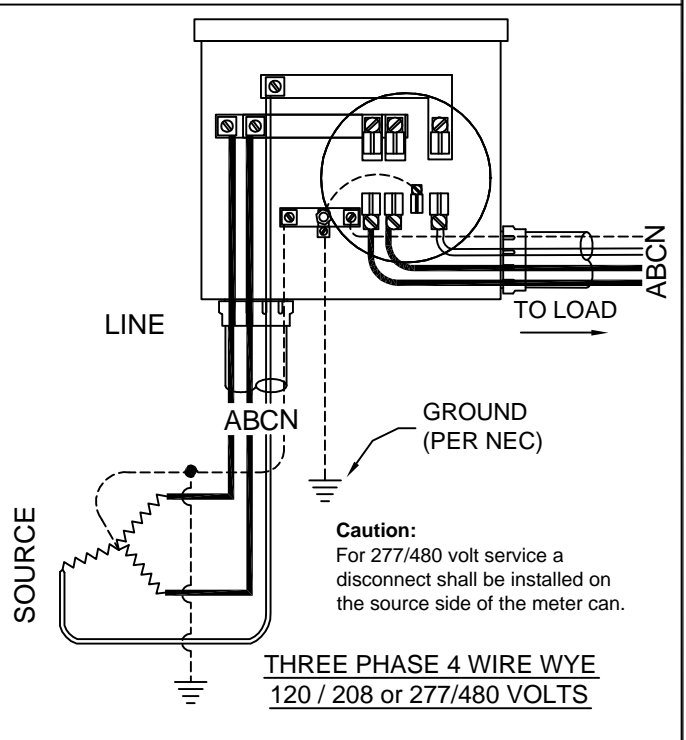
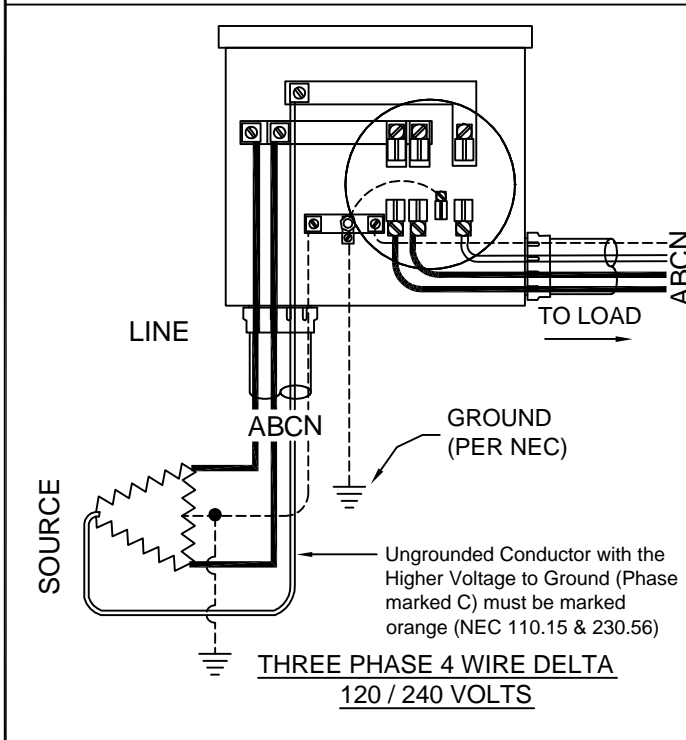
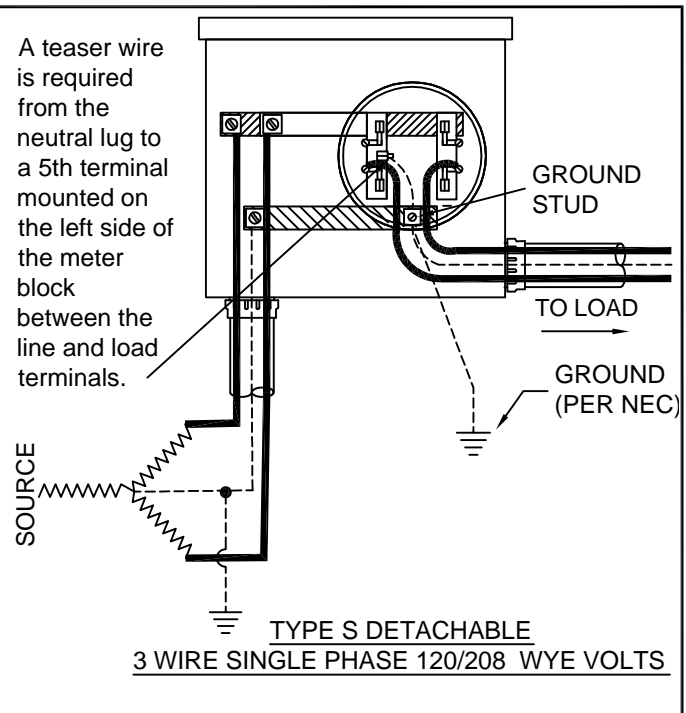
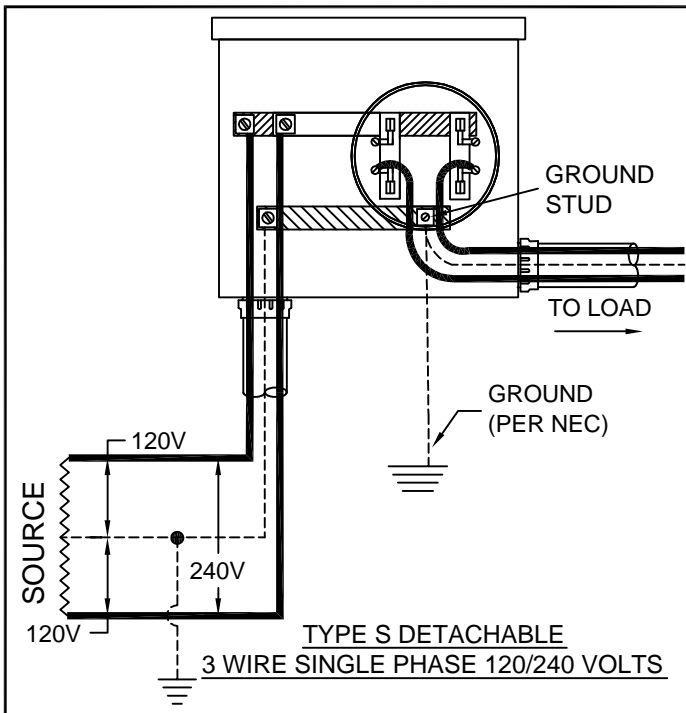
NOTES:

1. Ungrounded Conductor with the Higher Voltage to Ground (Phase marked C) must be marked orange (NEC 110.15 & 230.56).
2. All sockets, except residential single phase less than 320 Amps, shall have a manual mechanical gang operated bypass switch.
3. Load and supply wires shall not cross in the meter socket (11.1.2.7)

ENTERGY SERVICES, INC.	
WIRING DIAGRAM CONNECTIONS FOR OVERHEAD SELF CONTAINED METERS	
APPROVED BY: JDS	DATE: JUNE 1999
CHECKED BY: LKE	SCALE: NONE
DRAWN BY: CMS	
No. SS11.8-1	
PLOT 1=1	SH. 1 OF 2

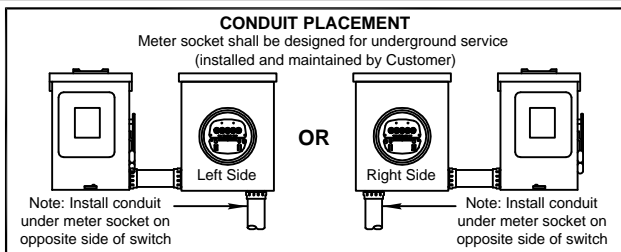
2	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:





Notes:

1. All diagrams on this drawing show connections when the switch is installed on the right side (see Right Side below) of the meter socket. If the switch is installed on the left side of the meter socket you will need to mirror this diagram (see Left Side below).
2. All sockets, except residential single phase less than 320 Amps, shall have a manual mechanical gang operated bypass switch.
3. Load and supply wires shall not cross in the meter socket (11.1.2.7)



ENTERGY SERVICES, INC.

