



**MUNICIPAL LIGHT & POWER
&
CHUGACH ELECTRIC ASSOCIATION**

**ELECTRIC SERVICE REQUIREMENTS
EXCERPT**

2015

**GENERAL INFORMATION
100A-200A SINGLE-UNIT SELF-CONTAINED
SINGLE-PHASE AND THREE-PHASE
INSTALLATIONS**

**2015 EDITION
Effective August 3, 2015**

This is an EXCERPT; the complete book is available on the utility websites:

www.mlandp.com under the "New Construction" tab

*www.chugachelectric.com under the Customer Service tab
"For Your Home" or "For Your Business" NEW SERVICE PROCEDURE CHECKLIST*

Utility Service Application Checklist

The following represents a checklist of the basic procedures required to complete the Utility service application. Please consult the checklist below to make certain all the applicable items have been completed.

1. **Electrical Service Extension Request:** For ML&P service, complete the ML&P Electrical Service Extension Request form; this is the first step in upgrading or installing a service. The extension request form is available on the ML&P web site www.mlandp.com/redesign/new_construction.htm. The extension request can be filled out and submitted to ML&P online. The Electrical Service Extension Request requires a signature page to be completed and sent to ML&P's Line Extension Coordinator (See Directory) for processing. It can also be faxed, E-mailed, or mailed; or you may fill one out in person at the main administration office.

For Chugach service, the building owner, or authorized representative must complete the Application for Service (residential and business application forms are available at www.chugachelectric.com) and bring it to Member Services at 5601 Electron Drive between the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday.

2. **Service Location:** You must provide to the Utility: 1) a site plan showing the proposed service location and location of other utilities; 2) the building outline; 3) any future building(s); 4) the property layout and site elevations; and 5) landscaping plans.
3. **Electrical Drawings:** For all commercial services and residential services over eight (8) units, you must provide the Utility with a complete set of MOA approved electrical drawings which include service entrance equipment and distribution panel information. Outside of the MOA inspection area, MOA approvals do not apply.
4. **Load Estimates:** For all services, you must provide the Utility with an estimate of the electrical demand load, based on the total connected load. Commercial services will require the electrical load information as furnished by the customer's engineer and approved by the MOA. Outside of the MOA inspection area, MOA approvals do not apply.

Once the above items are completed, the Utility can begin the necessary design.

5. **Permit and Inspection:** Contact the Municipality of Anchorage Development Services Department (See Directory) for procedures on obtaining the required permit and electrical inspection of your service entrance equipment. Outside of the MOA inspection area, contact the State of Alaska for inspection of non-residential and multi-family residential larger than duplexes.
6. **New Accounts:** You must establish an account with the Utility through the Customer Service Department (See Directory) for each new meter.
7. **Payments and Fees:** If required, it may be necessary to pay a deposit or fee to the Utility for such items as temporary services, trenching, concrete cutting and repair, and steam thawing.
8. **Construction Schedule:** Contact the Utility's Line Extension or Project Coordinator (See Directory) after the service entrance has been inspected for scheduling information.

Once items five through eight have been completed, the Utility crews can begin service construction.

SECTION 100 – GENERAL INFORMATION

101 Purpose

- 101.1 The purpose of this condensed booklet is to inform customers of the requirements for obtaining single-phase and three-phase electric service **up to 200 amperes (not including multiple meter or switchboard configurations)** from the Utility. Before purchasing the equipment for a proposed installation or beginning construction, the customer and/or his representative should contact the Utility's Line Extension Coordinator to learn the general requirements for obtaining service in the most economical and feasible way.
- 101.2 This booklet **is not** intended to ensure the adequacy and safety of the customer's wiring and equipment; such responsibility remains with the customer. Also, the Utility does not perform the function of inspecting the customer's internal wiring for compliance with requirements of electrical codes or regulations established by public bodies. This function is within the jurisdiction of municipal and other governmental authorities. In the Chugach service area that lies outside the Municipality of Anchorage (MOA) building inspection area, Chugach performs a limited inspection to ensure that the service is safe to energize and for compliance with Chugach requirements (this limited inspection applies to residential service equipment where the State of Alaska doesn't provide inspection).

104 Codes and Ordinances

- 104.1 Construction of new or remodeled installations must conform to current and applicable provisions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), federal, state, and municipal codes, regulations and ordinances, Utility's Tariff, and the Utility's Electric Service Requirements. The Utility's personnel are not authorized to waive federal, state or municipal regulations.
- 104.2 Where there is a conflict between the Utility's Tariff and this book, the Tariff shall take precedence. Codes, ordinances, and regulations are available from several sources. The Utility's Tariffs are available for customer inspection at the Utility's office (online at: <https://www.mlandp.com/redesign/mlputilitytariff.htm> or: <http://www.chugachelectric.com/inside-chugach/regulatory-affairs>).
- 104.3 Information and/or questions about the National Electrical Code (NEC) should be directed to the Municipality of Anchorage, Development Services, Building Safety Plan Review Engineer or to the Lead Electrical Inspector.

107 Coordination Responsibilities

- 107.1 ML&P and Chugach will gladly assist their customers with planning for and obtaining electric service to new or remodeled installations. However, coordination with other utilities such as water, telephone, communications, and natural gas is the customer's responsibility. The Utility will make every effort to help their customer(s) identify which of the other utilities may need to be contacted for other aspects of the customer's service project but the responsibility for contact and coordination remains with the Utility's customer.

SECTION 200 - SERVICE

203 Application for Service

- 203.1 **To obtain electrical service from ML&P**, a building owner, or his representative, must complete, sign, and file an Electrical Service Extension Request at ML&P's office with the assistance of the Line Extension Coordinator. Application should be made as far in advance as possible before service is required. Application can be made at the Engineering Division located at 1200 E. 1st Avenue, Monday through Friday between 7:30 a.m. and 4:30 p.m. or on line at <http://www.mlandp.com>. The Line Extension Coordinator can be reached at 263-5212.

To obtain electrical service from Chugach, a building owner, or authorized representative, must initiate an electric account with Chugach by completing the Application for Service (residential and business application forms are available at <http://www.chugachelectric.com>) and bringing it to Member Services at 5601 Electron Drive

between the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday. Chugach requires applicants for electric service to show identification and may require payment of a meter deposit and connect fees to establish electric service. Member Services can be reached at 563-7366, if more information is needed.

If Chugach does not have a power source adjacent to the customer's property, a line extension may be required (a line extension is the extension of primary electric facilities to the customer's property, subdivision or commercial building). In some cases, existing Chugach facilities may be inadequate and upgrading will be required. For additional information, contact the Project Coordinator at 762-4631. A deposit is required to request a preliminary design and cost estimate for the line extension. The request for a line extension should be made as far in advance as possible (the Line Extension Application form is available at <http://www.chugachelectric.com>).

204 Service Feasibility

ML&P

ML&P will construct the facilities necessary to extend service to any customer within its certified service area if the extension of service is determined by ML&P to be economically feasible.

- 204.1 An overhead line extension will be considered economically feasible if the cost of the extension does not exceed five times the estimated gross annual income that will be derived from the sale of electricity delivered over the extension. Refer to ML&P Tariff Rule 3.1.
- 204.2 An underground line extension will be considered economically feasible if the customer agrees to reimburse ML&P for the cost of necessary conduit, vaults, clearing, trenching and backfill for the primary line extension, all pavement cutting, removal, and replacement, and steam thawing, and if the remaining cost to ML&P does not exceed five times the gross annual income estimated by ML&P to be derived from the sale of electricity delivered by the extension. Refer to ML&P Tariff Rules 3.1 and 8.5.
- 204.3 If ML&P determines that the cost of the line extension will exceed five (5) times the estimated gross annual revenue, then ML&P will construct the extension only if the customer pays the difference (reimbursable portion) prior to construction or executes a written contract guaranteeing that the gross income derived from the line extension over a five (5) year period of time will meet or exceed ML&P's cost of the line extension. The contract shall provide for monthly payment by the customer of the charges and fees for services furnished over the line, or one-sixtieth (1/60) of the construction cost born by ML&P, whichever is greater. If additional customers apply for service from the same line extension, service will be provided to them only upon execution of an agreement to incur a minimum monthly billing based on an equal apportionment of the one sixtieth (1/60) of the cost among the total number of customers receiving service from the extension. Each contract so executed shall terminate on a date five (5) years after the first connection to service. Refer to ML&P Tariff Rule 3.3.

Chugach Electric

Chugach will construct the facilities necessary to extend service to any customer within its service area if the customer agrees to pay for their share of the cost of the extension of service.

- 204.4 Refer to Chugach Tariff Rule 8 for details on line extensions and modifications of electric distribution facilities. Rule 8.6 provides information on the economic feasibility of the line extension and Rule 8.7 details the calculation of credits applied to line extensions.
- 204.5 Submittal of a complete Line Extension application and deposit to Chugach initiates the process. Deposits are \$100 per residential unit, and \$300 per commercial unit. All relevant plat, site plans, civil drawings and electric load requirements for the project are to be provided with the submittal (revised drawings should be provided as they become available).
- 204.6 A preliminary design and cost estimate are prepared for the customer's review. The customer is required to sign an agreement that the cost estimate and the preliminary design meet the customer's requirements before the project can proceed to final design.

- 204.7 After the completion of the final design, acquisition of any easements and permits and the bid authorization is prepared for review and signature by the customer. This signature authorizes Chugach to release the project for bid. After bids are received, a line extension agreement is finalized for signature by the customer. The project will be released for construction when the agreement has been signed, and after the customer has paid any monies due (payment plans are available for single lot, residential line extensions).
- 204.8 A customer may hire an Alaska licensed professional electrical engineer to design/inspect and a contractor (Alaska electrical administrator license, unlimited line work category) to construct a new line extension under the conditions described in Chugach Tariff Rule 8.9.

205 Electric Service Extensions to Permanent Facilities

- 205.1 ML&P will usually extend up to one-hundred (100) feet of service conductor for single-phase services and up to sixty (60) feet of service conductor for three-phase services. Except where otherwise specified in these requirements, the length of service conductor extended is from the Utility's nearest overhead or underground facilities suitable for providing service to the customer's service entrance location, provided that the Utility's facilities are of proper capacity to serve the customer's needs. The customer **shall pay** all costs for pavement cutting, removal, and repair related to the service extension. Within the Chugach service area the maximum length of the service to permanent buildings is based on the electric load and location of the Chugach power source. In all cases the service equipment shall be located at the nearest point on the structure relative to the Chugach power source. For single-phase services, to buildings 200A and less, the customer will be responsible for the additional cost listed in Part B Special Service Installations of the Chugach Tariff for secondary service in excess of 100 feet (or the nearest point of service, whichever is shorter). Chugach places additional limits on the length of three-phase services larger than 1600A and remote meter installations.
- 205.2 If upgrades to the Utility's system become necessary, ML&P may require the customer to pay for such upgrades based upon Section 204: Service Feasibility guidelines (Chugach will determine any customer upgrade charge based on Chugach Tariff Rule 8).
- 205.3 If an application for underground service is received after the first day of **September** and before thaw the following year, frozen ground may necessitate that the underground service be installed either by steam thawing, or temporarily above ground. The customer **shall pay** all thawing related costs. When underground service is installed temporarily above ground, it shall be installed in corflo duct or electrical nonmetallic tubing. Only secondary service conductors (less than 600 volts) may be temporarily installed above ground (all services 480V line-line or greater require thawing and trenching or placement in HDPE conduit). The Utility will not install corflo/conduit above ground across roadways, driveways, or other locations subject to vehicle or equipment traffic.
- 205.4 The customer will receive underground service where the Utility's facilities are underground. Where ML&P's facilities are overhead, the customer may receive either overhead or underground service subject to the Underground Ordinance, Title 21 of the Anchorage Municipal Code. Within the Chugach service area, where facilities are overhead, all new services require an underground configuration (where they are subject to Underground Ordinance, Title 21 of the Anchorage Municipal Code). Outside of the area subject to the Underground Ordinance the Chugach customer may receive either overhead or underground service from existing overhead facilities.
- 205.5 Within the Chugach service area non-typical residential service entrance locations require prior approval by Chugach. Service entrances at any location on the residential structure, other than within three (3) feet from the corner of the structure that is closest to the power source designated by Chugach are non-typical. Residential post mounted (remote) meter base installations require prior approval by Chugach of a location within thirty (30) feet of the residence structure's typical service entrance location, outside of the utility easement and on the customer's property within the normal service alignment (based on the typical structure mounted meter location). A permanent sign (8" x 5" minimum) shall be attached to an unobstructed surface of the building nearest to the power source (the typical service location) and five to six feet above final grade. The sign shall be labeled "REMOTE ELECTRIC METER DISCONNECT located 00 ft south/north and 00 ft east/west". The installer shall substitute the actual distances and bearing directions (accurate to within five feet). The background color for the sign shall provide sufficient contrast with the siding color to be recognizable at a distance of ten feet in daylight and the lettering legible at three feet. Refer to 308.41 and 308.42 for additional signage requirements.

