A foremost concern at the City of San Marcos Utility Department (SMTX UTILITIES) is the safety of our customers and employees. We exercise a great deal of care ensuring that our facilities are safe. But even with our many precautions, electrical contact accidents have occurred.

**REMEMBER, ELECTRIC POWER LINES CAN KILL!**

When you are working near power lines or moving tools and equipment (cranes, scaffolds, derricks, piping, etc.) near power lines, stay alert. The Texas Health and Safety Code, Chapter 752, prohibits all activities in which persons or equipment MAY come within six (6) feet of energized overhead high voltage power lines, and Federal Regulations, Title 29, Part 1919.180(i) and Part 1926.550(a) (15) and 1910.333 require a minimum clearance of ten (10) feet from power lines. These laws carry both criminal and civil liabilities. In addition, contractors and owners are legally responsible for the safety of construction workers under these laws. If you or your company must work near overhead power lines, contact SMTX UTILITIES Engineering (see page 3). We will help you arrange for the lines to be de-energized and/or moved. Make your work place a safe one, and remember to LOOK UP AND LIVE near overhead lines. For information on the above or on electrical safety programs, contact SMTX UTILITIES Engineering.
FOREWORD

Experience has shown that certain standard practices are necessary to assure every customer of SMTX Utilities the best possible electric service. In compiling this edition of Service Standards for the guidance of customers, contractors, electricians, architects, and engineers, the basic purpose has been to keep them as simple and nonrestrictive as possible.

These Service Standards supplement and are subordinate to the terms and conditions for the delivery of electric service on file in the Company’s offices. They are also intended to supplement and not to be in conflict with the current edition of the National Electrical Code, National Electrical Safety Code, or of any regulatory authority having jurisdiction.

MANY PROVISIONS IN THESE SERVICE STANDARDS DISCUSS THE COMPANY’S VIEWS, BASED ON APPLICABLE CODES AND ORDINANCES, CONCERNING THE MANNER IN WHICH CUSTOMER WIRING AND EQUIPMENT SHOULD BE INSTALLED AND MAINTAINED BY THE CUSTOMER. IN EXPRESSING THESE VIEWS, THE COMPANY DOES NOT INTEND TO IMPLY THAT IT WILL INSPECT CUSTOMER WIRING AND EQUIPMENT TO ENSURE CONFORMITY WITH THESE VIEWS. THE CUSTOMER IS SOLELY RESPONSIBLE FOR INSTALLING, INSPECTING AND MAINTAINING ALL CUSTOMER WIRING AND EQUIPMENT.

The updated Service Standards are located on the City of San Marcos website at https://www.sanmarcostx.gov/230/Electric-Utility

Paper copies will only be provided upon request.

In the text, the substantial changes from the previous issue of the Service Standards will be marked with yellow highlight.
Customers should contact SMTX UTILITIES Engineering regarding information referred to in the Service Standards. Meter boxes required for transformer rated installations may be obtained from the SMTX UTILITIES office. The SMTX UTILITIES office is located at 2217 E. McCarty Lane, San Marcos, TX, 78666. Contact SMTX UTILITIES Engineering for services needed.

<table>
<thead>
<tr>
<th>Department</th>
<th>Address</th>
<th>City, State, Zip</th>
<th>Phone Number</th>
<th>Service Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>2217 E. McCarty Lane</td>
<td>San Marcos, TX, 78666</td>
<td>(512)-393-8300</td>
<td>Page 73</td>
</tr>
<tr>
<td>Billing</td>
<td>1040 TX-HWY 123</td>
<td>San Marcos, TX, 78666</td>
<td>(512)-393-8383</td>
<td>Page 73</td>
</tr>
<tr>
<td>Dispatch</td>
<td>2217 E. McCarty Lane</td>
<td>San Marcos, TX, 78666</td>
<td>(512)-393-8313</td>
<td>Page 73</td>
</tr>
</tbody>
</table>

- Company in this manual refers to the City of San Marcos Utilities Department (SMTX UTILITIES).

- Article # in this manual refers to numbers section detail in the manual.

- Scheduled power outage from a customer or contractor must be requested two weeks in advance before it can be approved and scheduled by SMTX UTILITIES.

- SMTX UTILITIES (whom is the authority having jurisdiction over distribution install-) can change the installation in the field after installation drawings are issued for construction.
# TABLE OF CONTENTS

## General Notes

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Line Safety</td>
<td>1</td>
</tr>
<tr>
<td>FOREWORD</td>
<td>2</td>
</tr>
<tr>
<td>SMTX UTILITIES Departments</td>
<td>3</td>
</tr>
<tr>
<td>Table of CONTENTS</td>
<td>4-6</td>
</tr>
<tr>
<td>SMTX UTILITIES Service Area</td>
<td>72</td>
</tr>
<tr>
<td>LONE STAR NOTIFICATION CENTER</td>
<td>73</td>
</tr>
</tbody>
</table>

## SECTION 100-DEFINITIONS

<table>
<thead>
<tr>
<th>Term</th>
<th>Page</th>
<th>Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMI Meter</td>
<td>7</td>
<td>101</td>
</tr>
<tr>
<td>Application for Service</td>
<td>7</td>
<td>102</td>
</tr>
<tr>
<td>Company</td>
<td>7</td>
<td>103</td>
</tr>
<tr>
<td>Connected Load</td>
<td>7</td>
<td>104</td>
</tr>
<tr>
<td>Customer</td>
<td>7</td>
<td>105</td>
</tr>
<tr>
<td>Customer Extension</td>
<td>7</td>
<td>106</td>
</tr>
<tr>
<td>Customer’s Installation</td>
<td>7</td>
<td>107</td>
</tr>
<tr>
<td>Customer’s Service Equipment</td>
<td>7</td>
<td>108</td>
</tr>
<tr>
<td>Distribution Lines</td>
<td>7</td>
<td>109</td>
</tr>
<tr>
<td>Electric Service</td>
<td>7</td>
<td>110</td>
</tr>
<tr>
<td>Harmonics</td>
<td>7</td>
<td>111</td>
</tr>
<tr>
<td>Manufactured Home</td>
<td>7</td>
<td>112</td>
</tr>
<tr>
<td>Meter</td>
<td>8</td>
<td>113</td>
</tr>
<tr>
<td>Meter Mounting Devices</td>
<td>8</td>
<td>114</td>
</tr>
<tr>
<td>Meter Box</td>
<td>8</td>
<td>115</td>
</tr>
<tr>
<td>Metering Current Transformer Box</td>
<td>8</td>
<td>116</td>
</tr>
<tr>
<td>Metering Potential Transformer Box</td>
<td>8</td>
<td>117</td>
</tr>
<tr>
<td>Meter Loop</td>
<td>8</td>
<td>118</td>
</tr>
<tr>
<td>Mobile Home</td>
<td>8</td>
<td>119</td>
</tr>
<tr>
<td>Modular Home</td>
<td>8</td>
<td>120</td>
</tr>
<tr>
<td>National Electrical Code</td>
<td>8</td>
<td>121</td>
</tr>
<tr>
<td>National Electrical Safety Code</td>
<td>8</td>
<td>122</td>
</tr>
<tr>
<td>Overhead Distribution Areas</td>
<td>8</td>
<td>123</td>
</tr>
<tr>
<td>Point of Delivery</td>
<td>8</td>
<td>124</td>
</tr>
<tr>
<td>Rate Schedule Classification</td>
<td>8</td>
<td>125</td>
</tr>
<tr>
<td>Retail Electric Provider (REP)</td>
<td>9</td>
<td>126</td>
</tr>
<tr>
<td>Service Cable Tap Box</td>
<td>9</td>
<td>127</td>
</tr>
<tr>
<td>Service Drop</td>
<td>9</td>
<td>128</td>
</tr>
<tr>
<td>Service Entrance Conductor</td>
<td>9</td>
<td>129</td>
</tr>
<tr>
<td>Service Lateral</td>
<td>9</td>
<td>130</td>
</tr>
<tr>
<td>Service Location</td>
<td>9</td>
<td>131</td>
</tr>
<tr>
<td>Service Outlet</td>
<td>9</td>
<td>132</td>
</tr>
<tr>
<td>Service Outlet Location and Data Statement</td>
<td>9</td>
<td>133</td>
</tr>
<tr>
<td>Terms and Conditions Package</td>
<td>9</td>
<td>134</td>
</tr>
<tr>
<td>Transmission and/or Distribution Service Provider (TDSP)</td>
<td>9</td>
<td>135</td>
</tr>
<tr>
<td>Transsocket Enclosure</td>
<td>9</td>
<td>136</td>
</tr>
<tr>
<td>Type of Service</td>
<td>9</td>
<td>137</td>
</tr>
<tr>
<td>Underground Distribution Areas</td>
<td>10</td>
<td>138</td>
</tr>
<tr>
<td>Underground Street Network Areas</td>
<td>10</td>
<td>139</td>
</tr>
</tbody>
</table>
Section 400 – Residential and Small Commercial Self-Contained Meter Service Installations (cont.)

- Service to Apartments, Townhomes or Condominiums ................................................. 38  .......................................................... 416
- Meter Loops ......................................................................................................................... 41 .......................................................... 417
- Meter Installations ................................................................................................................ 42 .......................................................... 418
- Methods of Installing Meter Mounting Devices ................................................................. 47 .......................................................... 419
- Height of Meters ...................................................................................................................... 51 .......................................................... 420
- Meter Location ......................................................................................................................... 51 .......................................................... 421
- Meter Pole Installations ......................................................................................................... 53 .......................................................... 422
- Meter Installation Sequence ................................................................................................. 53 .......................................................... 423

SECTION 500 – LARGE COMMERCIAL INSTRUMENT TRANSFORMER RATED Meter Service Installations

- General Information ........................................................................................................... 57 .......................................................... 500
- Services ............................................................................................................................... 59 .......................................................... 501
- Overhead Service ................................................................................................................. 59 .......................................................... 502
- Service Drop ........................................................................................................................ 59 .......................................................... 502
- Clearance for Service Drop .................................................................................................. 59 .......................................................... 503
- Location of Service Outlets ................................................................................................. 61 .......................................................... 504
- Grouping Service Outlets ................................................................................................. 61 .......................................................... 505
- Point of Attachment ............................................................................................................. 61 .......................................................... 506
- Anchorage for Service Drop ............................................................................................... 61 .......................................................... 507
- Service Entrance Conductors ............................................................................................. 62 .......................................................... 508
- Transformer Installation on Customer’s Premises ............................................................... 62 .......................................................... 509
- Temporary Installations ....................................................................................................... 62 .......................................................... 510
- Underground Service .......................................................................................................... 63 .......................................................... 511
- Commercial Underground ................................................................................................. 63 .......................................................... 511
- Underground Service Laterals in Overhead Areas ............................................................. 63 .......................................................... 512
- Meter Installations ............................................................................................................... 66 .......................................................... 513
- Methods of Installing Meter Equipment ............................................................................ 70 .......................................................... 514
- Meter Location ....................................................................................................................... 71 .......................................................... 515
- Meter Seals ............................................................................................................................. 71 .......................................................... 516
- Meter Installation Sequence ................................................................................................. 71 .......................................................... 517
SECTION 100-DEFINITIONS

100 The following is a list of terms and definitions used in this manual.

101 **AMI Meter**: Advanced Metering Infrastructure or Smart Meter used for both residential and commercial services to measure the electric power and energy supplied to a customer.

102 **Application for Service**: The agreement or contract between the SMTX Utilities and the Customer under which Electric Service is supplied and taken.

103 **Company**: The City of San Marcos – Utilities Department, commonly known as SMTX Utilities (SMTX UTILITIES)

104 **Connected Load**: The combined manufacturer’s rated capacity of all motors and other electric powered devices on the Customer’s premises, which may, at the will of the Customer, be operated.

105 **Customer**: Any individual, partnership, association, firm, public or private corporation, or governmental agency now being served or hereafter to be served, using the Electric Service of the Company at any specified location.

106 **Customer Extension**: Any addition to the Company’s existing distribution facilities required to render Electric Service to a Customer.

107 **Customer’s Installation**: All wiring, appliances, or apparatus of any kind owned or operated by the Customer on the Customer’s side of the Point of Delivery used in connection with the Customer’s ability to take and use the Electric Service of the Company.

108 **Customer’s Service Equipment**: The necessary equipment and accessories, located near the point of entrance of supply conductors to a building, which constitute the main control and means of disconnecting the supply to that building. This equipment usually consists of a circuit breaker or a switch and fuses.

109 **Distribution Lines**: The Company’s lines located along streets, alleys, highways, or easements on private property when used or intended for use for general distribution of Electric Service to Customers of the Company.

110 **Electric Service**: The availability of electric power and energy, regardless of whether any electric power and energy is actually used. The supplying of Electric Service by the Company consists of maintaining the approximate voltage, phase, and frequency agreed upon, at the Point of Delivery by means of facilities adequate for carrying the load which the Company is thereby obligated to supply by reason of the known requirements.

111 **Harmonics**: Integer multiples of the fundamental power system frequency (sixty cycles per second), which have a negative effect on the power system. Harmonics are generated by the non-continuous manner in which electronically controlled (non-linear) equipment draws current. See Article 500.1 and 500.2.

112 **Manufactured Home**: Built on a non-removable chassis (Federal Construction Safety Standards Act (HUD/CODE) requirement) and designed to be used as a dwelling, with or without a permanent foundation, when connected to required utilities. Mobile Homes are defined as manufactured homes in HUD regulations and the NEC Code also includes mobile homes in their definition of manufactured homes.
113 **Meter**: An instrument, or instruments, together with auxiliary equipment, for measuring the electric power and energy supplied to a Customer.

114 **Meter Mounting Devices**: The devices owned and furnished by the Customer for mounting and/or enclosing the Company’s self-contained Metering Equipment.

115 **Meter Box**: A metal box furnished by other/contractor and installed by the Customer at the Customer’s expense to house transformer rated meters.

116 **Metering Current Transformer Box**: A metal box furnished by the Company at cost and installed by the Customer at the Customer’s expense, for enclosing the Company’s metering current transformers where required.