WIRING DIAGRAM CONNECTIONS FOR UNDERGROUND SELF CONTAINED METERS

APPROVED BY: JRH	DATE: APRIL 2005
CHECKED BY: JED	SCALE: NONE
DRAWN BY: DAT	

No. SS11.8-2

PLOT 1=1 SH. 2 OF 2

Entergy

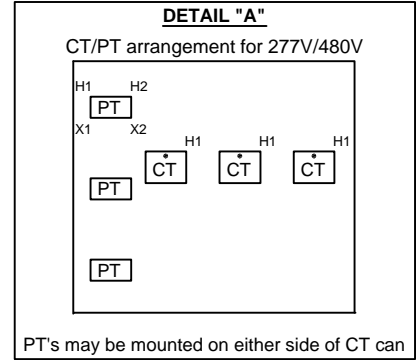
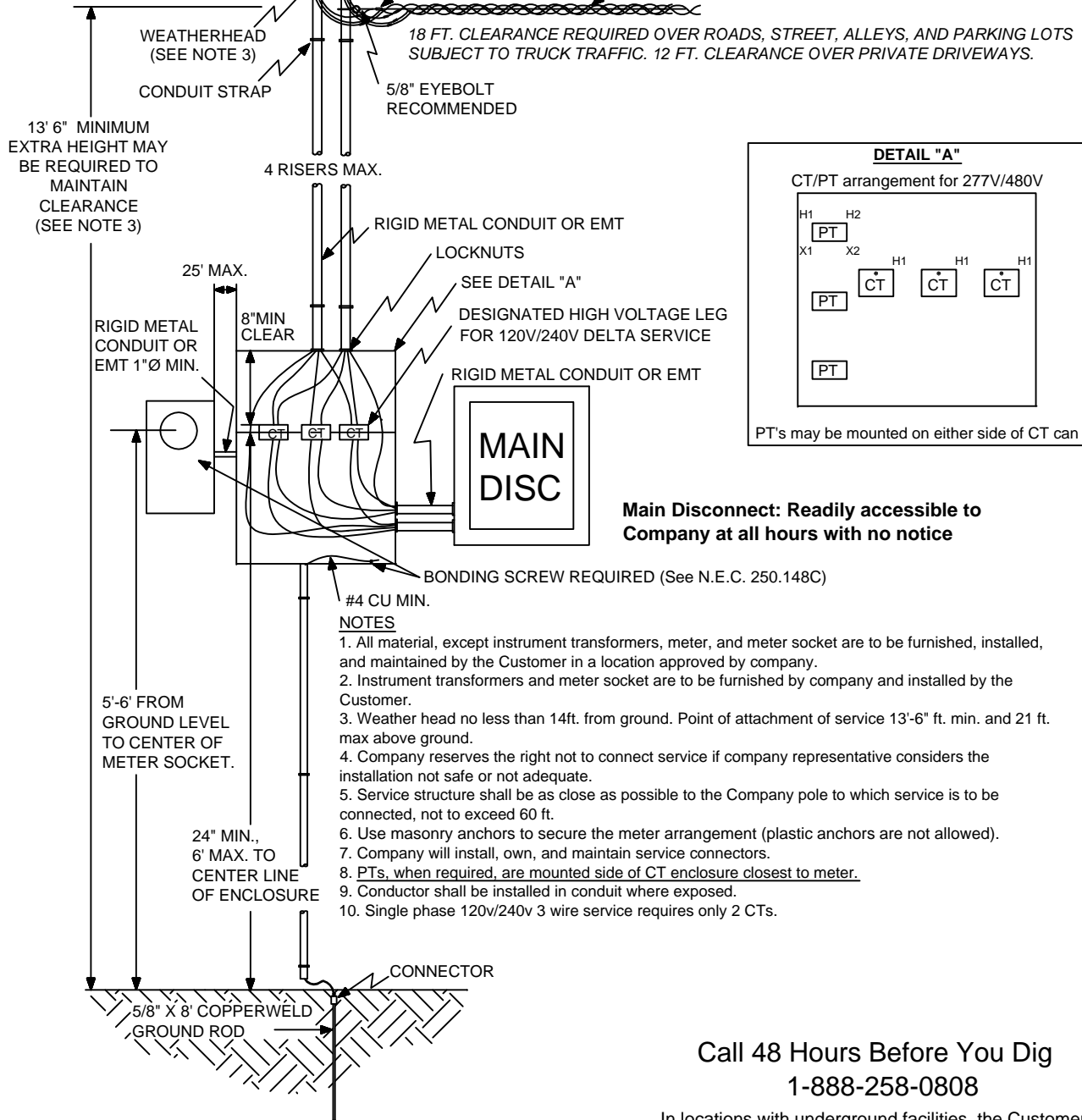
1	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT
NO.	DATE:	REVISION	BY: APPR:

SERVICE ENTRANCE CONDUCTORS
MINIMUM LENGTH 3'
BEYOND WEATHERHEAD

DIVISION OF OWNERSHIP
AT CONNECTOR

911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

COMPANY SERVICE CABLE



Main Disconnect: Readily accessible to Company at all hours with no notice

MINIMUM CT METER ENCLOSURE	
FOR 600 AMPS OR BELOW OR SINGLE CONDUCTORS OF 750 MCM OR GREATER AND PARALLEL CONDUCTORS UP TO AND INCLUDING 500 MCM	14" x 32" x 40" STEEL INSTRUMENT TRANSFORMER ENCLOSURE
FOR 600 - 800 AMPS OR PARALLEL CONDUCTORS GREATER THAN 500 MCM	14" x 32" x 54" STEEL INSTRUMENT TRANSFORMER ENCLOSURE
FOR 800 AMPS OR PARALLEL CONDUCTORS GREATER THAN 750 MCM	CONSULT THE COMPANY

**Call 48 Hours Before You Dig
1-888-258-0808**

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.