206 Electric Service Extensions to Temporary Facilities

- 206.1 The Utility will extend temporary service to the customer's service entrance equipment at a location designated by the Utility provided that the Utility facilities are of proper capacity to serve the customer's needs. ML&P customers **shall make** arrangements to pay ML&P for installation and removal costs including material, labor, equipment, and indirect overhead costs, less salvage value of materials returned to stock, prior to construction by ML&P.
- 206.2 If an application for temporary underground service is received after the first day of September and before thaw the following year, frozen ground may necessitate that the underground service be installed either by steam thawing or temporarily above ground. The customer **shall pay** all related costs. When underground service is installed temporarily above ground, it shall be installed in corflo or electrical nonmetallic tubing. Only secondary service conductors (less than 600 volts) may be temporarily installed above ground (all services 480V line-line or greater require thawing and trenching unless the temporary corflo protected service is located within a fenced, controlled access area or the conductor is placed in HDPE conduit). The Utility will not install corflo/conduit above ground across roadways, driveways, or other locations subject to vehicle or equipment traffic.
- 206.3 The customer will receive temporary underground secondary service where the Utility facilities are underground. Where the Utility's facilities are overhead, the customer may receive either temporary overhead or underground service subject to the Underground Ordinance, Title 21 of the Anchorage Municipal Code.

207 Easements

- 207.1 Easement definition: An easement is an interest in land of another for a specific purpose. In the case of an electric utility such as ML&P or Chugach, it includes the right of access over the easement area, the right to cut down or trim any part of a tree within the easement, the right to remove any obstructions within the easement area that interfere with construction or maintenance activities. No permanent structure will be allowed within the easement. Pavement, fences, shrubbery and gardens may occupy the easement area, but only at the property owner's risk.
- 207.2 The Utility will only construct, own, operate, and maintain facilities on public or private property across which easements or rights-of-way satisfactory to the Utility have been obtained without cost or within the public streets, roads, or highways in which it has legal rights to occupy without future relocation liability. As a condition of service, the Utility may require the execution of an easement or easements providing suitable right-of-way for the construction and maintenance of the distribution lines serving the customer's premises. It is the Utility's policy not to enter into "blanket" easements.

208 Customer Facilities

- 208.1 Before any service entrance equipment is installed on any building or structure, or before any substantial changes are made to any existing service, the customer, builder, or authorized representative shall obtain approval from the Utility's Engineering Division as to where the service entrance equipment and meter socket shall be located. Refer to Section 302 for specific details regarding metering and service equipment location requirements.
- 208.2 The Utility shall require the customer to provide a suitable path from the power source to the service entrance equipment. The route must be clear of all trees, shrubs, brush, stumps and debris (within the Chugach service area a 10-foot wide path following the most direct route is required). For underground service installations, in the Chugach service area, the slope of the route must be no more than 3:1 for inline installations and no more than 4:1 where the trench traverses the slope. Where these slope conditions are not met, Chugach must either approve the route in advance (based on specific site conditions) or an alternative meter and service entrance equipment location is required. In all cases where an exception is made to install a trench in a steeper slope, the customer accepts responsibility for restoration and maintenance of the trench to control possible erosion. Chugach will backfill the trench in accordance with standard practices.
- 208.3 The customer's premises shall be at plus or minus six (6) inches from final grade prior to the Utility's installation of underground cables, conduit, meters, or other related equipment. The customer is responsible for providing locations of existing or proposed private (non-utility) subsurface facilities (e.g. storm drain, septic, heated driveway/sidewalk, lighting circuits etc.)

- 208.4 The customer shall install and maintain all wiring equipment beyond the point of delivery including meter sockets, disconnect devices, circuit protection devices and any similar or related electrical enclosures. The Utility shall provide and install all kilowatthour meters. The point of delivery, unless otherwise specified, is that location on the exterior of the customer's building or structure where the Utility's system and the customer's facilities are interconnected.
- 208.5 The customer's wiring, meter socket, and service entrance facilities shall be installed and maintained by the customer in conformity with applicable municipal or state requirements, current standards required by the National Electrical Code and the Utility's Electric Service Requirements and Tariff. Service entrance conduit sizing shall be coordinated with and approved by the Utility's Engineering Division prior to installation. Refer to Section 520 for service riser conduit details.
- 208.6 A certificate of inspection is required and **shall be** furnished before service is connected. The Utility may disconnect, refuse to connect or reconnect a service when the customer's wiring of facilities is found to be non-compliant with applicable codes, ordinances, and requirements. Refer to Section 400 for specific details on electrical inspections.
- 208.7 The customer is responsible for providing suitable protective devices for equipment installed on the customer's premises. The customer shall protect equipment with special service requirements from potentially harmful conditions, including but not limited to single-phase operation of equipment requiring three-phase service or under-and-over voltage conditions. ML&P customers refer to ML&P Tariff Rule 5.3.
- 208.8 If a customer requires a degree of regulation of the characteristics of the electrical service greater than that normally furnished by the Utility, the customer is responsible for obtaining, installing, and maintaining the required regulating equipment.

209 Service Conductor Connection

- 209.1 Connections on the "load-side" of the customer's meter socket are the customer's responsibility. The Utility shall install service conductors between the customer's service entrance equipment and the transformer, pole, or pedestal, but the service conductors will remain de-energized until the customer has completed load-side connections and has passed an electrical inspection by the Municipality of Anchorage (or the State of Alaska for all non-residential services outside of the MOA inspection area.) All other service connections shall be made and/or terminated by the Utility and/or its representative. If the customer requires the service to be disconnected for any reason, the customer shall contact the Utility.

210 Service Facilities on Customer's Premises

- 210.3 On underground service installations requiring pad-mounted equipment or any other above-grade equipment such as secondary pedestals, the customer is required to furnish an accessible and safe location for this pad-mounted equipment on the customer's property. All pad-mounted or above-grade equipment site locations shall be approved by the Utility's Engineering Division. The Utility will not install pad-mounted or above-grade equipment on property other than that owned by the customer (except for service to load centers); this equipment **will not** be installed in a street or alley right-of-way, or on an adjacent neighbor's property. There shall be a minimum clearance from trees, shrubs and building walls of ten (10) feet in front of the pad-mounted equipment. Consult with the Utility's Engineering Division for specific details regarding acceptable side clearance dimensions for pad-mounted equipment. Clearance above the pad-mounted equipment should be sufficient to provide crane clearance for installation and replacement. Where required, the customer shall install, at his expense, suitable protective or security devices designated by the Utility on the customer's premises.
- 210.5 The Utility's employees shall have access to customer's premises at all reasonable times for the purpose of reading meters, testing meters and related equipment, inspecting the customer's load and equipment, installing, repairing, removing, or exchanging equipment belonging to the Utility. The customer **shall not** erect or have any device, building, fence, shrubs, trees, etc., that would impede access to the Utility's equipment.

SECTION 300 – METERING AND SERVICE EQUIPMENT

301 Scope

- 301.1 The Utility's metering and service equipment requirements are based on practices that are necessary to supply uniform, satisfactory, and safe service.
- 301.2 Interpretations or clarifications of the intent of these requirements are subject to the Utility's approval.
- 301.3 As used in this book, the term "approved" means authorized, sanctioned, permitted, or specified by the Utility. In most cases, the approval will be in written or published form.
- 301.4 The requirements, guidelines, and specifications in this book apply to the type, installation, and operation of equipment related to the supply and metering of electric service from the Utility's system to a customer's premises. These requirements, guidelines, and specifications apply to all parts of the customer's service entrance equipment including meter disconnects, service disconnects, main service disconnects, customer generators, generator transfer equipment, and non-utility generation equipment. These requirements, guidelines, and specifications apply to the customer's service entrance equipment regardless of the voltage rating of the equipment. See Sections 212, 214, 311, and Subsection 303.1 for reference.
- 301.5 The information in Section 300 is general in nature and applies to the installation guidelines and specifications in Section 500 and to the service equipment specifications in Section 600 where applicable. Each installation guideline and specification and each service equipment specification may also contain additional information which should be considered unique to that guideline or specification unless reference is made to another guideline, specification, or section.
- 301.6 All metering and service equipment installed in the Utility's service area must conform to the latest state adopted revision of the NEC, to the MOA's local amendments to the NEC, to the latest state adopted revision of the NESC, and to the Utility's requirements as stated in this book.
- 301.7 Information on electrical inspection guidelines and instructions on how and when to schedule an inspection with the Municipality of Anchorage, the State of Alaska and Chugach may be found in Section 400.
- 301.8 Refer to the Installation Guidelines and Specifications in Section 500 for typical applications of service entrance equipment and their installation requirements.
- 301.9 Refer to the service equipment specifications in Section 600 for types of equipment acceptable for use on the Utility's distribution system.
- 301.10 The point of delivery, unless otherwise specified, is that location on the exterior of the customer's building or structure where the Utility's circuit and the customer's circuit are interconnected. The Utility's responsibility for maintenance of service ends at the first point of contact whether it is at the meter socket for underground, or at the weatherhead for overhead.
- 301.11. Many of the Utility's requirements, installation guidelines, and service equipment specifications are based upon requirements and drawings from the Electric Utility Service Equipment Requirements Committee (EUSERC). EUSERC is an organization composed of utility representatives from the western region of the United States that works to promote uniform electric service requirements and the design and engineering of metering and service equipment. ML&P and Chugach are EUSERC members and adopt their requirements as much as is practical for the Utility's applications.
- 301.12. The Utility recommends that customer(s) consult with the Utility before purchasing service entrance equipment or installing it. The Utility will make every effort to review meter and service equipment drawings, diagrams, and manufacturer's literature provided by the customer and give feedback to the customer regarding the suitability of such equipment.
- 301.13 Grandfather Clause: The Utility does not recognize the term "grandfather clause." The Utility does not require customers to upgrade existing service entrance equipment when service requirements change where such equipment is functional, in good repair, and met the service equipment requirements and local, state, and national codes in effect at the time of original installation.

301.14 When a customer makes changes to existing service entrance equipment, the Utility requires that the entire service entrance to be brought into compliance with the Utility's Electric Service Requirements in effect at the time of the change. The only exception to this requirement is where minor repairs are made to existing equipment and such repairs do not change the characteristics of the existing service installation.

302 Metering and Service Equipment Location

302.1 Metering and service equipment location is subject to the Utility's approval. Prior to wiring a building or structure, or performing any electrical construction for a new service or a change in service, the customer shall request the Utility to designate the location of the customer metering and service equipment. The Utility will not be obligated to provide service to a structure at a point not designated by the Utility and a customer who proceeds without the designation of location may be required to modify the wiring or other construction to provide for service equipment at a location subsequently designated by the Utility.

302.2 Metering and service equipment shall be on the side of the building nearest to the Utility's overhead or underground facilities suitable for providing service. All metering and service equipment locations **shall be** approved in advance by the Utility's Engineering Division.

302.4 Metering and service equipment location specifically includes meter disconnects, service disconnects, and main service disconnects.

302.5 Metering and service equipment including self-contained meter sockets, meter disconnects, and main service disconnects shall be located outdoors, on the exterior of the building or structure.

302.6 The metering and service equipment (including meter disconnects and main service disconnects) may not be placed in a locked area. Metering and service equipment shall be accessible to the Utility. Access or Accessible means capability of being reached quickly for operating, reading, repairing, removing, testing, inspecting, or installing meters, transformers, switches, conductors, electrical enclosures, and related equipment without requiring those for whom access is required to climb over or remove obstacles, to unlock doors, to dismantle fences or gates, and so forth. Accessible equipment is not guarded by architectural enhancements, dogs, elevation, locks, parked vehicles, structures, or other impediments.

302.8 Metering and service equipment shall be located level and plumb, outdoors on the customer's structure (building, post, or pedestal) and shall be firmly supported.

302.9 Metering and service equipment shall be in locations free from vibration or mechanical injury.

302.10 Metering and service equipment shall not be placed in any unsafe or hazardous location as determined by the Utility.

302.11 Metering and service equipment shall not be located directly over or under any stairway, ramp, or steps.

302.12 Metering and service equipment shall not be placed in an area subject to falling ice and snow or snow storage locations. The Utility requires that the snow shedding side of pitched roofs shall be avoided or protected by suitable barriers approved by the Utility. Within the Chugach service area the barriers or ice diverters shall be roof-mounted and are required for all metal roofs. Chugach requires metering and service equipment to be located on the gable end of the structure when it is available (required for all installations from Girdwood south).

302.13 Metering and service equipment shall not be located in any underground vault or other depressed location.

302.14 Carport, porch, or patio areas shall be avoided due to the possible future enclosure of such areas, resulting in inconvenience to the Utility and expense to the customer when it becomes necessary to relocate the metering and service equipment.

302.15 The Utility does not permit the installation of customer metering and service equipment on the Utility's facilities such as distribution transformer enclosures, wood poles, or pad-mount transformers.

302.16 Meters are not allowed on mobile structures such as trailers, houseboats, barges, cranes, dredges, draglines, or mobile pumping equipment.

