LAKE CITY UTILITIES

ELECTRIC SERVICE
RULES AND REGULATIONS

Revised 2011

INTRODUCTION

Lake City Utilities (hereafter referred to as LCU) has assembled this booklet to assist its customers and their architects, engineers, or electrical contractors to plan for and obtain prompt and satisfactory electric service. Reviews will be made every other year with publication of revisions, if required.

The information presented here is intended to supplement the requirements of the National Electrical Code; National Electrical Safety Code; Minnesota Electrical Code and all other applicable federal, or state, and municipal codes, regulations, laws and ordinances. It is always necessary to refer to and comply with such other codes, regulations, laws, and ordinances when planning, designing, and installing a new electrical service. Specific requirements of LCU do not intentionally conflict with any other requirements known to be in effect as of the publication date of this booklet. Any apparent conflicts of this nature should be brought to the attention of LCU for interpretation.

LCU wishes to serve its customers promptly and satisfactorily. It will endeavor to cooperate with customers and their authorized representatives to the fullest extent in completing service connections with as little delay and inconvenience as possible, and will gladly give special attention to any particularly difficult situation confronting a customer.

LCU will be happy to confer with those customers desiring information concerning rates, services, etc., upon request by telephone or otherwise.

These rules and regulations are available on the LCU web site www.ci.lake-city.mn.us Contact LCU for more details.

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DEFINITIONS

Application for Service: The agreement or contract between LCU and the Customer under which electric service is supplied and taken.

Accessible: Admitting close approach and not guarded by locked doors, elevation, or other effective means including any portion of a temporary or permanent structure.

Approved: Acceptable to the authority having jurisdiction.

Connected Load: The combined manufacturer's rated capacity of all motors and other electric energy consuming devices on the Customer's premises which may, at the will of the Customer, be operated with the electric energy to be supplied from the service of LCU.

Customer: Any individual, partnership, corporation, or other legal entity now being served or to be served, using the electric service of LCU at any specified location.

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

Disconnection Means: A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

Distribution Lines: LCU's lines located along streets, alleys, highways, or easements on private property, when used or intended for use for general distribution of electric service to Customers of LCU.

Dwelling:

> **Dwelling Unit:** One or more rooms for the use of one or more persons as a housekeeping unit with space for eating, living and sleeping, and permanent provisions for cooking and sanitation.
>
> **Multi-Family Dwelling:** A building containing three or more dwelling units.
>
> **One-Family Dwelling:** A building consisting solely of one dwelling unit.
>
> **Two-Family Dwelling:** A building consisting solely of two dwelling units.

Electric Service: The availability of electric power and energy, regardless of whether any electric power and energy is actually used. The supplying of electric service by LCU consists of the maintaining, at the point of delivery, approximately the agreed voltage, phase and frequency by means of facilities adequate for carrying the load that LCU is thereby obligated to supply by reason of the known requirements.

Fault Current: The current that will flow through the system to a point where a piece of equipment or a conductor has failed, such as bare conductors touching together or a bare conductor touching a ground point.

Meter Set: An instrument or instruments, together with auxiliary equipment, for measuring the electric power and energy supplied to a Customer.

National Electrical Code: The current edition of the National Electrical Code as issued by the National Fire Protection Association (NFPA No. 70).

National Electric Safety Code: The current edition of the National Electric Safety Code as issued by the American National Standards Institute (ANSI C2).

Overhead Distribution Areas: The area or areas served by LCU's overhead distribution system as differentiated from the underground systems.

Points of Delivery: The point where the electric energy first leaves the line or apparatus owned by LCU and enters the line or apparatus owned by the Customer unless specified in the Customer's Agreement for Service. This is not necessarily the point of location of LCU's meter.

LCU: Lake City Utilities.

Rate Schedule Classification: The classification of the use of electricity into categories considering the amount of power supplied and the purpose of its use.

Secondary Terminal: The secondary side of a pad mounted transformer, a secondary terminal box at the base of a riser pole, or a secondary junction box, whichever is designated by LCU.

Service: The conductors and equipment for delivering energy from LCU's system to the wiring system of the Customer.

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

Service Entrance Conductors, Overhead System: The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.

Service Entrance Conductors, Underground System: The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

Service Equipment: The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

Service Lateral: The underground service conductors from LCU's distribution system, including any risers at a pole or other structure or from transformers, to the first point of connection with the service entrance conductors in a terminal box or meter or other enclosures with adequate space, inside or outside the building wall. Where there is no terminal box, meter, or other enclosure with adequate space, the point of connection shall be considered to be the point of entrance of the service conductors into the building.

Type of Service: The characteristics of electric service described in terms of frequency, phase, nominal system voltage and number of wires.

> **Primary Service:** Any type of service with a nominal voltage greater than 600 volts.
>
> **Secondary Service:** Any type of service with a nominal voltage less than or equal to 600 volts.

Underground Residential Distribution (URD) Areas: Those residential subdivisions or other specified areas within which all customers are served by underground distribution lines.

Utility: For the purpose of this document any public, city, or city-franchised organization that furnishes electric service.

Voltage (Of a Circuit): The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

Voltage, Nominal: The value, expressed in volts, which is assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 280Y/120, 480Y/277, 600, etc.). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

Voltage to Ground: For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for underground circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

SECTION 200

GENERAL INFORMATION

201 Service Jurisdiction

LCU has been established by the City of Lake City for the purpose of providing electricity to the residents of the City. LCU also provides electricity to residents outside of the City limits but within the service area boundaries established by the State of Minnesota. Service will be provided to all eligible applicants only when all applications, agreements, easements, deposits, payments, and other required information has been provided to LCU.

202 Application for Service

Application for new, additional, or temporary electric service must be made by the Customer, or a designated representative, to Lake City Utilities, 205 W Center St, Lake City MN 55041, in person or by FAX (651-345-3208). At the time of application, the Customer will be required to provide, in writing on the form(s) provided, information relating to the service request, including the following:

(1) Exact location of premises to be served including building street address, apartment or unit number if applicable, lot and block numbers and name of subdivision.

(2) The type of service desired (e.g. temporary, permanent, residential subdivision, dwelling unit, commercial, industrial, rewire, etc.).

(3) The approximate date that electric service is required.

(4) The name, address and telephone number of the Customer's designated representative who will be responsible for working with LCU representatives in providing the electric service (e.g. customer employee, engineer, contractor).

(5) Commercial Services'---Electrical Load Data Statement specifying the type of service required by the Customer and expected magnitudes of connected and peak load. Additional data in the form of construction drawings and the proposed service entrance may also be necessary for LCU to adequately determine the capacity and arrangement of service to the Customer. The statement must be received by LCU before a work order for the project can be issued and the necessary planning and design of the project can begin.

LCU should be advised of planning installations as early as possible so that details for furnishing service may be arranged and construction completed by the desired date. Blank application forms and additional information may be obtained by contacting LCU's Customer Service Representative at 651-345-5383.

See Section 206 for connections and disconnections to existing services.

203 Ownership of Equipment 203.1 LCU-Owned

Equipment

The meter and associated metering equipment furnished or installed by LCU are the property of LCU.

(1) Overhead Service—In addition to the metering equipment, the overhead service drop installed by LCU is the property of LCU.

(2) Underground Service—In addition to the metering equipment, all equipment up to and including the designated secondary terminal installed by LCU is the property of LCU. (The secondary terminal could be the secondary terminal of a pad mounted transformer, or a secondary junction box.) Unless service is taken at primary voltage or otherwise specified by written agreement, all conductors and equipment operating at nominal voltages in excess of 600V are the property of LCU.

203.2 Customer-Owned Equipment

The meter socket, instrument transformer compartment (if required, see Section 610), the service entrance conductors and conduit from the meter socket to the service entrance disconnect, the service entrance switch or circuit breaker and the service entrance ground equipment and the concrete transformer pad are the property of the Customer.

(1) Overhead Service—In addition to the equipment on the Customer side of the meter socket, the service drop wire holder or bracket, the weather-head and either the service mast and conduit with entrance wires or the service entrance cable with watertight connection to the meter socket are the property of the Customer.

(2) Underground Service—In addition to the equipment on the Customer side of the meter, all conduit and cable required to extend the secondary service lateral from LCU's secondary terminals to the meter socket are the property of the Customer.

The Customer is responsible for the installation, maintenance, repair, and replacement of the electric service equipment which each owns.

204 Easements

Whenever any LCU-owned underground and/or overhead material and equipment is located on or above the Customer's property, the Customer shall grant an easement to LCU to the extent which LCU deems necessary. (This does not include secondary service drops or service laterals.) All utility easements required by LCU are to be granted by the Customer at no cost to LCU. The Customer must provide a legal description by a Registered Land Surveyor. The easement will be signed and recorded by LCU.

205 Inspection of Customer's Facilities

205.1 As a minimum, wiring and electrical equipment of the Customer, shall be installed in accordance with the latest edition of the Minnesota Electrical Code.

205.2 Wiring installations located within the Lake City city limits, including temporary installations, must be inspected and approved by an authorized State Electrical Inspector. LCU will make connection only after approval by the authorized inspecting authority. The inspector is required by Minnesota Statutes Section 326.244 to disconnect or have disconnected by the utility any installation that is declared by the inspector to be unsafe and a hazard.

205.3 Underground Service Installation. Electrical contractors are requested to contact LCU when they call for inspection of residential service conductors with the trench open. If inspection points are used rather than an open trench, the contractor is requested to have one of the inspection points by the LCU point of service. This is done to facilitate prompt installation of cable into the secondary pedestal or transformer and avoid damage to the service conductors, <u>especially</u> for fall and winter installations.

205.4 Customers living outside the Lake City city limits and requesting service from LCU must have their wiring inspected by a state inspector. LCU will make connection before authorization from the state inspector only if the master electrician who installed or supervised the installation agrees in writing to be responsible for said wiring until such time

that it can be inspected and approved by the state inspector ("Certificate for Connection by Utility").

206 Service Connection, Disconnection, and Reconnection

After the Customer's installation has been inspected and approved by the proper authority, a meter will be installed by LCU and the electric service made available provided that all applications, agreements, and deposits have been submitted by the Customer and approved by LCU. Written or faxed inspection notices must be received by LCU no later than 3:00 p.m. of the day preceding the date that connection is desired (weekends and holidays excluded). LCU office is located at 205 W Center St, Lake City, MN.

Customer Service fax number is (651-345-3208). Under special circumstances, verbal inspections will be accepted as long as written inspection documentation is submitted immediately thereafter.

Customer requests for disconnection or reconnection of existing services must be received by LCU at least 24 hours in advance of the desired time of disconnection or reconnection (weekends and holidays excluded). For the mutual protection of the Customer and LCU, only authorized employees of LCU are permitted to set and remove meters, or to make and energize or break and de-energize the connection between LCU's service drop or secondary terminals and the Customer's service entrance conductors or secondary laterals.

207 Liability

LCU does not engage in the practice of doing interior wiring on Customer's premises except for the installation and maintenance of its own property, and therefore is not responsible for service beyond the point of delivery. LCU shall not be liable for damage to any Customer or to any third party resulting from the use of the service or from the presence of LCU's appliances or equipment on the Customer's premises.

The Customer is solely responsible for any accidents, fires or failures resulting from the condition and use of his wiring installation or equipment.

208 Service Interruptions

LCU reserves the right to interrupt service at any time. Interruptions for maintenance and system improvements will be prearranged and advance notice will be given to the Customer whenever practical.