ENTERGY SERVICES, INC.	
CURRENT INSTRUMENT TRANSFORMER FOR OVERHEAD SERVICE	
APPROVED BY: JRH	DATE: 04-23-01
CHECKED BY: JED	SCALE: NONE
DRAWN BY: C HAHN/DAT	CEA NO. 00000
No. SS11.8-3	
PLOT 1=1 SH. 1 OF 1	

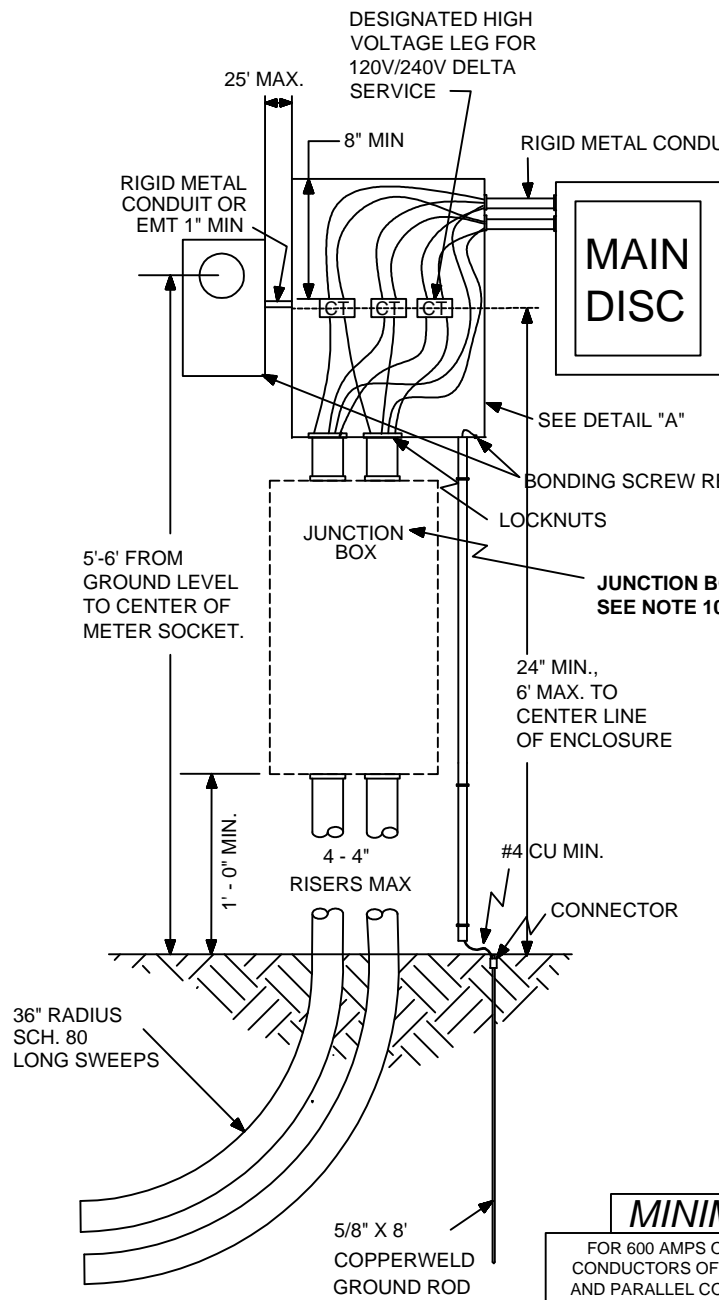
NO.	DATE:	REVISION	BY:	APPR:
3	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	



911 address shall be a minimum 3" lettering marked on meter enclosure, pole, or durable material attached to pole and should be visible from street. (See sections 1-3, 3, 4)

Call 48 Hours Before You Dig
1-888-258-0808

In locations with underground facilities, the Customer shall notify One Call and shall have One Call locate all underground facilities before digging. It shall be the responsibility of the Customer to stay clear of all underground facilities.



MAIN MAY BE DIRECTLY ABOVE OR ON EITHER SIDE OF CT ENCLOSURE

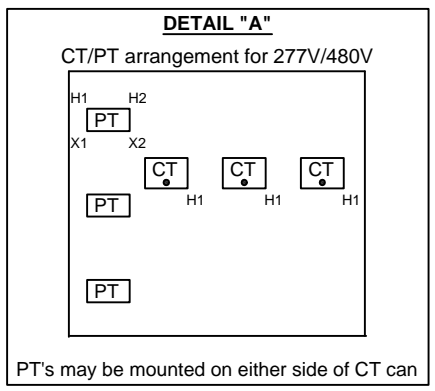
Main Disconnect: Readily accessible to Company at all hours with no notice

NOTES

1. All material, except instrument transformers, meter, and meter enclosure are to be furnished, installed, and maintained by the Customer in a location approved by the Company.
2. Instrument transformers and meter enclosure are to be furnished by Company and installed by the Customer.
3. Company reserves the right not to connect service if Company representative considers the installation not safe or not adequate.
4. Service structure shall be as close as possible to the Company pole to which the service is to be connected, not to exceed 150 ft.
5. Use masonry anchors to secure the meter arrangement (plastic anchors are not allowed).
6. Conductor shall be installed in conduit where exposed.
7. PTs, when required, are mounted on side of ct enclosure closest to meter.
8. Single phase 120v/240v 3 wire service requires only 2 CTs.
9. More than two conductors may require larger size enclosures. Consult the Company.
10. When the Customer provides, owns, installs, and maintains the cable to the Company's transformer, a junction box is not required. Consult the Company.
11. See section 8.7.1 for junction box sizing and Customer supplied connectors.

MINIMUM CT METER ENCLOSURE

FOR 600 AMPS OR BELOW OR SINGLE CONDUCTORS OF 750 MCM OR GREATER AND PARALLEL CONDUCTORS UP TO AND INCLUDING 500 MCM	14" x 32" x 40" STEEL INSTRUMENT TRANSFORMER ENCLOSURE
FOR 600 - 800 AMPS OR PARALLEL CONDUCTORS GREATER THAN 500 MCM	14" x 32" x 54" STEEL INSTRUMENT TRANSFORMER ENCLOSURE
FOR 800 AMPS OR PARALLEL CONDUCTORS GREATER THAN 750 MCM	CONSULT THE COMPANY



ENTERGY SERVICES, INC.

