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# INTRODUCTION TO ELECTRIC SERVICE STANDARDS







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SECTION 1200 COMMERCIAL SERVICES  
FROM SINGLE-PHASE  
UNDERGROUND  
RESIDENTIAL  
DISTRIBUTION PADMOUNT  
TRANSFORMERS



Article 1801.2 - Language added regarding securing of unmetered conductors.

Article 1802.2 - Condensed to remove information needed only for specific installations.

Article 1802.4 - Updated metering





Numbering of Figures Changed,  
respectively.

Article 2003 - Changed to Article  
2004 CPS Energy Facilities and System  
Modifications.

Article 2005.2 - Article 2010 Solar  
Power (Photovoltaic) General  
relocated to Article 2005.2 Design  
Considerations of DG Facilities. Note



"

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# SECTION 70

## SAFETY





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receive between the notification centers. This provision is to ensure that excavators need only make one call to notify most facility owners with buried utilities.

**70.2.2 The "Dig Safely" Program:**





SECTION 80

**SUPPLY AND UTILIZATION  
FACILITIES**





"

**80.1 Supply Facilities:**



SECTION 90

**GENERAL  
INFORMATION**







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**Note 1:**











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**CPS Energy:**

The gas and electric utility supplying principally the City of San Antonio, Texas, and County of Bexar.

**Concealed:**

Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

**Conductor:**

A material, usually in the form of a wire, cable, or busbar, suitable for carrying an electric current.

**Conductors Considered Outside of Building:**

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**Condu:**

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for the Customer's installation including appliances and apparatus used in conjunction therewith.

**Demand Load:**

The term "demand load" as used herein shall mean the maximum load in kilowatt per phase on the line-side of the point of delivery during any time interval









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*require current transformers (CT's) or voltage transformers (VT's), or both, to reduce the service current or voltage when they are beyond the measuring capacity of self-contained meters.*





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Energy owned service laterals supply two or more meters, the point of delivery will be in a junction box ahead of an auxiliary wire gutter as required and specified by CPS Energy (Refer to Fig. 1800.15).

"

meters, the point of delivery will be in the transformer vault or room at the secondary spades of the transformer. All CPS Energy owned conductors shall be effectively outside the building (Refer to Definition of "Conductors Considered Outside of Building")

**Point of Interconnection:**

The point where the Distributed Generation (DG) itself is electrically connected, either directly to the CPS Energy system or to the load side (metered) of the Customer owned equipment for the applicable DG system.

"

"Triplex" or "Quadrplex" cables are used for most service drops and consist of one bare neutral and two or three insulated aluminum conductors. Larger service drops consist of three or four ethylene propylene rubber (EPR) insulated copper conductors. They may be installed either 'open' (Moused) where each phase conductor is separate and attached to the structure or built into a structure.











"

**201 Characteristics of Service:**

The electric service supplied by CPS Energy is alternating current with a nominal frequency of 60 Hertz.

**202 Types of Electric Service, Overhead and Underground Distribution:**

**202.1 Secondary Voltage Service for Lighting and Appliances (Single-Phase):**

b





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- (2) Each transformer service lateral shall terminate on an individual bus within Customer service equipment.
- (3) Each transformer service lateral must be installed in accordance with the provisions of the NEC and other applicable codes.
- (4) Transformers shall be located such that the distance between transformers does not exceed 40 feet center to center.

**Note:** *CPS Energy will not install parallel transformers serving equipment with a common secondary bus.*

**Note:** *Grouping Customer's individual units using equipment*

305



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**(B) Special Occupancies:**

(1) A







**SECTION 300**

**USE OF ELECTRIC  
SERVICE**

















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401 General:

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coordinate with CPS Energy's Customer Service Representative to obtain available fault current information.

**403.4 Working Space:**



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*Exception 1:*







OVERSEAS













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to the top of the conduit. The service mast must be designed to withstand 750 pounds of load tension induced from the service drop conductors.