LCU will not be responsible for consequential damages resulting from service interruptions, fluctuations outside its control, or from operations in response to abnormal system conditions. Customers requiring service reliability and/or stability exceeding LCU's normal service should consider uninterruptible power supplies, isolation transformers, power conditioners, redundant services, or other options to provide the level of service needed. LCU's staff (651-345-4711 Ext 201) is available to discuss such needs.

209 Access

Employees of LCU shall have the right of access to the Customer's premises at all reasonable times for the purpose of installing, reading, inspecting, maintaining, or removing any of its meters, devices, or other equipment which is used in connection with the furnishing of the Customer's electric service.

210 Customer Responsibility

Failure of the Customer to notify LCU in a timely manner of any planned alteration to electric service facilities or increased electrical load, and failure to comply with LCU's published rules, regulations, and rate schedules may result in delayed connections, interruption of service, or damage to equipment, for which LCU disclaims all responsibility

211 Revisions of Requirements

All requirements stated or implied herein are subject to change at any time without prior notice. All revisions can be obtained from LCU's Customer Service Representative.

SECTION 300

RATES, CONNECTION CHARGES, AND CREDIT POLICY

301 Rate Schedule Classification

Electric service is supplied to Customers under various rate schedule classifications as determined by the type of service, the amount of electric power supplied, and the purpose for which the electric service is to be used.

302 Payment

LCU will, insofar as possible, read all meters every month and bill the Customer for service used during the period. Payment of the bill is due on the date noted on the bill.

If the meter cannot be read during a billing period, or the reading seems erroneous, an estimate will be made for that billing period. Adjustments to bills resulting from inaccuracies in the meters will be handled in the manner described in paragraph **608 Meter Testing**.

303 Customer Charge

There is a customer charge for each meter/service provided. The amount of this customer charge will vary based on the type and number of services provided.

304 New Underground Service Connection Charge

LCU will charge an underground service connection charge for the extension and connection of new underground electrical service to any single-family home, town home, condominium, duplex or triplex located within LCU's service territory. The amount of the charge can be obtained from a Customer Service Representative.

304.1 Service Connections

There will be no charge for connections to existing services during LCU's normal working hours. If connection must be made outside of normal working hours at the request of the Customer, a special connection charge will be assessed. The charge for such work can be obtained from the Customer Service Representative.

305 Service Disconnection/Reconnection

LCU may disconnect a Customer's service, with notice, for any of the following reasons:

- Nonpayment of billings or issuance of non-negotiable check
- Nonpayment of a deposit or other charges/fees
- Failure to meet credit requirements
- Failure to provide access to LCU owned metering equipment

Without notice, the Customer's service may be disconnected for:

- A condition determined to be hazardous--to the Customer; to other customers or to LCU.
- Unauthorized use of electricity, water, or equipment belonging to LCU.

In the event service has been disconnected for a valid cause, the Customer will be required to pay a reconnection fee before the service is restored.

A schedule of fees is available from LCU Customer Service Representative.

24 hours notice is required for removal of meter or disconnect of service due to re-siding.

306 Service Deposit

LCU has established a credit policy whereby existing customers with an acceptable credit history and customers never having had service with LCU will be required to provide a deposit as a condition of service. A new or additional deposit may be required in cases where a deposit has been refunded or where the current deposit amount is inadequate. The deposit amount is based on the average of a previous 12 month period and then doubled and bears interest at the rate established by the LCU Board. Further information is available in the LCU Deposit Policy.

SECTION 400

STANDARD SERVICES

401 General Characteristics

This section describes the types of services offered to Customers under LCU's Standard Rate Schedules. Electric service supplied by LCU is alternating current having a nominal frequency of 60 Hertz (cycles per second).

402 Availability of Service

Although the types of service listed below are generally available through the area served by LCU, service of the type requested by a Customer may not be available at the location where such service is desired, and in certain cases may be available only through special contractual arrangements and at the expense of the Customer. **Each Customer will generally be allowed only one type of service and one point of connection for each location. For redundant services see Section 503.**

403 Secondary Service Voltages

The following types of secondary service are generally available to Customers served under LCU's Standard Rate Schedules:

403.1 Single Phase Service

120/240 Volt, 3-Wire, Grounded Neutral. Generally available where the total load is 100kVA or less for pad-mounted primary service, or 50kVA or less for pole-mounted primary service with an underground secondary in each case.

403.2 Three Phase Service

a) 208Y/120 Volt, 4-Wire, Grounded Neutral. Generally available where facilities of adequate capacity are adjacent to the premises to be served. For loads where the service desired by the customer is not adjacent to the premises to be served, special contract arrangements may be required prior to service being furnished.

b) 240/120 Volt, Delta, 4-Wire, Grounded Neutral. Not recommended but available only where installed capacity exists.

c) 240 Volt (and 480 Volt), Delta, 3-Wire. Not recommended but available only where installed capacity exists.

d) 480Y/277 Volt, 4-Wire, Grounded Neutral. Generally available where the total load is 75kVA or greater for a pad-mounted primary service.

404 Primary Service Voltages

Three-Phase, 12470/7200 Volt, 4-Wire, Grounded Neutral Service: Available only by special request where the total annual peak load at one site is projected to exceed 500 kW (actual, metered, power factor corrected demand). LCU reserves the right to deny a request for a primary voltage service.

LCU will retain ownership of primary voltage equipment and conductors unless specifically agreed upon between LCU and the Customer. The point of delivery will normally be the terminals of LCU’s cable in the Customer’s switchgear.

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SECTION 500

SPECIAL SERVICES

501 Temporary Service

501.1 Temporary service is intended to be supplied at secondary voltages only to customers for use during the construction of permanent facilities and before the permanent service can be installed.

501.2 The address of the location to be supplied with temporary service must be permanently displayed at the location and on the temporary pedestal and be easily readable from the street before LCU will energize the temporary service. All overhead and underground temporary services will be metered and billed under one of LCU's Standard Rate Schedules. LCU will furnish only the overhead service drop or lateral and the meter.

501.3 The Customer shall provide an approved meter socket with the necessary raceway and a suitable rigid support for attachment of the metering equipment and service drop or lateral. On all three phase temporary services, where required, the Customer shall also provide a suitable enclosure for installation of LCU's instrument transformers.

501.4 A nominal flat fee (payable in advance) will be assessed for the first single phase temporary service of 200 amperes or less installed for residential construction. The location of the temporary service will be designated by representatives of LCU. The Customer will be required to pay LCU for the actual cost to install and remove any additional single phase temporary service of 200 amperes or less, any single phase temporary service larger than 200 amperes, any commercial temporary service, any temporary service located for the convenience of the Customer, and any other special facilities requested by the Customer.

Information regarding the charges for temporary service can be obtained from LCU's Customer Service Representative.

502 Services for Unusual Load Characteristics

The operation of Customer equipment having a relatively high load of short or intermittent duration, such as welders, compressor motors, elevators, and X-ray equipment, may cause serious fluctuations of voltage and interfere with the service being provided by LCU to other customers. If such a load is anticipated, the Customer must consult with LCU and agree to install such protective devices as may be required so as not to cause damage to any of LCU's equipment or in any way inhibit service to other customers. In addition, special compensation may be required from the Customer in those cases where it is necessary to install special or larger facilities than would normally be required to provide satisfactory service.

503 Redundant Facilities

LCU will normally provide one set of facilities (such as a set of primary cables and a transformer) to one point of service for each Customer. If a Customer requires redundant facilities (more than one set of facilities to the same point of service), LCU must be advised as soon as possible so the feasibility of such service can be determined. If LCU determines that redundant facilities can and will be provided, the Customer may be required to reimburse LCU for the entire cost of additional facilities, including all labor,

materials, vehicle charges, and overheads. An agreement between the Customer and LCU may also be executed.

504 Relocation or Protection of LCU Facilities

It is the responsibility of the Customer to arrange for the relocation and/or protection of LCU's facilities whenever such action is appropriate. Any intended relocation or protection of LCU facilities must be reviewed with and approved by LCU in advance. The cost of any change or relocation of LCU's facilities for the benefit only of the Customer, and which has been initiated by the Customer, shall be borne solely by the Customer. A deposit by the Customer may also be required before the changes are made. LCU will bear costs to the extent that a change or relocation benefit LCU. The Customer shall not be required to pay for changes necessitated through public improvements by the City, County or State.

505 Security Lighting

Security lighting is available under its own rate schedule classification for those Customers requesting it.

506 Rewiring Existing Facilities

The customer or electrical contractor shall contact LCU when it is necessary to rewire or upgrade an existing electric service. All LCU Electric Service Rules & Regulations will be followed to the degree that conditions allow, with final approval by LCU personnel. The customer shall be responsible for maintaining the same phase rotation for 3-phase rewires.

507 Underground Locations

507.1 Minnesota Statute, Chapter 216D, requires an excavator to contact the utility notification center (Gopher State One Call) at least 48 hours before beginning an excavation. The excavation notice may be made by calling the center at 1-800-252-1166 and providing the following information:

507.1a Name of the individual calling.

507.1 b Precise location of the proposed excavation.

507.1c Name, address and telephone number of the excavator.

507.1d Excavator's field telephone number.

507.1 e Type and extent of proposed excavation.

507.1 f Any anticipated use of explosives.

507.1g Date and time when excavation is to commence.

507.2 “Excavation” means an activity that moves, removes, or otherwise disturbs the soil by use of a motor, engine, hydraulic or pneumatically powered tool, or machine- powered equipment of any kind, or by explosives. Excavation does not include:

507.2a The extraction of minerals.

507.2b The opening of a grave in a cemetery.

507.2c Normal maintenance of roads and streets if the maintenance does not change the original grade and does not involve the road ditch.

507.2d Plowing, cultivating, planting, harvesting, and similar operations in connection with growing crops, trees, and shrubs, unless any of these activities disturbs the soil to a depth of 18 inches or more.

507.2e Gardening, unless it disturbs the soil to a depth of 12 inches or more.

507.2f Planting of windbreaks, shelterbelts, and tree plantations, unless any of these activities disturbs the soil to a depth of 18 inches or more.

507.3 Lake City Public Utilities encourages that underground facilities locations be requested prior to all construction or activity that disturbs the soil, including especially those activities that involve hand tools.

507.4 Any contact with an electric cable during excavation must be reported immediately, day or night, by calling LCU direct at 651-345-5383.

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SECTION 600

All new or rewired residential or commercial services must have an approved lever operated bypass meter socket (see Section 613 for approved bypass meter sockets). As of the approved date of these regulations, any new or rewired service without an approved bypass socket will not be energized.

METERS

This section covers the installation of meters and associated equipment such as current and potential transformers for both overhead and underground services. Further description of LCU requirements for both overhead and underground services is covered in other sections of this booklet. The requirements contained in this section are for services rated 600 volts or less. When services are required at primary voltage (such as 12470/7200 volts), the metering requirements and equipment will be determined on an individual basis.

601 Responsibilities for Providing Metering Equipment

All metering equipment, with the exception of current transformers and potential transformers, must be purchased and installed by the customer or electrical contractor. All metering equipment installed must be UL listed and labeled and have prior approval of the LCU Electric Supervisor. Metering equipment installed without LCU approval will not be energized unless by special permission of the LCU Electric Supervisor. LCU will energize only one set of metering equipment under each contract or application for one class of service.

602 Location of Meters

Meter locations will be agreed upon by representatives of the Customer and LCU, subject to final approval by the LCU.

602.1 Residential — All new or rewired services must have the meter located outside. Prior written approval from an LCU representative is needed to be excluded from this requirement.