CURRENT INSTRUMENT TRANSFORMER FOR UNDERGROUND SERVICE

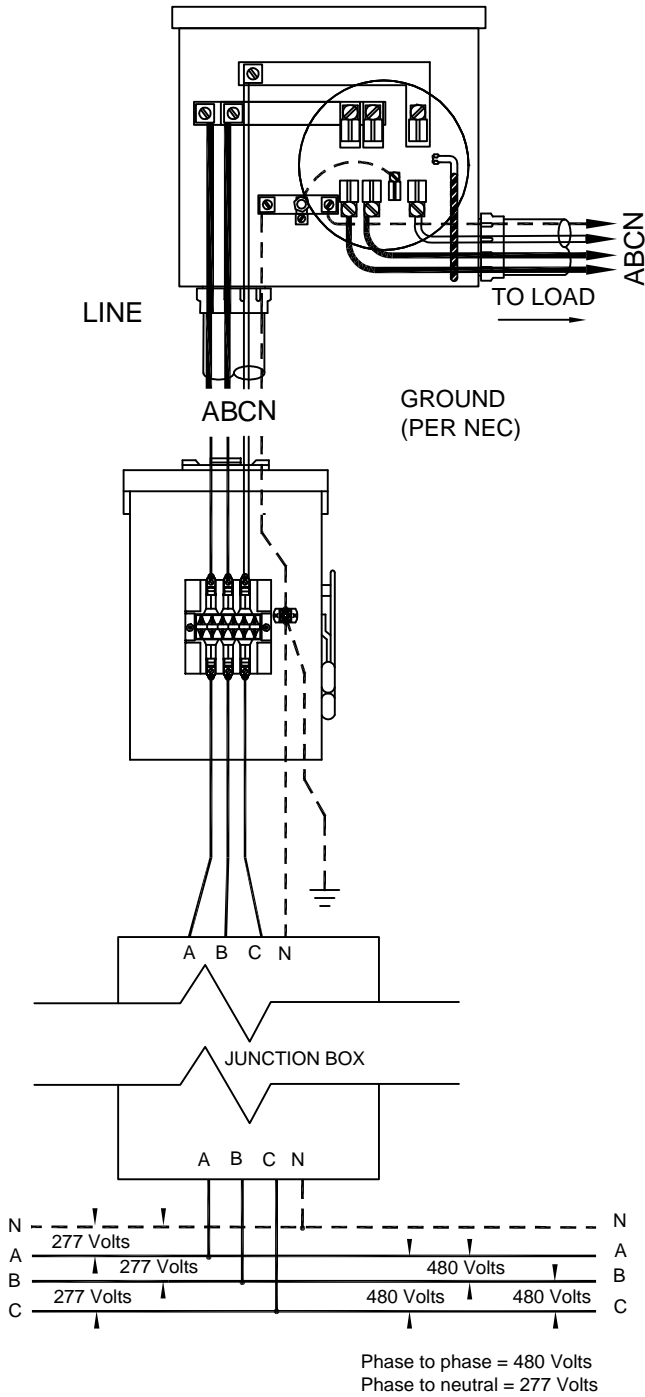
APPROVED BY: JRH	DATE: 04-23-01
CHECKED BY: JED	SCALE: NONE
DRAWN BY: C HAHN/DAT	CEA NO. 00000

No. SS11.8-4

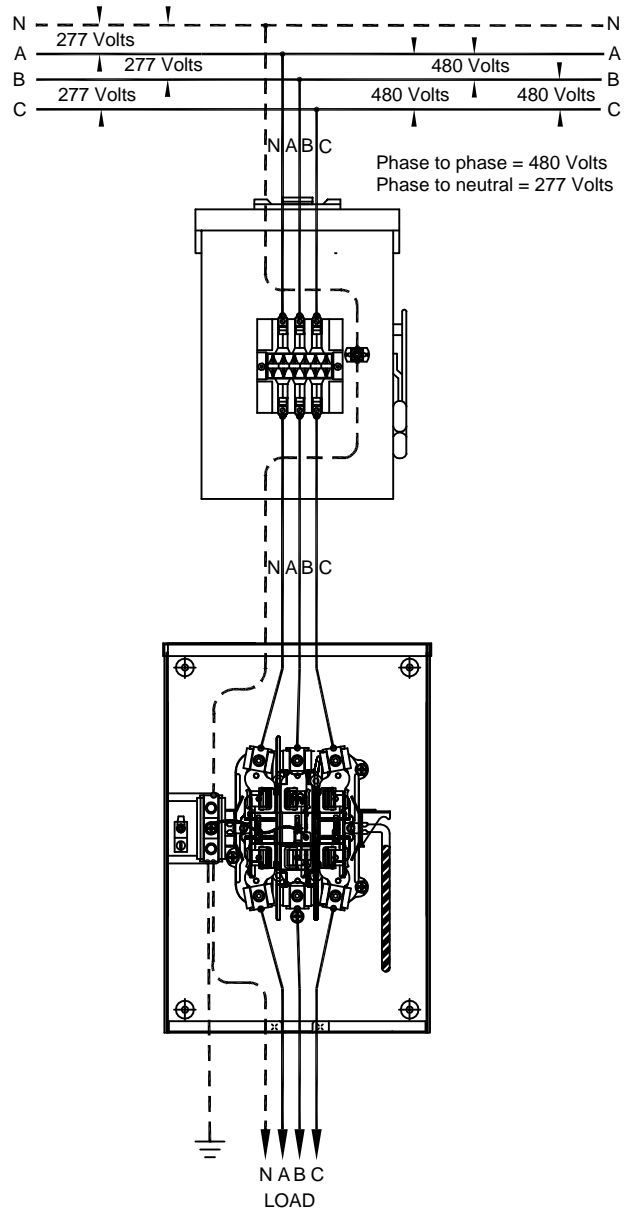
PLOT 1=1 SH. 1 OF 1

3	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
2	4/05	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
1	4/02	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

UNDERGROUND



OVERHEAD



NOTES:

1. A junction box may not be required for this underground service (see section 8.7.1)
2. See section 8.7.1 for junction box sizing and Customer supplied connectors.
3. Specific 480 volt applications involving ballparks, oil fields, and irrigation pumps require a disconnect ahead of the meter and an overcurrent device on the load side of the meter.

ENTERGY SERVICES, INC.

TYPICAL 3Ø 4 WIRE 277/480 INSTALLATION

APPROVED BY: JRH	DATE: 04-29-05
CHECKED BY: EJH	SCALE: NONE
DRAWN BY: DAT	CEA NO. 00000



No. SS11.8-5

PLOT 1=1 SH. 1 OF 1

1	3/08	UPDATED: CUSTOMER INSTALLATION STANDARDS TEAM	DAT	
NO.	DATE:	REVISION	BY:	APPR:

Section 12 Consumer Owned Generators

12.1 Electrical Emergency or Standby Systems

The easiest method for using a generator is to simply plug the desired appliance, tool or motor directly into the proper electric outlet on the generator.

If the generator is or will be connected to the building circuits at the same time the circuits are connected to the electric grid, see below.

12.2 Generators Interconnected to and Operating in Parallel with the Electric Utility Grid

For complete information refer to the Company's policy on Connecting Electric Generators to the Entergy Distribution System and/ or Net Metering Facilities Safety and Performance Standards which can be obtained by calling 1-800-ENTERGY. The Customer shall consult the Company early in the design phase.

Generation facilities other than the Company's shall be permitted to interconnect and operate in parallel with the Company's distribution system provided that all of the following are met throughout the life of the interconnection:

1. The safety of the general public and the personnel and equipment of the Company shall in no way be reduced or impaired as a result of the interconnection.
2. The quality, reliability, and the availability of service to the Company's other Customers shall not be diminished or impaired as a result of the interconnection.
3. The generator is connected through a double-pole, double-throw transfer switch which has an open and visible break verifiable by Company personnel. The Customer shall supply a disconnect method acceptable to the Company. The location shall be on the outside of the facility accessible to Company personnel at all hours.
4. A written interconnection agreement between the Company and Customer covering parallel operation of Customer generation and the proper coordination of protective devices has been executed and is in force.

Section 13 Customer's Service Installation

13.1 General Comments

Information regarding characteristics and availability of service, exact points of delivery and service entrance and location and type of service equipment shall be determined by consultation with the Company in planning any electrical work for new installations, for changes brought about by rewiring, for building reconstruction, or for increased load.

The Customer shall normally provide, install, own, and maintain all service cables, raceways, conduits, fittings, wires, fuses, main entrance and meter service switches or breakers, wire troughs, etc., on the Customer's premises beyond the point of termination of the Company's overhead service drop, or at the secondary terminals of the Company's transformer. (Exception: For residential Customers with underground service, the Company will own the service. See Section 8.6, Requirements for Obtaining Underground Residential Service.) The meters and metering apparatus including metering transformers will be furnished by the Company to adequately measure the Customer's load. The Customer shall pay for any additional metering requirements.