- 302.17 Metering and service equipment, including meter sockets, meter disconnects, service disconnects, and main service disconnects, shall be located a minimum of thirty-six (36) inches (horizontal) from the centerline of the closest natural gas regulator.
- 302.18 Metering and service equipment, including meter sockets, meter disconnects, service disconnects, and main service disconnects, shall not be placed above or below the natural gas service entrance equipment.
- 302.19 Natural gas service equipment is defined by the Utility as the natural gas meter, natural gas regulator, any part of the natural gas service equipment equipped with bypass vents, and natural gas shut-off valves.
- 302.20 Metering and service equipment shall be located at a minimum of thirty-six (36) inches from any other gas or liquid fuel source such as propane, diesel fuel, heating oil, etc.
- 302.21 A suitable standing surface and working space is an important and integral part of metering and service equipment installations. Metering and service equipment locations shall meet the clearance and working space requirements of Section 521.
- 302.22 Metering and service equipment locations shall meet the clearance requirements and meter socket height requirements of Section 303.
- 302.23 If at any time the Utility determines a meter access problem exists due to impediments including fences, security barriers, building additions, landscaping, plants, trees, bushes, dogs, or hazardous materials, the customer at their expense shall relocate the metering facilities to a new location approved by the Utility's Engineering Division.
- 302.24 Refer to ML&P Tariff Rule 8.2 for specific details regarding location and installation of meters. Within the Chugach service area refer to Chugach Tariff Rule 8.5.

303 Metering and Service Equipment Requirements, General

- 303.1 **Service Equipment Definition:** As used in this book, the term "service equipment" refers to meter sockets, meter socket enclosures, meter panels, service disconnects, meter disconnects, main service disconnects, grounding electrodes, grounding electrode conductors, and any other equipment or enclosures related to the supply and metering of electric service from the Utility's system to a customer's premises. For the purposes of this book, the terms "service equipment" and "service entrance equipment" are synonymous terms.
- 303.2 **Approved:** As used in this book, the term "approved" means authorized, sanctioned, permitted, or specified by the Utility. In most cases, the approval will be in written or published form. Approval may refer to the type or style of equipment, to the arrangement of equipment, to the service entrance equipment location, or as otherwise stated.
- 303.3 **Standards:** The meter socket and enclosure shall be designed in accordance with the latest revision of AEIC-EEI-NEMA Standards for Watthour Meter Sockets, Publication ANSI C12.7 and with Underwriters Laboratories Standard for Meter Sockets, UL414.
- 303.4 **Meter Sequence:** The approved metering arrangement considered to be standard and required by the Utility provides for the line current to first enter the meter and then the disconnecting means and overload protective devices, (meter-switch-fuse sequence).
- 303.5 **Socket Ring:** All meter sockets shall be ring type; ringless sockets are not allowed under any circumstances or conditions.
- 303.6 **Installation Responsibility, Self-contained Meter Sockets:** Self-contained meter sockets, approved by the Utility, shall be furnished, installed, and wired by the customer. Refer to Section 307 for requirements and specifications related to self-contained meter sockets. Meter socket connection diagrams can be found in Section 519.
- 303.8 **Socket Mounting:** All single position meter panels shall be surface-mount configuration. All multiple metering sockets and their enclosures shall be either wall-mounted or switchboard service section mounted. Flush mount or semi-flush mount meter sockets and/or meter panels are not acceptable.

- 303.9 Metering enclosures shall be suitable for the location. In most cases, metering enclosures must be NEMA Type 3R rated. Contact ML&P's Meter Shop regarding suitability of NEMA Type 1 metering enclosures. Within the Chugach all metering enclosures shall be NEMA Type 3R rated.
- 303.10 **Meter Socket Mounting Height Requirements:**
- a) Single Position Wall-Mounted Meter Panels: **The preferred mounting height for single position wall-mounted meter panels is sixty-five (65) inches.** The maximum mounting height for single position wall-mounted meter panels is seventy-two (72) inches. The minimum mounting height for single position wall-mounted meter panels is sixty (60) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
 - b) Post-Mounted Meter Panels and Commercial Service pedestals: **The preferred mounting height for post-mounted meter panels and commercial service pedestals is fifty (50) inches.** The maximum mounting height for post-mounted meter panels and commercial service pedestals is sixty-five (65) inches. The minimum mounting height for post-mounted meter panels and commercial service pedestals is forty-two (42) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
 - c) Steps, stools, blocks of wood, concrete cinder blocks, chairs, portable step ladders, or similar devices **are not** acceptable alternatives for meeting meter height requirements.
 - d) A platform may be an acceptable means for complying with meter socket height requirements as long as it is permanent in nature. Platforms may be constructed from concrete, steel, or structural lumber rated for ground contact. Platforms constructed from structural lumber or steel shall be placed on a permanent foundation. If a platform is more than twelve (12) inches above grade it shall be equipped with stairs. Platforms shall be constructed according to International Building Code standards. Where platforms are used to meet height requirements, the dimensions of the platform must provide an additional twelve (12) inches of width and an additional twelve (12) inches of depth to the minimum clearance and working space requirements as defined in Section 521. The maximum height above grade for any platform used to meet height requirements shall be twenty-four (24) inches. Platforms with a standing surface more than twenty-four (24) inches above grade **are not** acceptable. If a platform is attached to the building or structure it may be subject to municipal codes for decks. Check with the Municipality of Anchorage, Development Services Department for applicability.
- 303.11 **Meter Socket Clearance Requirements:** Where an adjacent wall, fence, or other electrical equipment extends beyond the face of the meter socket enclosure, a ten (10)-inch minimum side clearance dimension is required. The ten (10)-inch minimum side clearance is measured from the centerline of the meter socket opening. The ten (10)-inch minimum side clearance requirement applies to all types of metering including self-contained and commercial service pedestals. Refer to Section 521 for working space and clearance requirements.
- 303.12 **Bypass Requirements:** Except where specified otherwise in this book, self-contained service installations (225 amps or less) require meter sockets with the safety socket feature and test-block bypass facilities.
- 303.13 **Bypass Requirement Exemption:** Self-contained service installations (225 amps or less) qualifying under ML&P's Rate Schedule 11 and Chugach's Residential Service classification, which covers single-family dwellings for domestic and household purposes, are exempt from the requirement for meter sockets with the safety socket feature and test-block bypass facilities. The Utility exempts the following non-residential applications from the safety socket test bypass requirement: decorative lighting, thaw wires and the Lake Hood/Spenard floatplane tie downs.
- 303.14 **Bypass Facilities, Approved Type:** Where bypass facilities are required, they shall be the test-block bypass type as shown in Section 602, and shall include a safety socket feature. Refer to Subsections 307.13 through 307.18 for approved types and prohibited types of bypass equipment.
- 303.15 **Service Ampacity Ratings, General:** Service ampacity ratings as used in this book generally apply but are not necessarily limited to the sizing of combination meter disconnect device and service terminating enclosures. The ampacity rating shall be used to determine the type and style of equipment (e.g. wall-mounted style verses switchboard service section style) used. The ampacity rating shall also be used to determine when self-contained metering is required and when CT rated metering is required. Service ampacity ratings as used in this book are

not intended to interfere with or supersede NEC load calculations or the Utility service conductor or transformer size calculations in any way.

- 303.16 **Service Ampacity Rating, Self-contained Metering:** The maximum ampacity rating for self-contained metering is 225 amps. If the meter disconnect rating or the service conductor ampacity is 225 amperes or less, then self-contained metering is required.
- 303.22 **Conductors beyond the Point of Attachment:** The customer shall furnish and install the service entrance conductors and service equipment beyond the point of attachment to the Utility's overhead service drop or underground service conductors. All conductors between the overhead service weatherhead or underground pull section and the meter enclosure, shall be suitably enclosed and protected, and shall not be concealed except with the express consent of the Utility.
- 303.23 **Concealment of Service Equipment:** Except where otherwise specified in this book, no sealing and/or locking provisions for securing unmetered conductors or bus and no locking provisions for securing meter disconnects or main service disconnects may be placed behind any door or panel or concealed from view in any manner.

304 Grounding and Bonding Requirements

- 304.1 All electric services connected to the Utility's electric distribution system shall comply with all applicable grounding and bonding requirements of the latest revision of the NEC, and with any local amendments to the NEC.
- 304.2 The customer is responsible for furnishing, installing, and maintaining all components at the point of connection between the Utility and the premises wiring necessary to comply with the grounding and bonding requirements of the latest revision of the NEC and with any local amendments to the NEC.
- 304.3 The Utility requires the use of concrete encased electrodes where concrete footers exist as part of the foundation for new structures, and when practical, in remodeled structures. Within Chugach service area and outside of the MOA inspection area, Chugach requires two driven ground rod electrodes and recommends the installation of supplemental concrete encased electrodes for all installations.
- 304.4 In commercial applications where a concrete foundation does not exist, such as pad-mounted commercial service pedestals for street lighting load centers, or post-mounted meter sockets for food/beverage carts, etc., ground rods shall be required as per the NEC.
- 304.5 Refer to the MOA Building Safety Division Handout E.05 "Guidelines for Concrete Encased Electrodes in the Municipal Building Safety Service Area" for details regarding concrete encased electrodes.
- 304.6 Ground rods used as part of the grounding electrode system shall be no less than eight (8) feet in length and no less than five-eighths (5/8) inches in diameter.
- 304.7 Where ground rods are used as part of the grounding electrode system, they shall be placed a minimum of thirty-six (36) inches from any of the Utility's underground conductors, pad mounted transformers, or power poles.
- 304.8 Where ground rods are used as part of the grounding electrode system, they shall be placed a minimum of thirty-six (36) inches from any natural gas company underground lines or service risers.
- 304.9 Where multiple ground rods are used as part of the grounding electrode system, they shall be placed a minimum of eight (8) feet apart.
- 304.10 At least one (1) ground rod shall be installed on temporary service installations. The ground rod shall be placed no more than six (6) feet from the temporary service disconnecting means.
- 304.11 Where ground rods are used as part of the grounding electrode system, they shall be installed in a manner where the top of the rod is below the level of finished grade or the flush with the level of undisturbed soil, whichever is lower.
- 304.12 The Utility's electric distribution system is a multi-grounded system.

- 304.13 Metering equipment enclosures, including self-contained meter socket enclosures, are considered non-current-carrying conductive materials forming part of the service entrance equipment. All such enclosures shall be grounded and bonded in a manner that establishes an effective ground-fault current path.
- 304.16 The Utility does not install a bare grounding conductor in service drops from its overhead facilities or in service laterals from its underground facilities to either permanent service installations or temporary service installations. The Utility grounds the neutral or common conductor at the service transformer or the secondary pedestal.

305 Sealing and Locking Requirements

- 305.1 All removable access covers for compartments containing un-metered conductors shall be sealable or lockable. No removable panel or cover requiring sealing or locking shall be located behind other panels, covers, or doors except where otherwise specified in this book.
- 305.2 All top cover panels, side cover panels, and rear cover panels providing access to un-metered conductors shall be secured in place with devices that may not be loosened from the outside. Screws or bolts requiring special tools for installation or removal are not acceptable alternatives.
- 305.3 Sealable latches, stud and wing-nuts, sealing screws, or slot & tab devices shall be provided as the means of sealing removable access covers.
- 305.4 Hinged cover panels shall be lockable on the side opposite the hinges. Hinged panel covers shall accept a padlock with a shackle diameter of not less than five-sixteenths (5/16) inch.
- 305.5 Removable cover panels shall be sealed with stud and wing-nut assemblies on opposite sides of the panel. Alternate sealing methods may be used if the removable covers are self-supporting with the captive screws and sealing provisions removed.
- 305.6 Stud & wing nut sealing assemblies shall consist of a 1/4-inch x 20 (minimum) stud and associated wing nut, each drilled 0.0635 inch (minimum) for sealing purposes. The stud shall be securely attached so as to not loosen or back out when being fastened.
- 305.7 Sealing screws shall be drilled 0.0635 inch (minimum) for sealing purposes.
- 305.8 Locking devices shall be designed to sufficiently resist unauthorized access and shall be made of a durable corrosion resistant material.
- 305.9 All securing screws for removable panel covers shall be captive.
- 305.10 All sealing and locking provisions must be Original Equipment Manufacturer (OEM), provided and installed by the equipment manufacturer or be an OEM field retrofit kit provided by the manufacturer. Sealing and locking provisions provided by a third party manufacturer are not acceptable.
- 305.12 The term "lockable" is defined as accepting a padlock with a shackle diameter of five-sixteenths (5/16) inch. Under certain specified circumstances, padlocks with shackle diameters of one-quarter (1/4) inch may be used.
- 305.13 Key lock handles where the locking mechanism is an integral part of the handle assembly are not an acceptable means of locking or securing doors or panels covering any space, compartment, or section with un-metered conductors or metering equipment or meter disconnect devices or main service disconnect devices.

306 Service and Meter Disconnect Requirements

- 306.1 The term "Service Disconnect" can refer either to a "Meter Disconnect" or a "Main Service Disconnect". The distinctions between a "Meter Disconnect" and a "Main Service Disconnect" are described in their respective sections below.

306.2 Meter Disconnects, 600 Volts or Less, General

- a) For each and every meter, the customer shall furnish and install a circuit breaker, fused switch, or other approved disconnecting means with over-current protection referred to in this book as a “Meter Disconnect”.
- b) The meter disconnect shall control all of, and only the energy registered by its related meter.