602.2 Multiple Dwellings — Where more than one meter is installed, as on a duplex or apartment complexes, meters are to be located outside and grouped if possible. Exception: Complexes that have 24 meters or more may locate the meters inside as long as they are grouped at one location and accessible at all times to each customer and LCU personnel.

602.3 Industrial and Commercial — Meters for industrial and commercial service shall be located outdoors.

602.4 Height Limits — All meters located outdoors on residential or commercial services, where the meter is mounted on a permanent structure, shall have a height limit of not more than 6 feet and not less than 4 feet from final grade to the center of the meter. A typical metering arrangement is shown in Section 1000, Exhibit 1.

602.5 Mobile Homes — LCU will individually meter each mobile home located in a mobile home court or addition to a mobile home court. Resale of metered electrical energy by the court owner will not be permitted in these facilities. Individual meter pedestals, with sockets, shall be provided by the customer or his representative. Maintenance and repair of the meter pedestal is the responsibility of the customer. A typical mobile home metering arrangement is shown in Section 1000, Exhibit 2.

602.6 Meter Clearances — Meters shall be situated such that there is not less than three feet of unobstructed space in front and one foot on all sides. Meters shall not be located where they are subject to corrosive fumes, dust, vibration or physical damage. Outdoor meters shall not be located in carports, under porches or decks whether open or enclosed, or along walkways or driveways where they might create a hazard to people or be subject to

damage by passing objects.

602.7 Access to Meters — Meter locations shall not be hazardous or cause inconvenience to employees of LCU when installing, maintaining, or reading the meters.

602.8 Residential Apartment Buildings — In all cases where multi-metering panels with stacked meter sockets are used, the maximum height to the center of the top meter shall be not more than 6 feet and the minimum height to the center of the bottom meter shall be not less than 2 feet indoors and 4 feet outdoors. Individual apartment disconnects must be connected on the load side of the meter. If the service voltage is 120/208 volts, a fifth terminal located at the 9 o'clock position is required in the socket and must be connected to the service neutral in accordance with the National Electric Code (see Exhibit 12). The house meter socket for apartment buildings requires an approved lever actuated positive bypass mechanism which will provide clamping pressure on the meter blades. Only one meter may be installed under one socket cover in multi-metering panels.

602.9 Commercial Multi-Metering Panels — All commercial multi- metering panels used in shopping centers, spec buildings and multi- commercial tenant buildings shall have a maximum of four meter sockets per vertical stack. In all cases, the maximum height to the center of the top meter shall be 6 feet and the minimum height to the center of the bottom meter shall be 2 feet indoors and 4 feet outdoors. An approved lever actuated bypass is required on all meter sockets and each individual unit disconnect shall only be connected to the load side of the meter. Each individual meter socket shall have a barrier to isolate the customer's disconnect switch and wiring from the metering area. Only one meter may be installed under one socket cover. A system neutral is required to each 5 and 7 terminal meter socket in accordance with the National Electric Code.

603 Grouped Meters

In installations requiring more than one meter, the meters shall be grouped and suitably connected such that a meter serves no more than one Customer. The height limits stated previously also pertain to grouped meters where practicable. If deemed necessary by the space available, the meters may be stacked in an orderly fashion. Any dwelling with more than one Customer living therein must have an individual meter for each dwelling unit. These meters must be easily accessible to all tenants and to personnel of LCU. There shall be an approved type of disconnecting means for each meter which is lockable in some way to prevent reconnection by other than LCU personnel. A typical multiple metering arrangement is shown in Section 1000, Exhibit 3.

604 Meter Identification

If more than one meter is required for a building, each meter socket shall be identified and permanently designated in a suitable manner indicating the particular customer served. Each circuit shall be carefully traced and rechecked by the contractor to ensure against errors in wiring that would result in one customer obtaining service through the meter serving another customer. This is especially important when the wiring is concealed. Electric service shall not be energized if meter sockets are not identified. It will be the contractor's/owner's responsibility to correct any errors due to misidentification of meter sockets. LCU reserves the right to charge the building owner and/or electrical contractor for actual costs incurred by LCU to make corrections.

605 Meter Mounting

605.1 Outdoor meters and meter mounting devices shall be mounted securely on permanent structures such as houses, garages, and other buildings. Where outdoor meters are installed on surfaces that prevent installation of the meter mounting device in an exact vertical plane, a meter board must be installed or the surface modified in such a manner that the meter mounting device can be installed vertically. The preferred meter location is within ten (10) feet of the front end of the building (house or attached garage) on single family dwellings for new customer hook-ups. All meter locations for rewired or upgraded services shall be located outdoors with locations agreed upon between customer, contractor,

and LCU personnel with final approval by LCU personnel. LCU has the right to refuse to energize service if these requirements have not been met.

605.2 Indoor meters, **where permitted**, shall be mounted in accordance with the preceding requirements of this section and shall be located as close as possible to the point where service enters the building. Indoor metering equipment shall be mounted securely in a vertical plane on permanent structures in a location free from moisture, high temperature, vibration, dust or dirt.

606 Meter Connections

The Customer shall provide the necessary wiring for the meter set with the wiring so arranged that the line (supply) side can be connected to the top terminals of the socket and the load side to the bottom terminals. All conductors shall extend into the meter socket a minimum distance equal to the length of the socket trough. All neutral conductors must be insulated. For underground services, the line side neutral wire is to be identified in accordance with the National Electrical Code. There should be sufficient slack left in the underground cables to make up for any ground shifting due to settling or extreme cold.

607 Wiring Restrictions on Meters and Metering Sets

No Customer wiring is permitted to be connected to the metering, secondary wiring or under the terminals of the meter. No part of the metering set may be used as a junction box for the Customer's wiring.

608 Meter Testing

608.1 Any Customer who believes that a meter is failing to properly register the use of electricity may request a meter check by contacting the Customer Service Representative. LCU will test the meter using standard calibration equipment and generally accepted test procedures within a reasonable period of time. Customers who request additional meter tests within a twelve (12) month period may be charged for the additional tests at a standard fee.

608.2 If the period of inaccuracy cannot be determined, it will be assumed that the metering equipment has become inaccurate at a uniform rate since it was installed or last tested unless there is valid reason to use another method. Recalculation of bills is based on LCU Board Policy for adjustments of customer accounts.

608.4 When the average error cannot be determined by test due to complete failure of all or part of the metering equipment, then an estimate of the quantity of energy consumed based on available data will be used to determine the adjusted bills.

609 Meter Seals

All connections to LCU's service equipment shall be made by LCU personnel only. **Unauthorized connections to or tampering with any LCU meter, associated equipment or meter seals, or indications or evidence thereof subjects the Customer to immediate discontinuance of service, prosecution under the laws of Minnesota, adjustment of prior bills for services rendered, and reimbursement to LCU for all extra expense incurred on the account.** In addition, when the unauthorized connections or tampering involve an inside meter, the Customer shall, at his own expense, relocate all service equipment and metering facilities outside the building.

610 Services Requiring Instrument Transformer Installation

Single Phase – When any single phase service has a total connected load of 320 amps or greater, it will be necessary for LCU to use instrument transformers in the metering installation.

Three Phase – When any three phase service has a total connected load of 200 amps or greater, it will be necessary for LCU to use instrument transformers in the metering installation. These instrument transformers will be furnished by LCU and installed by the customer on the line side of the customer service entrance disconnect switch. The location of the instrument transformers will be determined by the LCU meter department. The customer shall not install any additional disconnect switches or junction boxes on the line side of the instrument transformer location. The customer must furnish and install a 1-inch metering conduit from the instrument transformer location to a meter location approved by the LCU metering department. Conduit runs shall not exceed 25 feet, except by special permission. If the conduit run exceeds 25 feet, it is the customer responsibility to furnish and install wire, per LCU specifications, from the instrument transformer location to the meter location.

610.1 Underground Service from Pad Mounted Transformers:

Where service is underground from a pad mounted transformer, instrument transformers are to be mounted in an approved instrument transformer cabinet. The location of the instrument transformer cabinet must be approved by the LCU metering department.

610.2 Overhead Services:

Where service is provided by overhead service drops, approved outdoor instrument transformer cabinets will be required. Location of transformer cabinets will have final approval by LCU Meter Dept. before installation. (No open air CT's or PT's will be allowed.) Refer to 610.3a for cabinet requirements.

610.3 Indoor Mounted Instrument Transformers:

Instrument transformers installed indoors must have a service size of 1200 amps or greater, be installed inside the customer switch gear in a compartment designated for instrument transformers only and have prior approval from LCU metering personnel.

610.3a Secondary Metering Instrument Transformer Cabinet

Instrument transformer cabinets shall be furnished and installed by the Customer. This includes all services either overhead or underground. All cabinets must be UL listed and labeled, approved by LCU meter personnel and meet all NEC requirements prior to installation. Cabinets must conform to the following:

a. The minimum cabinet size is to be 24 inches wide, 24 inches high and 10 inches deep.
b. The door must have provisions for locking with a standard padlock.
c. The cabinet must be hinged on the right or left side only.
d. Cabinets shall not be used as junction boxes or service connection cabinets.
e. Only LCU metering transformers may be contained therein.
f. Cabinets must be UL approved and be the correct NEMA class for the area environment in which they are installed.
g. A 1-inch conduit installed between the cabinet and meter socket is required.
h. Cabinet must accept bar-type current transformers on all services 1200 amps or less.

All services that require instrument rated meter sockets to be used will be furnished by LCU Meter Department. (See Section 613.1 and 613.2.)

610.3b Primary Metering Equipment - Indoors

When indoor primary metering service is to be installed, the Customer shall furnish a compartment or switchgear cubicle to house the primary current and potential transformers. All current and potential transformers shall be rated for metering accuracy as approved by the LCU Metering Department. The metering point shall be located electrically between the Customer's main disconnect and customer lateral circuits.

When practical, LCU may request that the Customer install instrument transformers per LCU specifications. (Call the Customer Service Representative at 651-345-5383 to obtain Engineering assistance.) In such situations, LCU will credit the Customer for installation and material charges up to LCU's normal cost for instrument transformers.

610.3c Primary Metering Equipment - Outdoors

When outdoor primary service is to be installed, LCU may elect to utilize a pad-mounted primary metering equipment set. Outdoor primary metering units are furnished and installed by LCU. Sharing of the material and installation costs for primary metering will be determined on a case-by-case basis.

611 Self-Contained Metering for Commercial Installations

In general, LCU will install self-contained meters (meters without instrument transformers) on single phase services where total connected load is 320 amps or less and on three phase services where the total connected load is 200 amps or less. Where such metering is to be used, the Customer shall provide a lever-operated bypassing socket (see Section 601). Such sockets permit a continuation of service upon removal of the meter for testing or maintenance. If a lever-operated bypass socket is not installed, the service will not be energized.

Commercial self-contained sockets must be rated continuous 200 amperes, minimum. For information on approved meter bypass sockets, see Section 614.1.

612 Master Metering

612.1 All new residential units will be individually metered.
Exception: Multi-Unit facilities providing care to elderly or disabled persons may be master metered in accordance with State Law (§1 16J.27 Subd.8).

612.2 All new commercial or industrial units will be individually metered. Exceptions:

612.2a Where the construction of a building or installation is such that individual service conductors and disconnects are not required by provisions of applicable building codes.

612.2b Where the building or installation owner demonstrates conclusively that the cost to accommodate individual metering exceeds the long- run cost benefit to the individual occupants.