It is important that the Company be notified in advance of any substantial change in the Customer's equipment or wiring. Consultation with the Company is necessary to guard against the purchase of unsuitable equipment by the Customer, and possible damage to the Company's service equipment.

The construction of pools, decks, fences or any structure, near under or over electrical facilities may cause a code and / or safety violation. See Section 7.3 Clearances and drawings SS7.1-1 SS7.1-2 and SS7.2-1. Consult the Company concerning all clearances.

13.2 Inspection and Approvals

The wiring, electrical equipment and appliances of the Customer should be installed in accordance with the requirements of the latest NEC and of authorities having jurisdiction. **The Company does not inspect Customer premise wiring.** Where inspection is available, the Company requires the Customer to have the premise wiring inspected and approved by the authorities having jurisdiction before requesting connection to the Company's service. Where inspection is required, the Company is not allowed to connect to the Customer's installation until it has been inspected and approved by the authorities having jurisdiction.

13.2 Inspection and Approvals (continued)

The Company reserves the right to refuse connection to any new installation and/or to disconnect from any existing service, should the Company learn that the wiring is unsafe or that it has not been approved. The authorities having jurisdiction also have the right to require the Company by written notification to discontinue service to an installation which has been found unsafe. The Company is not liable for any damages incurred when electrical service is discontinued under order of the authorities having jurisdiction. The Company accepts no responsibility for injury or damage to the Customer's premises or to persons on the Customer's premises resulting from defective wiring or equipment.

13.3 Meter Requirements

Refer to Section 11, Metering Installations and Equipment.

13.4 Service Entrance Conductors

The class and type of service being rendered determine the number and size of service entrance conductors. The service entrance conductors shall be sized as prescribed by the NEC and / or the authorities having jurisdiction.

Meter sockets shall not be used as junction boxes see Section 8.7.1. Only one conductor per phase or neutral shall be connected to the terminals in meter sockets unless the terminals are designed for more than one.

For loads where parallel phase and neutral service entrance conductors are installed, **the Customer shall consult with the Company early in the design phase to determine how many and sizing of conductors that may be brought out for their system.**

1. For overhead transformer banks, the Company shall connect its service drop to a maximum of four conductors per phase using Customer furnished terminal pads. **Company approved, Customer furnished connectors shall be required** for loads that exceed four conductors per phase for overhead service.
2. Pad mount transformers
 - 500 kVA or smaller can accept eight conductors per phase
 - 750kva and larger can accept twelve conductors per phase.
3. For underground service, bus duct **or a Customer furnished Company approved junction box** should be required for loads **that exceed the number of conductors the Company can accept.**

13.5 Grounding of Service Equipment

The neutral conductor and metallic parts of the service equipment, including all meter sockets, and instrument transformer enclosures, shall be effectively grounded and all grounding shall be bonded together according to NEC250.4

Typical grounding of service equipment:

1. Single-phase 120 Volt, two-wire system: The identified neutral conductor.
2. Single phase three wire system: The identified neutral conductor.

3. Multiphase systems having one wire common to all phases: The identified common conductor.
4. Multiphase systems in which one phase is used to supply 120/240 Volt, single-phase service: The identified neutral conductor.

The National Electrical Code requires grounding to a 'grounding electrode' (NEC article 250.52). A driven ground rod is preferred by Company and is shown in drawings in Section 7 (Overhead Services) and Section 8 (Underground Services). The Company reserves the right to refuse installation of service contingent upon inspection of Customer's grounding connections.

Grounding requirements are shown on many of the drawings in the Customer Installation Standards. A grounding conductor (#6 CU minimum – refer to NEC for correct sizing) that is free from exposure to physical damage shall be permitted to be run along the surface of the building construction without metal covering or protection where it is securely fastened to the construction; otherwise, it shall be in conduit, electrical metallic tubing, or cable armor (installed in accordance with the NEC).

All metal buildings, metal structures, and metal siding on buildings to which electric service is to be supplied shall be permanently bonded to the service entrance ground before service is connected.

13.6 Service Entrance from Overhead System

13.6.1 General Comments

The service entrance meter loop shall meet the requirements of all applicable codes and the Company's Service Standard requirements. It shall be installed, owned, and maintained by the Customer. In general, the service mast shall be extended above the service drop attachment. See **Drawing SS7.1-1. The service drop attachment shall be high enough to provide the required clearances in Section 7.3, Clearances.** The Customer shall provide the required conductors in the meter loop and leave three feet of wire outside the top of the service entrance mast for connection to Company's service drop.

13.6.2 Service Entrance Masts

When a building is not tall enough to attach the service drop at a point to provide for the necessary line clearances above the ground, a "service mast" or other approved extension to support the service drop conductors shall be furnished and installed by the Customer. The extension shall permit the point of attachment to be located at a proper height above ground as defined in Section 7.3, Clearances and Section 7.2 Point of Attachment. The service mast shall not exceed 21' above the ground or be more than 60" from its base.

Refer to **Drawing SS7.1-2** for typical installation of service mast above the eaves.

If a service mast is used to support the service drop conductors, it shall be rigid/intermediate metal steel. Service drop conductors shall be the only attachment to the service mast per NEC 230.28. Metallic conduits or brackets used as a service

mast or extension shall be electrically bonded and grounded to the ground wire terminal in the meter socket.

Service masts or other types of extensions shall be able to withstand the maximum loading requirements placed on them by the service line attached. Mast supports may be used to support loading. Mast supports shall be painted or otherwise treated to provide protection against corrosion and rotting. The Company reserves the right to refuse to attach its service drop to any service mast or extension considered a hazard to public safety.

Consult the Company for service entrance mast requirements for commercial installations designed for 200 Amps and above.

The Company assumes no responsibility of any kind or in any manner for any failure of the Customer owned service mast or extension.

13.7 Service Entrance from Underground Distribution System

The service entrance riser conduit shall be rigid/intermediate metal steel, rigid aluminum, or Schedule 80 PVC securely fastened, made rain tight, installed, owned, and maintained by the Customer. Refer to Section 8, Underground Service and Installations. Consult the Company for additional information and specifications.

13.8 Service Disconnecting Means

13.8.1 Disconnecting Means for Services Less Than 600 Volts

The Customer is required to provide each set of service entrance conductors with a means of disconnecting all energized wires from the source of supply. The disconnecting means may consist of not more than six switches with over current protection or six manually operable circuit breakers mounted in a single enclosure, in a group of separate enclosures, or in a switchboard.

The disconnecting means must be located in a readily accessible location near the point of delivery, either outside of a building or structure (recommended) or on the inside wall directly behind the outside service entrance. For residences, the main breaker should be a maximum of 2 feet horizontal and vertical from the meter.

480- volt electricity is much more likely to arc than 120, 208 or 240 volt service. To safely install and service 480 volt service. For any 480-Volt self-contained meter installations, the Customer shall supply a Junction box and a disconnecting means on the supply side of the Company meter. Specific 480V applications involving ballparks, oil fields and irrigation pumps require a disconnect ahead of the meter and an over current device on the load side of the meter.

All equipment must be U. L. approved and be installed in enclosures suitable for prevailing conditions, such as weather extremes or corrosive environments.