306.6 Meter and Service Disconnect Location, 600 Volts or Less

- a) Meter disconnects and main service disconnects are considered part of the service entrance equipment and are required to be placed outdoors on the exterior of a building or structure at a location approved by the Utility.
- b) Meter disconnects and main service disconnects shall meet the Utility’s access requirements.

306.9 Concealment of Service Equipment

Except where otherwise specified in these requirements, no sealing and/or locking provisions for securing unmetered conductors or bus and no locking provisions for securing meter disconnects or main service disconnects may be placed behind any door or panel or concealed from view in any manner.

306.10 Wire Terminations on Disconnects, 600 Volts or Less

The Utility’s (line-side) service conductors shall not terminate on a customer-owned circuit breaker, fused switch, or any other customer-owned disconnecting means. Approved termination facilities suitable for the application shall be provided by the customer for entrance and termination of the Utility’s (line-side) service conductors.

306.18 AIC Ratings

The “Ampere Interrupting Capacity” (AIC) rating of a disconnect device is the highest current at rated voltage that the disconnect device is intended to interrupt under standard test conditions. The Utility does not specify AIC ratings for meter disconnect, service disconnect, or main service disconnect devices. The Utility considers the determination of AIC ratings of disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the specific situation.

307 Self-Contained Metering Requirements, General

307.1 Self-contained meters are designed to carry rated current and be energized at line potential. They do not require auxiliary instrument transformers to step down line current or voltage. Self-contained meter panels are required on all electric services with a capacity requirement of 225 amperes or less.

307.4 The self-contained meter socket and enclosure shall be designed in accordance with the latest revision of AEIC-EEI-NEMA standards for Watthour Meter sockets, Publication ANSI C12.7 and Underwriters Laboratories Standard for Meter Sockets UL 414.

307.5 Self-contained meter sockets and/or meter panels rated at 100 amperes or 125 amperes **are acceptable** for use on the Utility’s system contingent on meeting the applicable service equipment specification (within the Chugach service area 100 ampere or 125 ampere equipment are approved for overhead services outside of the MOA underground surcharge area and for non-residential applications with test-block by-pass only). Chugach requires 200 amperes rated self-contained meter sockets and/or meter panels for all underground feed residential services.

307.6 Sockets for self-contained meters shall be furnished, installed, and wired by the customer. Diagrams of meter socket connections are shown in Section 519.

307.8 For each and every meter, the customer shall furnish and install a circuit breaker, fused switch, or other approved disconnecting means with over-current protection referred to in this book as a meter disconnect. The meter disconnect shall control all of and only the energy registered by its related meter.

- 307.9 Meter sockets for self-contained meters used in residential service applications shall have a maximum ampacity rating not less than the ampacity rating of the associated service disconnect. The maximum ampacity rating is 125% of the continuous-duty rating.
- 307.10 Meter sockets for self-contained meters used in commercial and industrial service applications shall have a continuous-duty rating of 100 amps for service disconnects rated up to 125 amps maximum and a continuous-duty rating of 200 amps for service disconnects rated up to 200 amps maximum.
- 307.11 The maximum ampacity rating of the service disconnect device used in any self-contained meter panel, whether residential service application or commercial service application, shall be 225 amperes. Meter panels with 250-amp rated breakers are not acceptable.
- 307.12 Meter sockets used in residential service applications shall meet the requirements of Section 601, shall include a circuit breaker, fused switch, or other approved disconnecting means with over-current protection, and shall be located on the exterior of the building or other outdoor location.
- 307.13 Meter sockets used in commercial, industrial, or non-residential applications shall meet the requirements of Sections 602, 603, or 604, shall include a circuit breaker, fused switch, or other approved disconnecting means with over-current protection, and shall be located on the exterior of the building or other outdoor location.
- 307.14 Meter sockets used in all commercial, industrial, or non-residential applications shall be equipped with the safety socket feature and factory installed test-block bypass facilities. For exceptions refer to Section 303.13.
- 307.15 Meter sockets with automatic circuit closing facilities are prohibited from use on the Utility's system. Automatic-type bypasses are not allowed under any circumstances or conditions.
- 307.16 Meter sockets with horn-type manual circuit closing facilities are prohibited from use on the Utility's system. Horn-type bypasses are not allowed under any circumstances or conditions.
- 307.17 Meter sockets with slider-type manual circuit closing facilities are prohibited from use on the Utility's system. Slider-type bypasses are not allowed under any circumstances or conditions.
- 307.18 Meter sockets with lever-type manual circuit closing facilities are prohibited from use on the Utility's system. Lever-type bypasses are not allowed under any circumstances or conditions.
- 307.19 All meter sockets shall be ring type; ringless sockets are not allowed under any circumstances or conditions.
- 307.20 The service termination facilities of meter sockets used in underground service applications shall be specifically designed to receive underground service conductors. Enclosures designed for either overhead or underground service conductor entry are acceptable provided they meet the requirements for both types of service conductor entry.
- 307.21 The service cable entry section and the meter socket section shall be sealable or lockable and isolated with suitable barriers separating these sections from other integral enclosure sections which are accessible to the customer. The purpose of isolation by suitable barriers is to effectively prevent the attachment of unauthorized connections to un-metered conductors or terminals.
- 307.22 All meter panel covers for compartments or sections containing un-metered conductors shall be sealable or lockable.
- 307.23 Meter sockets used in underground applications shall have a separate cover plate for the section of the socket which receives the meter and a separate cover plate for the service conductor termination section. The Utility prohibits the use of meter sockets with a single common cover plate for both the meter socket section and the service conductor termination section.
- 307.24 Five (5) jaw meter sockets are designed for network metering applications where single-phase loads are to be connected and metered from a 3-phase, 4-wire, wye-connected, 120/208 volt system. The 5th jaw is also called a potential jaw and is connected to the neutral of the system to provide for proper operation of the meter

- 307.25 Network service installations require a factory installed 5th jaw or a factory supplied 5th jaw kit. The 5th jaw shall only be located in the nine (9) o'clock position.
- 307.26 Meter sockets equipped with a 5th jaw for Network service but served from a true single-phase, 3-wire, 120/240 volt source, must have the 5th jaw and its associated wiring removed from the socket.
- 307.27 Seven (7) jaw meter sockets are designed for metering applications involving three-phase loads. Meters designed for use in seven (7) jaw meter sockets may be applied on 3-phase, 4-wire wye-connected, 208/120 volt systems; 3-phase, 4-wire and wye-connected 480/277 volt systems. The 7th jaw (ANSI/IEEE C12.7) is connected to the neutral of the system to provide for proper operation of the meter. The Utility does not permit new 3-phase, 4-wire Delta-connected, 240/120 volts systems.
- 307.28 Socket rim to jaw clearance for self-contained meter sockets shall be no less than 0.500" and no more than 0.690" as per ANSI C12.7.
- Exception: The 0.690" dimension does not apply to neutral clips on self-contained sockets.
- 307.29 The Utility does not recognize and does not accept the term "farm panel."

SECTION 400 – INSPECTIONS

401 General Information

- 401.1 Prior to connection of electric service, the customer/applicant is required to obtain an electrical inspection from the Municipality of Anchorage (or the State of Alaska for all non-residential and tri-plex or larger multi-residential services outside of the MOA inspection area.) The following type of work will require an inspection tag:
- a) All service installations not previously served by the Utility.
 - b) Service entrance equipment or a meter base assembly that has been replaced upgraded or relocated.
 - c) When service has been disconnected at the Utility's facilities for repair or re-wiring at the customer's building or service location.
 - d) When service to an existing installation has been disconnected for a significant period of time.
 - e) All services disconnected for reasons of safety, hazards, or non-compliance with codes.

402 Electric Service Inspection Requirements

- 402.1 All new electrical work on the customer's side of the meter requires a permit and may be done by either the homeowner or a contractor licensed by the Municipality of Anchorage. Electrical work done by the homeowner on their personal residence does not require a licensed contractor, but does require a permit. Electrical service equipment must be inspected and approved before connection by the Utility. Any inspection performed by Building Safety requires either a permit for new installations or code compliance agreement for existing installations.
- 402.2 Electrical permits or code compliance agreements and/or information about permits, fees, or payment methods may be obtained at the Building Safety permit counter located at 4700 S. Bragaw or by calling the permit counter at 343-8211. Information about electrical codes should be directed to Electrical Plan Review at 343-8333 or to Electrical Inspections at 343-8316.

403 How and When To Call For Inspection

Municipal Inspection Area

- 403.1 The MOA Inspection area includes the entire Anchorage Bowl except portions of the Upper Hillside that include; Stuckagain Heights, Glen Alps, Bear Valley and Potter Heights. All of the ML&P service area is within the MOA inspection area. Refer to the following link for a map of the Anchorage Bowl MOA Building Safety inspection area: http://www.muni.org/Departments/OCPD/development/BSD/Forms/Building_Safety_SA_8x11.pdf Contact MOA Building Safety for the specific boundaries that apply to permitting and inspection on the Upper Hillside.
- 403.2 Electrical inspections for services or structures under a permit may be requested by either telephone or fax. Fax inspection request forms are available at the Building Safety permit counter. The fax number is 249-7777. Your fax will be sent to the inspector and then added to the permit file. The information must be legible and complete.
- 403.3 The telephone recorder number is 343-8300. Please speak clearly and give the information in the order requested: 1) permit number, 2) legal description, 3) address of jobsite, 4) contact phone number, 5) alternate contact number, 6) company name, 7) contact name, 8) type of inspection, 9) any additional information, e.g., directions, time, etc. To avoid re-inspection fees, cancel your inspection by phoning Building Safety at 343-8211. Or you can request an inspection online at www.muni.org/bsd and follow the links to On Line Services.
- 403.4 The inspection request line cut off time is 6:00 a.m. Inspection requests made after that time will not be available to the inspector until the following day. It is the responsibility of the permit holder to arrange for access to the structure, service equipment, branch circuit panel boards and the grounding connection at the water supply.
- 403.5 Commercial service inspections are performed when the installation work for line side of the service up to and including the main disconnect or switch gear has been completed.
- 403.6 Residential service inspections are performed during the “wiring rough-in” inspection of the house. The building wiring, as well as the service, must be complete and pass inspection. Building Safety Handout #1 describes the inspection process and is available at the Public Works permit counter.
- 403.7 Service Inspections of Occupied Structures Occupied structures undergoing repair or replacement of service equipment will receive inspection priority and the inspector will attempt to schedule inspection times as requested. All electrical work must be completed and the existing service disconnected by the Utility before the inspector will approve the service. The suggested procedure is to schedule a disconnect from the Utility, add the estimated length of time needed to complete the work and request the inspection for that time from Building Safety.
- 403.8 Inspection of Existing Buildings before Reconnecting: Existing buildings that were disconnected from power shall be inspected by the Municipality before they can be reconnected. The customer may elect to have the service inspected for code compliance prior to hiring an electrical contractor. The structure wiring will be inspected for property/life safety violations. A service tag will be issued upon completion of the inspection if passed by the inspector. If the service or structure fails the inspection, a list of required changes will be provided. An electrical permit and/or an electrical contractor may be needed depending on the changes to be made. The inspector will provide directions as to requirements. Arrangements for inspections will be scheduled by the permit counter staff and confirmed by the inspector.