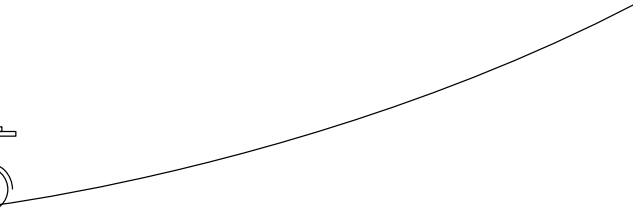
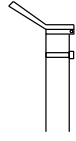




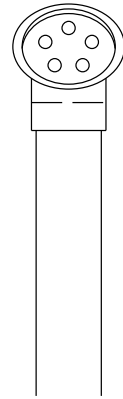
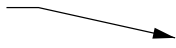


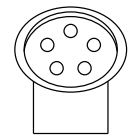












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**601 General:**

This type of service can be used for both commercial and residential occupancies where an overhead service drop from a distribution pole is either not an option





"

**Note 1:**

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*transformer poles (Refer to Definition of "Conductors Considered Outside of Building").*

**604.9 Under Drivable Surfaces:**

Where service lateral conduits are to be located underneath a drivable















# SECTION 700

## UNDERGROUND RESIDENTIAL DISTRIBUTION (URD) SERVICE



"

**701 General:**

This type of service is designed for residential subdivisions where all utilities are installed underground. An Underground Residential Distribution (URD) service lateral installed underground in conduit from a CPS Energy transformer or secondary enclosure to meter loop on Customer building or structure supplies service. Customer shall request this type of service either









"

**706.1 Size:**

Service-entrance conductors shall have sufficient ampacity to carry the load



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**801 General:**

This type of service is designed for apartment complexes where all utilities are installed underground. A service lateral installed underground in conduit from a CPS Energy transformer or riser pole to meter loop on Customer's building









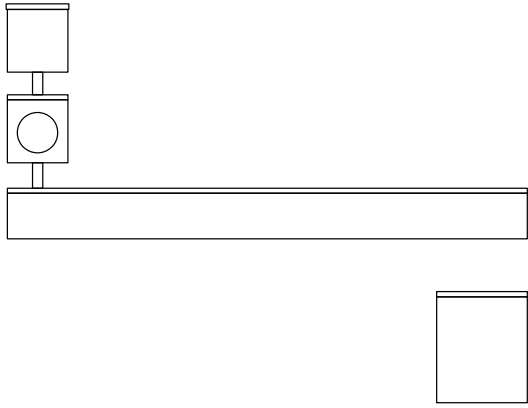


















SECTION 900

**SERVICE IN HIGH-RISE**







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separately meter house loads. Customer shall supply house loads with 208Y/120-volt, four-wire wye service from Customer owned service equipment (Refer to Section 1800 for requirements of metering equipment in Customer







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(C) Restricted Access to Transformer Rooms:





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(g)Á















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**1001 General:**

This type of service typically consists of underground primary voltage cables connected to the electric distribution system and installed in concrete encased conduit to CPS Energy owned three-phase padmount transformer located on Customer premises. Service is supplied to Customer from the padmount transformer's secondary terminals.

**1001.1 Demand Loads Over 300 kVA:**

A standard padmount transformer installation is intended for a commercial or industrial Customer, or group of such Customers, whose demand load exceeds 300 kVA. CPS Energy will supply service to the Customer's premises.

**1001.1.1 Demand Loads Over 300 kVA:** Customer demand load is 300 kVA or less. A padmount transformer is required for service to the Customer's premises.









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**(B) Cable and Connectors in Transformer:**

The quantities and sizes of secondary cables that can be connected to CPS Energy transformers are identified in Table 1000.1 (A) and are

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(4) Wireways shall not contain removable covers and shall be equipped with casketed flanges secured by nuts and bolts suitable for the condition; self-tapping screws are not permitted.

(5)





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**Note:** Where conduit has been approved to be installed above ground, IMC or Rigid conduit shall be used and size to be specified by CPS Energy.