For more details, refer to NEC Articles 230 VI and VII and any other referenced code.

13.8.2 Disconnecting Means for Services Over 600 Volts

The Customer shall provide a means of disconnecting all energized conductors of each service entrance from the source of supply. The disconnecting means shall comply with the requirements of the NEC Article 230.205 through NEC 230.208 and any other referenced code and/or authorities having jurisdiction.

Where the Customer has self-generation or takes two or more points of service that can be tied together, automatic trip circuit breakers shall be required. Relaying on these circuit breakers should be coordinated with the Company.

For disconnecting means required on service above 4160/2400Y volts, contact the Company.

13.9 Isolation Switches for Services Over 600 Volts

The Customer shall install isolating switches between the supply conductors and the disconnecting means. The isolating switch shall isolate the circuit or equipment from any source of power. (Isolating switches are required as a safety measure and strict compliance is necessary to protect the interest of the Customer and the Company.) The disconnecting means shall separate the conductors of the circuit from the source of supply.

Isolation switches are not required where disconnecting equipment is mounted on removable panels or metal-enclosed switch gear units which cannot be opened unless the circuit is disconnected, and which, when removed from the normal operating position, automatically disconnects the circuit breaker or switch from all live parts. Also, fuses or cutouts used with non-automatic oil switches as disconnecting means may serve as isolating switches provided that they can be operated as a disconnect switch and completely disconnect the oil switch and all service equipment from the source of supply. The Customer shall be equipped to operate the fuses or cutouts. Finally, pole top air break switches which are accessible to the Customer's authorized personnel only and which are arranged so that grounding connection can readily be made on the load side may be used as isolating switches.

13.10 Alternate Sources and Automatic Transfer Schemes

A Customer may need alternate power sources due to the requirements of the load. If the Customer desires to have an additional distribution feeder as the second source, the Customer is responsible for the costs to install, operate and maintain the Company's additional facilities in addition to the charges, if any, required for the original service.

An automatic transfer switch may be specified as part of any alternative source system. The Company does not normally specify switches that are installed on the Customer's premises, past the metering point. However, any automatic switch connected to the Company's system shall be able to sense a dead power line and shall be blocked from closing in on the dead line. The Customer shall be responsible for the consequences of any back feed that occurs due to the switch closing in on a dead power line.

13.10 Alternate Sources and Automatic Transfer Schemes (continued)

The automatic transfer scheme shall block any faults occurring in the Customer's facilities from the utility system.

Furthermore, a closed transition transfer switching (CTTS) (make-before-break) application, while momentarily paralleling the Customer's system to the original power source, shall limit the parallel power feed to 10 cycles or less. This CTTS (make-before-break) application shall be performed while the utility supply is energized and shall contain the necessary synchronizing checks.

Consult the Company for a guideline for automatic transfer schemes.

Section 14 Customer's Electrical Equipment

14.1 General Comments

The Company offers the following suggestions as an aid in maintaining reasonably uniform voltage and continuous service. The type, size and mode of operation of equipment frequently affect the voltage and the quality of service received. Three wire, single phase and all multiphase circuits should be arranged to maintain load balance on the individual circuits and the main service within 10%. Many of these details can be best resolved when the wiring is in the design stage.

The Company recommends that the Customer's wiring be designed so that the voltage drop between the disconnecting means or service entrance switch, and the farthest outlet is limited to not more than 2% at full load. Consult the Power Quality Standard for Electric Service (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.) for the voltage sag on the primary side of a distribution transformer.

Equipment such as computers and other sensitive electronic devices may be adversely affected by minor voltage variations. It is the Customer's responsibility to provide any uninterruptible power supplies, voltage regulating equipment or other protective apparatus for these sensitive devices and equipment.

14.2 Radio and Television Interference

Some types of utilization equipment, including certain types of motors, equipment depending for its operation upon frequent making and breaking of the circuit, X-ray machines and other devices, may cause unsatisfactory operation of television, radios and other electronic equipment unless especially designed or equipped to prevent such interference. In purchasing utilization equipment, the Customer should inquire regarding such interference characteristics and select non-interfering types. Where interference is experienced from utilization equipment, it can often be eliminated or minimized by equipping the interfering device with an U. L. approved interference suppresser. These suppressers are available through many retail stores. Consult the Power Quality Standard for Electric Service see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.

14.3 Electric Heating

Large heating appliances should be connected to 120/240, 120/208, or 277/480 volt circuits. Also see Section 5.3 Voltages for Heating.

14.4 Motor - Voltage Rating

Single-phase motors manufactured under American National Standard Institute (ANSI) Standard C84.1-1970 have 115 or 230 Volt nameplates and, if three phase, have 208, 230, 460, 2,300, 4,000, or 13,200 Volt nameplates. These are nominal voltage ratings and do not imply that the motors shall be operated at the exact voltages supplied. Motors may be supplied with nominal voltages as listed below:

Table 14.4-4. Nominal Voltage Rating of Motors

Type of Service	Motor Voltage Rating (Nameplate)	Nominal Supply Voltage
Single Phase	115	120
Single Phase	230	240
Three Phase	208	208
Three Phase	230	240
Three Phase	460	480
Three Phase	2,300	2,400
Three Phase	4,000	4160
Three Phase	13,200	13,800

All motors should have a manufacturer's nameplate indicating the voltage, current rating, speed and horsepower rating for continuous or intermittent use as the case may be. This nameplate should also carry the NEMA "code letter" designation of the motor. (See NEC Table 430.7B.) When a motor is rewound to produce a change in its original design, a new nameplate should be attached indicating the new characteristics and the name of the firm or person making the change.

14.5 Motor Starting

14.5.1 General Comments

Most motors draw current much in excess of full load running current when starting at rated voltage. Also, the power factor of this starting current is usually low. This causes, for a brief period, a voltage drop or lighting flicker. It is essential that the Customer's equipment have good starting characteristics to assure against objectionable effects to the Customer's equipment and to service to other Customers. The Company finds it necessary to establish certain limitations for the maximum allowable starting currents of motors to be connected to its lines. Frequency of starting is also a factor.

Considerable latitude in the amount of starting current is permissible under certain conditions, especially where the motors are started not more than two or three times per day. Refer to the Power Quality Standard for Electric Service (See Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.)

It is necessary that the Customer consult with the Company as to the acceptability of the proposed installation in this respect.

14.5.2 Single Phase Motors

14.5.2.1 Horsepower Rated

Single-phase motors rated in horsepower may be started "across the line", that is, at full rated voltage by merely closing a switch. It is recommended that single phase motors larger than 1/2 hp be operated at 240 volts. Locked rotor current specified in Table 14.5-5, will be permitted under the following conditions only:

1. When such motors are provided with proper current limiting starting equipment; or
2. When the total locked rotor currents of two or more smaller motors, which may be started simultaneously, are less than the allowable locked rotor current of the largest motor in said installation.

Table 14.5-5. Allowable Starting Currents for Single Phase Motors

Equipment Rated	Locked Rotor Current
115 volts	
All Sizes	50 amps
230 volts	
2 hp. or less	60 amps
3 hp.	80 amps
5 hp.	120 amps
6-1/2 hp.	150 amps
Over 6 1/2 hp.	Consult the Company

The NEC contains specific information for motor characteristics.