612.3 Existing master metered buildings or installations will be reviewed if:

612.3a Additional units are added or the nature of existing units is substantially altered, and

612.3b If the occupants of the units are responsible for paying for a portion of the electric power and energy used in these units.

The continuation of master metering in existing buildings or installations will be prohibited unless the owner demonstrates conclusively that the cost to accommodate individual metering exceeds the long-run cost benefit to the individual occupants.

612.4 Individual meters will be installed, owned, maintained, and read by LCU. Submetering by others for the purpose of charging individual occupants based on measured use must be in accordance with statutory requirements. Submetering by others for information purposes or to control the use of electric power for energy is permitted.

613 Approved Bypass Sockets

Meter sockets installed for self-contained meters must be approved by LCU prior to installation. Meter installations made with unapproved sockets will not be energized. Services energized with unapproved sockets will be subject to disconnection until the correct socket is installed.

613.1 Customer-Furnished Sockets — All meter sockets for single phase self-contained metering up to 320 amps and for three phase self-contained metering up to 200 amps are to be furnished and installed by the customer/contractor. All sockets require an approved lever actuated locking jaw bypass with an insulating track resistant poly carbonate safety shield. Three phase services over 200 amps require instrument rated sockets.

613.2 LCU-Furnished Sockets — Meter sockets for instrument rated meters must be installed by the LCU.

613.3 Approved Bypass Sockets - Currently the Landis and Gyr (HQ), Milbank (HD 200 Series) and Thomas & Betts/Anchor (TB Series) Square D (HD) bypasses are approved. Any other bypass socket must have approval from LCU prior to installation. Meter installation made with unapproved bypasses will not be energized. Service will be subject to disconnection until the correct socket is installed.

613.4 Exceptions – Telephone booths, bus stops, billboards, and non-commercial garages maybe be excluded from the bypass socket requirement.

614 Service at 480 Volts

480 volt, 3 phase, 3 wire and 480 volt, 3 phase, 4 wire delta services will be metered using instrument transformers on both currents and potentials for safety reasons. LCU will supply and install all instrument transformers at no cost to the customer/contractor.

615 Location of High-Leg in Meter Socket on 240/120 Volt, 3 Phase Services

The conductor with the higher voltage to ground must be connected to the terminal on the right side. The high-leg conductor must be identified as required by the National Electric Code. Meter sockets with the high-leg in the wrong position will not be energized. Incorrectly wired sockets will be subject to disconnection until wiring is corrected.

616 Removing LCU Seals and Meters

Disconnection of LCU metering equipment and cutting of seals is not allowed without obtaining prior approval.

617 Customer Generation

Where a customer intends to operate any type of electric generator, photovoltaic array, wind generator, or similar equipment interconnected with the LCU system, special service and metering requirements must be satisfied. Contact LCU for details prior to interconnecting any generation equipment.

618 Proper Grounding

All metering conduits and sockets must be properly grounded. If PVC conduits are used, grounding conductors must be provided and installed by the customer/contractor in accordance with the National Electric Code. Electric service will not be connected to improperly grounded equipment.

619.1 Neutral for 5 and 7 Terminal Sockets

A system neutral is required to each 5 and 7 terminal socket. Conductor should be sized in accordance with the National Electric Code.

619 Customer Disconnect Switch

Individual customer disconnect switches should be connected on the load side of the meter. No customer devices, e.g. surge suppressors, load management equipment, etc., may be installed on the line side of the meter.

620 Special Sockets

All special sockets, such as apartment panels, recessed, mobile home parks, socket and switch, or socket and transfer, must have LCU's approval prior to installation.

621 LCU-Owned Equipment

Any metering equipment furnished by LCU, such as meters, instrument transformers, relays, totalizers, test switches, etc., remain the property of LCU. If the equipment has to be removed or disconnected for any reason, please call LCU so that the equipment can be picked up.

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SECTION 700

CUSTOMER UTILIZATION EQUIPMENT

The Customer's service entrance and utilization equipment shall be installed in accordance with all state and National Electrical Code requirements. It is the intent of this section to provide the Customer with recommendations concerning factors that can affect both LCU and the Customer in the selection, installation, maintenance and operation of the Customer's utilization equipment. If concerns arise that are not covered in this section, LCU's Customer Service Representative should be contacted.

701 Protection of Customer Equipment

The customer is advised to provide adequate protection against the effects of outages or voltage spikes in accordance with the NEC or other pertinent sources of information for all types of motors and other equipment.

Equipment that should be protected includes, but is not limited to:
- motors
- computers
- electronics equipment
- equipment in which computers or electronics form an integral operating part

Equipment should be protected under all conditions, including:

- overload
- loss of voltage
- high or low voltage
- loss of phase(s) (e.g. single phasing on polyphase motors)
- re-establishment of service after any of the foregoing
- phase reversal
- motors that cannot be subjected to full voltage on starting
- harmonics or wave form irregularities

Failure to provide such protection may result in needless damage to equipment and the expense of delay and repair.

Sensitive electronics, such as microprocessor-based home electronics and business computers, are susceptible to damage due to voltage spikes or surges.

Before any microprocessor-based electronics are installed:

- Wiring practices that meet manufacturer specifications need to be assured. (For example, proper grounding and dedicated circuits are important.)
- Consideration should be given to installing transient voltage surge suppression

  -at the main service entrance, and
  -at the point of use

- An uninterruptible power supply (battery backup) should be considered if a momentary voltage dip or outage would cause loss of data.

702 Motor Starting Currents

Generally, all motors require a starting current substantially greater than their normal running current. Where starting currents are excessive, an abnormal drop in supply voltage will result. In order to minimize the unfavorable effects of such voltage drops, it is essential that the Customer's motors do not exceed the allowable starting characteristics as shown in Table 430-151 of the National Electric Code.

NOTE: Customers planning to install any motor larger than 5 hp single phase or 25 hp three phase, must contact the Customer Service Representative. Motor installations that cause power quality problems for other customers shall be corrected at the owner's expense.

703 Power Factor

In order to improve the efficiency of LCU's distribution system, the Customer's utilization equipment shall maintain an average power factor as close to unity as possible.

Some of LCU's rate schedules include a demand charge and a penalty for an average power factor that is less than 95%. Details of the method of billing for such Customers can be obtained from the Customer Service Representative. For new services, it is suggested that the Customer's utilization equipment be designed for operation at high power factor or with capacitors that are switched on and off with the equipment. See Section 1000, Exhibit 11 for correcting customer's power factor.

LCU will calculate the power factor of Customers in designed rate classes by installing a varhour meter. See Section 601 for Customer's responsibilities in providing metering equipment.

704 Fault Currents

The Customer's service equipment and other devices shall be adequate to withstand and interrupt the maximum available fault current. For single family residences with service equipment rated 200 amperes maximum and 120/240 volts, single phase, equipment shall have a minimum interrupting rating of 10,000 amperes symmetrical and other equipment shall be braced to withstand that minimum value.

705 Wiring Adequacy

The National Electrical Code (NFPA No. 70) specifies the adequacy of wiring with respect to safety but such installations may not be efficient, convenient, or adequate for good service of future expansion of electrical use. In many instances, the installation of wiring capacity greater than minimum code requirements is strongly recommended.

706 Customer-Owned Generating Equipment

Unless authorized by written agreement, electric generating equipment installed by the Customer shall not be interconnected or operated in parallel with LCU system. The customer shall own, install, operate, and maintain electrical interlocking equipment which will prevent parallel operation and such equipment shall be approved by LCU prior to installation. Any cogeneration facilities will not be permitted by LCU according to SMMPA Supplier contract.

707 Energy Conservation

LCU encourages the prudent and efficient use of the electric power and energy which it provides. Customers desiring special information or other assistance regarding the efficient end use of electricity should contact a Customer Service Representative at 651-345-5383.

708 Customer’s Obligations

708.1 Increased Load. In the event the Customer desires to increase load materially, such as additional electric heat, increased motor loads, etc., they shall give LCU sufficient advance notice, so that LCU may provide added facilities if necessary. If the Customer fails to notify LCU and LCU’s equipment is damaged as a result of such increase in load, the Customer shall reimburse and make payment to LCU for all such damages.

708.2 Balancing of Load. Except in the case of three-phase, four- wire delta services, the current unbalance in three-phase services shall not exceed 10 percent of the current that would

be required at maximum load under balanced conditions.

708.3 Total Harmonic Distortion (THD).

708.3a The application of any nonlinear load by the Customer (e.g., static power converters, arc furnaces, adjustable speed drive systems, etc.) shall not cause voltage and/or current Total Harmonic Distortion (THD) levels greater than industry accepted levels on LCU's electric system at the point of power delivery to the Customer's facility.

708.3b The Customer shall disclose to LCU all nonlinear loads prior to connection. LCU may test the Customer's load to determine the THD levels.

708.3c It shall be the responsibility of the Customer to assure that the THD requirements are met, including the purchase of necessary filtering equipment. Any load found not in compliance with this policy shall be corrected immediately by the Customer at the Customer's expense. If not corrected, LCU may disconnect service to the Customer's facility.

708.3d The Customer shall be liable for all damages, losses, claims, costs, expenses and liabilities of any kind or nature arising out of, caused by, or in any way connected with the application by the Customer of any nonlinear load operating with maximum THD levels in excess of the values stated in 708.3a. The Customer shall hold harmless and indemnify LCU from and against any claims, losses, costs of investigation, expenses, reasonable attorneys' fees, damages and liabilities of any kind or nature arising out of, caused by, or in any way connected with the application by the Customer of any nonlinear load operating with maximum THD levels in excess of the values stated in 708.3a.

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SECTION 800

OVERHEAD SECONDARY SERVICE

LCU will supply overhead secondary service (600 volts or less) at the voltages and under the conditions specified in other sections of this publication. The service entrance location will be specified by LCU. This section includes information on distribution transformer size, overhead service drop and connections to the Customer's premises or equipment. Metering and customer equipment requirements are covered in other sections of this publication. The requirements of this section apply to all residential, commercial and industrial customers.

801 Maximum Transformer Size

801.1 The maximum overhead transformer size installed by LCU will be either one 50kVA transformer for a single phase application or three 1 5kVA transformers for multiphase applications. If a larger transformer size is required for a particular application, it shall be a pad-mounted type.

801.2 One or more secondary services may be supplied from a transformer; the number of services from a transformer shall be determined by LCU depending upon the application.

802 Service Drop Conductors

802.1 The service drop for new services will be a twisted wire triplex (three wires) or quadruplex (four wires) configuration from the distribution system to the point of attachment on the Customer's premises.

802.2 Existing services may be either a twisted wire or open wire configuration. If necessary for various reasons, LCU may change a service from an open wire to a twisted wire configuration.

803 Clearances

803.1 The service drop must be so located that the minimum clearance as specified in the latest edition of the National Electrical Code (NFPA No. 70) is maintained. An illustration of the clearances required is shown in Section 1000, Exhibit 4.

803.2 Service drop conductors shall not be installed above a swimming pool or surrounding area extending 10 feet horizontally from the pool edge, diving structure, observation stands, towers or platforms.

804 Point of Attachment

A solid point of attachment for supporting the service drop on the building shall be provided by the Customer at a point which will comply with previously stated clearances. Where the required heights and clearances cannot be maintained by a point of attachment on the building, the Customer shall provide a service mast which is of a permanent nature and of sufficient strength to support the service drop at the required minimum clearance. Typical building attachment and service mast installations are shown in Section 1000, Exhibits 5 and 6, respectively. In such an installation, 2-inch or larger galvanized iron conduit or 3-inch or larger rigid aluminum conduit shall be used. LCU reserves the right to decline to connect its service drop to an extension support which, in its judgment, constitutes a hazard to life or property.