117 **Metering Potential Transformer Box**: A metal box furnished by the Company and installed by the Customer at the Customer’s expense, for enclosing the Company’s metering potential transformers where required.

118 **Meter Loop**: The opening in and extension of the Customer’s Service Entrance Conductors provided for installation of the Company’s Meter.

119 **Mobile Home**: A factory assembled structure or structures transportable in one or more sections that is built on a permanent chassis (integrated frame and axles) and designed to be used as a dwelling without a permanent foundation where connected to the required utilities. The metal frame that the house is hauled on is also the structural floor support of the home and stays as part of the home after installation. The term Mobile Home includes manufactured homes. The requirements in the NEC treat mobile and manufactured homes the same unless specifically stated otherwise.

120 **Modular Home**: Designed, engineered and built in a factory-controlled environment and then carried in sections by special trucks to a building site where they are put together by a builder on a permanent foundation, similar to regular home construction. Unlike mobile homes, modular homes do not have integrated frames and axles. For the purposes of these Service Standards, SMTX UTILITIES will treat Modular Homes and Developer/Contractor Built Homes the same.


123 **Overhead Distribution Areas**: The area or areas served by the Company’s overhead distribution system as differentiated from the underground system.

124 **Point of Delivery**: The point where the electric energy first leaves the line or apparatus owned by the Company and enters the line or apparatus owned by the Customer, unless otherwise specified in the Customer’s Agreement for Service. This is not necessarily the point of location of the Company’s Meter.

125 **Rate Schedule Classification**: The classification of the Customer’s Electric Service, the amount of electric power supplied, the rate area and the purpose for which the Electric Service is to be used.
Retail Electric Provider (REP): A person (or company) that sells electric energy to retail Customers in this state (Texas). As provided in PURA ¶ 31.002(17), a Retail Electric Provider may not own or operate generation assets. As provided in PURA ¶ 39.353(b), a Retail Electric Provider is not an Aggregator.

Service Cable Tap Box: An enclosure designed with busbars for the purpose of terminating service entrance conductors from the electric utility point of supply and for terminating service conductors to individual tenant services.

Service Drop: The Overhead Service conductors extending from the Company’s Overhead Distribution System to the Customer’s Service Entrance Conductors at the Point of Delivery.

Service Entrance Conductors: The wires or bus bars provided by the Customer extending from the Customer’s Service Equipment to the terminals of the Service Drop or Service Lateral.

Service Lateral: The Underground Service conductors between the street and/or easement, including any risers at a pole or from transformers, and the first point of connection to the Service Entrance Conductors in a terminal box or Meter. (Underground Service conductors are owned and maintained by the Customer.)

Service Location: Conductors on the utility side of the service point are not covered by the NEC. SMTX Utilities (SMTX UTILITIES) specifies the location of the service point. Service entrance conductors go from the Service Point through the meter socket to the Service Equipment (breakers, fuses or switches), SMTX UTILITIES has equipment specifications and/or service requirements beyond the Code for meter sockets, metering cabinets, and metering compartments within switchgear, switchboards and panelboards. See Section 412 and 418.3 of these Service Standards for use of Self-Contained Meter Pedestals in mobile home parks.

Service Outlet: The outside terminal portion of the Customer’s Installation to which the Company’s Service Drop is connected.

Service Outlet Location and Data Statement: A written statement prepared by the SMTX Utilities representative for the guidance of the Company and the REP, or his representative. This statement shows the estimated load to be served, the Type of Service which the Company proposes to make available, and the agreed location for the Customer’s Service Outlet at the specific premises under consideration.

Terms and Conditions (T&C) Package: is a written agreement between SMTX Utilities and the customer. The T&C describes the Electrical Infrastructure that SMTX UTILITIES agrees to install on the customers behalf.

Transmission and/or Distribution Service Provider (TDSP): An Entity that owns or operates for compensation in this state (Texas) equipment or Facilities to transmit and/or distribute electricity, and whose rates for Transmission Services, Distribution Services, or both is set by a Governmental Authority.

Transsocket Enclosure: A combination of current transformers and voltage transformers used for metering on applications greater than 200 AMPs and less than 800 AMPs. Any applications requiring 800 AMPs or greater require current transformer in can (purchased from SMTX UTILITIES).

Type of Service: The characteristics of Electrical Service described in terms of frequency, phase, nominal system voltage and number of wires.
138 **Underground Distribution Areas**: Those areas where Electrical Service is supplied by the Company from its underground distribution facilities as described in Articles 135, 136, and 137.

139 **Underground Street Network Areas**: Those areas designated by the Company where established 120-volt street secondary network systems are in operation.

140 **Underground Radial Areas**: Those areas where Electric Service is supplied by the Company from its underground distribution facilities connected to a radial supply.

141 **Underground Residential Distribution (URD) Areas**: Those residential areas where special contractual arrangements have been made for single-phase 240/120 Volt underground service to all Customers in a subdivision or specified area.
SECTION 200 - GENERAL INFORMATION

200 This section contains information on how to obtain service and outlines standards to be followed to ensure safe and reliable service. Consequently, the Company reserves the right to refuse service to any installation not meeting these Standards.

201 Application for Service

201.1 The Customer must contact the Permit Center to make application for service. All requests for service or changes in service should be made as early as possible. Customers requesting either overhead or underground electric service will be required to grant permanent easements for these facilities. This easement document outlines specific obligations to keep the easement free from obstructions and appurtenances.

201.2 It will facilitate the prompt rendering of Electrical Service to new Customers or additional Electric Service to existing Customers if the following information is supplied to SMTX UTILITIES Engineering during the early planning stages of the project.

A) Customer Information Packet (Provided by SMTX UTILITIES or Uploaded from MyPermitNow)
   i. Requirements to Establishing Electric Services
   ii. Detailed Plan Requirement Information
   iii. Electric Service Application
   iv. Electric Utility Easement
   v. Acknowledgement
   vi. One-Line Diagram
   vii. Load Analysis

201.3 Customer must ask for a power outage 72 hours in advance of desired outage time.

202 Agreement for Service

The Company will supply to a Customer, at any specific premise, the Types of Service or Services listed in Section 300 of the Service Standards and such service(s) will be covered by one agreement for service. The Customer’s Installation is to be so arranged that all Electric Service(s) under one agreement for service can be supplied at one Point of Delivery and measured by one meter.

202.1 Lighting
   A) All lighting must meet the following voltage
      i. Residential Lighting- 120/240 VAC
      ii. Commercial Lighting- 120/240 VAC or 480/277 VAC
      iii. Roadway Lighting- 120/240 VAC

203 Service Location

Before work is started on the Customer’s installation, the Customer or his Contractor shall follow the guidelines in Article 201.2

204 Change in Customer’s Wiring Installation

When planning additions or alterations to the Customer’s installation, the Customer shall notify the Company and the Permit Department since most building alterations or rewiring work will
necessitate some change in the Company's facilities. The Customer or his Contractor shall not assume that a remodeled or increased service will be served from the same Point of Delivery as the old service. Additional wiring shall comply with the current National Electrical Code or the adopted code by the authority having jurisdiction. In localities having electrical ordinances, approval by the city inspecting authority having jurisdiction will be required before the Company is permitted to reconnect the service.

205 Change in Location of Existing Service Facilities

Company may require a Customer to pay the expense of change in the Point of Delivery, location of Service Drop, or location of Metering Equipment when such changes are requested by the Customer. Where a service pole or poles must be set to provide proper clearance around or over driveways, garages, trees, or other obstructions on the premises, a charge shall be made for each service pole required.

206 Attachments to Company’s Property

The Company’s street light standards, poles, wires, towers, structures, and other facilities are provided for the exclusive purpose of supplying Electric Service. Any non-authorized radio or television equipment or wires, ropes, signs, banners, etc., are prohibited from being attached to poles, wires, towers, or structures or located near enough to such facilities as to present a hazard. The Company reserves the rights to remove all such hazards without notice.

When the Company’s poles with approved customer equipment attached need to be relocated or replaced, the Customer is responsible for relocating all of their equipment at their cost within 30 days of receipt of written notification.

207 Customer Wiring

207.1 The Customer’s wiring installation should conform to the requirements of the National Electrical Code and the National Electrical Safety Code, State, Municipal requirements in force at the time the installation is made and the Company Service Standards as to Service Outlet Location, Service Drop, Meter Location and height, etc. Compliance with all such codes and requirements is the sole responsibility of the Customer for all Customer wiring and equipment. The Company does not inspect Customer wiring and equipment, and the supplying of Electric Service by the Company does not mean that Customer wiring and equipment has been inspected or approved by the Company.

207.2 All city ordinances prohibit SMTX UTILITIES from supplying Electric Service to a Customer until a permit has been received by SMTX UTILITIES from the City of San Marcos’ Permit Department, and the company terms and conditions is signed.

207.3 For the Customer’s and Company’s mutual safety, the Company reserves the right to decline to serve or continue to serve any installation that is declared by the Company or the proper authorities to be unsafe and a hazard. In all such cases, the Customer or a representative will be notified, wherever possible, and a reasonable period of time allowed for the correction of such unsafe condition. In no case, however, does the supplying of Electric Service by the Company indicate that the Company assumes any responsibility for the Customer’s wiring or its safety or adequacy.

207.4 For the Company to supply electrical service, two or more separately metered services shall not be electrically connected to a common device on the load side of the service disconnects.
208 **Grounding**

208.1 To assure maximum safety, the Customer should provide an adequate and permanent grounding conductor attached to the neutral terminal of the main-line switch, or where a main-line switch is not required, the breaker box.

208.2 For all Service Entrance Conductors the grounded neutral conductor should be electrically continuous from the Service Outlet through the Meter Loop. The grounded conductor should be positively identified either by use of white insulation, white paint at terminals, or by other suitable methods.

208.3 The grounding conductor shall be sized and installed in accordance with Illustration 1 on Page 18 and the National Electrical Code.

209 **Utilization Voltage**

209.1 A clear understanding of utilization voltage is essential for optimum operation of utilization equipment. Utilization voltage is the voltage at the line terminals of the utilization equipment. It should not be confused with service voltage which is the voltage at the point where the electric systems of the supplier and user are connected, which is the Point of Delivery. Utilization voltage may vary with each location of utilization equipment. In practice the service voltage may differ from the nominal system voltage which is designated voltage class rather than a specific voltage.

209.2 It is recommended that the Customer install Transient Voltage Surge Suppression at the line terminals or receptacles for all critical equipment and sensitive electronic appliances. Transient Voltage Surge Suppressors should be UL 1449 listed and are readily available from electrical contractors and retail stores.

210 **Energizing of Customer’s Service**

For the mutual protection of the Customer and the Company, only authorized employees of the Company are permitted to make and energize the connection between the Company’s Service and the Customer’s Service Entrance conductors.

211 **Responsibility for Customer’s Installation**

211.1 The Company will not install any electric wiring on the Customer’s premises other than the installation of its Service Drop and Metering Equipment, as described in this manual.

211.2 The Customer is solely responsible for any accidents, fires, or failures (including meter disconnect fuses) resulting from the condition and use of his wiring installation or equipment.

211.3 The Customer should check carefully to see that phase connections and rotation are correct when first starting motors and to see that three-phase motors are not "single-phasing."

211.4 Customers requiring service at voltages of 7,200 volts and above must provide at the Point of Delivery a Company-approved disconnecting means and proper overload and short-circuit protection. Customers shall submit plans in accordance with SMTX UTILITIES Specification to Engineering for approval.

212 **Motor Protection Devices**

212.1 All motors need protective devices to safeguard the motors, the wiring, and the equipment they operate from damage that might be caused by overloading, short circuits, single-phasing, large fluctuations in voltage, etc.
212.2 The Company’s Power System is designed to provide high speed reclosing of its protective devices following power interruptions resulting from lightning or other causes. In most instances these power interruptions will be of extremely short duration. The Company recommends that under-voltage motor protection be equipped with time delay devices to permit motors to ride through these short duration interruptions.

212.3 It is recommended that overcurrent protective devices be provided in each phase to afford some motor-running protection of three-phase, three-wire motors against “single-phasing” unless complete protection for single-phase operation is provided, such as a relay which will detect a “single-phasing” condition.

212.4 Protective devices of the kind described above are readily available through most electrical contractors. The Company will advise the Customer regarding the type required for any particular case.

213 Customer Communication or Tone Systems

Modulated carriers or pulsed carrier systems shall not be impressed upon the electric service conductors, furnished by the Company, for conveying intelligence, for control purposes or for signal purposes beyond the Customer’s premises. In instances where carriers are impressed upon the Customer’s privately owned electric distribution system, the owner of such systems shall provide filters to isolate the carrier signals from the Company’s facilities.

214 Antennas (Radio, Television, Communication, Etc.)

Customers are cautioned to check the location of power lines in the immediate vicinity where an antenna is to be installed and to remember the danger to life and property should any part of the antenna come into contact with a power line during inclement weather.

215 Customer-Owned Generation Equipment

215.1 Customer generation equipment may be installed and operated after application for such installation and operation has been received and approved by SMTX UTILITIES. Customer generation equipment will be classified as either non-parallel or parallel generation.

215.2 Non-parallel generation equipment must operate separately from the Company’s facilities. Examples include emergency power for homes, schools, hospitals, businesses, computer installations, and other utilities (water, wastewater, telephone, and gas). Non-parallel generation equipment will operate under specific terms and conditions provided by SMTX UTILITIES Engineering.

215.3 Customers may operate generation equipment in parallel with the Company distribution system under specific terms and conditions as established on the City’s Website. https://www.sanmarcostx.gov/253/Distributed-Generation-Rebate-Program

215.4 Before Customer-owned generating equipment may be interconnected to the Company system, application must be made and approved. For more information, contact the SMTX UTILITIES Engineering.

215.5 Customers may not install or use any transfer switch on the high side (SMTX UTILITIES side) of the meter or any transfer switch between the meter and the meter socket jaws.

215.6 Customer owned standby generators that are to be permanently installed, must be located on the load side (customer side) of the meter, behind a service entrance rated device that prevents tying
the running generator into the SMTX UTILITIES system, whether the SMTX UTILITIES lines are hot or dead.

216 Electrified Fences
Use of the Company’s electric service to energize fencing or to energize devices which simultaneously energize fencing is prohibited.