Outside of the Municipal Inspection Area

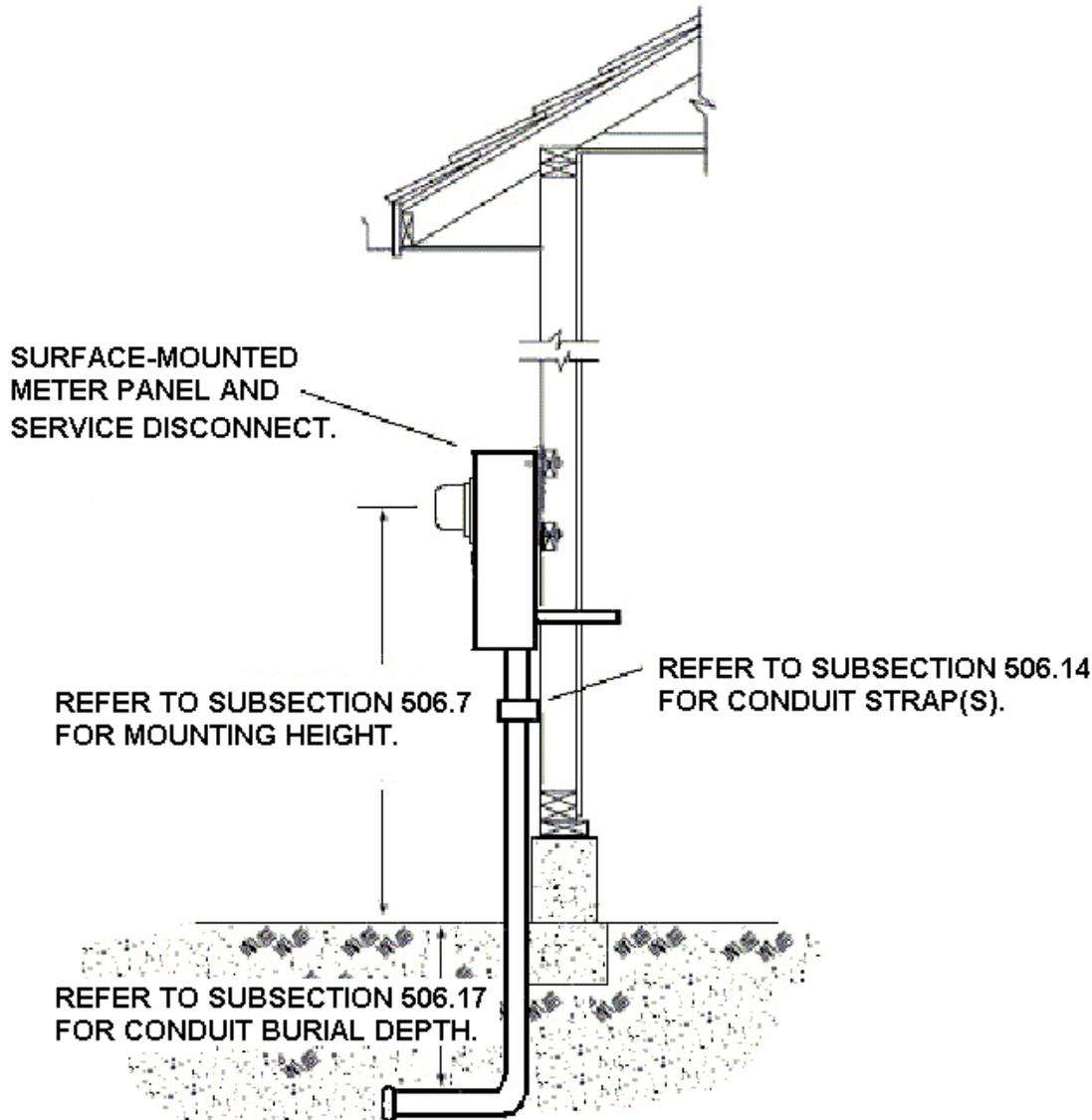
- 403.9 The areas outside of the MOA inspection area include portions of the Upper Hillside that include Stuckagain Heights, Glen Alps, Bear Valley and Potter Heights, within the Anchorage Bowl, and all areas south of Potter. All of these areas are within the Chugach service area.
- 403.10 For all non-residential buildings, contact the State of Alaska Department of Labor, Mechanical Inspections (907) 269-4925 at P.O. Box 107020, Anchorage, Alaska 99510.
- 403.11 For all single and duplex residential buildings and non-residential load centers, contact Chugach at (907) 563-7494 or toll free (800) 478-7494.

SECTION 500 - INSTALLATION GUIDELINES & SPECIFICATIONS

506 Underground Service, Wall-Mounted, Up To 200 Amps

- 506.1 All applicable requirements and specifications from other sections of this book apply to these installation guidelines and specifications.
- 506.2 The customer shall furnish and install a residential combination meter panel and service disconnect or a combination safety socket panel with test-block bypass and service disconnect.
- 506.3 Residential combination meter panels and service disconnects or combination safety socket panels with test-block bypass and service disconnects shall be placed outdoors on the exterior of the building or structure in accordance with Section 302.
- 506.4 Single family residential service installations qualifying under ML&P Rate Schedule 11 (or Chugach's Tariff Residential Classification within the Chugach service area) shall use a residential combination meter panel and service disconnect meeting the requirements of Section 601.
- 506.5 Non-residential, commercial, or industrial service installations shall use a combination safety socket panel with test-block bypass and service disconnect meeting the requirements of Section 602. The Utility exempts the following non-residential applications from the safety socket test bypass requirement: decorative lighting, thaw wires and Lake Hood/Spenard floatplane tie downs.
- 506.6 Self-contained meter sockets used in wall-mounted underground service applications shall meet the general requirements of Section 307.
- 506.7 **The preferred mounting height for single position wall-mounted meter panels is sixty-five (65) inches.** The maximum mounting height for single position wall-mounted meter panels is seventy-two (72) inches. The minimum mounting height for single position wall-mounted meter panels is sixty (60) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 506.8 Wall-mounted underground service installations, both residential and commercial applications, shall meet the clearance and working space requirements of Section 303 and of Section 521.
- 506.9 Wall-mounted underground service installations shall meet the applicable grounding and bonding requirements of Section 304.
- 506.10 Meter panels or meter panel mounting struts, and conduit mounting straps or conduit strap mounting struts shall be anchored to structural components of the building. Attachment to plywood siding, aluminum siding, or light gauge steel siding **is not** acceptable. Attachment to heavy gauge steel siding may be acceptable where the steel siding is at least 16 gauge.
- 506.11 The customer shall furnish and install service riser conduits for the Utility's (line-side) service conductors meeting the general requirements of Section 520.
- 506.12 Service riser conduits for wall-mounted non-residential, commercial, or industrial service installations shall be rigid metal conduit.
- 506.13 Service riser conduits for wall-mounted single position meter sockets used in residential applications shall be liquidtight flexible metal conduit with an inside diameter of two (2) inches, a maximum length of nine (9) feet, and shall include a bushing or ferrule on the open end. The flexible metal conduit riser connection requires the use of one of the three following methods: 1) an insulated grounding bushing with two 3-1/2" x 2" reducing washers, sandwiching the enclosure floor 2) a 4-bolt threaded hub or 3) an insulated grounding bushing with a 2-inch drilled hole through bottom of enclosure without a knockout provision.
- 506.14 Service riser conduits shall be secured in place. Service riser conduits shall be anchored to the building or structure with a minimum of one (1) conduit strap or clamp (24-inch min spacing required for rigid steel risers).

506 Underground Service, Wall-Mounted, Up To 200 Amps

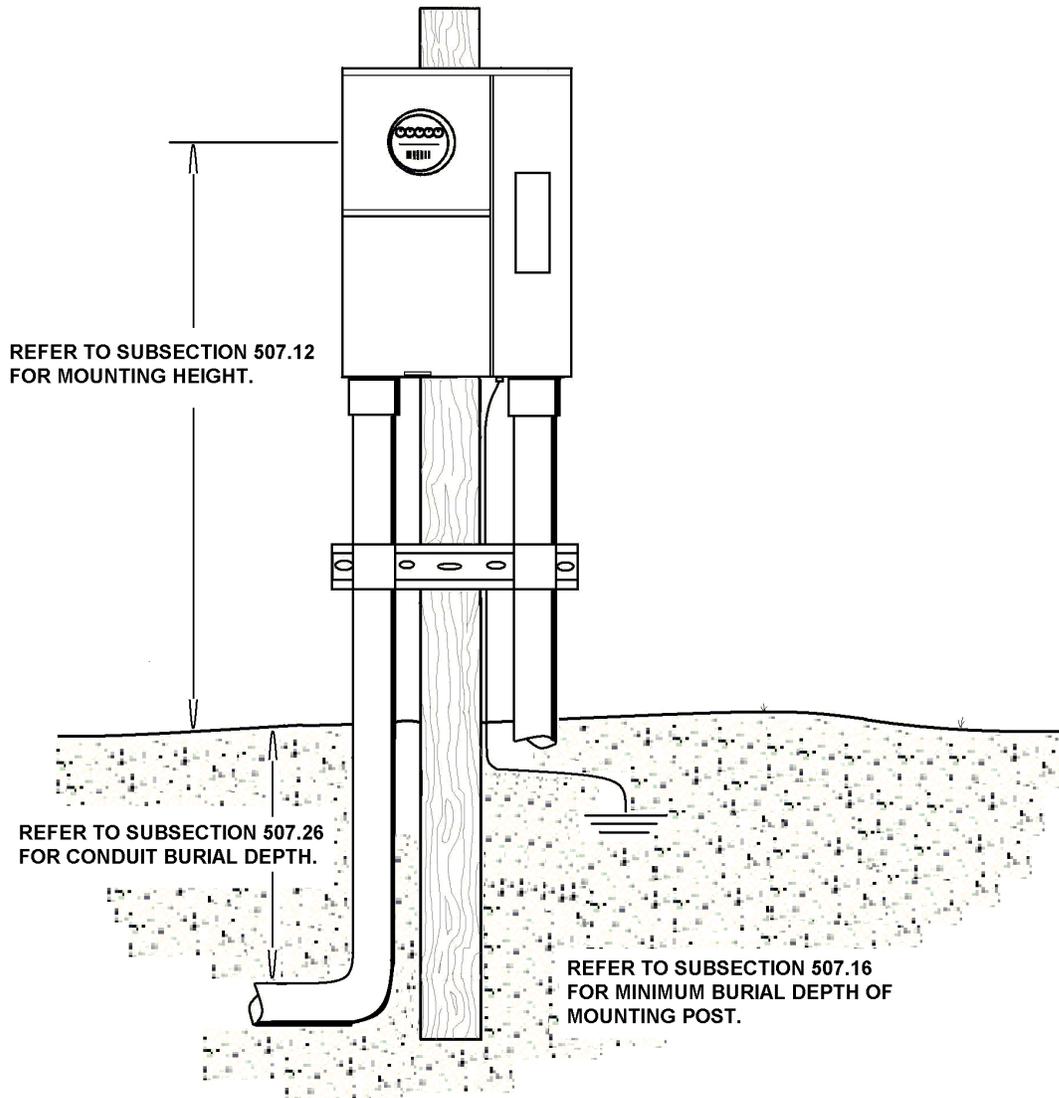


- 506.15 Service riser conduits for entry of the Utility's (line-side) service conductors into terminating pull sections or compartments shall include ninety (90) degree, twenty-four (24) inch minimum radius conduit elbows (rigid metal conduit only) to transition from the horizontal part of the conduit run to the vertical part of the conduit run.
- 506.16 The horizontal section of each service riser conduit shall extend out from the terminating pull section or compartment a minimum of twelve (12) inches and no more than forty-eight (48) inches from the pull section or compartment on which it is landed.
- 506.17 Except where otherwise specified in this book, the horizontal section of each service riser conduit shall be placed so that the top of the conduit is twenty-four (24) inches below finished grade. Within the Chugach service area the minimum burial depth is thirty (30) inches.

507 Underground Service, Post-Mounted, Up To 200 Amps

- 507.1 All applicable requirements and specifications from other sections of this book apply to these installation guidelines and specifications.
- 507.2 Post-mounted underground service installations may be configured as single position self-contained metering point 200 amps in service capacity.
- 507.3 The customer shall furnish and install an equipment mounting post or posts, meter panel, meter disconnect, and service riser conduit mounting provisions.
- 507.4 Where a single position meter installation is required, the applicable parts of Section 506 shall apply.
- 507.5 Single family residential service installations qualifying under ML&P Rate Schedule 11 (and Chugach's Tariff Residential Classification within the Chugach service area) shall use a residential combination meter panel and service disconnect meeting the requirements of Section 601. Within the Chugach service area non-typical residential service entrance locations require prior approval by Chugach. Service entrances at any location on the residential structure, other than within three (3) feet from the corner of the structure that is closest to the power source designated by Chugach are non-typical. Residential post mounted (remote) meter base installations require prior approval by Chugach of a location within thirty feet of the residence structure's typical service entrance location, outside of the utility easement and on the customer's property within the normal service alignment (based on the typical structure mounted meter location). A permanent sign (8" x 5" minimum) shall be attached to an unobstructed surface of the building nearest to the power source (the typical service location) and five to six feet above final grade. The sign shall be labeled "REMOTE ELECTRIC METER DISCONNECT located 00 ft south/north and 00 ft east/west". The installer shall substitute the actual distances and bearing directions (accurate to within five feet). The background color for the sign shall provide sufficient contrast with the siding color to be recognizable at a distance of ten feet in daylight and the lettering legible at three feet. Refer to 308.41 and 308.42 for additional signage requirements.
- 507.6 Commercial, industrial, and non-residential service installations rated 200 amps or less shall use a combination safety socket panel with test-block bypass and service disconnect meeting the requirements of Section 602. Within the Chugach service area non-residential post mounted service is required to be located within fifteen (15) feet, but no closer than ten (10) feet to the power source (the post mounted service location must be approved by Chugach Engineering in advance of installation).
- 507.8 Self-contained meter sockets used in post-mounted underground service applications shall meet the general requirements of Section 307.
- 507.11 Post-mounted underground service installations, both residential and commercial applications, shall meet the clearance and working space requirements of Section 303 and of Section 521.
- 507.12 **The preferred mounting height for post-mounted meter panels is fifty (50) inches.** The maximum mounting height for post-mounted meter panels is sixty-five (65) inches. The minimum mounting height for post-mounted meter panels is forty-two (42) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 507.13 The customer shall provide a single, un-spliced, self-supporting post or posts with a minimum diameter of six (6) inches and with a length sufficient to meet both minimum depth burial requirements and minimum meter socket height requirements.
- 507.14 Where wood posts are used, the wood shall be treated and rated for ground contact (factory pressure treated preservative).
- 507.15 Where steel posts are used, the steel shall be galvanized or have a similar approved coating to prevent corrosion. Where steel posts are used, the minimum diameter may be reduced to four (4) inches (steel posts must be capped).
- 507.16 The post shall be buried to a minimum depth of forty-eight (48) inches, backfilled and compacted sufficiently to insure that the post remains level and plumb after the meter and service conductors have been installed (steel posts require a concrete backfilled foundation).