805 Service Entrance

The Customer's service entrance wiring shall terminate at a point so located that the service drop from the supply lines will not interfere with windows, doors, awnings, drainpipes, or other parts of the building or other obstructions so that only one bracket is required.

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SECTION 900

UNDERGROUND SERVICE

901 Undergrounding in New Residential Developments

901.1 LCU requires the complete underground installation of primary and secondary distribution service laterals to new structures in all residential zones, except in those cases where it is determined that such underground installations are either technically or economically undesirable.

901.2 LCU will designate a junction point for the connection of the Customer's secondary underground service lateral. The junction point will be a service pedestal or junction box, the terminals of a pad-mounted transformer, or a meter enclosure. In general, LCU will install, own, operate, and maintain all facilities on the source side of the junction point, including the junction enclosure and connections; and the Customer will install, own, operate, and maintain all secondary cables, conduit, and related service equipment specified in other sections of this publication on the load side of the junction point. However, the developer of a new subdivision is responsible, during general development, for installing road crossing conduits per LCU specifications. (Refer to Section 1000, Exhibit 13.)

901.3 Junction points will be located within LCU's easement area along or near a front or rear property line unless it is necessary or desirable to designate locations which are closer to the metering point(s). In such cases, the Customer will be charged for the installed cost of any additional lengths of underground distribution cable and conduit from the property line to the junction point. Such charges shall be in addition to any other charges specified herein.

901.4 LCU's primary and/or secondary distribution laterals will normally be installed within front lot line utility easements provided by the Customer as a part of the recorded property plat. All utility easements requested by LCU are to be granted by the Customer at no cost to LCU.

901.5 Additional information regarding LCU and customer responsibilities for URD installations is provided in Section 1000, Exhibit 9.

902 Residential Undergrounding in Overhead Areas

Customers residing in residential zones served by overhead lines must install an underground electric service. Customers intending to relocate, upgrade or replace an existing overhead service must install an underground service. In either case, the Customer shall install, own, operate, and maintain the facilities specified in Section 901.2. In addition, the Customer will be charged an amount which reflects any additional cost incurred by LCU in providing service to the junction point. All such charges must be paid by the Customer before LCU will commence installation of the necessary facilities.

903 Underground Service to Commercial and Industrial Customers

903.1 LCU requires the underground installation of primary and secondary distribution service laterals to new commercial and industrial structures.

903.2 LCU will designate a junction point for the connection of the Customer's secondary underground service lateral. The junction point will normally be the secondary terminals of a pad-mounted transformer placed at a mutually agreeable location on the Customer's property, as close as practicable to the metering point.

903.3 LCU will install, own, operate, and maintain the primary underground cable, the distribution transformer, and the secondary connections.

903.4 The primary cable will be installed in Schedule 40 PVC conduit, sized to LCU construction standards from LCU's main distribution system, on or adjacent to the Customer's property, to the distribution transformer. If underground main distribution facilities are located on the Customer's property, the Customer shall provide the conduit from a designated tap point to the distribution transformer. If overhead main distribution facilities are located on the Customer's property, the Customer shall provide conduit to the riser pole and the Customer shall provide and install the conduit including the elbow, from the riser pole to the pad mounted distribution transformer. See Section 1000, Exhibit 8 for details.

903.5 If the transformer is located in an area where it may be subject to physical damage (e.g. from vehicular traffic), LCU may require the Customer to furnish and install an approved means of protection.

903.6 The Customer shall install, own, and maintain all secondary cables, conduits, and cabinets from the transformer to the building service entrance; the cables and conduit shall be buried 24 inches minimum below final grade. If service is such that a secondary lateral is to be installed directly from LCU's main secondary distribution system, the secondary cables and conduit shall be installed, owned, and maintained by the Customer. (Conduit for the riser pole, if required, shall be furnished by the Customer.) LCU must approve the design of all secondary bus duct and cable bus designs. The installation will be inspected by LCU and the secondary connections to the transformer, and the transformer side of the connection cabinet will be made by LCU. It is the Customer's responsibility to coordinate with and provide the necessary information to LCU to assure that adequate connections are made at the secondary terminals of the transformer.

903.7 LCU will furnish and install the meter set in accordance with the requirements of Section 600.

903.8 The maximum number of secondary connections available shall be:

Single Phase:
Six (6)350 MCM conductors per phase
Three Phase:

Transformer Size	# of Conductors per Phase
45 KVA	3
75 KVA to 500kVA	6
750kVA to 1500kVA	10
2000kVA to 2500kVA	10

The maximum size secondary conductor to be installed in a 3-phase transformer is 600 MCM.

Any service requiring more conductors per phase than listed above must utilize a customer-provided secondary connection cabinet.

903.10 Secondary cables installed in an LCU manhole must be copper or aluminum conductor.

903.11 Secondary cables installed to a three phase pad-mounted transformer should be copper.

904 Secondary Connection Cabinets

Where secondary connection cabinets are necessary, the following apply:

904.1 Cabinet assemblies will be suited to the installation and meet LCU and National Electric Code (NEC) requirements.

904.2 Cabinets shall be constructed with provisions for bar-type or donut-type current transformers.

904.3 Conduits from service equipment to connection cabinet and from transformer to connection cabinet will be furnished and installed by electrical contractor as concrete pads are being formed and poured. Conduit systems shall meet LCU requirements. Above-grade raceway from the transformer to the connection cabinet is not allowed.

905 Transformer Clearances

Where pad mounted transformers and equipment in pad mounted enclosures are installed, the minimum clearances specified in Section 1000, Exhibit 7 must be maintained. Fences, shrubbery, and trees may be installed by the Customer provided that the specified clearances are maintained, the grade is not altered, and the underground cables are not endangered.

906 Winter Installation

Underground cable installation at the Customer's request between December 1 and April 30 will be subject to a winter installation charge. See Section 1000, Exhibit 10 for details.

907 Total Undergrounding

LCU does not install underground vaults, manholes, or submersible transformers on Customer property. If the presence of permanent structures up to the property lines, or other conditions, precludes the installation of pad mounted equipment on the Customer's property, primary service will normally be provided.

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SECTION 1000
EXHIBITS

Exhibit 1

Typical Underground Residential Metering Arrangement
Up To and Including 200 amp, 140/240 volt