217 Clearances & Easement

217.1 Clearances information from Terms & Conditions

217.2 The Company underground duct bank shall have 6' (ft.) of easement from the edge of both side of the duct bank. See Figure 1.

217.3 The Company Poleline service shall have 7'(ft) of easement from the edge of both sides of the pole. See Figure 2.
## SECTION 300 – TYPES OF SERVICE

### 300 Types of Service

<table>
<thead>
<tr>
<th>Type</th>
<th>Single Phase</th>
<th>Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overhead</td>
<td>Underground (Pad Mount)</td>
</tr>
<tr>
<td><strong>120/208 V 3-Wire</strong></td>
<td>• Not Available</td>
<td>• Available only in locations with existing 120/208 supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 75-1000 KVA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All equipment must be rated for 208 V</td>
</tr>
<tr>
<td><strong>120/240 V 3-Wire</strong></td>
<td>• Standard Service</td>
<td>• Standard Service</td>
</tr>
<tr>
<td></td>
<td>• 1.5 - 100 kVA transformers available</td>
<td>• 1.5 - 167 kVA transformers available</td>
</tr>
<tr>
<td><strong>120/208Y 4-Wire Gnd Neutral</strong></td>
<td>• Standard Service</td>
<td>• Standard Service</td>
</tr>
<tr>
<td></td>
<td>• Permanent Service Only</td>
<td>• Permanent Service Only</td>
</tr>
<tr>
<td></td>
<td>• Load must be balanced</td>
<td>• Load must be balanced</td>
</tr>
<tr>
<td></td>
<td>• All equipment must be rated for 208 V</td>
<td>• All equipment must be rated for 208 V</td>
</tr>
<tr>
<td></td>
<td>• All phase wires must be the same size</td>
<td>• All phase wires must be the same size</td>
</tr>
<tr>
<td></td>
<td>• Single phase load must be equally divided</td>
<td>• Single phase load must be equally divided</td>
</tr>
<tr>
<td></td>
<td>• 45-300 KVA transformer banks available</td>
<td>• 75-1000 KVA</td>
</tr>
<tr>
<td></td>
<td>• Secondary conductors longer than 50 ft require Company’s review to maintain required voltage</td>
<td>• Secondary conductors longer than 50 ft require Company’s review to maintain required voltage</td>
</tr>
<tr>
<td></td>
<td>• Power factor must be above 97%</td>
<td>• Power factor must be above 97%</td>
</tr>
<tr>
<td><strong>120/240 V Delta 4-Wire Gnd Neutral</strong></td>
<td>• Non-Standard Service</td>
<td>• Non-Standard Service</td>
</tr>
<tr>
<td></td>
<td>• 45-150 kVA transformer banks available</td>
<td>• 45-150 kVA transformer banks available</td>
</tr>
<tr>
<td></td>
<td>• Phase wire permanently identified, power leg color = orange</td>
<td>• Phase wire permanently identified, power leg color = orange</td>
</tr>
<tr>
<td></td>
<td>• Secondary conductors longer than 50 ft require Company’s review to maintain required voltage</td>
<td>• Secondary conductors longer than 50 ft require Company’s review to maintain required voltage</td>
</tr>
<tr>
<td></td>
<td>• Power factor must be above 97%</td>
<td>• Power factor must be above 97%</td>
</tr>
<tr>
<td><strong>277/480 V 4-Wire Gnd Neutral</strong></td>
<td>• Standard Service</td>
<td>• Standard Service</td>
</tr>
<tr>
<td></td>
<td>• Load must be balanced</td>
<td>• Load must be balanced</td>
</tr>
<tr>
<td></td>
<td>• All phase wires must be the same size</td>
<td>• All phase wires must be the same size</td>
</tr>
<tr>
<td></td>
<td>• 45-300 kVA transformer banks available</td>
<td>• 45-2,000 kVA transformer available</td>
</tr>
<tr>
<td></td>
<td>• Power factor must be above 97%</td>
<td>• Power factor must be above 97%</td>
</tr>
<tr>
<td><strong>7,200/12,470 V Wye 4-Wire Gnd Neutral</strong></td>
<td>• Non-Standard Service</td>
<td>• Non-Standard Service</td>
</tr>
<tr>
<td></td>
<td>• Load must be balanced</td>
<td>• Load must be balanced</td>
</tr>
<tr>
<td></td>
<td>• All phase wires must be the same size</td>
<td>• All phase wires must be the same size</td>
</tr>
<tr>
<td></td>
<td>• Load must be more than 200 kVA</td>
<td>• Load must be more than 200 kVA</td>
</tr>
<tr>
<td></td>
<td>• Power factor must be above 97%</td>
<td>• Power factor must be above 97%</td>
</tr>
</tbody>
</table>
SECTION 400 – RESIDENTIAL AND SMALL COMMERCIAL SELF-CONTAINED METER SERVICE INSTALLATIONS

400 General Information

The Customer’s wiring installation should conform to the requirements of the National Electrical Code and the National Electrical Safety Code, State, Municipal requirements in force at the time the installation is made and the Company Service Standards as to Service Outlet Location, Service Drop, Meter Location and height, etc. Compliance with all such codes and requirements is the sole responsibility of the Customer for all Customer wiring and equipment. The Company does not inspect Customer wiring and equipment, and the supplying of Electric Service by the Company does not mean that Customer wiring and equipment has been inspected or approved by the Company.

General requirements detailed in Section 200 governing service installations are available from the SMTX UTILITIES Engineering. Customers or customer’s representative should contact SMTX UTILITIES Engineering at (512) 393-8302, as early as possible to ensure that adequate time is allowed for the preparation of individual specifications, cost estimates, ordering equipment and acquiring easements, if required.

401 Services

The Company will supply to a Customer, at each Point of Delivery, only one of the Types of Service listed in these Service Standards. The Customer’s installation is to be so arranged that the Company can measure the power used by the Customer with one meter.

OVERHEAD SERVICE

402 Service Drop

402.1 Requirements: The Company will install one Service Drop from the Company’s Distribution Lines to the Customer’s Service Outlet. For Service Entrance Conductors sized 200 Amperes or less, and Service Voltages of 240 volts, a Triplex (or SMTX UTILITIES discretion) Service Drop will be used. (See Illustration 2 - Typical Residential Service Mast, below).

![Typical Residential Service Mast](image-url)
Point of Attachment: See Articles 402.2 & 407.1. Not more than 25' above ground. Not more than 18" left or right of service outlet. Not less than 6" nor more than 12" below the service outlet. For minimum clearance above ground, see Article 408.

Conductors greater than 1/0. If 3/0 Quadplex is used, Eye bolt must be used.

Note:
1) 1 Phase Service drop Triplex cable is used by SMEU
2) 3 Phase Servicedrop Quadplex cable is used by SMEU


Service Entrance Disconnect and Overcurrent Protection (location to conform to N.E.C. and local ordnances.)

Ground Electrode Conductor

Approved Type of Ground Clamp, Ground Connection to Ground Rod or Other Approved Method As Described in the NEC Section 250.

Wiring shall conform to Nat'l Elec. Code and Local Ordinances.

ARRANGEMENT OF OVERHEAD SERVICE EQUIPMENT
Illustration 1
402.2 Service Drop Length: The maximum length of Service Drop which the Company will install will be governed by the amount and Type of Service and will be determined by Company personnel. Allowable voltage drop and mechanical factors, determined by the size and number of wires, impose limits on its length.

403 Clearances

403.1 Service Drop Conductors, when not in excess of 600 volts, shall have the minimum clearances at the lowest point of the drip loop or service drop as required by Illustrations 5A and 5B - Clearances for Service Drop, pages 20 & 21.

403.2 If an existing service is being modified and any revision in the service entrance raceway is made, the modified service must conform to the heights and clearances outlined in Illustrations 5A and 5B - Clearances for Service Drop, pages 20 & 21.

403.3 Service drop shall be located no closer than 5 ft. to windows, doors or porches from which the Service Outlet may be accessible. This clearance is an NESC (Table 234.1) requirement and must be maintained.

403.4 House knobs are not allowed.
HORIZONTAL CLEARANCE
Service drop conductors attached to a building shall not pass closer than 5 ft. to windows, doors, or porches from which the service outlet may be accessible.

<table>
<thead>
<tr>
<th>VERTICAL CLEARANCE TO GROUND FOR SERVICE DROP CONDUCTORS</th>
<th>TWIST SECONDARY WITH BARE NEUTRAL</th>
<th>SECONDARY CONDUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-480V/277V</td>
<td>480V</td>
</tr>
<tr>
<td>1. Areas accessible to pedestrians, finished grade sidewalks, residential driveways or where truck traffic is not encountered. (Trucks shall be defined as any vehicle exceeding 8 ft. in height).</td>
<td>12 FT.</td>
<td>12 FT.</td>
</tr>
<tr>
<td>2. Over non-residential driveways, parking lots, alleys, or other areas subject to truck traffic.</td>
<td>18.5 FT.</td>
<td>18.5 FT.</td>
</tr>
<tr>
<td>3. Over public streets and roads. (Based on Footnote 26)</td>
<td>22.5 FT.</td>
<td>22.5 FT.</td>
</tr>
</tbody>
</table>

(Based on NESC Tables 232-1Foot Notes)

*EXCEPTIONS TO LINE (1)*

Drip loops for 120/240 Volt, single phase, 3 wire Triplex service with bare messenger shall have a 10 ft. minimum clearance from ground, if located at the electrical service entrance of the building.

1. Triplex secondary with insulated neutral used in contaminated areas shall have the same clearance as secondary conductors 0-480V.

CLEARANCES FOR SERVICE DROP
(Article 403)
Illustration 5A
403.5 Clearance near or around swimming pools shall adhere to Illustration 6 - Clearances of Wires, Conductors or Cables Installed Around Swimming Areas.

Underground wiring shall not be permitted under the pool or under the area extending 5' horizontally from auxiliary equipment or from the inside wall of the pool, except where permitted by the NESC latest edition.

<table>
<thead>
<tr>
<th>TYPE CLEARANCE REQUIRED</th>
<th>OVERHEAD TWISTED SUPPLY, CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(See A, B, and C in above sketch)</td>
<td>Twisted secondary with bare neutral 0-750V</td>
</tr>
<tr>
<td>A) Clearance in any direction from the water level edge of pool, base of diving board, or anchored raft.</td>
<td>22'-6&quot;</td>
</tr>
<tr>
<td>B) Clearance in any direction to the diving platform or tower.</td>
<td>14'-6&quot;</td>
</tr>
<tr>
<td>C) Vertical clearance over adjacent land.</td>
<td>Clearance shall be as required by OH Distribution Standard 05-100</td>
</tr>
</tbody>
</table>

1. The above table does not apply to a pool fully enclosed by a solid or screened permanent structure.
2. These clearances apply to all wires, cable or conductors within 10 ft horizontally of the edge of the swimming pool, diving platform or diving tower.
3. Greater clearance is required for twisted secondary with insulated neutral used in contaminated areas and open wire supply conductors.
4. Clearances stated above is an NESC requirement and must be maintained.

Refer to NESC Table 234-3.

CLEARANCES OF WIRES, CONDUCTORS OR CABLES INSTALLED AROUND SWIMMING AREAS
Based on NESC Fig. 234-2
Illustration 6
LEGEND:
- NESC vertical clearance to primary 13'-6" above or below accessible structures. Horizontal clearances to primary 7'-6" or 4'-6" plus conductor blowout whichever id greater.
- Horizontal clearances to neutral/secondary 5'-0" or 3'-6" plus conductor blowout whichever is greater.

NOTES:
1. THIS DIAGRAM IS FOR ILLUSTRATION PURPOSE ONLY. EXACT NESC CLEARANCE REQUIREMENTS CAN VARY DEPENDING ON THE APPLICABLE VERSION OF NESC AND FACTORS SUCH AS FRAMING, CONDUCTOR TYPE AND CONDUCTOR SAGGING CRITERIA.
2. PLEASE CONTACT SMEU WITH ANY QUESTIONS ON CLEARANCE.
403.6 Service Drops must be free of contact with trees. The customer shall trim all trees required to provide the necessary clearances. Customer should not trim trees around primary lines.

403.7 Under no circumstances will the Company attach its Service Drop to an intermediate structure installed by the Customer between the Company’s Distribution Lines and the Customer’s Service Outlet.

403.8 Where a service pole or poles must be set to provide proper clearance around or over driveways, garages, trees, or other obstructions on the premises, a charge shall be made for each such service pole required.

404 Location of Service Outlet

404.1 Located at a sufficient height above ground level to provide proper clearances for the Service Drop, as required by Illustration 5A - Clearances for Service Drop, page 20. For the twisted type Service Drop, the Service Outlet shall not be more than 18" horizontally, and not less than 6" nor more than 12" above the Point of Attachment see Illustration 1 - Arrangement of Overhead Service Equipment, on page 18).

404.2 Located so that the Company’s Service Drop or the Customer’s Service Entrance Conductors are not closer than 12" to telephone or communication wires, whether in the air or on the building.
405 Grouping Service Outlets

If a building has an established Service Outlet location which conforms to the above requirements, then any additional Service Outlets shall be located within 18” of this established point (See Illustration 17A – Grouping of Service Outlets).

NO MORE THAN SIX WEATHERHEADS SHALL BE INSTALLED AT EACH SERVICE OUTLET LOCATION.

If the established location does not conform to these requirements, then all Service Outlets shall be combined at a satisfactory point specified by the Company.
405.1 Residential (Townhomes) Service Outlet Rack: In developments where service grouping is desired, a free standing service outlet rack may be used (See Illustration 35 & 36, next page.)