14.5.2.2 Btu/h Rated

Years of development have resulted in single phase, hermetically sealed air conditioning and heat pump units that, from the Customer's stand point, and are as efficient and trouble-free as three phase units up through units sized with a nominal 60,000 Btu/h (5 ton) rating. All hermetically sealed motors in this category will be served single phase provided they do not exceed the locked rotor current values of Table 14.5-6.

Table 14.5-6. Single Phase Air Conditioning and Heat Pump Equipment Rated In BTU Per Hour

Equipment Rated	Locked Rotor Current
115 volts	
All sizes	50 amps
230 volts	
20,000 BTU/H or less	60 amps
20,000 Btu/h to and including 60,000 Btu/h	60 amps plus 3 amps per 1,000 Btu/h in excess of 20,000 Btu/h (150 amps max)
Over 60,000 Btu/h	Consult the Company

For larger homes requiring heating and cooling capacity in excess of a nominal 60,000 Btu/h, (5 tons), the Customer should consult the Company to determine the type of service that will be supplied. The Customer should not overlook the possibility of using two or more independent units that can provide better zone control.

14.5.3 Three Phase Motors

14.5.3.1 Horsepower Rated

Because conditions vary widely at different points on the system, no specific rule can be written as to the size of polyphase motors which may be connected, either for "across-the-line" starting or with starting equipment to limit the starting current. Therefore, it will be necessary to consult the Company for motors of 10 hp size and larger to determine the maximum value of starting current permissible at a given location. Refer to Section 15.8, Converters - Operation of Three Phase Motors from Single Phase Electric Supply, for phase converter operations.

14.5.3.2 Btu/h Rated

Where it has been determined that three-phase service will be rendered, motor starting currents shall not exceed the following values: 159 amps if the service voltage is 208V, 150 amps if the service voltage is 230 V, or 75 amps if the service voltage is 460 V. For motors exceeding these values and for units greater than 120,000 Btu/h, (10 tons), it will be necessary to provide facilities to limit the starting current to values specified by the Company for the location involved.

14.5.4 Motor Starting and Control Equipment

All motors and motor control equipment shall be installed in accordance with the NEC Article 430, the Power Quality Standard for Electric Service (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.) and any other referenced code.

Auxiliary starting devices shall be used on all motors that cannot be safely subjected to full voltage while starting. They shall also be used on all motors which, if started at 100% voltage, would draw currents in excess of those discussed in 14.5.2.1 (Single Phase Motors) Horsepower Rated, 14.5.2.2 (Single Phase Motors) Btu/h Rated, and 14.5.3.2 (Three Phase Motors) Btu/h Rated. The auxiliary starting device shall limit the starting current such that the values in the Power Quality Standard for Electric Service. (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location) The auxiliary starting device should be designed in such a way that the motor can be thrown into the running position before the motor has reached rated running speed in the starting position. Typically, electric irrigation motors above 60 hp served at three phase, 480 Volts will be started with reduced voltage starting equipment. The Company may specify the particular voltage tap setting to be used.

Motor Starters/Controllers of the Silicon Controlled Rectifier (SCR) type as well as other similar devices can create harmonic disturbances that may have detrimental effects on the Company's electric system and/or service to the Customers. Disturbances of this nature attributable to the use of these type devices shall be corrected without undo delay, at the Customer's expense, to the satisfaction of the Company. Consult the Company for information.

14.6 Critical Service Motor Operation

Where continuous operation of a motor is essential, the no-voltage release should have a time delay relay, which will prevent the opening of the circuit in the event of momentary voltage fluctuation. The Company will assist the Customer in selection of an automatic starting device and any other device to hold motors on line during voltage disturbances.

14.7 Motor Protection

14.7.1 Phase Reversal Protection

Reverse phase relays are required on three phase elevator services (NEC Article 620) and it is strongly recommended that the Customer install them where accidental reversal of motor rotation would cause serious inconvenience, damage, or delay. The Company shall not be responsible for any damages caused by phase reversal.

14.7.2 Over Current Protection

The NEC requires that adequate over current protection be provided in each phase on all motor installations. The Customer shall ensure complete protection against "single-phasing" on all three-phase motors. Over current protection in two phases is not adequate protection for this condition. Single phasing on the distribution system is necessary at times for fault clearing and switching and occurs occasionally due to unforeseen circumstances. Motor protection is the responsibility of the Customer.

14.7.3 Partial or Complete Loss of One or More Phases

The Company operates the three-phase distribution system with single-phase devices. For this reason, it is recommended that all three-phase Customers follow the NEC (National Electric Code) Article 430 III pertaining to motor protection. The Code requires motors to be provided with three current (i) overload units, one in each phase. In addition, it is also recommended that all polyphase motor installations be equipped with an automatic disconnecting device (sensing voltage loss) as added protection for 'single phasing conditions' (partial or complete loss of one or more phases). Partial or complete loss of one or more phases may be from failure of the Customer's equipment serving the motor or from inherent partial or complete loss of one or more phases of the Company's electric distribution equipment. The Company shall not be held responsible or liable for damage to the Customer's installation due to such causes in the inherent operation of their distribution system.

Section 15 Customer's Special Equipment

15.1 General Comments

So that the Company may provide adequate electric service to all its Customers and avoid unnecessary delays in supplying electric service, it is recommended that the Customer, prior to purchase, submit to the Company information and specifications of any special equipment that might cause interference with the service to the Customer or to others. This prior information is especially important if the special equipment requires additional electric facilities for its satisfactory operation. The Company will not connect electric service until all problems caused by utilization equipment that may cause interference with other Customers has been remedied by the Customer providing the necessary corrective equipment. The Company reserves the right to inspect and test any equipment connected to its lines and to require that such equipment be provided with nameplates showing the voltage, phase, full-load amperes, maximum current, maximum kVA and such other information as may be necessary to determine the operating characteristics of the equipment. Consult the Power Quality Standard for Electric Service (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.)

15.2 Additional Electric Facilities

A Customer may desire or require additional facilities (such as emergency service, oversized transformer, separate transformer, dual service, etc.) to minimize voltage fluctuations or interference with other Customers, or to provide satisfactory operation of the Customer's electric equipment. The Company in cases, where practicable, will furnish such facilities, when the Customer agrees to pay in some manner the additional cost of such facilities. Consult the Company for details.

15.3 Radio and Television Antennae

Antennae for radio, radio transmitter, and/or television sets shall never be erected over, under, or in close proximity of either side of the Company's power lines or other wires carrying electric current. Nor should they be constructed in such a place where they may accidentally fall into energized wires. Antenna lead in and other wires shall not cross over and should not cross under Company's electric conductors. Such location of the Customer's apparatus may result in serious accidents, damage to the equipment, or poor reception. Where proximity to electric power service conductors cannot be avoided, a ten-foot minimum clearance is required. The attachment of antenna systems to poles or service masts carrying the Company's conductors is strictly prohibited. The Company will remove such attachments upon discovery, and the responsible party will be billed for all removal costs.

15.4 CATV and Carrier Installations

Service for the operation of radio and television transmitting apparatus will be furnished under conditions specified by the Company and conditions of use of such service shall not cause undue disturbance of electric service to other Customers. Where necessary, the Customer shall install suitable filters or other devices to prevent radio, telephone, and television interference by the electrical power supply. Consult the Company for installation of community antenna television (CATV) systems on Company poles. The Customer shall sign a Service Agreement and the Company will designate the service locations and specifications for attachment and operation on Company poles.