**(D) Load Management Data (Pulse Device):**

For single meter installations where Customer requests load management data



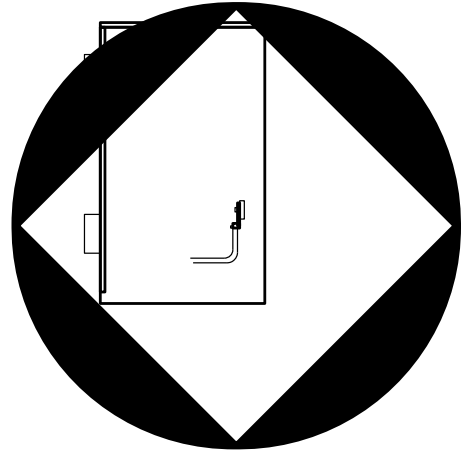
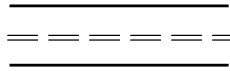


TABLE 1000.2  
WIREWAY SIZES TO BE USED WITH TAP BOX INSTALLATIONS

The table content is redacted with grey blocks. The redaction consists of a large grey block covering the top two rows, a smaller grey block covering the middle row, and a final grey block covering the bottom row.















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**1101 General:**

CPS Energy provides electric service to the majority of the San Antonio Central



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(C) Frequent Switching:











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**(K) Fire Ratings:**

The building design or the authority having jurisdiction (AHJ) may require

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(6)Á

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**1103.4 Descrambling Box:**

Before entering transformer vault or room and fuse pad location, low impedance bus bars and Customer's conductors must be unscrambled (all like phases to come together). Customer shall provide a descrambling area (box) prior to entering transformer vault or room. The descrambling box shall be sized in