Minimum Requirements (Illustration 35)

- 4” x 6” treated lumber post buried a minimum of 4'-0” and set in concrete
- Maximum six Service Outlets per rack
- 36” clearance area in front of rack
- Meter mounting 4'-0” to 6'-0” above finished grade
- 12'-0” minimum clearance to ground for Service Drop Conductors
- The rack must be capable of withstanding a pull of 300 lbs.
- The Point of Attachment must be a minimum 14'-0” above finished grade
- Customer shall not install any attachments to the rack including decorative lattice which may pose a hazard to the Company’s personnel
- Maximum 200 Amp Service Outlet
- See Article 403, Clearances for Service Drop, Illustration 5A, page 20.
405.1 Alternate Design (Semi-URD - Illustration 36)

- Maximum six Service Outlets per rack
- 36" clearance area in front of rack
- Meter mounting 4'-0" to 6'-0" above finished grade
- Customer to furnish conduit and cable to pedestal
- Conduit 2'-0" minimum depth
- Requires exclusive SMTX Utilities (SMTX UTILITIES) Easement
- Contact SMTX UTILITIES Engineering for service requirements

Contact SMTX UTILITIES for alternate service (Easement Required)
406  **Point of Attachment**

406.1 Provisions: A solid Point of Attachment for supporting the Service Drop on the building shall be provided by the Customer at a point which will comply with the provisions of ARTICLE 402. The Point of Attachment shall not be more than 25 feet above ground, unless a greater height is required for proper clearance (See Illustration 1 - Arrangement of Overhead Service Equipment, page 18). Company personnel will specify on the Service Outlet Location, the height of the Point of Attachment if it must be less than the minimum or greater than 25 ft. above grade.

406.2 Clearances: Where the required heights and clearances specified above cannot be maintained, the Customer shall provide an extension support, which is of a permanent nature and of sufficient strength to support the Service Drop at the required minimum clearance. In such cases, the Customer’s Service Outlet is to be located above the service support at a height which will permit the required clearances. A typical service mast installation is shown in Illustration 2 - Typical Residential Service Mast, on page 17. In such an installation, 2" or larger galvanized iron conduit, 2" or larger intermediate metal conduit, or 3" or larger rigid aluminum conduit shall be used. If a Service Mast will not have sufficient strength to properly support the Service Drop, installation of a service bracket will be required.

407  **Anchorage for Service Drop**

407.1 Installation: Where the building is of wood construction and permits use of a screw hook and the structure furnished by the Customer is capable of withstanding a pull of 300 lbs., the twisted Service Drop support will be furnished and installed by the Company. Where installation of a screw hook is not practical, the Customer shall install the Service Drop support in accordance with ARTICLE 407.2. The Type of Service Drop to be installed shall be determined in accordance with ARTICLE 402. The service drop support must be installed as securely as possible to minimize damage to the installation from storms, falling branches, or other hazards. No house knobs.

407.2 Twisted Service Drop: For a twisted Service Drop, when impractical to use a screw hook, the Customer shall install one 5/8" galvanized machine bolt of sufficient length for the threaded end of the bolt to extend 2" beyond the surface of the wall and so installed that it shall be capable of withstanding a pull of 300 lbs.

408  **Service Entrance Conductors**

The Service Entrance Conductors, as defined in ARTICLE 127 may be installed in schedule 40 or greater rigid non-metallic conduit, rigid metal conduit, electrical metallic tubing (EMT) or intermediate metal conduit except where subject to physical damage, such as near a parking area, driveway, gate or underground rising up on rider pole. Only schedule 80 rigid non-metallic conduit, rigid metal conduit or intermediate metal conduit may be used for the service entrance conduit where subject to physical damage see Illustration 10- Arrangement of Meter Mounting Device on next page.

The Service Entrance Conductors shall be provided with a weatherproof entrance fitting where they extend from the Customer’s conduit or raceway. The connection to the Metering Mounting Device shall be watertight.
The service raceway shall not be run through attics, in partitions, or in other enclosed spaces. Service Entrance Conductors shall extend beyond the service entrance fitting a distance sufficient to permit connections to the Company's Service Drop, but in no case less than 18" where a twisted wire Service Drop is to be used or 36" where an open wire Service Drop is to be used. (See ARTICLE 402).

Except for multi-occupancy projects converting from master to multi-metering, Service Entrance Conductors shall not be installed in the same conduit or raceway with other wiring of the Customer, nor shall load wires from a meter be run in the same conduit or raceway with unmetered conductors. Customers contemplating the use of pre-wired/ganged type enclosures should contact Distribution Operations. Such installations require special contractual arrangements and submittal of detailed manufacturer's specifications for acceptance by Electric Engineering.
409 Transformer Installations on Customer’s Premises

Under certain conditions, where large loads or considerable distances are encountered, it may be necessary to install transformers on the Customer’s premises either overhead, or, at the Company’s option and with special contractual arrangements, on the ground, or at the Company’s option. Transformers or other Company equipment should be installed in areas readily accessible by Company vehicles for maintenance and replacement. Vehicular access shall not be blocked by permanent structures or landscaping. The requirements of such installations vary widely and it is necessary in each case for the Customer to consult SMTX UTILITIES Engineering so that satisfactory arrangements may be made to cover the installation. This contact should be made in the planning stages or as early as possible to ensure that adequate time is allowed for ordering equipment and acquisition of easements.

410 Temporary Installations

Where service is required for construction or other temporary purposes, the Customer shall provide a suitable location and anchorage for the Company’s Service Drop and Meter. Temporary service will be installed at the Customer’s expense. (See ARTICLE 422.2 for temporary Meter poles.) Temporary meter poles may not be placed within the utility easement. Meter mounting devices used in temporary installations shall be supplied by the Customer or his Contractor and shall meet the requirements listed under Article 418.2.

UNDERGROUND SERVICE

411 Commercial Underground:

Commercial Customers desiring Underground Service should contact the Company so that Engineering may develop the Service Specifications as required.

412 Mobile Home Parks:

Customers desiring underground service to mobile home parks utilizing self-contained Meter pedestals should contact the Company so that satisfactory arrangements can be made. Such installations generally require additional contractual arrangements. The Company shall make all connections between the Company’s equipment, cables, or conductors and the Customer’s Service Entrance Conductors. Consult the Company for charges for standby time of Company personnel during installation of service conductors by electrical contractors into three-phase pad-mounted transformers. Clearance near or around swimming pools shall adhere to the requirements listed in Illustration 6 - Clearances of Wires, Conductors or Cables installed around swimming areas, on page 21.
413 Underground Service Laterals in Overhead Areas

413.1 Requirements:

It is necessary for Customers planning to install secondary underground service in Overhead Distribution Areas to consult SMTX UTILITIES Engineering to arrange for a Service Outlet Location as set forth in Article 203 and obtain the necessary Service Specifications for the installation. The Customer’s underground riser conduit may be installed on SMTX UTILITIES service poles where the pole is located on Customer’s property or immediately adjacent in the street right-of-way or utility easement.

No more than four (4) conductors per phase and neutral shall be accepted per metered service (no more than 16 conductors per pole total for all services).

Customer’s conduit installed on poles shall be only rigid metal, intermediate metal, or PVC Schedule 80. When the underground service entrance conduit is PVC and the riser on the pole is rigid or intermediate metal conduit, the Customer or Customer’s contractor shall ground all risers in accordance with requirements of the National Electrical Code.

Service poles will be provided ONLY if the standard service extension requires them. If service poles are not required for standard service extension, the Customer shall install and maintain a separate pole for the underground riser. The maximum conduit riser attached directly to a pole shall not exceed one 3” conduit. Larger conduit and multiple conduits may be installed on poles of sufficient strength, but they must be installed on stand-off brackets (See Illustration 8 – Conduit risers on stand-off brackets, next page). When the Company’s poles with approved customer equipment attached need to be relocated or replaced, the customer is responsible for relocating all of their equipment at their cost within 30 days of receipt of written notification.
413.2 Service Conduit:

**Material List**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Washer square 2 1/4&quot; X 2 1/4&quot;</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Bolt Double Arming 5/8&quot; X 24&quot;</td>
</tr>
<tr>
<td>3</td>
<td>AS</td>
<td>Strap Channel Pipe</td>
</tr>
<tr>
<td>4</td>
<td>REQ'D</td>
<td>Channel</td>
</tr>
</tbody>
</table>

**Conduit Risers on Stand-Off Brackets**

(Article 413.2)
Illustration 8

**Riser Notes:**
1. 4" Maximum conduit size.
2. Maximum quantity
   (A) 3-4" conduits
   (B) 4 conduits with the total of the diameter equal to 12" or less.
3. No bus weatherheads shall be allowed on Company poles.
4. Where two primary risers are attached to the pole no other conduits shall be attached.
5. For multiple sets of conduit use one set of stand-off brackets.

**Installation Notes:**
A. **CAUTION:** Only qualified personnel are permitted to install electrical equipment in the vicinity of energized electrical lines as described in OSHA 1910 Subpart R & S.
B. All service installations shall meet NEC, state, and local codes and regulations.
C. Maintain 40" minimum from drip loop to communication cable or hardware.
D. Company will specify the location of the riser based on the location of existing attachments. Conduit shall maintain a minimum 6" clearance below the secondary or neutral. If 35kV primary, maintain 5" below transformers if no neutral or secondary.
Customer may attach service conduit not larger than 6” inside diameter directly to the pole. SMTX UTILITIES Engineering will specify on the Service Outlet Location when the Customer must attach the service conduit directly to the pole, as in residential areas. Conduit risers shall be permitted in order of service requests as shown by the Illustration 7 - Conduit Risers Attached Directly to Pole, next page. See Illustration 7, next page. Customers must use standoff brackets for service conduit larger than 3” inside diameter. A maximum conduit size of 6” will be allowed. See Illustration 8 - Conduit Risers on Stand-off Brackets, for suggested installation, page 31.
CAUTION
DO NOT CLIMB OR EXTEND CONDUIT ABOVE NEUTRAL OR SECONDARY
See Note A

CONDUIT RISERS ATTACHED DIRECTLY TO POLE
(Article 413.2)
Illustration 7

Riser Notes:
1. 1 - 6" Conduit Maximum
2. Treat existing CenterPoint Energy Primary Riser as conduit #1 in Detail "A", and Customer's Riser as conduits #2, #3, or #4.
3. Customer shall furnish all conductor and material to point of connection.
4. For multiple conduit installation see illustration 8.

Installation Notes:
A. CAUTION: Only qualified personnel are permitted to install electrical equipment in the vicinity of energized electrical lines as described in OSHA 1910 Subpart R & S.
B. All service installations shall meet NEC, state, and local codes and regulations.
C. Maintain 40" minimum from drip loop to communication cable or hardware.
D. Company will specify the location of the riser based on the location of existing attachments. Conduit shall maintain a minimum 6" clearance below the secondary or neutral. If 35KV primary, maintain 6" below transformers if no neutral or secondary.
**414 Underground Service in Underground Residential Areas**

414.1 Since Underground Residential Distribution (URD) areas are established by special contractual arrangements, special conditions for service may exist, and the Customer must request URD Service Specifications through SMTX UTILITIES Engineering.

414.2 In the Underground Residential Distribution Area, the only type of service available to each Customer shall be the type known as single-phase 120/240 volt, three-wire, 60 hertz. This service is available to residential Customers only.

**415 Customer Installed Underground Conductors**

415.1 Requirements: In URD areas, the Customer or his Contractor shall furnish and install the service conductors (Service Lateral) in accordance with Illustration 9 - Arrangement of Residential Underground Equipment, next page. The Company will make all connections between the Customer’s service conductors (Service Lateral) and the Company’s conductors and equipment.

Note: where the customer is issued a Terms & Conditions SMTX UTILITIES, the customer must install the electrical infrastructure based on the signed Terms & Conditions.
PLAN VIEW

Cables shall be coiled, the ends sealed and secured to a stake clear of the ground (Note 3)

ELEVATION VIEW

CenterPoint Energy Secondary Service Pedestal or Transformer (Point of Delivery)

Customer Fence

24" Cover Min., SEE CHART

Service Conductor (Note 2)

Meter Location (Note 1)

4' - 8' to Center

Wide Sweep Bend

CenterPoint Energy Secondary Service Pedestal or Transformer (Point of Delivery)

Customer Fence

Minimum Cover for Underground Conductors:
Direct Buried Cable or Conduit shall be installed to meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Cover</th>
<th>Wiring Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 inches</td>
<td>Over Direct Buried Cables.</td>
</tr>
<tr>
<td>6 inches</td>
<td>Over Rigid Metal Conduit.</td>
</tr>
<tr>
<td>6 inches</td>
<td>Over Intermediate Metal Conduit.</td>
</tr>
<tr>
<td>18 inches</td>
<td>Over Rigid Nonmetallic Conduit approved for direct burial without concrete encasement.</td>
</tr>
<tr>
<td>18 inches</td>
<td>Over other approved raceways.</td>
</tr>
</tbody>
</table>

* Wiring shall conform to the National Electric Code (latest revision) and local ordinances.

ARRANGEMENT OF RESIDENTIAL UNDERGROUND EQUIPMENT
(Article 415.1)
Illustration 9
Notes: Arrangement of Residential Underground Equipment

1. Meter mounting device shall be furnished by the Customer and installed by the Customer or Customer’s electrical contractor. Location should be on the side of the house or garage where accessibility, height, working clearance, etc. comply with Section 400 of the Service Standards.

2. Customer’s contractor shall furnish and install service to the following specifications:
   A. Refer to ARTICLE 415 for conductor requirements.
   B. Cable shall be installed a minimum of 3 ft. below grade if using direct burial cable. Bottom of trench and backfill immediately above cable shall be fine soil or sand, free of rocks, concrete, or hard objects which might damage cable. Aluminum and aluminum alloy cables require the utmost care in handling and installation, most installations are especially susceptible to nicks and scratches, and careless handling may result in failure of the cable.

3. Customer’s contractor shall install service cable to within 1 ft. of secondary service hole or transformer pad. (Contractor shall contact Distribution Operations for proper location of service cable connections, if not apparently evident on ground.) Service brought to transformer pads shall be left opposite the small notched "V" mark on transformer pad. Ten (10) feet of service cable shall be left for connection to a secondary pedestal or transformer. The cable shall be coiled and secured to a stake as to be clear of the ground. Cut ends shall be made watertight by an approved sealing method immediately after cutting. Caution should be observed when digging within the area to avoid damage to telephone, other cables, and gas pipe coatings. Damage to any utility equipment shall be immediately reported to owner of utility. SMTX UTILITIES will not be responsible for damage by persons other than its own personnel.