507 Underground Service, Post-Mounted, Up To 200 Amps



THIS IS A TYPICAL DIAGRAM; IT IS NOT TO SCALE.

507 Underground Service, Post-Mounted, Up To 200 Amps

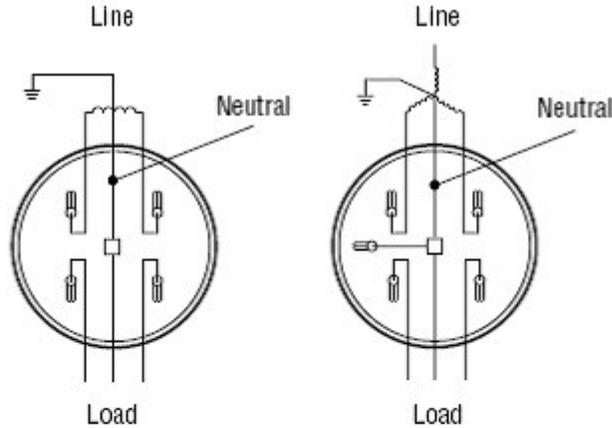
- 507.17 The single un-spliced post or posts shall extend at minimum to the top edge of the service equipment mounted upon it. The post or posts shall extend no more than eighteen (18) inches above the top edge of the service equipment mounted upon it.
- 507.18 Mounting provisions for meter panels, meter sockets, meter disconnects, multi-meter enclosures, CT cabinets, or wall-mounted pull boxes may be constructed of wood or steel. Where wood is used for equipment mounting, it shall be factory pressure preservative treated. Where steel is used for equipment mounting, it shall be galvanized or have a similar approved coating.
- 507.19 Post mounted service installations shall be constructed to provide service equipment support equivalent to that of wall-mounted equipment. Post mounted equipment that has excessive bending, bowing, flexing, or twisting **is not** acceptable and will not be approved.
- 507.20 Post-mounted underground service installations shall meet the applicable grounding and bonding requirements of Section 304. Where ground rods are used as part of the grounding electrode system, they shall be placed a minimum of thirty-six (36) inches from any the Utility underground conductors, pad mounted transformers, or poles.
- 507.21 The customer shall furnish and install service riser conduits for the Utility's (line-side) service conductors meeting the general requirements of Section 520.
- 507.22 Service riser conduits for all post-mounted service installations shall be rigid metal conduit. Liquidtight flexible metal conduit **shall not** be used in post-mounted service applications.
- 507.23 Service riser conduits shall be secured in place. Service riser conduits shall be anchored to the post or posts with a minimum of one (1) conduit strap or clamp (24-inch minimum clamp spacing).
- 507.24 Service riser conduits for entry of the Utility's (line-side) service conductors into terminating pull sections or compartments shall include ninety (90) degree, twenty-four (24) inch minimum radius conduit elbows (rigid metal conduit only) to transition from the horizontal part of the conduit run to the vertical part of the conduit run.
- 507.25 The horizontal section of each service riser conduit shall extend out from the terminating pull section or compartment a minimum of twelve (12) inches and no more than forty-eight (48) inches from the pull section or compartment on which it is landed.
- 507.26 Except where otherwise specified in these service requirements, the horizontal section of each service riser conduit shall be placed so that the top of the conduit is twenty-four (24) inches below finished grade. Within the Chugach service area the minimum burial depth is thirty (30) inches.
- 507.27 The Utility requires remote service post load centers to be labeled with a code designating the type of load: MC for miscellaneous loads not coded here, LS - sewage lift stations, LU - streetlighting, PS - water pump stations, RR - Railroad and TS - traffic signalization. The lettering shall be cut vinyl decals (3-M Scotchcal 220), embossed metal or engraved laminated plastic with a 3/4 - inch minimum letter height. The labeling requirement includes an ownership label (printed reflective decals are permitted with no letter height requirement other than legibility).

519 Meter Socket Connection Diagrams

Services Metered Using Direct-Connect Meters

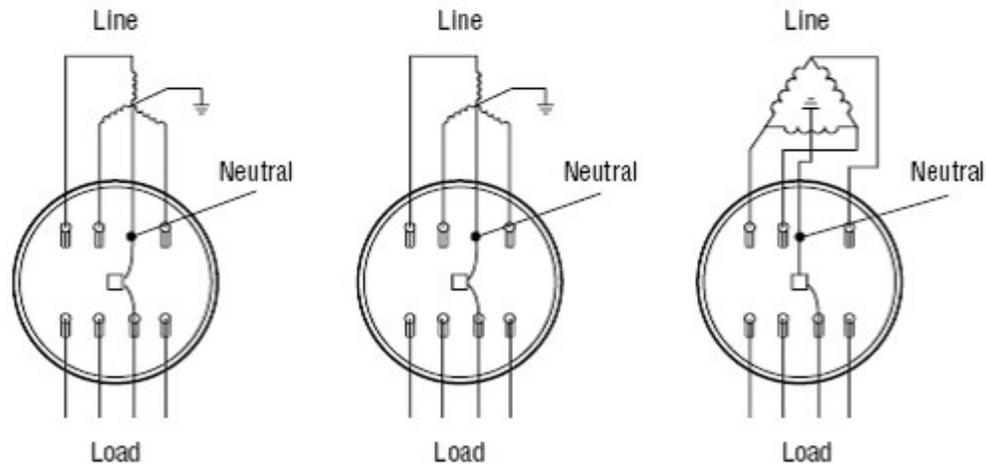
Services metered by direct-connect meters, are illustrated here.

For single-phase services:



120/240V and 240/480V 3-Wire 120/208V 3-Wire network

For three-phase services:



120/208V 4-Wire wye

277/480V 4-Wire wye

120/240V 4-Wire delta

The Utility does not permit new three-phase 120/240V, 240/480V delta services.

520 Service Riser Conduit Requirements

- 520.1 The installation guidelines and specifications of this section are general in nature and represent typical service applications. It is strongly recommended to consult with the Utility's Engineering Division for specific details regarding the size and number of conduits required for a particular installation. The Utility's Engineering Division may specify conduit sizes smaller or larger than the typical sizes specified in these general guidelines. The Utility's Engineering Division may also specify additional conduits as spares for certain installations.
- 520.2 All residential underground services rated 200 amps or less shall use liquidtight flexible metal conduit for the service riser. The liquidtight flexible metal conduit shall be at least two (2) inches inside diameter and shall extend a maximum of nine (9) feet.
- 520.3 All commercial, industrial, or non-residential underground services, rated 200 amps or less shall use rigid metal conduit at least two (2) inches inside diameter for the service riser.
- 520.4 Self-contained meter sockets for commercial application rated at 200 amps are capable of accepting conduit fittings up to a maximum of three (3) inches. However, the Utility does not stock 3-inch conduit or conduit fittings. Do not use 3-inch conduit or conduit fittings without written approval from the Utility.
- 520.5 All 3-phase, 4-wire, commercial, industrial, or non-residential underground service installations rated at 200 amps shall use rigid metal conduit two (2) inches inside diameter for the service riser.
- 520.7 All overhead service risers (service masts) shall use rigid metal conduit only and shall be a minimum of two (2) inches inside diameter.
- 520.9 The use of electrical metallic tubing and non-metallic conduit on the service riser is prohibited in general. The Utility may approve the use of non-metallic conduit in some applications. Refer to Subsection 520.11 below.
- 520.10 The use of intermediate metal conduit (IMC) as a service riser conduit is prohibited in general.
- 520.12 Service riser conduits for entry of the Utility's (line-side) service conductors into termination enclosures, or termination compartments shall include ninety (90) degree, twenty-four (24) inch minimum radius conduit elbows (rigid metal conduit only) to transition from the horizontal part of the conduit run to the vertical part of the conduit run.
- 520.13 Residential underground service installations rated at 200 amps or less using liquidtight flexible metal conduit for the service riser **shall not** include a ninety (90) degree rigid metal conduit elbow. Where liquidtight flexible metal conduit is used, the flexible metal conduit shall be formed to make the ninety (90) degree transition from horizontal to vertical.
- 520.14 The horizontal section of each service riser conduit shall extend out from the termination enclosure, or termination compartment, a minimum of twelve (12) inches and no more than forty-eight (48) inches from the enclosure, compartment, or cabinet on which it is landed.
- 520.15 Except where otherwise specified in this book, the horizontal section of each service riser conduit shall be placed so that the top of the conduit is twenty-four (24) inches below finished grade (within the Chugach service area the minimum burial depth is thirty (30) inches). Twenty-four (24) inches is the standard burial depth for ML&P's service conductors rated 480 volts or less, extending to customer's service equipment.
- 520.18 Service riser conduits for entry of the Utility's (line-side) service conductors into a switchboard service termination section shall have ninety (90) degree, 24-inch minimum radius conduit elbows (rigid metal conduit only) and each conduit shall extend out from the outside edge of the concrete pad a minimum of twelve (12) inches and a maximum of forty-eight (48) inches.
- 520.20 No condulets (LB's, LL's or LR's) may be used in the service riser conduit run for the Utility's (line-side) service conductors.
- 520.21 Except where otherwise specified in this book, no junction box may be used as part of the service riser conduit run for the Utility's (line-side) service conductors.

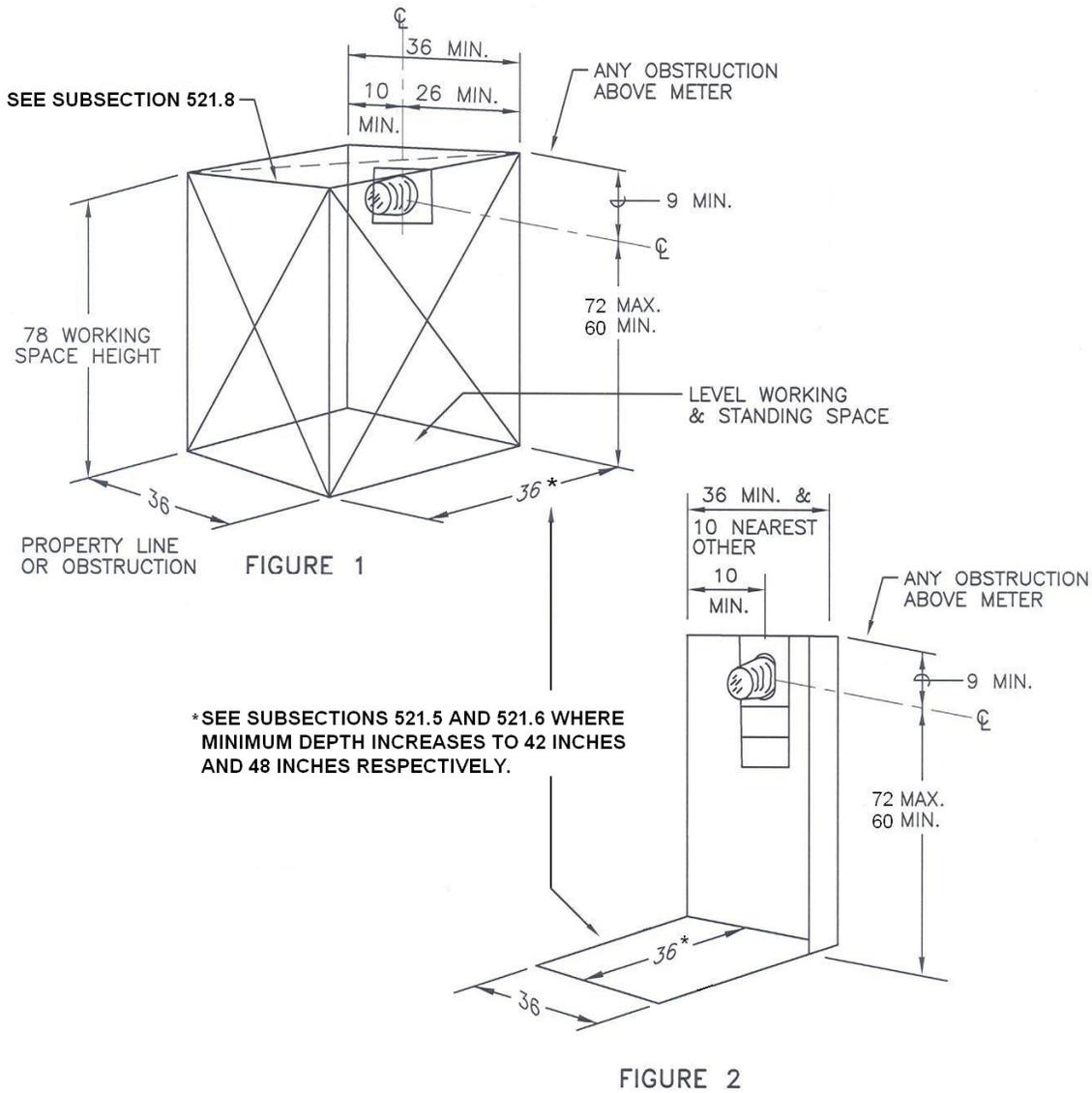
- 520.22 Service riser conduits shall be secured in place. Service riser conduits shall be anchored to the building or structure with a minimum of one conduit strap or clamp (24-inch minimum spacing).
- 520.23 Where customers have concerns regarding ground settlement or frost jacking, the Utility is willing to review detailed proposals for the installation of expansion fittings in the vertical section of the service riser conduit run where the conduit lands on fixed equipment. Approval for the use of expansion fittings in a service riser conduit will be in written form specific to the service location and customer proposal. To mitigate vertical riser displacement of flexible metal conduit installations one of the three connection methods is required: 1) an insulated grounding bushing with two 3-1/2" x 2" reducing washers, sandwiching the enclosure floor 2) a 4-bolt threaded hub or 3) an insulated grounding bushing with a 2-inch drilled hole through bottom of enclosure without a knockout provision.
- 520.24 A possible hazardous (classified) location exists in and around the Merrill Field airport complex and International East Subdivision (GAAB landfill). These are former landfill sites, and like any other landfill site, decomposing matter can and does produce many different gasses including nitrogen, oxygen, ammonia, sulfides, carbon monoxide, and methane. The Solid Waste Services department of the Municipality of Anchorage released a reminder memo dated January 1, 2010 regarding the hazardous gasses that may be present in the Merrill Field area. New or remodeled service installations in or near the Merrill Field complex and International East subdivision may be required to install explosion proof fittings on the vertical part of the service riser conduit run.
- 520.25 Refer to Section 508 regarding service riser conduit requirements for commercial service pedestals.