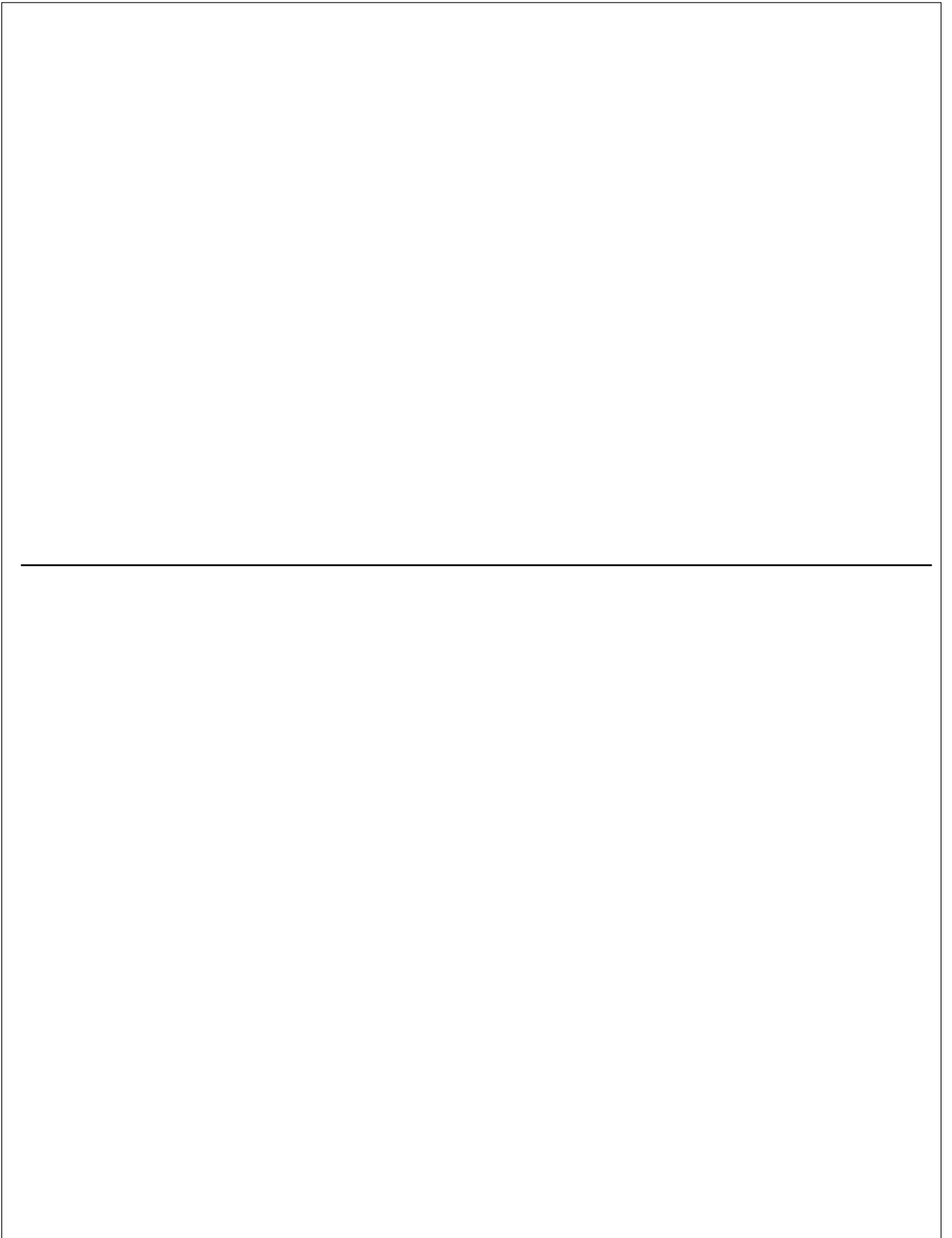


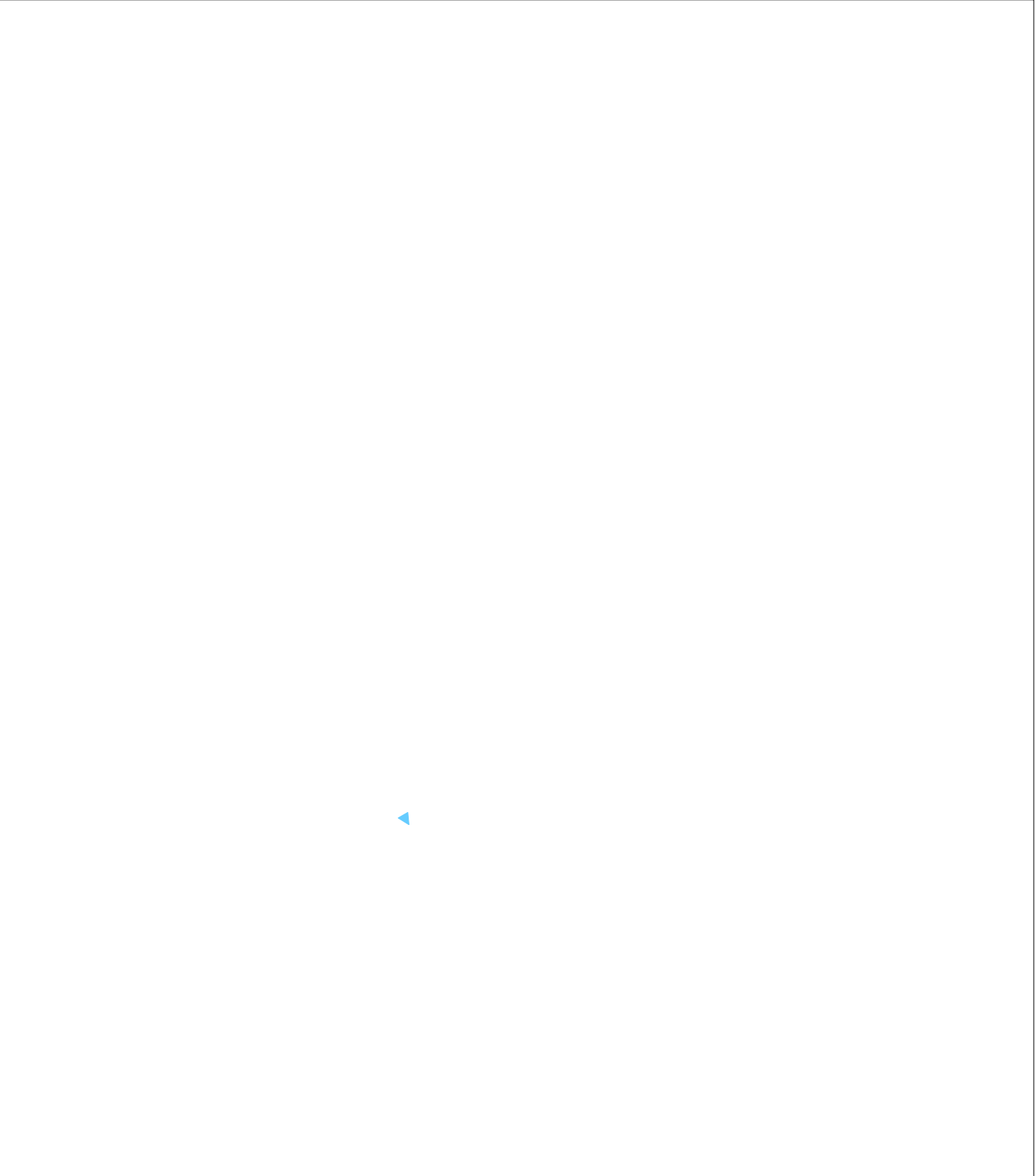












# SECTION 1200







"