4. Temporary service poles shall be set outside the confines of the utility easement.

5. For temporary services only, the height of the meter mounting device on temporary meter poles in URD areas may be reduced below the requirements of ARTICLE 420, but in no event shall the center line of the meter mounting device be lower than 3 ft. above grade.

6. All services shall be properly grounded.

7. Breaker box may be installed either outside or inside building.

8. Construction in areas where electrical installations are governed by city ordinance shall meet requirements of all applicable ordinances and codes.

9. The service entrance conduit may be schedule 40 or greater rigid non-metallic conduit, electrical metallic tubing (EMT), rigid metal conduit, or intermediate metal conduit except where subject to physical damage, such as near a parking area, driveway, or gate. Only schedule 80 rigid non-metallic conduit, rigid metal conduit or intermediate metal conduit may be used for the service entrance conduit where subject to physical damage. (See Illustration 10- Arrangement of Meter Mounting Device, page 29).
415.2 Service Conductors:

Conductors shall be listed as Underground Service Entrance “USE” rated and sized for load according to the National Electrical Code latest edition and shall be clearly marked as suitable for direct burial. Suitable conductor types are USE, THW, THHW, TW, RHW, THWN, and XHHW. Direct buried conductors shall be clearly marked as to type. Other conductor types require SMTX UTILITIES approval. Conductors must be installed with at least 24” of cover. The bottom of the trench and backfill immediately above the conductors shall be of fine soil or sand, free of any hard objects which could damage conductors. Conductors in conduit shall be installed in accordance with the National Electrical Code latest edition or as approved by the local governing authorities.

415.3 Conductors in Conduit:

Conduit shall be buried in accordance with the National Electrical Code latest edition, however, the conduit at the transformer or pedestal end of the run shall have at least 24” of cover. Cables installed in conduit shall be of types listed in ARTICLE 415.2. Service cables must be installed within 1 ft. of the secondary pedestal or transformer pad as shown in the Illustration #11.

415.4 Installation:

Service cables brought to transformer pads shall be left adjacent to the small notch “V” in the transformer pad, (See Illustration 11) or adjacent to the secondary pedestal. The cable shall be coiled and secured to a stake so as to be clear of the ground. Cut ends must be made watertight by an approved sealing method immediately after cutting. Caution should be observed when digging within the area to avoid damage to other utility facilities. Damage to any utility equipment must be reported immediately to the owner of such equipment. (See Lone Star Notification Center, page 73).
415.5 Temporary Service (Underground):

Temporary service for home construction within the URD area will be available only at designated locations adjacent to existing energized transformers or energized secondary cable junction boxes. The applicant for temporary service or contractor must install a temporary meter pole. Temporary meter poles may not be placed within the utility easement. A charge will be made for the temporary service. Meter mounting devices used for temporary service shall be supplied by the Customer or his Contractor and shall meet the requirements listed under ARTICLE 418.2.

415.6 Swimming Pools:

Underground conductors in the proximity of a swimming pool or its auxiliary equipment must conform to the latest edition of National Electrical Code. See Illustration 6 - Clearance of Wires, Conductors or Cables installed around swimming areas, on page 21.

416 Service to Apartments, Townhomes, or Condominiums

416.1 Requirements:

The Company, by special contractual arrangements, will provide underground service to apartment complexes. This service will be single-phase, 120/240-volt, 60 hertz and metered separately for each apartment unit. SMTX UTILITIES Engineering should be contacted for contractual information and Service Specifications for the part of the electrical services facilities to be installed by the owner of the apartment complex.

416.2 Master-Metering:

The apartment complexes that are served from master-metered distribution system may be converted to individual unit metering, if re-wiring is done to provide a separate electric service to each unit and special contractual arrangements are made with the Company. Before making conversion plans the owner should contact SMTX UTILITIES Engineering in the area for the Terms and Conditions for converting a master-metered system to a multi-metered system.

416.3 Cable Terminal Boxes:

Whenever more than four sets of Service Entrance Conductors (maximum of 4 sets of 350 KCMIL conductors) are to be served from a Company-owned pad-mounted transformer, services shall be supplied from a cable terminal box. Customer’s service equipment must be suitable for the maximum fault current available or the Customer shall install current limiters. Current limiters shall not be installed within pad-mounted transformers. The Company will, upon request, furnish guidelines for the fabrication of a typical cable terminal box. The use of a cable terminal box must be in accordance with applicable codes and electrical ordinances. Cable terminal box typical details are shown in Illustration 12 – Typical Cable Terminal Box Details, next page. All cable terminal box fabricators shall be pre-approved. For approvals contact SMTX UTILITIES Engineering.
Cable Terminal Box Clearances

Illustration 12A

TYPICAL CABLE TERMINAL BOX DETAILS
Illustration 12

MINIMUM CLEARANCE FOR CABLE TERMINAL BOXES FROM BUILDING

MINIMUM UNOBLTRacted CLEARANCE FOR CABLE TERMINAL BOXES (Typical)

Cable Terminal Box Clearances
Illustration 12A
Notes: Typical Cable Terminal Box Detail

1. The above reflects general requirements and as such show typical details only. Any equivalent designs submitted shall be considered.

2. Cable terminal box will be served by service lateral from SMTX Utilities’s transformer in SMTX Utilities’s easement.

3. Cable terminal box and concrete foundation shall be owned, installed and maintained by the owner. The location of the cable terminal box with respect to the transformer will be by mutual agreement between SMTX Utilities and the contractor or owner. The clearance requirements stated in Illustration 12A, Page 39 are for the life of the service.

4. Cable terminal box shall be made with two separate compartments; one side for SMTX Utilities connections and the other side for owner’s connections. Doors on both sides will be secured by a three-point latch system.

5. SMTX Utilities’s lock will be on SMTX Utilities’s compartment of cable terminal box.

6. The owner shall provide for locking the owner’s compartment of the cable terminal box. (Entire cable terminal box shall be tamper proof in accordance with AMERICAN NATIONAL STANDARD ANSI C57.12.28 latest edition.

7. Fiberglass or other material shall not be acceptable.

8. Aluminum shall be used in all coastal areas such as Galveston and Freeport.

9. Cable terminal box shall be weather tight.

10. Cable terminal box shall be mounted and secured on concrete foundation in a level position. Foundation to be capable of supporting junction box and maintaining it in a level position.

11. The owner shall install conduit from SMTX Utilities service lateral to cable terminal box before SMTX Utilities’s transformer and pad is installed.

12. Insulating barriers to be 1/2" thick and meet NEMA Code N-1, XX, GP01 or GP03.

13. All bus bars shall be rigidly supported.

14. Bus bars shall not be formed inside the cable terminal box.

15. Each phase bus bar shall be a minimum of 1/4" X 4".

16. Aluminum bars shall be tin plated at connection points. Bus requirements of two thousand Amps and above will consist of a tinned copper design.

17. The owner shall make provisions for 3 sets of 2-hole lugs per bus bar for SMTX Utilities’s side of cable terminal box.

18. The owner shall make provisions as required for the owner’s requirements on owner’s side of cable terminal box.

19. The cable terminal box shall have sufficient mechanical strength and momentary rating to withstand short circuit current given on outlet location statement.

20. SMTX Utilities will connect facilities on its side of the cable terminal box. The owner shall connect his on his side.

21. All cable terminal box fabricators shall be pre-approved. For approvals contact SMTX UTILITIES Engineering.

417 Meter Loops
The Customer shall provide the necessary wiring for the Meter Loop with the wire so arranged that the line (supply) side can be connected to the top terminals of the meter mounting and the load side to the bottom terminals. All conductors shall extend into the meter mounting device a minimum distance equal to the length of the meter mounting device trough. If an aluminum neutral conductor is used, it must be insulated. Where the service is three-phase, four-wire delta, ground and phase wires shall be permanently identified in accordance with latest edition of the National Electrical Code. The conductor serving power load (Hi-Leg) shall be permanently identified or have a distinctive orange covering. The Hi-Leg Conductor shall be connected to the far-right meter socket terminal (while facing the meter mounting device) on both the line and load sides. Meter mounting device shall be furnished and installed by the Customer for all Self-Contained installations. Only meter mounting devices which meet Company specifications will be acceptable on the Company’s system. No Meter Loops shall be allowed on Company poles.
418 Meter Installations

Only SMTX Utilities or its designated representative is authorized to install, remove or relocate a meter. SMTX Utilities reserves the right to discontinue service to anyone violating this ruling.

418.1 Meters and Metering Equipment: The Customer shall furnish and own all self-contained Meter Mounting Devices. Meter Mounting Devices shall be used for both indoor and outdoor self-contained installations, and shall be furnished in accordance with ARTICLE 418.2. Relocation and/or maintenance of the Meter Mounting Devices will also be the responsibility of the Customer’s Contractor. All connections to the Meter Mounting Devices shall be made by the Customer’s contractor, except instrument transformer rated installations. All connections to the Company’s equipment shall be made by Company personnel only. Existing three-phase residential Customers planning wiring changes shall contact the nearest Company office before making changes.

**Meter Can Decision Flow Chart**

Illustration 14

418.2 Meter Mounting Device: It shall be the responsibility of the Customer or his Contractor to purchase the proper type of meter mounting device for residential or commercial service in accordance with the Self-Contained Meter Mounting Device Chart, on next page. Meter mounting device shall be installed by the Customer’s Contractor. The types of meter mounting devices are designed to carry the continuous current as indicated for the several types of services shown. Conductors installed in the Meter Mounting Devices shall be within the range of approved sizes as listed on the UL labeling (lug sizes) within the Meter Mounting Device or the Company will not install its Meters. The customer’s main service breaker shall be sized for the meter mounting device used (i.e. up to a 200-amp main for a 200-amp meter can and up to a 400-amp main for a 320-amp service). In addition, for 320 Amp Meter Mounting Devices, the 320 Amp Specifications on page 46 of these
Service Standards also apply. The Customer will be responsible for any damage to the Company’s metering devices, plus labor charges to repair.

The conduit shall enter and leave the meter mounting device at location of existing hubs or knockouts. The Customer or his Contractor shall close all unused openings by means of galvanized metal plugs or hole closer. Line and load conductors to the meter mounting device shall not be run in the same conduit.

### SELF-CONTAINED METER DEVICE CHART

#### Residential Service

<table>
<thead>
<tr>
<th>TYPE OF SERVICE</th>
<th>METER MOUNTING DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHASE</td>
<td>WIRE</td>
</tr>
<tr>
<td>1</td>
<td>3 (Note 4)</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4 (Note 2)</td>
</tr>
</tbody>
</table>

#### Commercial Service

<table>
<thead>
<tr>
<th>TYPE OF SERVICE</th>
<th>METER MOUNTING DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHASE</td>
<td>WIRE</td>
</tr>
<tr>
<td>1</td>
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<td>1</td>
<td>3 (Note 4)</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3 (Note 1,3)</td>
</tr>
</tbody>
</table>

Notes:

1. Requires a bonding conductor, Article 303.
2. Three-phase residential services are not generally available. Article 303.
3. Fifth terminal lug shall be isolated from the can.
4. Fifth terminal lug shall be bonded to the service neutral conductor.
   Service provided for Underground Street Network only (See Article 301)
METER MOUNTING DEVICE GENERAL SPECIFICATIONS

All materials, construction, and testing shall be in accordance with the American National Standards Institute (ANSI) C12.7, Requirements for Watthour Meter Sockets, latest revision.

The meter socket housing shall be fabricated of steel, or aluminum in accordance with U/L Standard 414, latest revision and be suitable for outdoor use in accordance with NEMA 3R, latest revision.

All meter cans shall be painted after fabrication and finish coats shall provide a tough non-chalking weather resistant finish.

Performance requirements for meter sockets shall be in accordance with applicable performance sections of ANSI C12.7 and UL-414 (latest revisions).

Meter socket shall be tested in a certified test lab to meet Underwriters Laboratory (U/L) Standard 414, latest revision, performance requirements and labeled as such.

Socket jaws shall be rated for 600 volts.

Five terminal cans shall have the fifth terminal located in the 9 o’clock position. Fifth terminal lug shall be isolated from the can.

A neutral connection or contact must be accessible from the meter socket opening. A fifth neutral jaw will suffice for 120/208V Y services. (Exception: 3 Phase, 3 Wire Can)

Knockouts shall not be above any energized surfaces with the meter in place.

Minimum inside dimensions of the enclosure shall be sufficient to provide ample room for the distribution of the maximum-size conductors for which the socket is intended. Internal wiring space shall be such as to allow line or load conductors, or both, entering either or both ends of the enclosure to be readily routed to the proper terminals.

Meter socket installation shall be in accordance with SMTX UTILITIES Service Standards, latest revision and meet any code requirements that may be enforced by the local Public Authority.

Maintenance on all Customer owned devices is the responsibility of the Customer.
125 Amp and 200 Amp Meter Mounting Device

Socket jaws shall be rated for 125 Amp or 200 Amp continuous current capability.

Meter socket bypass devices are not allowed.

All meter sockets will be ring type. Meter sockets with ringless covers will not be allowed. All single-phase four terminal 125Amp and 200 Amp cans shall have tamper proof lids (TP Bar construction).
418.3 Self-Contained Meter Pedestals: Where used, self-contained meter pedestals SHALL BE FURNISHED, INSTALLED AND MAINTAINED BY THE CUSTOMER after contractual arrangements (See ARTICLE 412) for the installation of underground facilities have been completed. The pedestals shall meet the following minimum requirements. The meter mounting device shall have an ampacity of 200 amps for mobile home park applications and an ampacity of not less than 50 amps for CATV power supply applications. At the pedestal, an adequate disconnecting means shall be provided for each service on the load side of the meter. The ground rod connection shall be made at ground level for easy access. The neutral conductor shall come into the pedestal at least to the switch box ground terminal. The pedestal shall extend not less than 30" below final grade. If required, adequate stabilization material shall be added to ensure that the pedestal will remain vertical at all times. Customers contemplating the use of self-contained meter pedestals should submit detailed manufacturer’s specifications for acceptance by SMTX UTILITIES Engineering.