15.5 Electric Welders and Furnaces

Electric welders and arc furnaces usually have such severe load characteristics that special attention shall be given to the service installation to prevent interference and impairment of service to the Customer and others. The Company is prepared to assist the Customer in planning installations of electric welders and industrial type furnaces. It is essential in every case that the Company be consulted when such installations are being planned and before commitment to purchase equipment, so that there will be ample time to determine the electrical supply requirements.

15.6 Radio and Television Transmitters, X-Ray, Diathermy, and High Frequency Heating Equipment

Customers using radio and television transmitters, x-ray, diathermy, and high frequency heating equipment shall install and maintain devices approved by the Company for protection of transformers, meters, and other service equipment. Should the operation of the Customer's equipment impair their own or other Customers' service, then a separate transformer and service entrance connection or other appropriate corrective measures shall be required. The Company shall not be required to furnish or continue service to radio installations, X-ray apparatus, or other apparatus, the operation of which causes disturbances on the Company's distribution circuits.

It is recommended that X-ray and similar imaging devices be connected to dedicated circuit run directly to the service entrance.

Wired-radio, or any related means of transmitting information, shall not be connected or coupled to the Company's lines except by special arrangement with the Company.

Consult the Company for service to commercial radio and television facilities.

15.7 Customer's Capacitors and Other Reactive Equipment

It is desirable and important to maintain the power factor of any load as near unity as possible. Maintaining a high power factor may allow a reduction of conductor sizes and equipment capacities. This may suggest the installation of capacitors. Capacitors shall be applied more carefully than most types of electrical equipment in order that satisfactory operation and maintenance will result. When a Customer installs capacitors to improve the power factor, the Customer should provide, or at the request of Company, the Customer shall provide automatic disconnecting of capacitors when the equipment causing the low power factor is not operating. Where large capacity motors are to be installed, consideration should be given to the use of synchronous type equipment.

15.8 Converters - Operation of Three Phase Motors from Single Phase Electric Supply

The phase converter is used to simulate a three-phase voltage from a single-phase source. One converter is recommended for each three-phase motor. The phase converter shall be matched with both the motor horsepower and the motor application. Special consideration shall be given to the type of phase converter being used on the motor. The Company shall be consulted prior to the installation of a phase converter.

Section 16 Power Quality Parameters for Customer Equipment Specifications

16.1 General Comments

The best time to address power quality issues is during the design stage of a new facility or plant expansion. This Section and The Power Quality Standards Moved to Power Quality Standard for Electric Service. (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.) was developed to aid Customers in specifying new equipment and in determining the need for power conditioning equipment for critical systems. This is to ensure that the Company's and other Customers' equipment will not be adversely impacted by a new Customer's facilities or an existing Customer's planned expansion.

The Company should be consulted early in the design phase for new installations and load additions to address specific installation requirements for new facilities and planned expansions.

Applicable Standards are:

ANSI C84.1 Electric Power Systems and Equipment

ANSI MG-1 Motors and Generators

ANSI C62.92.4-1991 IEEE Guide for the Application of Neutral Grounding in Electrical Utility Systems, Part IV-Distribution

IEEE 141-1993 IEEE Recommended Practices For Electric Power Distribution For Industrial Plant Systems

IEEE 519-1992 IEEE Recommended Practices And Requirements For Harmonic Control In Electrical Power Systems

IEEE 1159-1995 IEEE Recommended Practice For Monitoring Electric Power Quality

16.2 Steady State Voltage to Customer

The steady state voltage is the voltage a Customer can expect to receive under normal operating conditions. Since the loads on a utility system are constantly changing, it is impossible to maintain a completely constant voltage. Thus the Company will provide voltage regulation to keep the steady state voltage within the ranges shown in Tables 16.2-1 as indicated by ANSI standard C84.1.

Table 16.2-1 ANSI C84.1 Voltage Limits (Service Voltage)

Service Voltage (1)	Range A (2)(4)	Range B (2)(6)
Maximum	+5%	+5.83%
Minimum	-5%	-8.33%

1. **Service voltage** is measured at the point of common coupling between Customer and Company. Jurisdictional Public Service Commissions may specify other voltage limits.

Notes continued on next page

16.2 Steady State Voltage – Continued.

Table 16.2-2 ANSI C84.1 Voltage Limits (Utilization Voltage)

Utilization Voltage (6)	Range A (2)(4)	Range B (2)(6)
Maximum (equipment rated >600 V)	+5%	+5.83%
Maximum (equipment rated <600 V)	+4.17%	+5.83%
Minimum	-8.33%(-10% (3))	-11.67%(-13.33%(3))

2. Voltage limits in % deviation from nominal
3. For circuits with no lighting equipment
4. **Range A** applies to normal operations
5. **Range B** applies for short duration and/or abnormal conditions on the utility system (excluding fault conditions and transients).
6. **Utilization Voltage** is measured at the equipment using the electricity.

When abnormal conditions occur (such as the loss of a major transmission line, generator, etc.), corrective measures shall be taken by the Company within a reasonable time to improve voltages to meet Range A guidelines. The Company will follow these guidelines for service voltages.

It is the responsibility of the Customer to design their electrical system to ensure the utilization voltage guidelines in ANSI standard C84.1 are met. Table 16.2-2 lists the guidelines for the Customer's utilization equipment.

The Company's transmission grid (above 34.5 kV) is designed to operate at steady state voltage levels between 95% and 105% during normal conditions and between 92% and 105% during contingency situations. Accordingly, Customers fed from the transmission grid should have a means of regulating the step-down transformer(s) low-side voltage to ensure the appropriate voltage levels are maintained at the Customer's utilization equipment.

16.3 Voltage Unbalance

16.3.1 Voltage Unbalance at Service Entrance

The voltage Unbalance at the service entrance under **no-load** conditions should be limited to 3% or less per ANSI standard C84.1. The Company's facilities will be designed to meet this guideline.

$$\text{Percent voltage unbalance} = \frac{V_{\text{max dif}} - V_{\text{av 3 ph}}}{V_{\text{av 3 ph}}}$$

Where:

$V_{\text{max dif}}$ = the phase voltage most different from the average of three phases

$V_{\text{av 3 ph}}$ = the average voltage of three phases

16.3.1 Voltage Unbalance At Service Entrance (continued)

For voltage imbalance greater than 1% at a Customer's motor terminals, the motor should be derated; ANSI Standard MG-1 provides guidelines for motor derating to avoid excessive motor heating. Additionally, excessive current imbalance due to supply voltage imbalance can cause nuisance tripping of motor protective devices. The Customer is responsible for balancing the loads in their facility to ensure adequate levels of balance are maintained during all loading conditions.

16.3.2 Loss of Power

An extreme case of phase imbalance is single phasing, which can occur on both the utility side and the Customer side of the point of common coupling. It is the responsibility of the Customer to protect utilization equipment from single-phasing events on the power system. Compliance with the NEC does not insure adequate protection from single phasing. Also see Section 14.7.3 and NEC 430.

The Power Quality Standard for Electric Service. (see Section 1.5 General Terms Used in Service Standards (page 10) for the Internet location.) should be consulted for subjects such as

- Voltage Swells
- Voltage Sags
- Voltage Fluctuations Caused By Customer
- Harmonic Distortion
- Transients
- Frequency
- Electrical Noise