1201.3 Transformer Located on Customer Property:

(A) New Transformer:

"

**Note 2:** *Customer is not permitted to access energized CPS Energy equipment. Customer shall coordinate with CPS Energy for conduit and cable installation.*

**1201.5 Existing Transformer or Secondary Enclosure Located on Adjacent Property:**

Where a service and /or secondary is needed from an existing transformer or secondary enclosure, the service including secondary conduits will be





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**(E) Installation:**

A typical trench and conduit installation shall consist of PVC conduits

















**SECTION 1300**

**PRIMARY VOLTAGE SERVICE**



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be responsible for the installation, operation, and maintenance of their overhead electrical system.

**Note:** *At no time will Customer be permitted to accept overhead to underground primary service from CPS Energy's primary meter pole.*

**1304.3 Customer's Service Equipment:**

Customer shall install on their terminal pole suitable equipment for disconnecting their service and providing overcurrent protection. Customer's



**Note 3:** Two inspections are required for transformer slabs. A CPS Energy inspector shall inspect the slab after forms, reinforcing steel, primary and secondary conduits, metering conduit(s) and ground rods are in place, and the installation is ready for concrete pouring. A second inspection is

# SECTION 1400

## SERVICE TO CUSTOMER OWNED METER POLE





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**1401 General:**

Where Customer requests electric service and is not allowed to or chooses not to have their meter loop installed their ver #equecei(,00 ty

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(A) Steel I-Beam or Pipe Type:

SECTION 1400 - SERVICE TO CUSTOMER OWNED METER POLE

"

Customer Service Representative and after proper clearance (36 inches) to the service drop conductors and drip loop is maintained.

**Exception:** Where meter pole is used for telecommunication systems in accordance with Section 1900.



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1501 General:

Service to manufactured homes within a Manufactured Home Community may be supplied from an underground or an overhead distribution system. Customer may request service from either type of system with the CPS Energy Customer Service Representative (Refer to "Helpful Numbers" listed on the inside front cover

1501.1 Final Grades Provided by Customer:

Customer Energy Center 4E2bheu7  
^ `24 4024 4024 `27 7331 `40 1 Tf -142255 (5 )321 7 (4024 12)-1454024 3 T 013  
4 T 832 5023 T0023 13 T 832 5023  
27 n0321.330.7512t0322037 T16 0803550322037

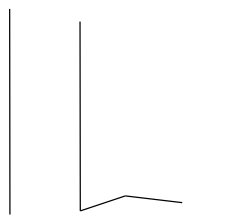
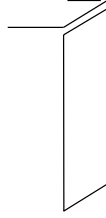
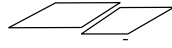


"  
(5)Á Meter sockets shall not be mounted on manufactured homes.

**Note 1:** *All applicable parts of Section 500 for overhead services will apply to overhead systems in manufactured home communities.*

**Note 2:** *CPS Energy shall make all connections to service drop conductors.*

**Note 3:** *Overhead to underground service installations shall meet the requirements for URD installations as outlined in Article 1502 for the exception that the Customer will be responsible for furnishing and installing the service lateral conduit from transformer pole to meter pedestal.*



SECTION 1600

**TEMPORARY SERVICE**



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**1601 General:**  
CPA Henry S

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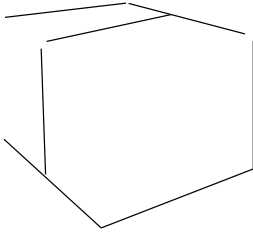
**Note 2:**



**Note:** *All applicable Articles of Section 500 for Overhead systems will apply to temporary service in overhead areas.*