418.4 Pre-Wired Modular/Ganged Type Meter Banks: Pre-wired modular/ganged type meter banks may be utilized under certain conditions. CUSTOMERS CONTEMPLATING THE USE OF PRE-WIRED/GANGED TYPE ENCLOSURES SHOULD CONTACT DISTRIBUTION OPERATIONS. SUCH INSTALLATIONS REQUIRE SPECIAL CONTRACTUAL ARRANGEMENTS AND SUBMITTAL OF DETAILED MANUFACTURER’S SPECIFICATIONS FOR ACCEPTANCE BY SMTX UTILITIES ENGINEERING.

419 Methods of Installing Meter Mounting Devices

419.1 Requirements: Meter mounting devices shall not be used as junction boxes for the Customer’s wiring. Customer’s wiring shall be installed in Meter Mounting Devices, as follows:

Meter Mounting Devices for Socket Type Meters rated at 200 amperes or less:

Only one conduit and one set of Service Entrance Conductors shall be used on the line side, and one conduit and one set of Service Entrance Conductors shall be used on the load side of meter mounting device.

Meter Mounting Devices for Self-Contained Meters rated at more than 200 amperes:

Meter mounting devices rated at greater than 200 amperes shall not be used where the anticipated load and service entrance conductors have a rating of 200 amperes or less. No more than two conduits and two sets of Service Entrance Conductors shall be used on the line side and no more than two conduits and two sets of Service Entrance Conductors shall be used on the load side of the meter mounting device. The conductors do not have to be the same size for line and load. The Customer or Customer’s contractor shall make all connections to the Meter Mounting Device, except for instrument transformer rated installations. (For more information on 320 Amp meter mounting devices, see ARTICLE 418.2 and Illustration 13A & 13B on page 46.

419.2 Meter Mounting Device

Multiple occupancy service usually requires that Service Entrance Conductors be in a sealable weatherproof wiring trough similar to the arrangements shown for single-phase installations in Illustration 15 - Multiple Installation Using Wiring Gutter and Individual Meter Mounting Devices, next page. Line taps shall be made in the wiring trough by the electrical contractor. For three phase service fed from a multi-tenant line gutter, the electrical contractor is responsible for providing and maintaining A-B-C clockwise rotation to the line side of the self-contained meter mounting device. No more than four (4) weatherheads and four (4) conductors per phase and neutral shall be allowed in a wiring gutter installation. Pre-wired/ganged type installations shall be limited to one (1) weatherhead and one (1) conductor per phase and neutral. Accepted grounding practices for multi-meter installation are shown in Illustration 16 - Acceptable grounding practices for multi-metering installations, on page 49.
MULTIPLE INSTALLATIONS USING WIRE GUTTER AND INDIVIDUAL METER MOUNTING DEVICES
(Article 418.2)
Illustration 15
419.3 Meter Mounting: Meter Mounting Devices shall be installed so that the display of the meter is level.

419.4 Clearances: Meter Mounting Devices shall be installed by the Customer or the Customer’s Contractor with a free space of at least 36” in front and 2” on the sides, top and bottom, as necessary clearance to install, remove, and to test equipment. The free space shall be over the Customer’s property or public ways and shall not encroach upon the property of others even though there may be a utility easement in the area of encroachment.

419.5 Service Cable Tap Box – Multi-Tenant Services: In Multiple-Tenant buildings where additional services are likely, a bus conductor service cable tap box may be required similar to Illustration 33A, next page. A Multiple occupancy service usually requires that Service Entrance Conductors be in a sealable weather-tight wiring tap box similar to Illustration 33B. Line taps shall be made in the tap box by the electrical contractor. For three phase service fed from a multi-tenant line gutter, the electrical contractor is responsible for providing and maintaining A-B-C clockwise rotation to the line side of the self-contained meter mounting device. All Service Cable Tap Box Fabricators shall be pre-approved. For approvals, contact SMTX UTILITIES Engineering.

1. No grounding connectors will be permitted in meter mounting device.
2. No double lugging or splicing will be permitted in meter mounting device.
3. Grounding connectors must be sized in accordance with N.E.C.

ACCEPTABLE GROUNDING PRACTICES
FOR MULTI-METERING INSTALLATIONS
(Article 419)
Illustration 16
This page is intentionally left blank
Notes: Typical Service Cable Tap Box Details

1. The above reflects general requirements and as such show typical details only. Any equivalent designs submitted shall be considered.
2. Service Cable Tap Box will be served by service entrance conductors from SMTX UTILITIES’s transformer or customer’s weather-head.
3. Service Cable Tap Box and conductors shall be owned, installed and maintained by the owner.
4. Service Cable Tap Box shall be lockable and can accept a SMTX UTILITIES lock.
5. Covers shall be fastened with machine screws or bolts. Hinged covers shall not be permitted.
6. Covers shall have two handles for cover removal.
7. Non-Metallic material such as fiberglass shall not be acceptable.
8. Service Cable Tap Box shall be weather-tight and fabricated from minimum 12GA Steel or equivalent metal.
9. The bottom of Service Cable Tap Box shall be a minimum of 6" above finished grade.
10. 600V Insulators are required for supporting the energized bus bar.
11. Bus bars shall be sized to physically accommodate the maximum number of tenant services anticipated and predrilled for conductor tie-ins.
12. All bus bars shall be rigidly supported and protected from physical damage.
13. The phase arrangement on three phase horizontal common power and vertical buses shall be A-B-C from front to back, top to bottom, or left to right as viewed from the front of the Service Cable Tap Box. B phase shall be that phase having the higher voltage to ground on three phase, 4-wire, Delta connected systems. The phases shall be permanently marked.
14. The bus arrangement shall include 2-hole NEMA spaced holes or multi-port lugs for cable termination.
15. Service Cable Tap Box shall have sufficient mechanical strength and momentary rating to withstand short circuit current given on outlet location statement.
16. All Service Cable Tap Box fabricators shall be pre-approved. For approvals, contact SMTX UTILITIES.
17. For use on service voltages through 480V. Exception: Residential Occupancies

420 Height of Meters

420.1 Socket Bases: The height of meter mounting devices shall be such that the center of the opening for the meter is between 4 ft. - 5 ft. above ground or floor level. The meter mounting devices may be mounted at a height greater than 5 ft. above ground where required due to local building codes which establish minimum building elevations for flood protection. Contact SMTX UTILITIES Engineering in cases where flood plain construction occurs. The meter mounting devices may be mounted on a stairway and must be mounted so as to provide easy access to read the meter.

420.2 Pedestals: The height of self-contained meter pedestals used in mobile home parks shall be such that the center of the opening for the meter is between 3 ft. and 6 ft. above ground level.

421 Meter Location

421.1 All metering equipment shall be installed on the supply side of the main switch. No Customer-owned device(s) shall be allowed ahead of the meter except those required by the Company. (See ARTICLE 423)
421.2 All residential and combination residential and commercial service meters shall be installed outdoors. In residential areas where service is supplied underground, the meter should be located on the side of the house instead of the rear of the house. (See Illustration 9, on page 35) In residential areas where service is supplied overhead and the house is accessible to overhead service drops to a rear corner, the meter should be located on the side of the house instead of the rear. In all cases the meter should be located in a position that is accessible to Company employees at all times without Customer assistance.

421.3 Meters are to be installed immediately above or below line gutter except for 480Y/277-volt service or 480-volt service, in which case the required meter disconnect will be between the line gutter and the meter and shall be located so the height of the operating handle is not less than 4 feet and not more than 7 feet above finish grade. (See Article 423) Also, a minimum 4” clearance should be provided to the right of the meter disconnect to allow adequate clearance for locking.

421.4 Meters shall not be located where they will interfere with traffic on sidewalks or driveways, or where they will obstruct the opening of doors or windows.

421.5 Metering equipment shall be installed on a wall which is a substantial part of the building itself or on a meter pole. Temporary partitions, etc., which are subject to replacement or excessive vibration shall not be used. Meters or metering equipment shall not be installed on the Company's poles.

421.6 Grouping: Where more than one meter is installed, the meters shall be grouped at a point accessible at all times to the Customer's and Company employees. EACH METER MOUNTING DEVICE SHALL BE CLEARLY AND PERMANENTLY MARKED ON THE OUTSIDE TO SHOW THE APARTMENT AND/OR ADDRESS TO BE SERVED BY THE METER. It shall be the responsibility of the Customer or his Contractor to ensure the accuracy of the markings with respect to the apartment and/or address. For changes in existing wiring, the Customer should consult SMTX UTILITIES Engineering.

421.7 Wiring Gutter: On apartment buildings which are served 120/240, 120/208 volts, single phase, the wiring trough with individual meter mounting devices in Illustration 15 on page 48 may be used. Where space limitations will not permit placing all meter mounting devices on the same level, the meter installation may be made by arranging them in two tiers. The center of the opening for the meters in the lower tier shall not be less than 2.5 ft. above finished grade-level and the center of the opening for the meters in the upper tier shall not be more than 6.5 ft above finished grade level. The center of the meter opening for a "building service" or any meter mounting devices requiring a kVA demand-type meter shall not be greater than 6 ft above finished grade-level. Where space limitations will not permit placing meter mounting devices as outlined above, or if the installation involves multiple three-phase installations and they cannot be arranged at the same height, consult SMTX UTILITIES Engineering.
422 Meter Pole Installations

422.1 Requirements: A meter pole is required in those cases where suitable location, clearance, and anchorage as called for in Articles 403, 404 and 406 are not available on the Customer’s premises. Even if the conditions set forth in Articles 403, 404 and 406 are satisfied, the Customer has the option to install a meter pole. Meter poles are installed and maintained by the customer at his expense and shall not be installed in utility easements. Meter poles required by the Company or at the Customer’s discretion shall be a round pole, a 4” x 6” timber pressure treated with penta/creosote or a steel pole of equivalent strength. The use of alternate types of meter poles must have Company approval before installation. All meter poles shall provide the point of attachment, clearances, and anchorage as described herein. The pole setting depth shall be a minimum of 4 ft., or 2 ft. plus 10% of the pole length, whichever is greater. Steel poles shall be truck accessible. The Company will not provide service to any customer owned steel pole that is not truck accessible. The customer must provide a readily accessible Service Disconnect at the meter pole.

422.2 Temporary Service: Meter poles for temporary service of 125 Amperes or less may be 4” x 4”, or larger, timber if well anchored and braced to withstand the strain of the Service Drops. Such meter poles may be used only when the Company’s Service Drops will not cross a street or roadway. When the Company’s Service Drops must cross a street or roadway, the Customer may pay the Company for the cost of installation and removal of a service pole. As an alternative, the Customer may install a 30 ft., round creosoted meter pole (25 ft. above ground) on his property and within 70 ft. of the Company’s pole so that proper road clearance of the Service Drops may be maintained. Temporary meter poles may not be installed in utility easements. Meter Mounting Devices used for temporary single-phase service (T-Saw) installations shall be supplied by the Customer or his Contractor and shall meet the requirements shown in Article 418.2.

422.3 Meter Seals: It is the practice of the Company to seal or lock all meters. Only the Company’s agents and persons authorized by law are permitted to remove a Company seal or lock.

423 Meter Installation Sequence – 240 Volts & Below Self-Contained

SERVICE – METER – SWITCH – FUSE – LOAD

METER INSTALLATION SEQUENCE – 480V SELF-CONTAINED

SERVICE - METER DISCONNECT SWITCH - METER – SWITCH - FUSE - LOAD
Meter Disconnect Switch Informational Note:

Per UL 98 Standard for Enclosed and Deadfront Switches, the maximum short-circuit rating for a non-fusible switch is 10,000 Amps which is typically below the available fault current of most 480V self-contained metered services. The use of a fusible switch will meet the requirements specified in NEC 230.82(3) for a meter disconnect switch.

The meter disconnect switch shall not be used as a service disconnect and shall be locked and sealed under the exclusive control of the Company. See Illustration 34, next page. In addition, it must comply with the requirements specified in NEC 230.82(3) as well as all other applicable NEC requirements. Note: The meter can is not to be used as a junction box, so the grounded conductor must run straight through the meter can without splices.

For certain multi-level structures, the most feasible method of serving individually metered tenants often includes metering gutters located within the building proper and remote to the Point of Delivery of Electric Service. With such service arrangements, National Electrical Code requirements, building design, and Customer wiring costs also make the installation of a disconnecting means between the Point of Delivery and the remote metering gutter a desirable alternative. REQUESTS FOR THE INSTALLATION OF A DISCONNECTING MEANS ON THE LINE SIDE OF A REMOTE METERING GUTTER MUST BE REFERRED TO SMTX UTILITIES ENGINEERING FOR APPROVAL OF THE ARRANGEMENT DURING EARLY DESIGN STAGES, PRIOR TO INSTALLATION OF EQUIPMENT. Failure to obtain the required approval may result in the Company refusing to energize equipment installed by the Customer. The sequence of connections for individual meter installations served from a metering gutter shall be as stated above. The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure, or inside nearest the point of entrance of the service conductors. The intent of the foregoing is to locate the disconnecting means as close as possible to the meter. For all new services, Company personnel must be able to verify that the main disconnect is open before energizing service.
480V METERS INSTALLATION SEQUENCE
Illustration 34
(Article 423)
NOTES:

Service Entrance Conductors: (See Articles 402.1 and 408.) Phase conductors for permanent installations must not be smaller than #6 CU or #4 AL, unless approved by the Company.

Service Entrance Raceway: (See Article 408.)

Meter Mounting Device: Meter Mounting Device is to be furnished and installed by the Customer. (See Article 418.2 of SMTX Utilities Service Standards for correct size of meter mounting device)

Service Entrance Disconnect and Overcurrent Protection: Externally and manually operable with overcurrent protection (fusing or breaker setting) not greater than capacity of service entrance conductors; May be located inside or outside of building; Must be rain tight if mounted outdoors, either on a building or on a pole.

Grounding Electrode Conductor: The grounding electrode conductor shall be continuous without splices from the neutral bus in the service equipment to the grounding electrode. The grounding electrode conductor, minimum size #8, or its enclosure shall be securely fastened to the surface on which it is carried. A #4, or larger, conductor may be exposed but shall be protected if exposed to severe physical damage. A #6 grounding conductor 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 rigidly stapled to the construction; otherwise, it shall be in conduit, electrical metallic tubing, or cable armor. Grounding conductors smaller than #6 shall be in conduit, electrical metallic tubing, or cable armor. The National Electrical Code requires grounding to a "Grounding Electrode." A driven ground rod is preferred by SMTX Utilities.