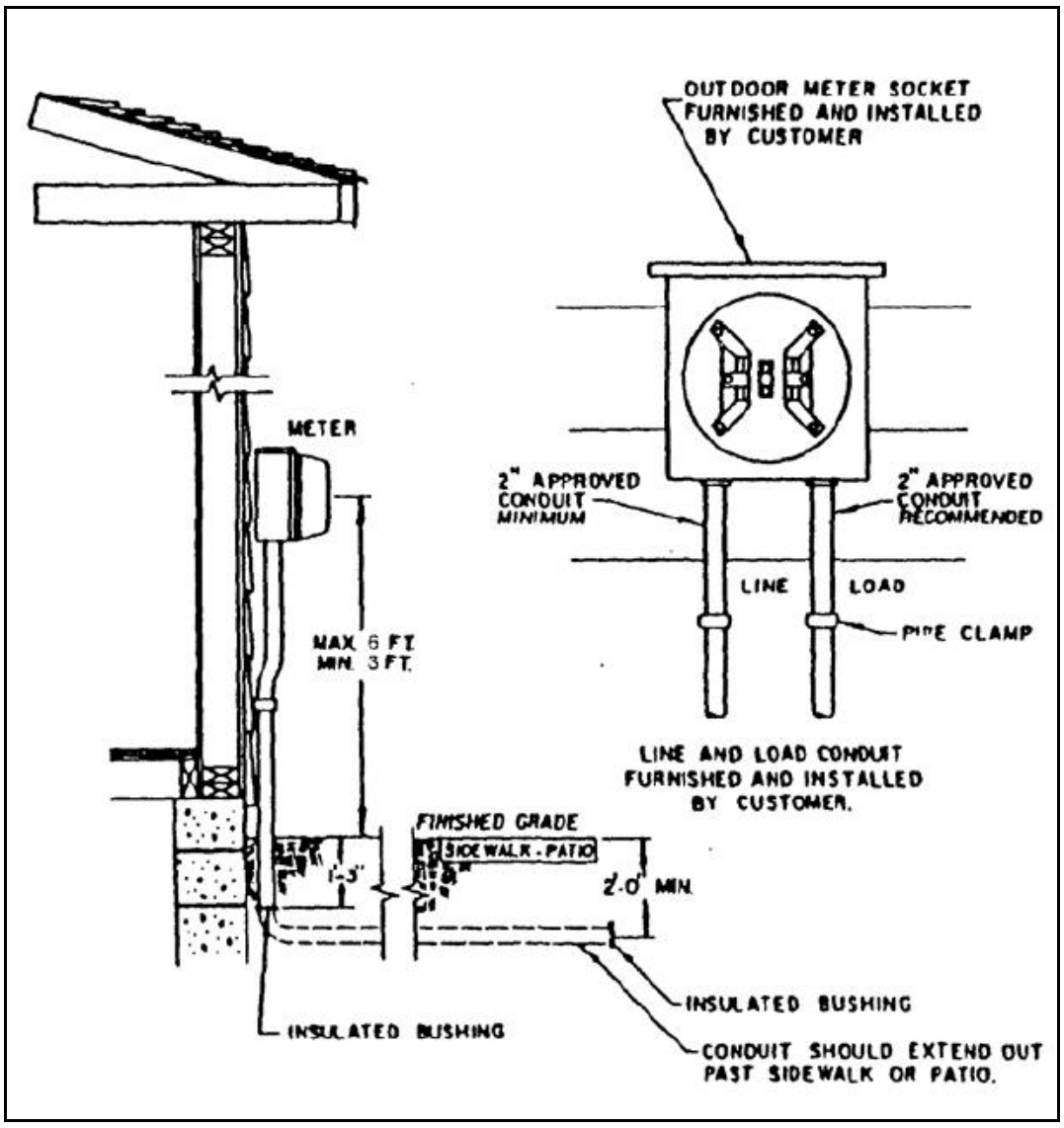

Exhibit 2

Typical Manufactured Home Metering Arrangement

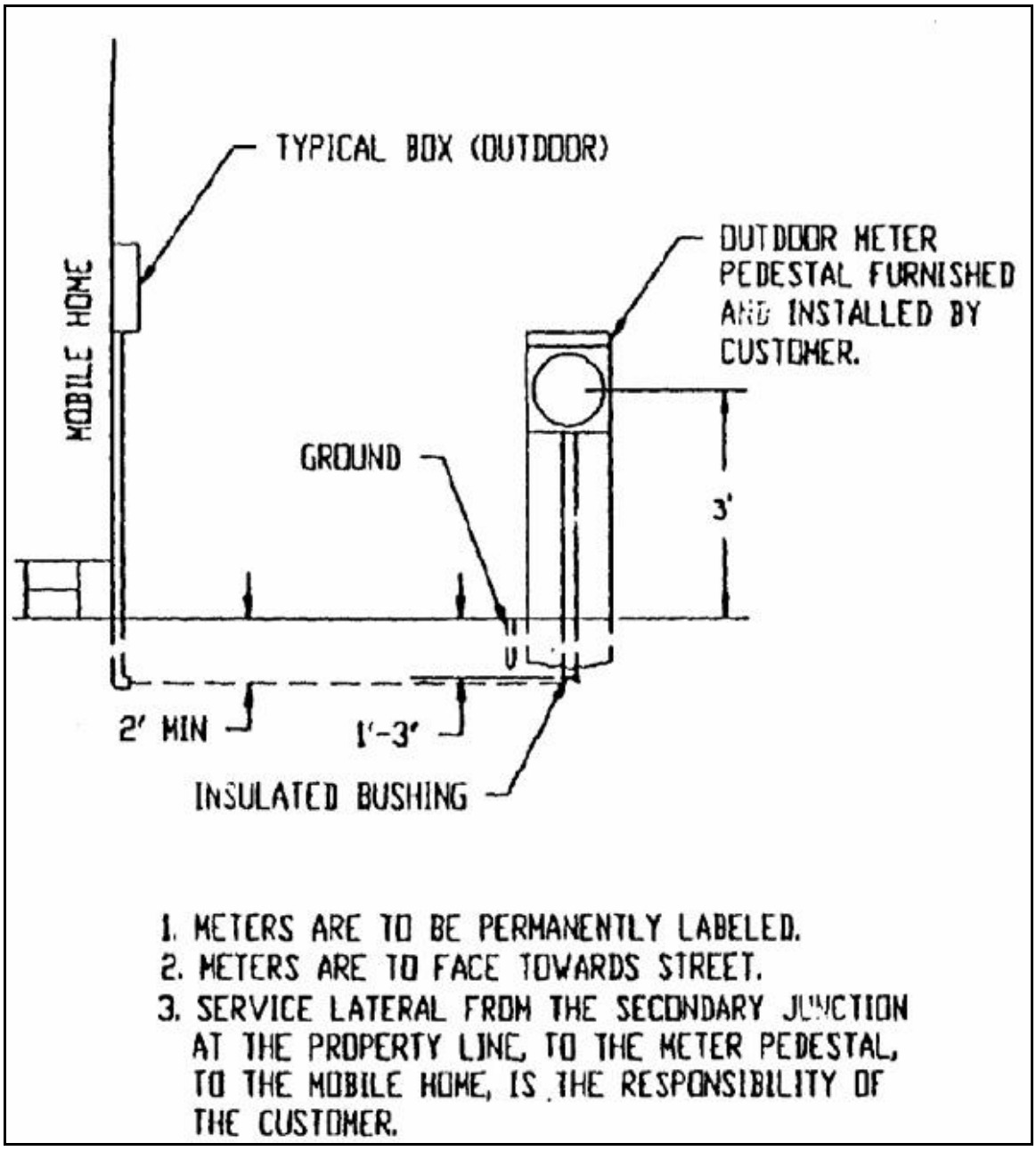

Exhibit 3

Typical Multi Metering Arrangement

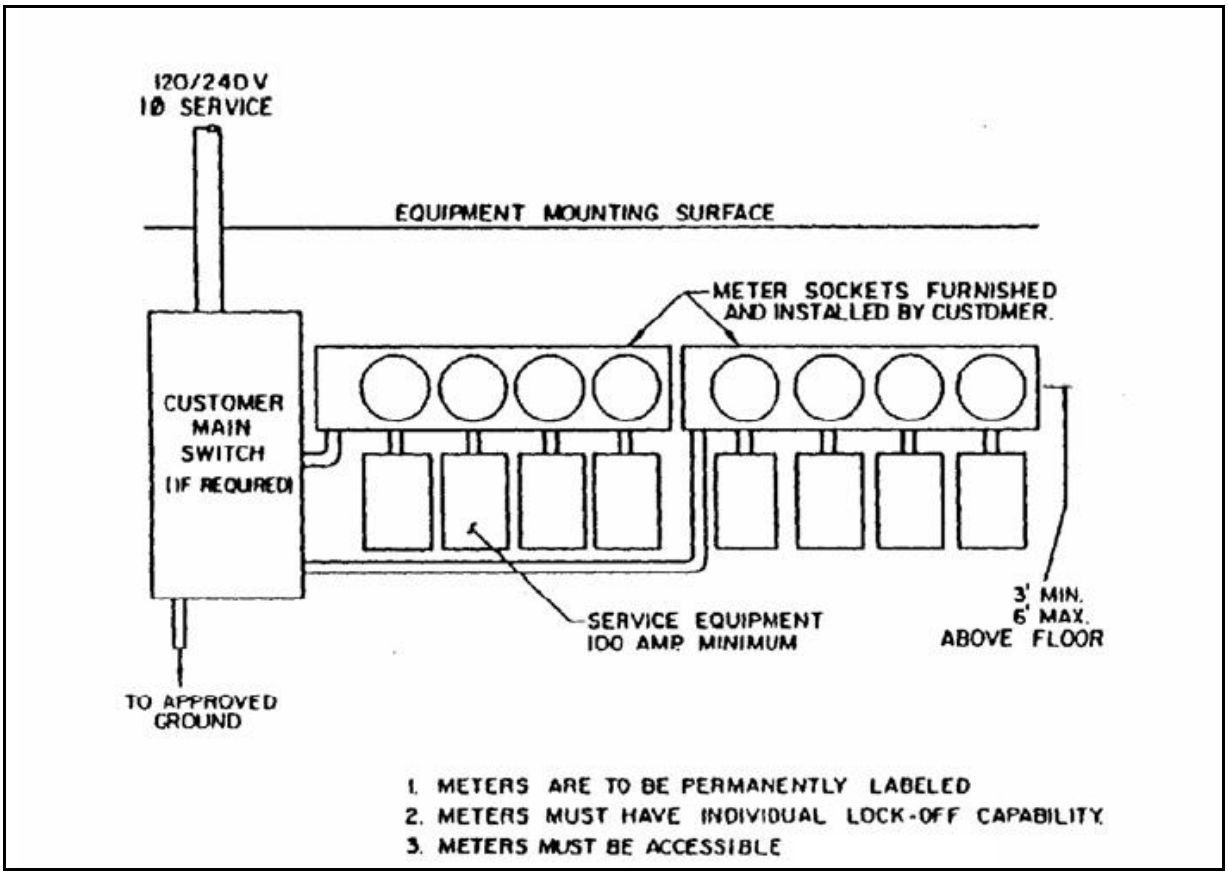

Exhibit 4

Secondary Services Drop Clearances

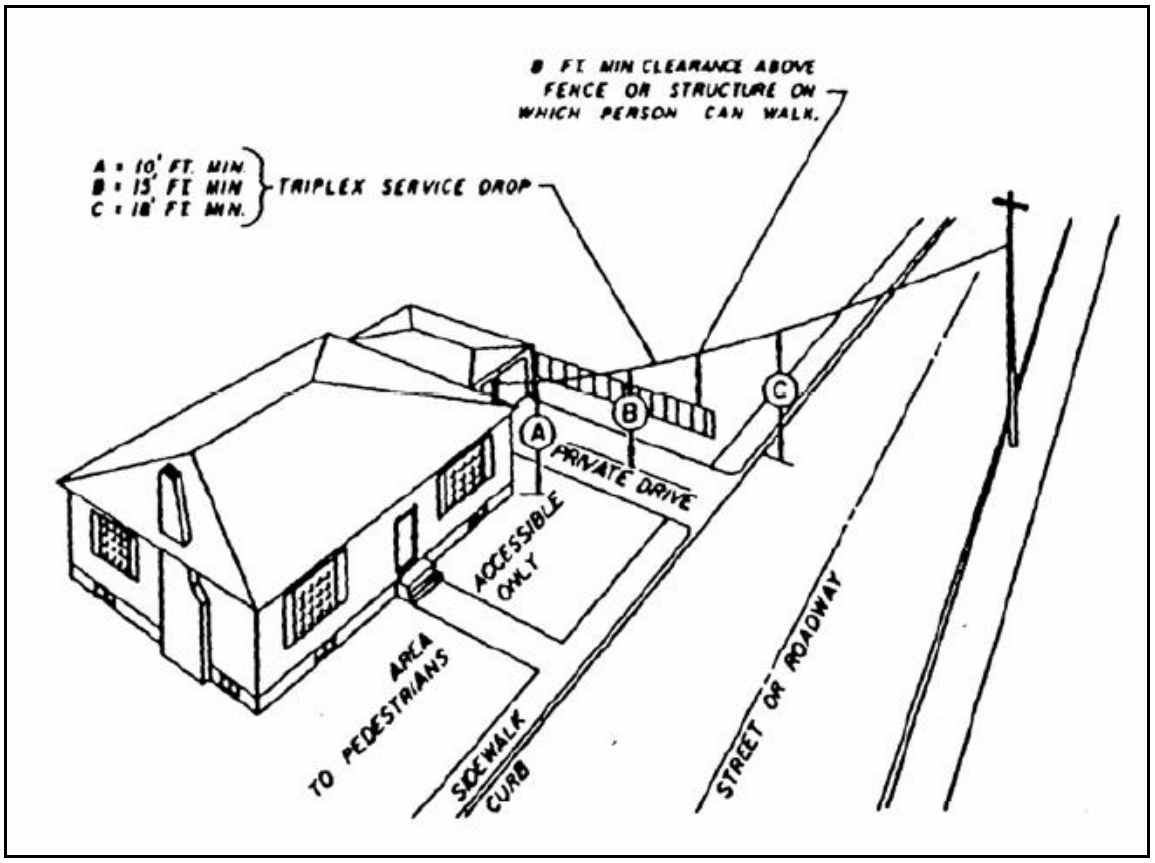

Exhibit 5

Typical Residential Overhead Service Installation

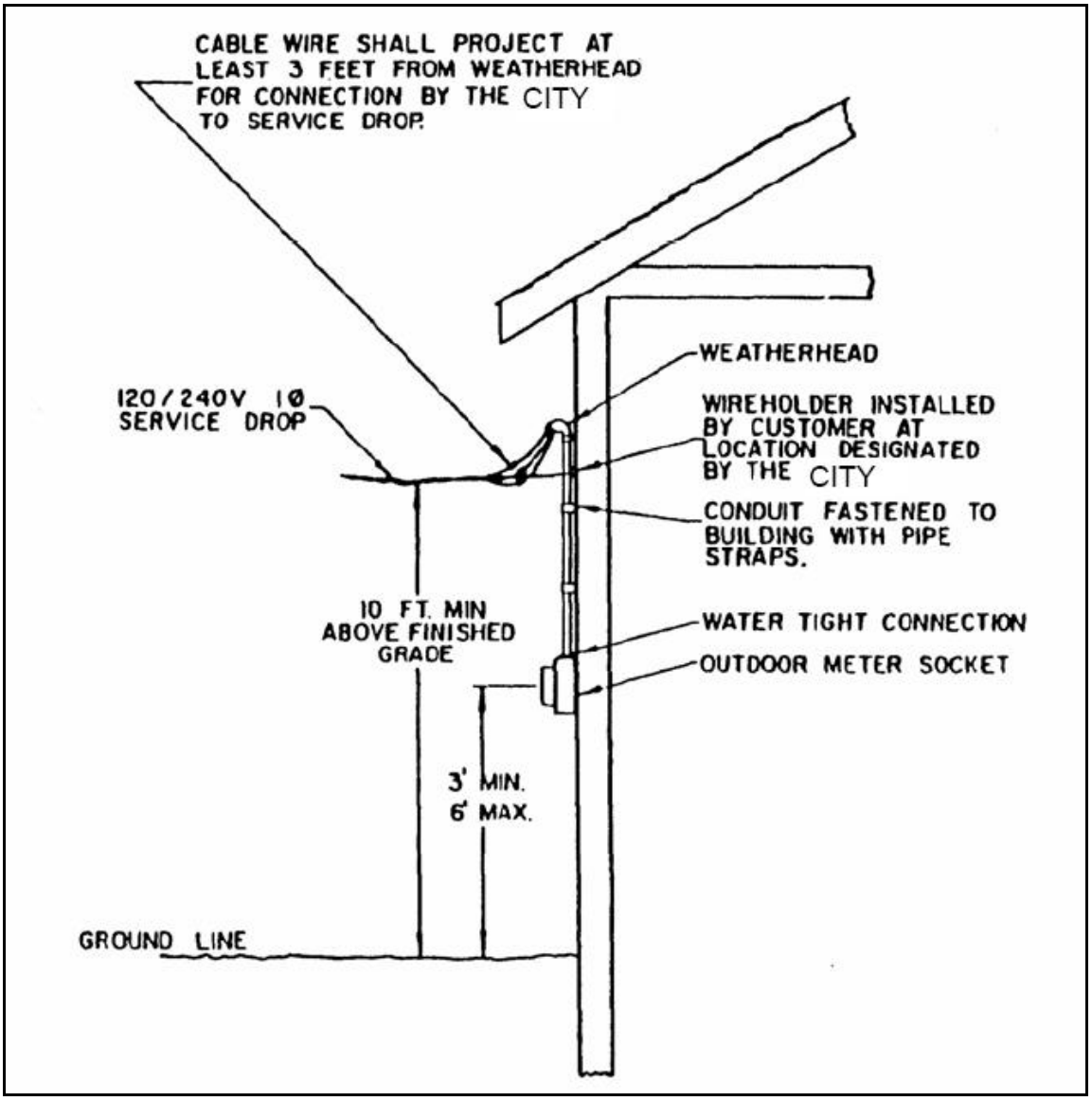

Exhibit 6

Typical Residential Service Mast

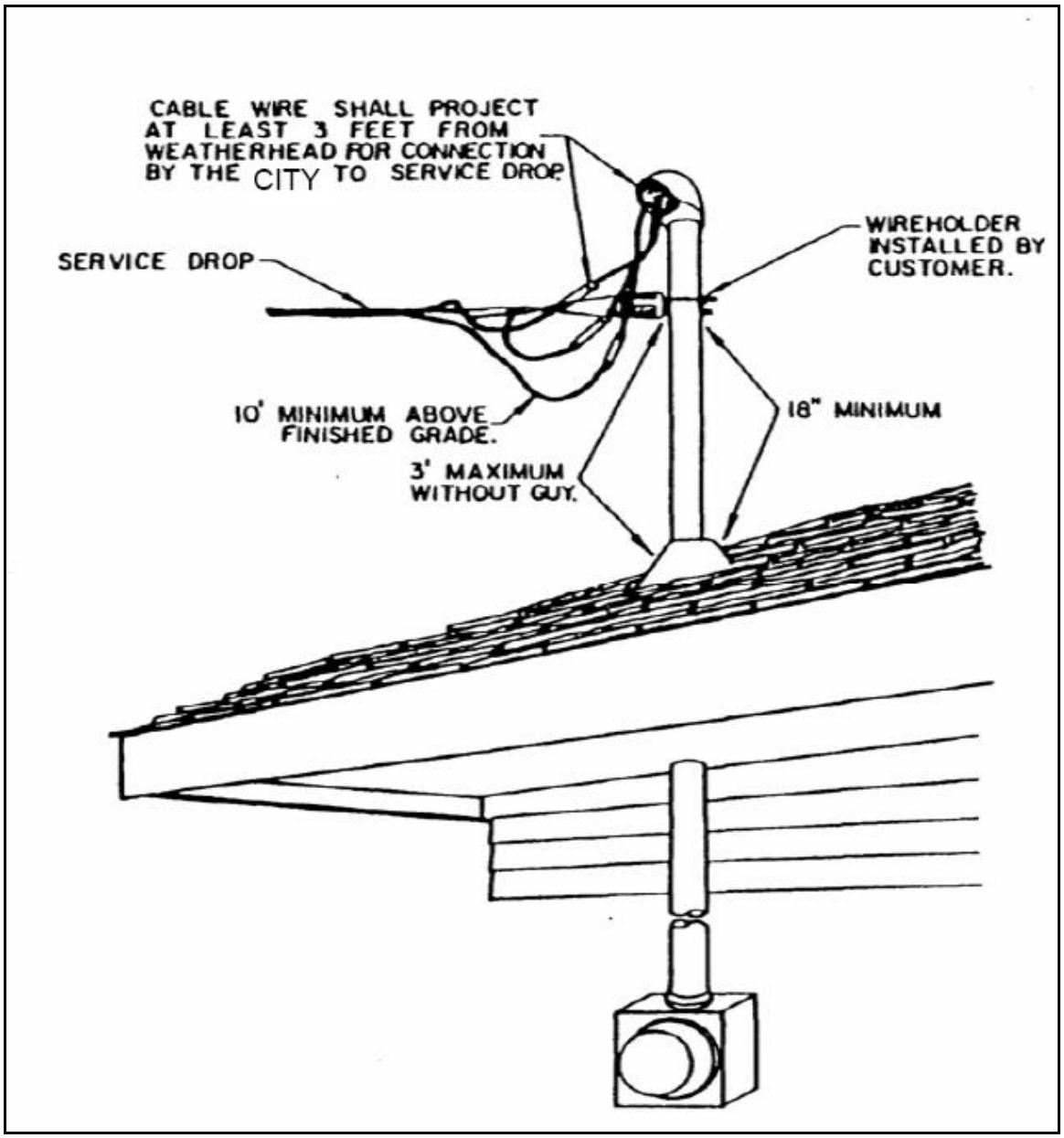

Exhibit 7

Transformer Clearance Information

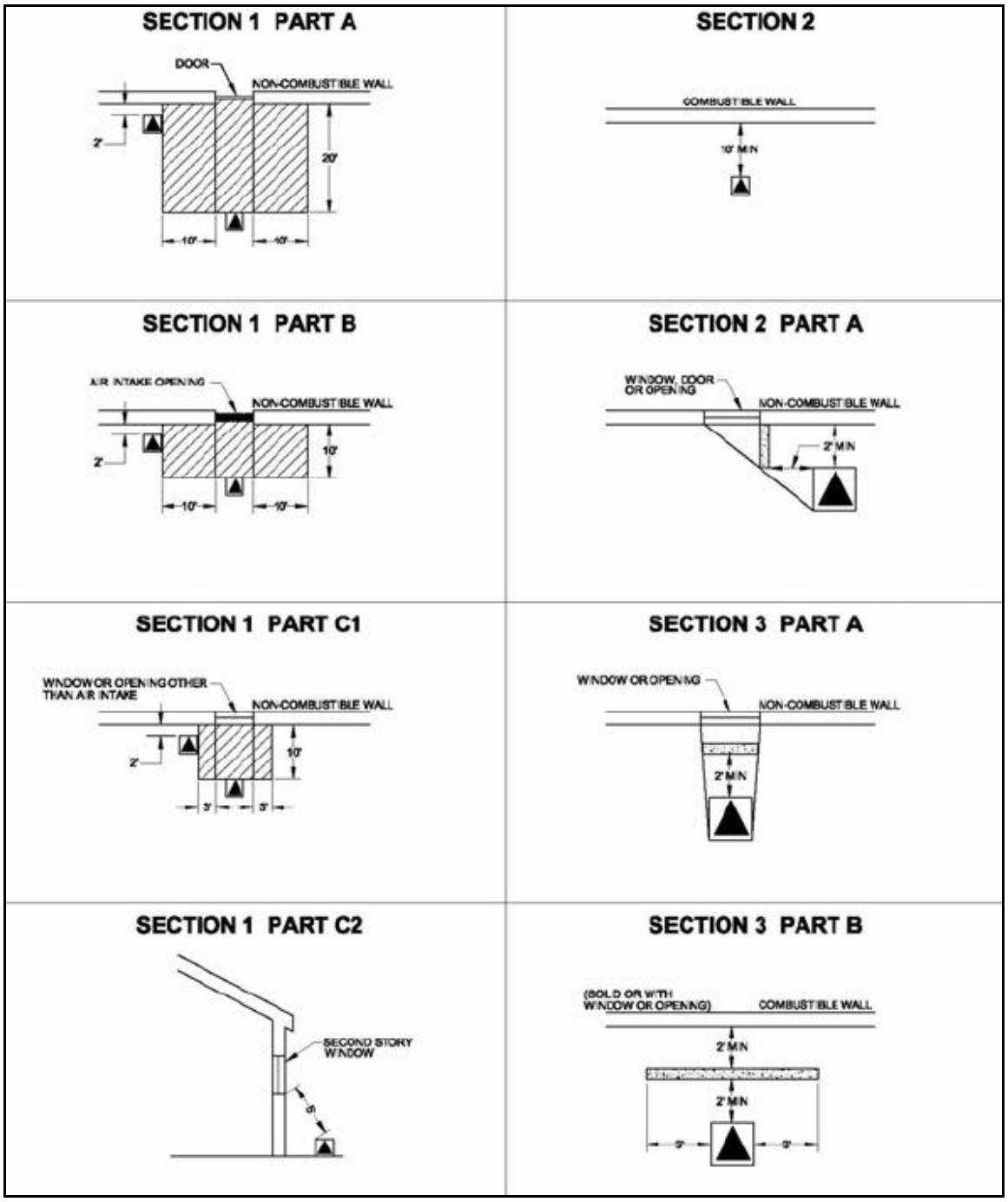

EXHIBIT 7

Location of Pad-Mounted Transformers Near Buildings

1. **Non-Combustible Walls**
(Included in this class would be wood framed brick veneered buildings, metal clad steel framed buildings, asbestos-cement-board walled metal framed buildings and masonry buildings.)

Pad-mounted oil insulated transformers may be located a minimum distance of 24 inches from non-combustible walls if all the following clearances are maintained from doors, windows and other building openings. A sump shall be installed for transformers if the immediate terrain shall be pitched away from the building. If a combustible first floor overhang exists, a 10-ft. distance from the edge of the transformer to the edge of the overhang (combination of vertical and horizontal distance) shall be required in addition to the other clearance as shown.

A. Doors
Pad-mounted oil insulated transformers shall not be located within a zone extending 20-ft. outward and 10-ft. to either side of a building door.

B. Air Intake Openings
Pad-mounted oil transformers shall not be located within a zone extending 10-ft. outward and 10-ft. to either side of an air intake opening located at the level of the transformer. If the air intake opening is located above the transformer level, the distance from the transformer to the opening shall be a minimum of 25-ft.

The above term "level of the transformer" is to be interpreted as within 10-ft. of the ground.

C **Windows or Openings other than Air Intake**

1. First Story
Pad-mounted oil insulated transformers shall not be located within a zone extending 10-ft. outward and 3-ft. to either side of a building window or opening other than an air intake.

2. Second Story
Pad-mounted oil insulated transformers shall not be located less than 5-ft. from any part of a second story window or opening other than an air intake.

2 **Combustible Walls** (Included in this class would be wood buildings and metal clad buildings with wood frame construction.)