**1604.1 Location of Temporary Meter Structure:**

The structure shall be located within the Customer's premises at a minimum distance of 15 feet and a maximum distance of 100 feet from CPS Energy's







# SECTION 1700

## GROUNDING OF SERVICES







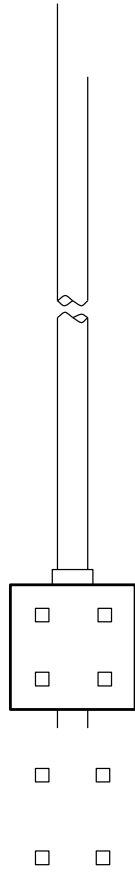




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- (1) All raceways, cable trays, cable bus framework, auxiliary gutters or service cable armor or sheaths that enclose, contain or support service conductors.
  - (2) All enclosures containing service conductors, including metering equipment, boxes, or the like, introduced in the service raceway or armor.

**1706.1 Method of Bonding at the Service:**

Bonding jumpers meeting the requirements of the NEC shall be used around impaired connections, such as reducing washers or oversized, concentric, or



# SECTION 1800

## **MA3.95NG EQUIPMENT AND**







socket specifications, Customer will be required to design their service to use transformer rated metering equipment as outlined in this Section.

**(A) Overhead and Underground Service Installations:**

Single-position, self-contained, meter sockets furnished by CPS Energy are







*shall submit to CPS Energy for approval, an enclosure meeting CPS Energy's specifications and construction criteria.*

**(D) Standard Transockets:**

Transockets are self-contained, weatherproof metering enclosures that house all required instrument transformers, test switch, metering control cable, and





requiring 120/240-volts and/or 120/208-volts for calculated loads not exceeding 200 amperes per individual unit or house load (Refer to Figure 1800.14).

**Note:**



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(c)Á

"

1804.4 Metering Equipment Rack (Meter Rack):





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(d) Doors to the metering instrument transformer compartment(s) must be

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(a)Á



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**Exception 3:** Where four stack, and five stack modular metering is installed, the minimum height to the meter center of the lowest meter shall be to 3 feet and the maximum height to the center of the highest meter shall be 6 1/2 feet.



"

Only service conductors are allowed within gutter; load wires are not permitted. Gutter shall be furnished, installed, and maintained by Customer (Refer to Figure 1800.15).









insulated connectors designed for both copper and aluminum conductors. This junction then will be the POD.

**(D) Construction Specifications:**

Auxiliary wire gutters may be designed to suit specific installations and their general design must be in accordance with the following requirements:

- (1) Gutter must be of corrosion resistant steel and be primed and finish painted, or of aluminum. Where applicable it must be weatherproof.
- (2) Gutter must be constructed of minimum 12-gauge steel or aluminum and shall be adequate to prevent bending or warping.
- (3)







"

1810 Communication Provisions for Metering:





TABLE 1800.1

Service  
Voltage

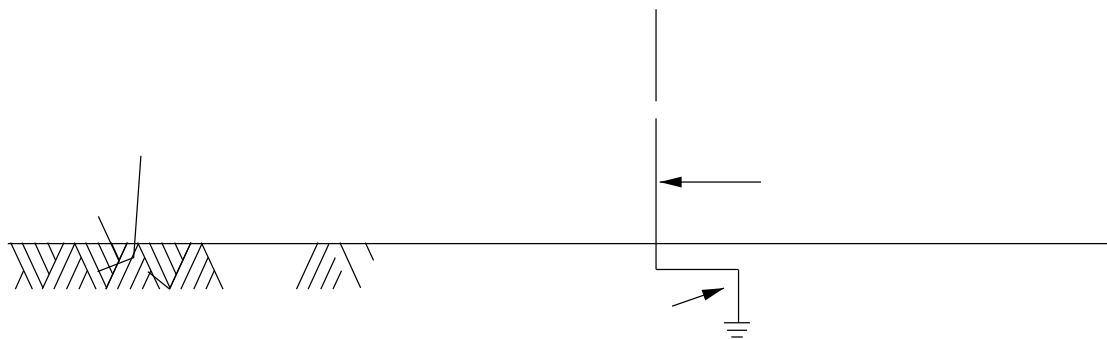
Meter Socket  
Ampacity  
(See Note 1)