Bonding (Jumper) Conductor: A bonding conductor (jumper) shall not be installed on the meter socket neutral lug. The meter socket neutral lug bonds the meter socket to the grounded system conductor.
SECTION 500 – LARGE COMMERCIAL INSTRUMENT TRANSFORMER RATED METER SERVICE INSTALLATIONS

500 GENERAL INFORMATION

The Customer’s wiring installation should conform to the requirements of the National Electrical Code and the National Electrical Safety Code, State, Municipal requirements in force at the time the installation is made and the Company Service Standards as to Service Outlet Location, Service Drop, Meter Location and height, etc. Compliance with all such codes and requirements is the sole responsibility of the Customer for all Customer wiring and equipment. The Company does not inspect Customer wiring and equipment, and the supplying of Electric Service by the Company does not mean that Customer wiring and equipment has been inspected or approved by the Company. General requirements detailed in Section 200 governing service installations are available from SMTX UTILITIES Engineering. Large Service Customers should contact the appropriate key Accounts Representative in the planning stages or as early as possible to ensure adequate time is allowed for the preparation of individual specifications, ordering equipment and acquiring easements, if required.

500.1 Motor Starting Currents

Motors generally require a starting current substantially greater than their normal running current. An abnormal drop in supply voltage results when starting currents are excessive. It is essential that the Customer’s motors not exceed allowable starting characteristics to minimize detrimental effects upon equipment. Contact SMTX UTILITIES Engineering upon adding any new motor load of 250 horsepower or more. DC and Adjustable Speed Drive motors generate harmonic currents that may severely distort the customer’s voltage, and could affect service to other SMTX Utilities customers. Therefore, before installing DC or Adjustable Speed Drive motors totaling over 250 hp, please submit SMTX UTILITIES Engineering each harmonic current, in percent of fundamental 60 Hertz frequency, generated by the motor. Where harmonic currents at SMTX Utilities’s meter exceed IEEE Standard 519 limits, the customer will be required to filter the disruptive frequencies. Before placing orders for motor control equipment, Customers contemplating the installation of large motors shall consult SMTX UTILITIES Engineering to ascertain the allowable motor starting currents at the specified location. Customers wanting to operate a group of motors from a single control shall consult with the Company to ascertain the allowable motor starting currents at the specified location.

500.2 Loads Having Abnormal Electric Characteristics

Certain types of equipment have electrical characteristics which may cause serious fluctuations of voltage and interfere with the service of the Company to its Customers. In such cases the Company shall decline to serve such equipment under the Company’s established Rate Schedules until the Customer, at his expense, has provided suitable apparatus to hold the effects of such fluctuations within reasonable limits. Circumstances may require such equipment to be supplied from a separate service and, in such event, the Company may require additional contractual arrangements and may meter such services separately from other services supplied to the Customer.

Installation of X-ray equipment may require special equipment on the part of both the Customer and the Company. The Company shall be consulted before any special wiring is started for X-ray equipment.
An increasing segment of Customer load today incorporates electronic components and can cause harmonic distortion in the Customer’s voltage and current. This distortion can cause negative effects in the Customer’s operations and can affect the service to other SMTX Utilities Customers. For this reason, SMTX Utilities requires limits to harmonic distortion in compliance with IEEE Standard 519 to insure proper service to all Customers. The following are examples of harmonic producing equipment devices.

- DC or variable frequency AC motors utilized in air conditioning chillers and blower motors, pump motors and plastic extrusion, etc.
- Electronic equipment such as computers and microprocessor controls.
- Equipment utilizing arcing devices including:
  - Arc furnaces
  - Welders
  - Florescent, sodium and mercury vapor lighting with high-efficiency electronic ballast-controlled lighting.

Power factor correction capacitors can magnify harmonic distortion. Before installing any of the equipment discussed above or other similar devices including power factor correction capacitors, contact SMTX UTILITIES Engineering for guidance to ensure the proposed loads will not exceed SMTX Utilities or IEEE Standard 519 limits.

500.3 Ranges, Ovens and Other Heating Devices

Large heating devices to be operated from 3-wire or 4-wire service shall have the elements connected so that the load is evenly divided between the wires, or phases, when such equipment is equipped with automatic control that may cause frequent connection and disconnection of the load. The Customer shall consult with the Company concerning the allowable variation in load. The Customer shall consult with the nearest Company office and determine the exact type of service to be supplied before placing orders for heating equipment other than the portable or plug-in type.

500.4 Heavy Duty Portable Equipment

Contractors, builders and others contemplating the temporary use of heavy-duty portable equipment such as floor sanders, welders, tile polishers, etc., are required to apply to the nearest Company Office and make satisfactory arrangements before connecting any such equipment to convenience out-lets or other light-duty circuits. In cases of non-compliance with this regulation, they will be held liable for any damage to the Company’s service facilities.

500.5 Customer Owned Generating Equipment

Before Customer-owned generating equipment may be interconnected to the Company system, application must be made and approved. For more information, contact SMTX UTILITIES Engineering. (See Article 215 page 14).

500.6 Fire Pumps

Fire Pump Services shall be served through a C.T. Metered Service. (See Instrument Transformer Rated Meter Installation Sequence, Article 517 and Metering C.T. Box, Article 513.5).
501 Services

The Company will supply to a Customer, at each Point of Delivery, only one of the Types of Service listed in these Service Standards. The Customer’s installation is to be so arranged that the Company can measure the power used by the Customer with one meter.

OVERHEAD SERVICE

502 Service Drop

502.1 Requirements: The Company will install one Service Drop from the Company’s distribution lines to the Customer’s Service Outlet. Quadruplex type Service Drop must be used for all overhead three phase services. Where Service Outlets are grouped (See ARTICLE 505), the combined ampacity of all Service Outlets shall determine the type of Service Drop.

502.2 Service Drop Length

The maximum length of Service Drop which the Company installs will be governed by the amount and Type of Service and will be determined by Company personnel. Allowable voltage drop and mechanical factors, determined by the size and number of wires of Service Drop, impose limits on its length.

502.3 Service Poles

Where a service pole or poles must be set to provide proper clearance around or over driveways, garages, trees, or other obstructions on the premises, a charge shall be made for each such service pole required.

503 Clearance for Service Drop

503.1 Service Drop Conductors, when not in excess of 600 volts, shall at least have the minimum clearances at the lowest point of the drip loop or service drop listed in Illustration 20 – Clearances for Service Drop.

503.2 If an existing service is being modified and any revision in the service entrance raceway is made, the modified service must conform to the heights and clearances outlined above.

503.3 Located no closer than 7 ft. to windows, doors or porches from which the Service Drop may be accessible. This clearance is an NESC requirement and must be maintained.

503.4 Service Drops must be free of contact with trees. The customer shall trim all trees required to provide the necessary clearances.

503.5 Under no circumstances will the Company attach its Service drop to an intermediate structure installed by the Customer between the Company’s Distribution Lines and the Customer’s Service Outlet.
HORIZONTAL CLEARANCE

Service drop conductors attached to a building shall not pass closer than 5 ft. to windows, doors, or porches from which the service outlet may be accessible.

VERTICAL CLEARANCE TO GROUND FOR SERVICE DROP CONDUCTORS

<table>
<thead>
<tr>
<th></th>
<th>SECONDARY CONDUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-480V/277</td>
<td>480V</td>
</tr>
<tr>
<td>1. Areas accessible to pedestrians, finished grade, sidewalks, residential driveways, or where truck traffic is not encountered. (Trucks shall be defined as any vehicle exceeding 8 ft. in height)</td>
<td>14’ FT.</td>
</tr>
<tr>
<td>2. Over non-residential driveways, parking lots, alleys, or other areas subject to truck traffic.</td>
<td>18 FT.</td>
</tr>
<tr>
<td>3. Over public streets and roads.</td>
<td>22 FT.</td>
</tr>
</tbody>
</table>

CLEARANCES FOR SERVICE DROP

Illustration 20
504 Location of Service Outlet

504.1 The location must be at a sufficient height above ground level to provide proper clearances for the Service Drop, as required by ARTICLE 503.

504.2 Service Outlet shall be located so that neither the Company’s Service Drop nor the Customer’s Service Entrance Conductors are nearer than 18” to any telephone or signal wires, whether in the air or on the building.

505 Grouping of Service Outlets

If a building has an established Service Outlet location which conforms to the above requirements, then any additional Service Outlets shall be located within 18” of this established point. NO MORE THAN SIX WEATHERHEADS SHALL BE INSTALLED AT EACH SERVICE OUTLET LOCATION. If the established location does not conform to these requirements, then all Service Outlets shall be combined at a satisfactory point specified by the Company.

506 Point(s) of Attachment

506.1 Provisions: A solid Point of Attachment for supporting the Service Drop on the building shall be provided by the Customer at a point which will comply with the provisions of ARTICLES 503 and 505. The Point of Attachment shall not be more than 25 feet above ground. (See Illustration 20, on page 60). Company personnel will specify on the Service Outlet Location, the height of the Point of Attachment if it must be less than the minimum or greater than 25 ft. above grade.

506.2 Clearances: Where the required heights and clearances specified above cannot be maintained, the Customer shall provide an extension support, which is of a permanent nature and of sufficient strength to support the Service Drop at the required minimum clearance. In such cases, the Customer’s Service Outlet is to be located above the service support at a height which will permit the required clearance. If a Service Mast will not have sufficient strength to properly support the Service Drop, installation of a service bracket will be required.

507 Anchorage for Service Drop

507.1 Installation: The Customer shall install the Service Drop support in accordance with ARTICLE 506.2. The type of Service Drop to be installed shall be determined in accordance with ARTICLE 502. The service drop support must be installed as securely as possible to minimize damage to the installation from storms, falling branches, or other hazards.
508 Service Entrance Conductors

The Service entrance Conductors, as defined in ARTICLE 127, shall be installed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC conduit, or, as permitted by the local governing authority, may be an approved service entrance cable. The Service Entrance Conductors shall be provided with a weatherproof entrance fitting where they extend from the Customer’s conduit or raceway.

Except for service to internally located metering rooms, as approved by the Company’s Electric Engineering Department, the service raceway shall not be run through attics, in partitions, or in other enclosed spaces. Service Entrance Conductors shall extend beyond the service entrance fitting a distance sufficient to permit connection to the Company’s Service Drop, or 36” where an open wire Service Drop is to be used. (See Article 502.1.)

Except for multi-occupancy projects converting from master to multi-metering, Service Entrance Conductors shall not be installed in the same conduit or raceway with other wiring of the Customer, nor shall load wires from a meter be run in the same conduit or raceway with unmetered conductors. Customers contemplating the use of pre-wired/ganged type enclosures should contact Distribution Operations. Such installations require special contractual arrangements and submittal of detailed manufacturer’s specifications for acceptance by Electric Engineering.

509 Transformer Installations on Customer’s Premises

Under certain conditions, where large loads or considerable distances are encountered, it may be necessary to install transformers on the Customer’s premises either overhead, or, at the Company’s options and with special contractual arrangements, on the ground, or at the Company’s options and with special contractual arrangements, in a transformer vault. See Article 512 for primary underground service in Overhead Areas.

Transformers or other company equipment shall be installed in areas readily accessible by company vehicles for maintenance and replacement. Vehicular access shall not be blocked by permanent structures or landscaping. The requirements of such installations vary widely and it is necessary in each case for the Customer to consult SMTX UTILITIES Engineering so that satisfactory arrangements may be made to cover the installation. This contact should be made as early as possible to ensure that adequate time is allowed for ordering equipment and acquisition of easements.

510 Temporary Installations

Where service is required for construction or other temporary purposes, the Customer shall provide a suitable location and anchorage for the Company’s Service Drop and Meter. Temporary service will be installed at the Customer’s expense.
UNDERGROUND SERVICE

511 Commercial Underground

Commercial Customers desiring Underground Service should contact SMTX UTILITIES Engineering so that Electric Engineering may develop the Service Specifications as required. The Company shall make all connections between the Company’s equipment, cables, or conductors and the Customer’s Service Entrance Conductors. Consult SMTX UTILITIES Engineering for charges for standby time of Company personnel during installation of service conductors by electrical contractors into three-phase pad-mounted transformers.

512 Underground Service Laterals In Overhead Areas

512.1 Requirements: It is necessary for Customers planning to install Secondary Underground Service in Overhead Distribution Areas to consult SMTX UTILITIES Engineering to arrange for a Service Outlet Location as set forth in ARTICLE 203 and obtain the necessary Service Specifications for the installation. The Customer’s Underground riser conduit may be installed on SMTX UTILITIES poles where the poles are located on Customer’s property or immediately adjacent in the street right-of-way or utility easement. Customer’s service riser may be installed on a service pole if located on the Customer’s property. Service poles will be provided ONLY if the standard service extension requires them. If service poles are not required for standard service extension, the Customer shall install and maintain a separate pole for the underground riser. The maximum riser conduit attached directly to a service pole shall not exceed one 3” conduit. Larger conduit and multiple conduits may be installed on poles of sufficient strength, but they must be installed on stand-off brackets (See Illustration 23 – Conduit Riser on Stand-off Brackets, next page).

No more than four (4) conductors per phase and neutral shall be accepted per metered service (no more than 16 conductors per pole total for all services). (See ARTICLE 513.5 for limitation of conductors inside a metering current transformer box.) Customers’ conduit installed on poles shall be only rigid metal, intermediate metal, or PVC Schedule 80. When the underground service entrance conduit is PVC and the riser on the pole is rigid or intermediate metal conduit, the Customer or Customer’s contractor shall ground the riser in accordance with the National Electrical Code.