521 Working Space and Clearance Requirements

- 521.1 All metering and service equipment installations shall provide a suitable working space as defined in this installation guideline and specification and shall include an appropriate standing surface and width, depth, height, approach, and side clearance dimensions listed as follows:
- 521.2 **Standing Surface:** A suitable standing surface shall be provided and maintained in front of each metering and service equipment installation. A clear and unobstructed working space shall be provided above this surface. A suitable standing surface is defined as a properly supported concrete pad, asphalt pavement, steel plate, or compacted soil or gravel. The standing surface shall be level and shall have a non-skid walking surface.
- 521.3 **Working Space Width:** The width of the working space shall be at least as wide as the metering and service equipment and sufficient to permit ready access to the metering and service equipment and shall be a minimum of thirty-six (36) inches. A 36-inch horizontal separation, measured from the center of the nearest meter socket to the building access door hinge side, is required prevent a door from opening into the service entrance work space (door restraint devices are not acceptable to reduce the door swing radius and reduce this clearance requirement).
- 521.4 **Working Space Depth Up to 240 Volts:** The depth of the working space shall be a minimum of thirty-six (36) inches for services at 120/240 volts single-phase, 120/208 volts three-phase, and 120/240 volts three-phase.
- 521.5 **Working Space Depth Above 240 Volts:** The depth of the working space shall be a minimum of forty-two (42) inches for services at 240/480 volts single-phase and 277/480 volts three-phase. The depth of the working space is measured from the outer surface of the metering and service equipment.
- 521.6 **Working Space Depth, Other Electrical Equipment:** The depth of the working space shall increase to a minimum of forty-eight (48) inches for all services regardless of service voltage level where the outer surface of the metering and service equipment faces other metering and service equipment or other electrical equipment. The depth of the working space is measured from the outer surface of the metering and service equipment to the outer surface of other metering and service equipment or electrical equipment.
- 521.7 **Working Space Height:** The height of the working space shall be equal to the overall height of the metering and service equipment and in no case be less than seventy-eight (78) inches.
- 521.8 **Approach Height:** The approach and/or path to the metering and service equipment shall have a minimum height of seventy-eight (78) inches and a minimum width of thirty-six (36) inches.

- 521.9 **Walking Surface:** The approach and/or path to the metering and service equipment shall have a non-skid walking surface free of obstacles.
- 521.10 **Side Clearance Requirement:** The working space around the meter socket shall include a minimum of ten (10) inches from the centerline of the meter socket opening to the nearest side wall or other obstruction. **This minimum ten (10) inch side clearance requirement extends to both sides of the meter.**
- 521.11 The working space around the meter socket shall include a minimum of nine (9) inches from the centerline of the meter socket opening to any obstruction above the meter.
- 521.12 Where a cabinet or compartment door or cover swings on hinges, the door or cover shall swing a minimum of ninety (90) degrees and there shall be a minimum of twenty-four (24) inches from the edge of the extended door or cover to any wall, barrier, or obstruction for means of escape.
- 521.13 Refer to Section 302 for details regarding metering and service equipment location requirements.
- 521.14 Refer to Section 303 for details regarding side clearance and meter socket height requirements.

521 Working Space and Clearance Requirements



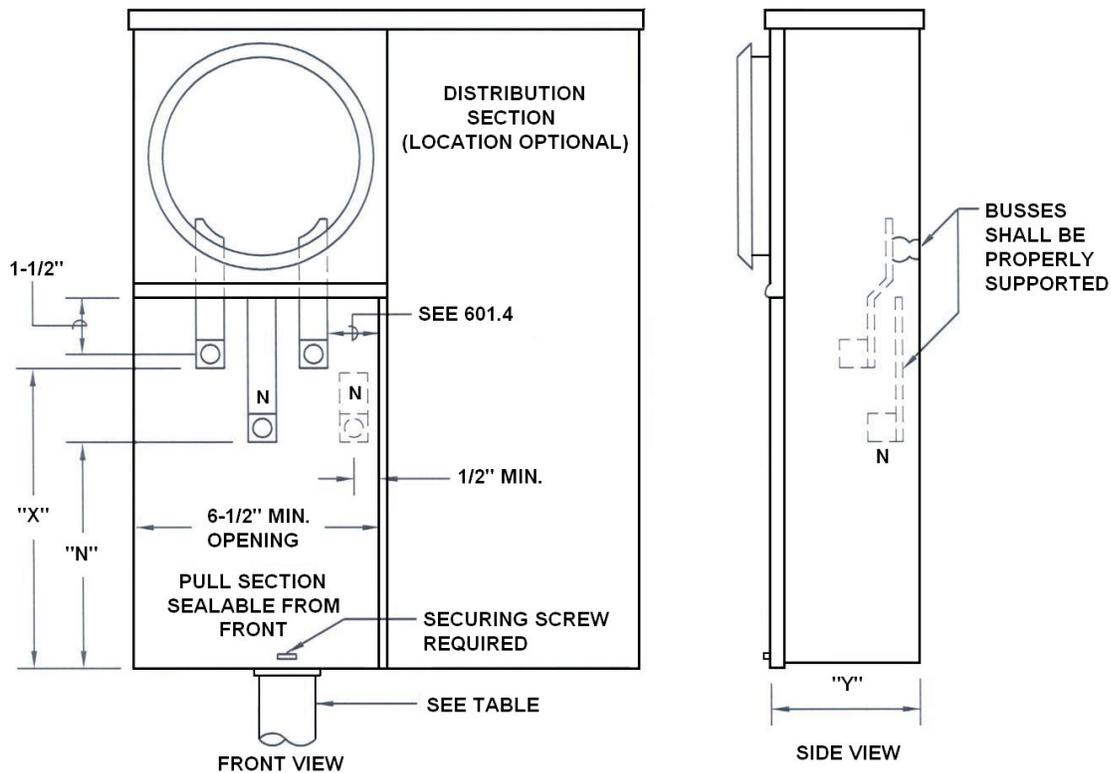
ALL DIMENSIONS SHOWN ARE IN INCHES

SECTION 600 - SERVICE EQUIPMENT SPECIFICATIONS

601 Residential Combination Meter Panel and Service Disconnect

- 601.1 This equipment may be constructed for underground service supply or as a combination panel allowing either overhead or underground service supply applications.
- 601.2 Only one set of terminating facilities shall be provided and located as shown in the following diagram for both underground and overhead service supply applications. The terminating facilities for the service conductors shall be aluminum bodied mechanical lugs with a range of No. 6 AWG through 1/0 AWG for a 125 ampere panel and No. 4 AWG through 250 KCMIL for a 225 ampere panel.
- 601.3 A bonding screw or jumper shall be provided if the neutral terminal is insulated from the enclosure.
- 601.4 A minimum radial clearance of one and one-half (1-1/2) inches shall be provided between the hot bus terminals, hot bus and ground, and hot bus and neutral surfaces. The clearance from the hot bus to the back of the enclosure may be reduced to one (1) inch.
- 601.5 For residential service applications, meter sockets shall have a maximum ampacity rating not less than the ampacity rating of the associated service disconnect. The maximum ampacity rating is 125% of the continuous-duty rating. Within the Chugach service area a minimum meter socket rating of 200 amperes is required for all underground feed services to residential combination meter panels.
- 601.6 The maximum ampacity rating of the service disconnect device used in a residential combination meter panel shall be 225 amperes. Meter panels with 250-amp rated breakers **are not** acceptable.
- 601.7 The Utility does not specify short circuit current ratings for meter disconnect or service disconnect devices. It is the responsibility of the designer and/or installer of the equipment to evaluate and install a device with an AIC rating appropriate for the circumstances.
- 601.8 Meter panels used in underground service applications shall have a separate panel cover for the meter socket section and a separate panel cover for the service conductor termination section. The Utility prohibits the use of meter panels with a single common cover panel for both the meter socket section and the service termination section.
- 601.9 All meter panel covers for compartments or sections containing un-metered conductors shall be sealable or lockable and shall meet the requirements of Section 305.
- 601.10 Single Position Wall-Mounted Meter Panels: **The preferred mounting height for single position wall-mounted meter panels is sixty-five (65) inches.** The maximum mounting height for single position wall-mounted meter panels is seventy-two (72) inches. The minimum mounting height for single position wall-mounted meter panels is sixty (60) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 601.11 **The preferred mounting height for post-mounted meter panels is fifty (50) inches.** The maximum mounting height for post-mounted meter panels is sixty-five (65) inches. The minimum mounting height for post-mounted meter panels is forty-two (42) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 601.12 Residential combination meter panel and service disconnect devices shall meet the applicable requirements of Section 307.
- 601.13 The Utility does not recognize or accept the term "farm panel".
- 601.14 This service equipment specification is similar to EUSERC Drawing 301. Within the Chugach service area the 200A meter panel minimum dimensions for the utility (line) side compartment are 7-inches wide, 16-inches high, 5-1/2-inches deep with an 11-inch terminal height.

601 Residential Combination Meter Panel and Service Disconnect



MAXIMUM AMPACITY	"X" MIN. DIM.	"N" MIN. DIM.	"Y" MIN. DIM.	CONDUIT RANGE
125	8"	6"	4"	1-1/4" TO 2-1/2"
225	11"	8-1/2"	5"	1-1/2" TO 3"

SEE 601.5 FOR DETAILS REGARDING MAXIMUM AMPACITY RATINGS AND CONTINUOUS-DUTY RATINGS.

SEE 601.6 FOR MAXIMUM ALLOWABLE AMPACITY RATING OF THE SERVICE DISCONNECT DEVICE.

ALL DIMENSIONS SHOWN ARE IN INCHES.

Within the Chugach service area the 200A meter panel minimum dimensions for the utility (line) side compartment are 7-inches wide, 16-inches high, 5-1/2-inches deep with an 11-inch "X" and "N" terminal height.

602 Combination Safety Socket Panel with Test-Block Bypass and Service Disconnect

- 602.1 The meter panel shown on the next page is typical with the customer's distribution section located to the side of the metering compartment. The distribution section may also be located below the test-block bypass compartment on meter panels configured for overhead supply only.
- 602.2 The meter socket shall be mounted on a rigid support and attached to the meter socket panel.
- 602.3 All panels shall be removable without disturbing adjacent panels.
- 602.4 Minimum test-block bypass compartment access opening dimension shall be as shown in the minimum dimensions table on the following page.
- 602.5 Test-block bypass facilities with rigid insulating barriers shall be furnished installed, and bussed or wired to the meter socket by the manufacturer as follows:
- a) For single-phase, 3-wire, provide two test-blocks with bypasses mounted in the outer positions and a 4-jaw socket. For 120/208 volts, single-phase 3-wire (network) provide two test-blocks with bypasses mounted in the outer positions and a 5-jaw socket connecting the 5th jaw of the socket to the neutral lug with a white No. 12 AWG (minimum size) copper wire.
 - b) For 3-phase, 3-wire, provide three test-blocks with bypasses and a 5-jaw socket. Connect the line and load poles together at the top of the center position test-block with bypass by means of a bus section and connect the bus to the 5th jaw of the socket with a No. 12 AWG (minimum size) copper wire. Color used to identify the wire shall not be white, gray, green, or orange.
 - c) For 3-phase, 4-wire, provide three test-block bypasses and a 7-jaw socket. Connect the 7th jaw of the socket to the neutral lug with a white No. 12 AWG (minimum size) copper wire. For 120/240 volt, 4-wire delta, the right hand test-block bypass shall be the power leg (measures 208 volts to ground) and shall be identified with an orange color.
 - d) Test-block bypass connection sequence shall be LINE-LOAD from left to right and shall be clearly identified in three-quarter (³/₄)-inch minimum size block letters.
 - e) Cable terminals shall be aluminum-bodied mechanical lugs with a range from No. 6 AWG through 1/0 AWG for 100 ampere rated test-block bypasses and from No. 1/0 AWG through 250 KCMIL for 200 ampere rated test-block bypasses.
- 602.6 There shall be a one and one-half (1-1/2)-inch (minimum separation) dimension measured from the compartment side to the test-bypass block rigid insulating barrier.
- 602.7 There shall be a three (3)-inch (minimum separation) dimension measured from the upper test connector stud (stud "A") to the meter socket cover.
- 602.8 The neutral terminal may be provided as follows:
- a) A single mechanical lug or lay-in lug, located on either side or side wall. The lug shall be mounted on a neutral bus bar extending into, and terminating in the customer section.
 - b) Two mechanical lugs or lay-in lugs, located on either side or side wall. The neutral conductor provided from one of the lugs to the neutral bus in the customer section may be factory or field installed.
 - c) For overhead supply only, a single insulated, bondable, vertical, lay-in lug located on either side or side wall with the neutral conductor installed unbroken through the lug and terminating on the neutral bus in the customer section.
- 602.9 Knockouts for the service supply conduit may be cut in the locations shown at the top of the panel.