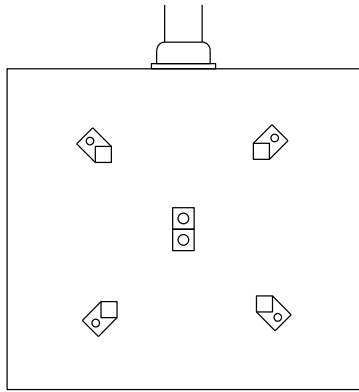
Adjusted Meter Socket  
Ampacity for C201Tf280580ommercial3Fj/TT01Tf661

FIGURE 1800.1

FIGURE 1800.2  
CPS ENERGY FURNISHED, SELF CONTAINED, THREE PHASE



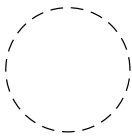




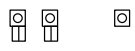












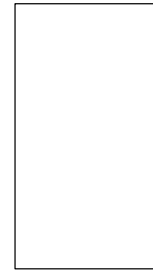
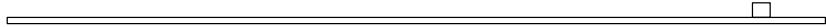












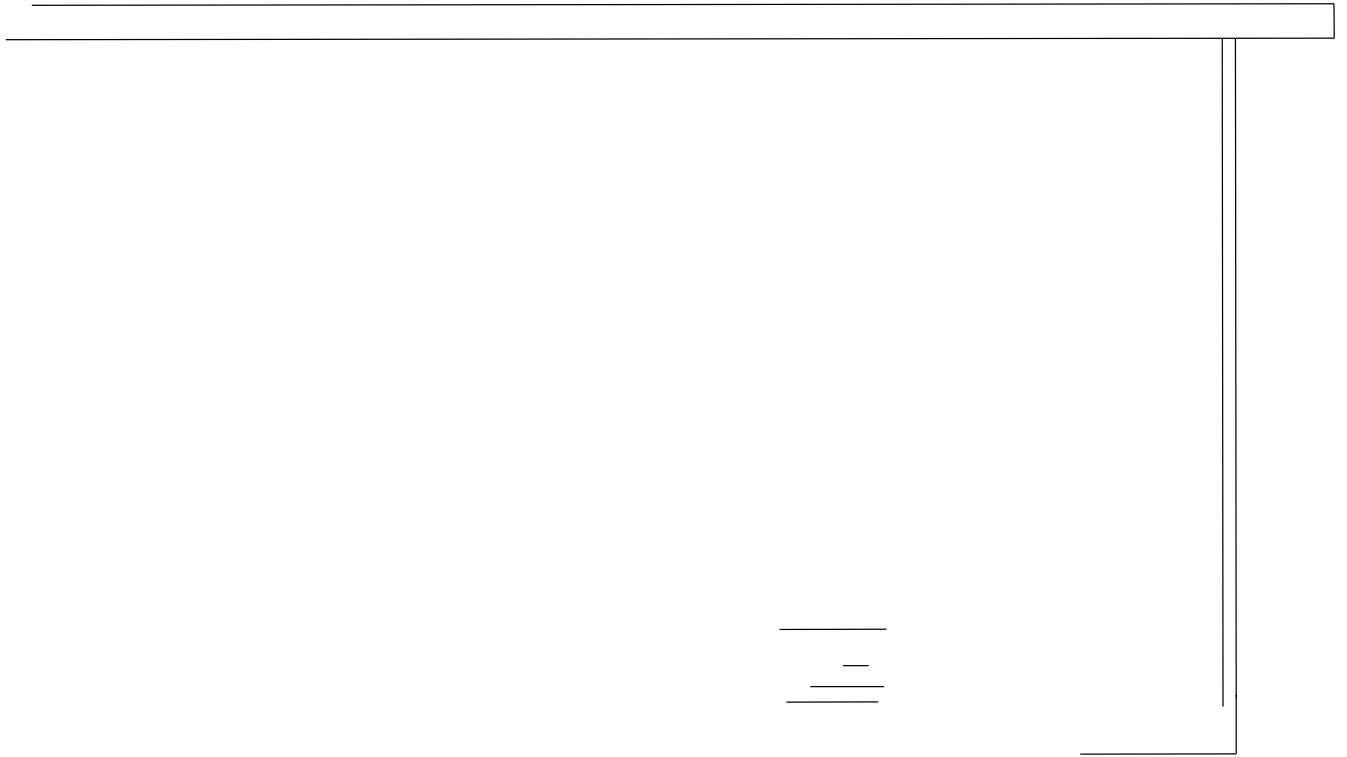




















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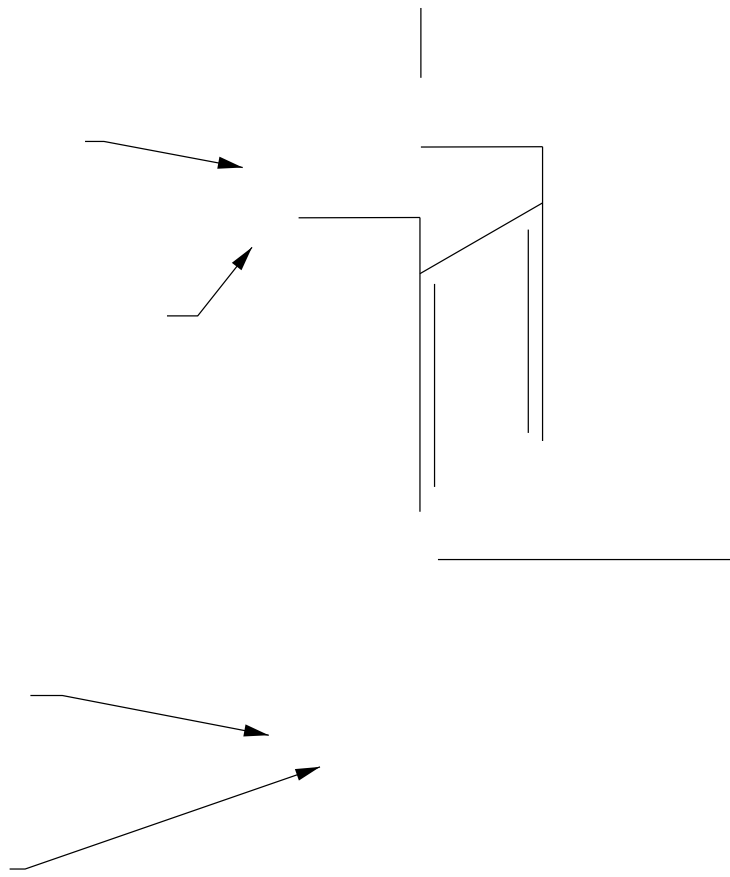