512.2 Service Conduit: Customer may attach service conduit not larger than 6” inside diameter directly to the pole. Distribution Operations personnel will specify on the Service Outlet Location when the Customer must attach the service conduit directly to the pole, as in residential areas. Conduit risers shall be permitted in order of service requests as shown in Illustration 22 – Conduit Risers Attached Directly to Pole on page 65. In the event a primary riser is attached to the pole, the primary riser shall be considered the #1 Customer, and any further Customer service risers shall be attached at the #2, #3, or #4 riser on pole. In the case where two primary risers are attached to the pole, no other conduit may be attached to the pole. See Illustration 22, page 65. Primary Underground Service in the Overhead Distribution Areas shall be supplied where, in the judgment of the Company, the size or service requirements of the load make such installation necessary. See ARTICLE 509 for Transformer Installation on Customer’s premises.

512.3 Standoff Brackets: Customers must use standoff brackets for service conduit larger than 6” inside diameter. A maximum conduit size of 4” will be allowed. See Illustration 23 – Conduit Risers on Conduit Stand-off Bracket, on page 64, for suggested installation.
Riser Notes:
1. 6” Maximum conduit size.
2. Maximum quantity
   (A) 3-4” conduits
   (B) 4 conduits with the total of
       the diameter equal to 12” or less.
3. No bus weatherheads shall be allowed
   on Company poles.
4. Where two primary risers are attached
   to the pole no other conduits shall
   be attached.
5. For multiple sets of conduit use one
   set of stand-off brackets.

Installation Notes:
A. CAUTION: Only qualified personnel are
   permitted to install electrical equipment in
   the vicinity of energized electrical lines as
   described in OSHA 1910 Subpart R & S.
B. All service installations shall meet NEC,
   state, and local codes and regulations.
C. Maintain 40” minimum from drip loop to
   communication cable or hardware.
D. Company will specify the location of the
   riser based on the location of existing
   attachments. Conduit shall maintain
   a minimum 8” clearance below the
   secondary or neutral.

CONDUIT RISERS ON CONDUIT STAND-OFF BRACKETS
(Article 512.3)
Illustration 23
CONDUIT RISERS ATTACHED DIRECTLY TO POLE
(Article 413.2)
Illustration 22

Installation Notes:

A. CAUTION: Only qualified personnel are permitted to install electrical equipment in the vicinity of energized electrical lines as described in OSHA 1910 Subpart R & S.
B. All service installations shall meet NEC, state, and local codes and regulations.
C. Maintain 40" minimum from drip loop to communication cable or hardware.
D. Company will specify the location of the riser based on the location of existing attachments. Conduit shall maintain a minimum 6" clearance below the secondary or neutral.

Riser Notes:

1. 6" Maximum conduit size.
2. Maximum quantity
   (A) 3-4" conduits
   (B) 4 conduits with the total of the diameter equal to 12" or less.
3. No bus weatherheads shall be allowed on Company poles.
4. Where two primary risers are attached to the pole no other conduits shall be attached.
5. For multiple sets of conduit use one set of stand-off brackets.
512.4 Service Riser Protection: Customer may not install theft deterrents that pose a safety hazard to SMTX UTILITIES personnel.

513 Meter Installations

Only SMTX UTILITIES or its designated representative is authorized to install, remove or relocate a meter. SMTX UTILITIES reserves the right to discontinue service to anyone violating this ruling.

513.1 Meter and Metering Equipment:

For instrument transformer rated installations, the Company shall furnish and own all equipment directly connected with the housing and protection of Meters and Metering Equipment. Application for such equipment will be made at the nearest Company Office listed on page 3. The customer will be asked to furnish the location of the establishment to be served, name of owner, and the type and size wire to be used in the Meter Loop at the location where the metering enclosure is to be installed. Meters and Instrument Transformers, where required, shall be installed by the Company at its expense. All connections to the Company’s Service equipment shall be made by Company personnel only. Where a metering current transformer box or outdoor CT service is installed, a meter box and a 10” x 26” metering potential transformer box (if required) will be furnished by the Company and installed by the Customer or his Contractor.

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**Meter Can Decision Flow Chart**

Illustration 21
Applications: When the ampacity of the Service Entrance Conductors is greater than the ampacity of the Meter Mounting Device Information shown on page 46, it will be necessary for the Company to use current transformers in the metering installation. Potential transformers will be required on 480 volt and 480Y/277-volt services.

Overhead Service: Where service is provided by Overhead Service Drops, current transformers will be mounted in a Metering Current Transformer Box in accordance with ARTICLE 513.5; or, they may be mounted outdoors without a Metering Current Transformer Box in accordance with ARTICLE 513.7. When required, potential transformers shall be mounted in a metering potential Transformer Box in accordance with Article 513.4. See Illustration 24 – Typical Outdoor Metering for Single Customer. Service requiring current transformer installations may be paralleled in accordance with requirements outlined in Articles 513.3-513.9.
513.3 Metering Potential Transformer Box

Where a metering current transformer box or outdoor CT service is installed for 480 volt or 480Y/277 volt service, a 10” x 26” Metering Potential Transformer Box will be furnished by the Company and installed by the Customer or his contractor. The 10” x 26” metering potential transformer box shall be mounted between 4ft and 6ft above ground or floor level. Where a metering current transformer box is installed, the 10” x 26” metering potential transformer box shall be connected to the metering current transformer box with 1 ¼” conduit or a 1 ¼” nipple. Where an outdoor CT service is installed, 1 ¼” conduit shall be run from the 10” x 26” metering potential transformer box to the bottom of the 7 point rack. An outdoor weatherhead shall be installed on the conduit. The placement of the 10” x 26” metering potential transformer box shall not exceed 50’ in distance from the current transformer mounting location.

513.4 Meter Can

Meter can will be installed adjacent to the metering potential transformer box and connected with a 1 ¼” conduit or nipple using the pre-cut 1 ¼ in. knockout holes at the base of the meter can. No conduit will enter the top of the meter can. Where a metering potential transformer box is not required, the meter can will be installed with the same mounting requirements as the metering potential transformer box as listed in Article 513.3.

OUTDOOR MOUNTED CURRENT TRANSFORMERS (Outdoor C.T.)

513.5 Service Entrance Phase Conductors: Where a building is designed to be occupied by a single Customer (one meter) and is served from an Overhead Service Drop, one set of outdoor mounted current transformers may be utilized. Where potential transformers are required, see Article 513.3. Service Entrance Phase Conductors for outdoor metering transformer installations may be made up of one wire (500 KCMIL through 1,000 KCMIL conductor) or two identical wires per phase (300 KCMIL through 1000 KCMIL conductors). Each pair of parallel phase conductors shall be of the same color or shall be taped together securely or otherwise marked for easy identification. Conductors may not be paralleled where the total combined area per phase is less than 500 KCMIL (2-300 KCMIL) or greater than 1,000 KCMIL (2-2000 KCMIL). NO MORE THAN TWO CONDUCTORS PER PHASE SHALL BE USED REGARDLESS OF CONDUCTOR SIZE.

513.6 Mounting Devices: Where Service Entrance Conductors do not exceed 2-500 KCMIL per phase, the current transformers will be mounted on a standard secondary rack installed by the Customer or his Contractor in accordance with Illustration 24 – Weatherhead Arrangements for Outdoor Metering, on page 67. The Customer shall attach the rack to his structure with two 5/8” galvanized machine bolts of such length that the threaded end of the bolt will extend 2” beyond the surface of the wall, and the bolts are to be anchored so that each bolt will be capable of withstanding a pull of 300 lbs. Where Service Entrance Conductors exceed 2-500 KCMIL (1-1,000 KCMIL) per phase, the service will become an underground service.

513.7 Service Mast Installations: Where a service mast type installation is used in conjunction with outdoor mounted current transformers, the Customer shall provide 1 ¼” conduit through the roof connecting to the 10” x 26” meter box/metering potential transformer box.
513.8 Customers Ineligible for Outdoor C.T. Service: In a building where more than one Customer (more than one meter) is to be served from a single Overhead Service Drop, outdoor metering shall not be used and each Customer (meter) requiring current transformers must install a Metering Current Transformer Box (and a Metering Potential Transformer Box, if required.) However, where service has been provided to a building occupied by only one Customer (one meter) utilizing outdoor mounted metering transformers and the building is later divided so as to add one or more additional Customers (meters), the added Customers will be served through self-contained metering or current transformer metering as required. Each added Customer requiring current or potential transformers must install a metering Current Transformer Box (and a Metering Potential Transformer Box, if required) and a protective meter box. The original outdoor metered service may be retained, but not more than two additional weatherheads, with a maximum of 1-1,000 KCMIL per phase in each weatherhead, will be connected to the Service Drop, provided the total combined load does not exceed 1,500 kVA.

513.9 Meter Equipment Bonding:

- The customer is responsible for bonding connections.
- All non-current carrying metallic parts to be effectively bonded with copper conductors.
- The Meter Box, PT Box and CT Box shall be bonded with nut/bolt bonding lugs.
- The equipment bonding jumper for CT Box shall be #1/0 CU minimum.
- From the Meter Box to the CT Box, the bonding conductor shall be #8 CU marked in accordance with the NEC.
- The Company will install the secondary wiring between the instrument transformers and the meter. Also, the Company will install the final bonding connection to system neutral.
514 Methods of Installing Metering Equipment

514.1 Metering current and potential transformer boxes and meter boxes shall be installed by the Contractor with a free space of at least 36" in front, 2" on the sides, 6" on top, and 36" on the bottom from finished grade as necessary clearance to install, remove, and to test equipment. The free space shall be over the Customer's property or public ways and shall not encroach upon the property of others even though there may be a utility easement in the area of encroachment. The Customer shall install a meter box as required at a location which will provide these clearances and which will meet all conditions listed in Article 513.

514.2 Where a Metering Current Transformer Box is used, it should be mounted with the service and load conduits entering and leaving on opposite end sections of the box. If necessary, the conduit may enter the back of the box at the extreme ends. The length of both line and load leads entering the Metering Current Transformer Box shall be 48" for 30" x 42" boxes. If both line and load conduits must enter one end section of the 30" x 42" box, one set of lead must be 72" long and the other set of leads must be 48" long. Holes cut in Metering Current Transformer Boxes must be cut with a hole cutter and must not be burned. If hubs are installed in Metering Current Transformer Boxes, they must not be welded, brazed, or soldered. See Illustration 32-Current Transformer Box Modification.
515 Meter Location

515.1 In all cases, the meter should be located in a position that is readily accessible to Company employees at all times without Customer assistance.

515.2 All instrument transformer rated meters shall be installed outdoors where practical. In locations where outdoor installations are impractical, commercial and industrial meters may be installed indoors; only when the Company is consulted and grants its’ approval.

515.3 Meters shall not be located where they will interfere with traffic on sidewalks or driveways, or where they will obstruct the opening of doors or windows.

515.4 In those special cases where metering equipment is installed indoors (when approved by SMTX UTILITIES), it shall be located in a clean, dry place, free from vibration and readily accessible during normal working hours. It shall not be installed in toilets, bathrooms, elevators shafts, boiler rooms, attics, balconies, kitchens, stairways, ventilators, storage sheds, moving machinery or hazardous locations.

515.5 Metering equipment shall be installed on a wall which is a substantial part of the building itself or on a meter pole. Temporary partitions, etc., which are subject to replacement or excessive vibration shall not be used. Meters or metering equipment shall not be installed on the Company’s poles.

515.6 Meters or current transformers shall not be installed in or directly on switchgear cabinets.

516 Meter Seals

It is the regular practice of the Company to seal or lock all meters, meter test switches, terminal boxes, current transformer cabinets and terminals of current transformers. No one but the Company’s agents and persons authorized by law are permitted to remove a Company seal or lock.

517 Instrument Transformer Rated Meter Installation Sequence

THE SEQUENCE OF CONNECTIONS SHALL BE AS FOLLOWS:

SERVICE – METER – SWITCH – FUSE – LOAD

For certain multi-level structures, the most feasible method of serving individually metered tenants often includes metering gutters located within the building proper and remote to the Point of Delivery of Electric Service. With such service arrangements, National Electrical Code requirements, building design, and Customer wiring costs also make the installation of a disconnecting means between the Point of Delivery and the remote metering gutter a desirable alternative. REQUESTS FOR THE INSTALLATION OF A DISCONNECTING MEANS ON THE LINE SIDE OF A REMOTE METERING GUTTER MUST BE REFERRED TO SMTX UTILITIES ENGINEERING FOR APPROVAL OF THE ARRANGEMENT DURING EARLY DESIGN STAGES, PRIOR TO INSTALLATION OF EQUIPMENT. Failure to obtain the required approval may result in the Company refusing to energize equipment installed by the Customer. The sequence of connections for individual meter installations served from a metering gutter shall be as stated above. The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure, or inside nearest the point of entrance of the service conductors. The intent of the foregoing is to locate the disconnecting means as close as possible to the meter. For all new services, Company personnel must be able to verify that the main disconnect is open before energizing service.
OSHA Rule 1926.651 Requires Previous Notification
CALL BEFORE YOU DIG
811 (www.call811.com) nationwide number

When you need to excavate in the San Marcos area, there is a single number you can call to be sure you don’t encounter the inconvenience of digging into underground power lines.

Just call Texas 811 who is on duty 24 hours a day, seven days a week at 8-1-1. Tell the operator who, what, when and where about your excavation plans at least 48 hours before you begin. Your message is relayed to each of the area utilities. If they have underground lines in the area, they will either contact you directly, or will stake out the job site with color coded markers to show you where their lines are located.

Here are the colors:

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Proposed Excavation</td>
</tr>
<tr>
<td>Pink</td>
<td>Temporary Survey Markings</td>
</tr>
<tr>
<td>Red</td>
<td>Electric power lines or conduits.</td>
</tr>
<tr>
<td>Orange</td>
<td>Communication lines or other hazardous lines.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Gas, oil, petroleum or other hazardous lines.</td>
</tr>
<tr>
<td>Green</td>
<td>Storm and sanitary sewer lines.</td>
</tr>
<tr>
<td>Blue</td>
<td>Water lines</td>
</tr>
<tr>
<td>Purple</td>
<td>Reclaimed water, irrigation, slurry lines.</td>
</tr>
</tbody>
</table>

If, for any reason, you should cut an underground line, Call Texas 811 at 8-1-1.

Remember this number, and save yourself time and trouble when you need to dig.