602 Combination Safety Socket Panel with Test-Block Bypass and Service Disconnect

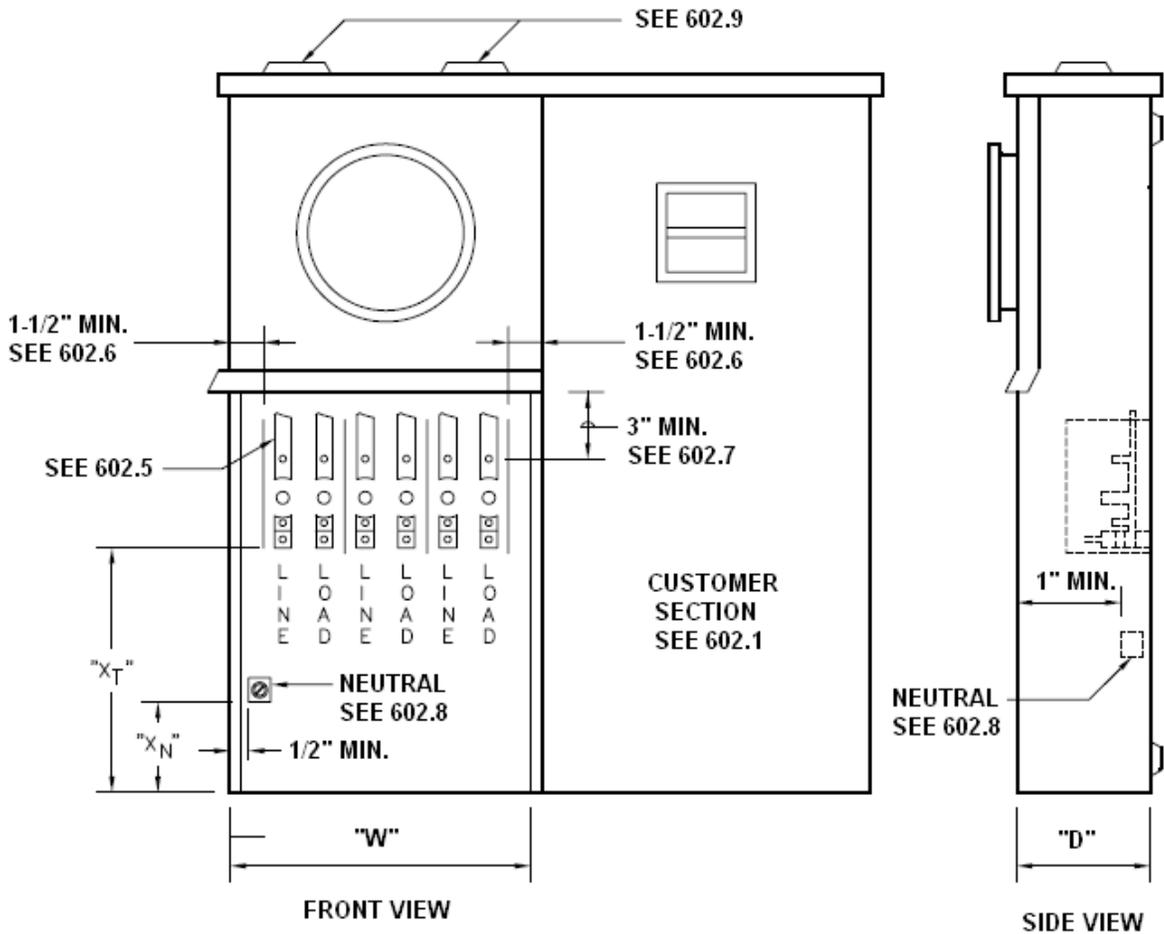


TABLE - MINIMUM DIMENSIONS

PANEL TYPE	PANEL RATING ¹ (AMPERES)	"D"	"W" SEE 602.4	"X _T "	"X _N "
STANDARD	100	4-1/2"	11-1/2"	8"	5"
HEAVY-DUTY	200	6"	13-1/2"	11"	8"

¹CONTINUOUS-DUTY

ALL DIMENSIONS SHOWN ARE IN INCHES

602 Combination Safety Socket Panel with Test-Block Bypass and Service Disconnect

- 602.10 The Utility does not specify short circuit current ratings for meter disconnect or service disconnect devices. It is the responsibility of the designer and/or installer of the equipment to evaluate and install a device with an AIC rating appropriate for the circumstances.
- 602.11 Safety socket panels with factory installed test-block bypass facilities configured without an integral service disconnect may be used provided that a suitable meter disconnect meeting the requirements of Section 306 is included as part of the service installation.
- 602.12 All access panels for compartments or sections containing un-metered conductors shall be sealable or lockable and shall meet the requirements of Section 305.
- 602.13 Single Position Wall-Mounted Meter Panels: **The preferred mounting height for single position wall-mounted meter panels is sixty-five (65) inches.** The maximum mounting height for single position wall-mounted meter panels is seventy-two (72) inches. The minimum mounting height for single position wall-mounted meter panels is sixty (60) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 602.14 **The preferred mounting height for post-mounted meter panels is fifty (50) inches.** The maximum mounting height for post-mounted meter panels is sixty-five (65) inches. The minimum mounting height for post-mounted meter panels is forty-two (42) inches. Mounting height is measured from the centerline of the meter socket opening to the finished grade or standing surface immediately in front of the meter.
- 602.15 Combination safety socket panels with test-block bypass facilities and service disconnects shall meet the applicable requirements of Section 307.
- 602.16 This service equipment specification is similar to EUSERC Drawing 305A.

APPENDICES

Meter Socket Quick Reference Guide - Self-Contained Single-Phase For All Underground Residential Services Rated up to 100 Amps

4-Terminal, Single-Phase, 3-Wire, 120/240 Volts, 100 Amp Rated

e.g. - Similar or equal to Cooper B-Line U1M1R (residential only) (1M1R in Chugach service area)

e.g. - Similar or equal to Cooper B-Line U1M1RP (residential only) (1M1RP in Chugach service area)

e.g. - Similar or equal to Milbank U3585-O-100 (residential only)

e.g. - Similar or equal to Siemens MM0406L1125SEC (residential only)

Notes:

1. All residential combination meter panels installed in the Utility's service area shall meet the requirements of Section 601. The products listed above were known to meet this service equipment specification at the time of publication of the Utility's 2015 Electric Service Requirements. Within the Chugach service area 100 amp rated meter panels are not approved for underground feed services (the OH version of the listed equipment is acceptable for overhead service installations outside of the MOA underground surcharge area only).
2. The Utility does not specify AIC ratings for meter panel and service disconnects. The Utility considers determination of AIC ratings of these meter panel and service disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the circumstances.
3. The catalog numbers listed above typically represent the lowest available AIC rating for a particular product.

APPENDICES

Meter Socket Quick Reference Guide - Self-Contained Single-Phase For All Underground Residential Services Rated up to 200 Amps

4-Terminal, Single-Phase, 3-Wire, 120/240 Volts, 200 Amp Rated

e.g. - Similar or equal to Cooper B-Line U2M2R (residential only)

e.g. - Similar or equal to Cooper B-Line U2M2RP (residential only)

e.g. - Similar or equal to Milbank U3584-O-200 (residential only)

e.g. - Similar or equal to Milbank U3585-O-2/100 (residential only) (Not approved at Chugach)

e.g. - Similar or equal to Milbank U3665-O-200 (residential only) (Not approved at Chugach)

e.g. - Similar or equal to Siemens MM0406L1200SEC (residential only)

Notes:

1. All residential combination meter panels installed in the Utility's service area shall meet the requirements of Section 601. The products listed above were known to meet this service equipment specification at the time of publication of the Utility's 2015 Electric Service Requirements. Within the Chugach service area a supplemental list of acceptable meter panels that don't meet the minimum dimensional requirements (refer to subsection 601.14) but were evaluated and approved for use is available at www.chugachelectric.com or the Chugach Engineering Division.
2. The Utility does not specify AIC ratings for meter panel and service disconnects. The Utility considers determination of AIC ratings of these meter panel and service disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the circumstances.
3. The catalog numbers listed above typically represent the lowest available AIC rating for a particular product.

APPENDICES

Meter Socket Quick Reference Guide - Self-Contained Single-Phase

For All Commercial, Industrial, and Non-Residential Services

4-Terminal, Single-Phase, 3-Wire, 120/240 Volts

For 100 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U214MTB.

e.g. - Similar or equal to Milbank Cat. No. U214MTB.

For 200 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U224MTB.

e.g. - Similar or equal to Milbank Cat. No. U224MTB.

4-Terminal, Single-Phase, 3-Wire, 480 Volts

For 100 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U214MTB-MS-15.

e.g. - Similar or equal to Milbank Cat. No. U214MTB-48.

For 200 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U224MTB-MS-15.

e.g. - Similar or equal to Milbank Cat. No. U224MTB-48.

Notes:

1. All combination safety socket panels with factory installed test-block bypass facilities and service disconnects installed in the Utility's service area shall meet the requirements of Section 602. The products listed above were known to meet this service equipment specification at the time of publication of the Utility's 2015 Electric Service Requirements.
2. The Utility does not specify AIC ratings for meter panel and service disconnects. The Utility considers determination of AIC ratings of these meter panel and service disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the circumstances.
3. The catalog numbers listed above typically represent the lowest available AIC rating for a particular product.

APPENDICES

Meter Socket Quick Reference Guide - Self-Contained Network For All Commercial, Industrial, and Non-Residential Services

5-Terminal, Network, 3-Wire, 120/208 Volts

For 100 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U214MTB with Cat. No. 50371 5th jaw kit.

e.g. - Similar or equal to Milbank Cat. No. U214MTB with Cat. No. 105J 5th jaw kit.

For 200 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U224MTB with Cat. No. 50371 5th jaw kit.

e.g. - Similar or equal to Milbank Cat. No. U224MTB with Cat. No. 105J 5th jaw kit.

Notes:

1. All combination safety socket panels with factory installed test-block bypass facilities and service disconnects installed in the Utility's service area shall meet the requirements of Section 602. The products listed above were known to meet this service equipment specification at the time of publication of the Utility's 2015 Electric Service Requirements.
2. The Utility does not specify AIC ratings for meter panel and service disconnects. The Utility considers determination of AIC ratings of these meter panel and service disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the circumstances.
3. The catalog numbers listed above typically represent the lowest available AIC rating for a particular product.

APPENDICES

Meter Socket Quick Reference Guide - Self-Contained Three-Phase

For All Commercial, Industrial, and Non-Residential Services

7-Terminal, Three-Phase, 4-Wire, 120/208 Volts

For 100 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U217MTB.

e.g. - Similar or equal to Milbank Cat. No. U217MTB.

For 200 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U227MTB.

e.g. - Similar or equal to Milbank Cat. No. U227MTB.

7-Terminal, Three-Phase, 4-Wire, 277/480 Volts

For 100 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U217MTBMS15.

e.g. - Similar or equal to Milbank Cat. No. U217MTB-48/22.

For 200 amp Services

e.g. - Similar or equal to Cooper B-Line Cat. No. U227MTBHMS15.

e.g. - Similar or equal to Milbank Cat. No. U227MTB-48/22.

Notes:

1. All combination safety socket panels with factory installed test-block bypass facilities and service disconnects installed in the Utility's service area shall meet the requirements of Section 602. The products listed above were known to meet this service equipment specification at the time of publication of the Utility's 2015 Electric Service Requirements.
2. The Utility does not specify AIC ratings for meter panel and service disconnects. The Utility considers determination of AIC ratings of these meter panel and service disconnect devices to be the responsibility of the designer and/or installer. The Utility expects and requires the designer and/or installer of the equipment to evaluate a given electric service installation and install a disconnect device with an AIC rating appropriate for the circumstances.
3. The catalog numbers listed above typically represent the lowest available AIC rating for a particular product.