**1901 General:**

This type of service is designed for cell tower sites and wireless communication





















# SECTION 2000





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*utilize qualified and experienced contractors, consultants, and where required, licensed engineers and that work be performed in accordance with minimum*



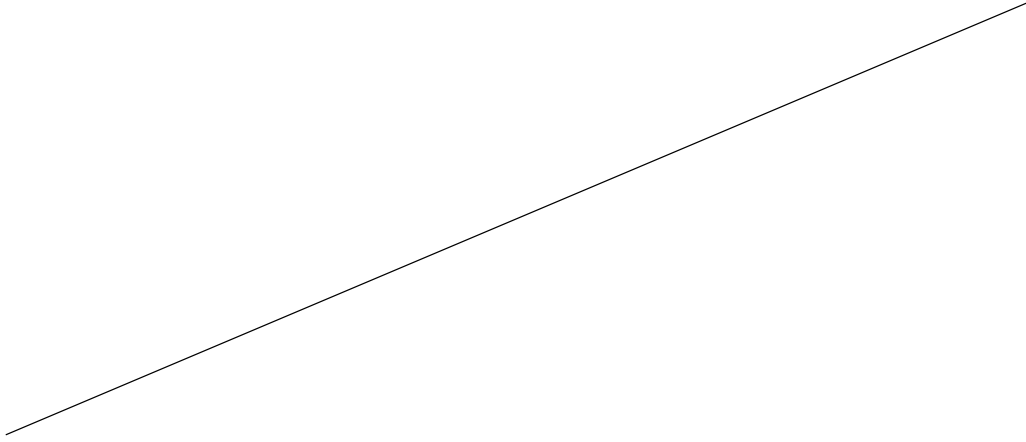






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