EXHIBIT 7 – Continued

Pad-mounted oil insulated transformers shall be located at a minimum of 10-ft. from the building wall. In addition to the clearance from building doors, windows and other openings set forth for noncombustible walls. A sump shall be installed for transformers if the immediate terrain is not pitched away from the building. Contact LCU Engineering Section for sump specifications. If a combustible first floor overhang exists, a 10-ft. distance from the edge of the transformer to the edge of the overhang (combination of vertical and horizontal distance) shall be required in addition to the other clearances as shown.

3. Barriers (Included in this class are reinforced concrete, brick or concrete block barrier walls.)

If the clearance specified above cannot be obtained, a fire resistant barrier shall be constructed in lieu of the separation. The barrier when required is provided by the Customer. The following methods of construction are acceptable:

A. **Non-Combustible Walls**

The barrier shall extend to a projection line from the corner of the pad-mount to the furthest corner of the window, door or opening in question. The height of the barrier shall be 1-ft. above the top of the pad-mounted transformer.

B. **Combustible Walls**

The barrier shall extend 3-ft. beyond each side of the pad- mounted transformer. The height of the barrier shall be 3-ft. above the top of the pad-mounted transformer. If a combustible first floor overhang exists, the 24-in. specified shall be measured from the edge of the overhang rather than from the building wall.

4. Fire Escapes

Pad-mounted oil insulated transformers shall be located such that a minimum clearance of 20-ft. is maintained from fire escapes at all times.

Exception: Pad-mounted transformers may be located closer to a fire escape than the 20-ft. minimum when a fire resistant barrier is constructed around the pad-mounted (side walls and roof). The barrier shall extend a minimum of 1-ft. beyond the pad-mount. The pad-mount and barrier shall not in any way obstruct the fire escape exit. A 10-ft. clearance is required in front of pad-mounted transformer doors. Adequate transformer accessibility and ventilation must be provided.

5. Decorative Combustible Enclosure

Decorative combustible enclosures (fence) installed by the customer around pad-mounted transformers adjacent to a combustible building wall shall not extend more than 24-in. beyond the transformer towards the combustible wall. A 10-ft. clearance is required in front of pad-mounted transformer doors. Adequate transformer accessibility and ventilation must be provided.

6. Non-Combustible and Combustible Walls — Fire Resistant Barriers

For definitions of combustible and non-combustible walls and fire resistant barriers, refer to the State of Minnesota Building Code. This information can be obtained at the office of the Lake City Planning Department. 651-345-6803.

EXHIBIT 8

LCU AND CUSTOMER RESPONSIBILITIES ASSOCIATED WITH UNDERGROUND THREE-PHASE INSTALLATIONS

LCU RESPONSIBILITIES

1. Designate service location and/or transformer location.
2. Supply and install pad-mounted transformer.
3. Make all primary terminations and connections.
4. Connect the Customer's secondary cable to the secondary terminals of the transformer only after Customer's wiring has been approved by the inspecting authority.
5. Energize the service only when authorized to do so by the inspecting authority.
6. Install conduit supplied by Customer on terminal poles.
7. Supply and install all primary cable at no cost to the Customer after said Customer furnishes and installs conduit for the entire distance from the property line to the transformer (including a 30 foot vertical riser on the pole).
8. Supply and install one meter set for each Customer, including all meters required for billing purposes and any accessories such as totalizers, current and potential transformers, phase-shifting transformers, test switches, and color code meter wiring.
9. Inspect customer-furnished equipment required by LCU. Installations not in compliance with LCU regulations will be rejected.

CUSTOMER RESPONSIBILITIES

1. Contact LCU to obtain the location and routing of LCU's facilities and to fill out an "Application for Service," and any other forms or statements required by LCU.
2. Provide necessary easements and clear area of all construction obstructions.
3. Bring area to final grade before installation of cable and transformers. Grade changes requiring cable adjustments will result in charges to the party requiring the changes.
4. Compaction along conduit route after installation of conduit is Customer's responsibility.
4. LCU will furnish a ground sleeve to accommodate the transformer size and place it at a predetermined location suitable to the customer and LCPU.
5. Provide the following minimum clearances around the transformer: front-10 feet; sides and back-24 inches. These clearances must be at the same grade as the transformer.
6. Provide easy accessibility to area 24 hours a day.
7. Furnish and install all secondary cables, cabinets, and conduits from the transformer to the building service entrance.
8. Furnish and install a specified length of 4 inch or larger Schedule 40 PVC conduit to the point of interconnection with LCU (36" minimum depth), including a steel elbow at the riser pole. Furnish steel conduit for LCU installation on the riser pole. Minimum elbow (bend) radius shall be 36 inches. Furnish and install pull rope in conduit. Final location of the riser conduit attachment to the pole must be approved by LCU personnel.
9. Install protective posts if transformer pad is to be installed in parking area or area of vehicular traffic.
10. Protect LCU facilities from damage during construction period.
11. Have wiring approved by inspecting authority and then request service connection by LCU.
12. Notify LCU prior to any proposed building or grade changes within 10 feet of the electrical service or the cable route.
13. Supply and install LCU approved meter socket on outside wall or approved location and install conduit for service cable.
14. Notify LCU as far in advance as possible when any unusual loads are anticipated, such as special medical equipment, arc welders, elevators, or any other equipment that could affect LCU's system or any other Customer.

EXHIBIT 9

LCU AND CUSTOMER RESPONSIBILITIES ASSOCIATED WITH UNDERGROUND RESIDENTIAL DISTRIBUTION (URD) INSTALLATIONS

LCU RESPONSIBILITIES

1. Designate service location or transformer location.
2. Supply and install all primary cable, transformer ground sleeves, and pad- mounted transformers.
3. Make all primary terminations and connections and install the grounding system.
4. Connect Customer's secondary cables to LCU's secondary terminal after Customer's wiring has been approved by the inspecting authority.
5. Supply and install the meter set, including the meter(s) and any other meter accessories needed for billing purposes, excluding the meter socket.
6. Energize the service only when authorized to do so by the inspecting authority.
7. Install conduit supplied by Customer on terminal poles.
8. Supply and install secondary connection pedestals and secondary cable to the pedestals.

CUSTOMER RESPONSIBILITIES

1. Contact LCU to obtain the location of LCU's facilities and customer service point and to fill out an "Application for Service," and any other forms or statements required by LCU.
2. Provide necessary easements and clear area of all construction obstructions.
3. Bring area to final grade before installation of cable and transformers. Install grade stakes at all front lot line property corners. Grade changes requiring cable adjustments will result in charges to the party requiring the changes.
4. In new developments, install road crossing conduits per Exhibit 13 as designated by LCU in the general development specifications.
5. In areas with overhead transformers, supply Schedule 80 PVC or rigid steel conduit for LCU installation on the riser pole.
6. Allow LCU to install cable/conduit prior to installation of sidewalks, soil or lighting along cable route.
7. Compaction of Customer installed (buried) cable is Customer's responsibility. (LCU will compact all primary and secondary cable it buries.)
8. Provide firm soil conditions under the pad area to prevent settling of the pad.
9. Provide the following minimum clearance around the transformer: front-10 feet; sides and back-24 inches. These clearances must conform with Exhibit 7 and be at the same grade as the transformer.
10. Protect LCU facilities from damage during construction period.
11. Provide easy accessibility to the area 24 hours a day.
12. Have wiring approved by inspecting authority and then request service connection by LCU.
13. Install protective posts if transformer pad is to be installed in parking area or area of vehicular traffic.
14. Underground cable installed between December 1 and April 30 will be subject to a per foot winter installation charge.
15. Notify LCU prior to any proposed building or grade changes within 10 feet of the electrical service or the cable route.
16. Notify LCU as far in advance as possible when any unusual loads are anticipated, such as special medical equipment, arc welders, elevators, or any other equipment that could affect LCU's system or any other Customer.
17. Supply and install LCU approved meter socket on outside wall.
18. Supply all secondary cable extending from the meter to the LCU designated secondary terminus.
19. Contact LCU 24 hours in advance when a service is to be installed so that LCU can unlock the power source and the contractor can install the service into the power source.

EXHIBIT 10

ROCK AND WINTER INSTALLATION GUIDELINES

1 LCU will bill the developer for any surcharge we receive from our contractor for rock excavated or unsuitable backfill.

2 LCU will install underground electric main distribution services through October 31 at no charge, on a first come - first served basis. For jobs started before December per a mutually agreed upon schedule, installation will continue until complete with no surcharge applied for frost.

3 Developments not ready for installation by the day scheduled will be rescheduled to last. If rescheduling will result in installation on or after November 1, a trenching surcharge may be applied.

4. Installations scheduled on or after December 1, and completed before April 30, may receive a per foot trenching surcharge.

5. Installations scheduled on or after December 1 will be attempted at the discretion of LCU, based on ground conditions.

6 Where conditions do not permit the completion of a scheduled installation, or where a development cannot be completely brought to grade in time, partial installation will be made at no added cost under the following conditions:

A. Partial installation must conform to final design layout, including placement of one (minimum) permanent transformer.
B. Partial installations must be contiguous with existing facilities.
C. Total project fees must be paid before partial installation will be approved.
D. All standard pre- and post-installation site conditions must be met for a partial installation.

7. Temporary service to a permanent structure in an undeveloped area will be provided on a "at cost" basis.

EXHIBIT 11

MULTIPLIERS TO DETERMINE REQUIRED CAPACITOR KVARS FOR CORRECTING POWER FACTOR

Original Power Factor	Corrected Power Factor 90%	92%	94%	95%	96%	98%	100%
60%	0.849	0.907	0.97	1.005	1.042	1.13	1.333
62%	0.781	0.839	0.903	0.937	0.974	1.062	1.265
64%	0.716	0.775	0.838	0.872	0.909	0.998	1.201
66%	0.654	0.712	0.775	0.81	0.847	0.935	1.138
68%	0.594	0.652	0.715	0.75	0.787	0.875	1.078
70%	0.536	0.594	0.657	0.692	0.729	0.817	1.02
72%	0.48	0.538	0.601	0.635	0.672	0.761	0.964
74%	0.425	0.483	0.546	0.58	0.617	0.706	0.909
76%	0.371	0.429	0.492	0.526	0.563	0.652	0.855
78%	0.318	0.376	0.439	0.474	0.511	0.599	0.802
80%	0.266	0.324	0.387	0.421	0.458	0.547	0.75
82%	0.214	0.272	0.335	0.369	0.406	0.495	0.698
84%	0.162	0.22	0.283	0.317	0.354	0.443	0.646
86%	0.109	0.167	0.23	0.265	0.302	0.39	0.593
88%	0.055	0.114	0.177	0.211	0.248	0.337	0.54
90%	0	0.058	0.121	0.156	0.193	0.281	0.484
92%		0	0.063	0.097	0.134	0.223	0.426
94%			0	0.034	0.071	0.16	0.363
96%					0	0.089	0.292
98%						0	0.203
100%							0

INSTRUCTIONS:

1. Determine the average power factor that your system operates at during peak demand months. Call this your ORIGINAL POWER FACTOR.

2. In the row titled CORRECTED POWER FACTOR at the top of the page, find the power factor that you wish to correct your system to.

3. Read from left to right along the row corresponding to your ORIGINAL POWER FACTOR until you reach the column that shows your desired CORRECTED POWER FACTOR.

4. Read the number that you find at the intersection of the row and column. Multiply your KW Demand by this number to calculate the total amount of capacitor KVAR you need to install to your electric service.

5. If your plant operates with a 3 phase electric service, divide the total KVAR by 3 to determine the amount of KVAR to connect per phase.

Example: If your plant has a 3 phase demand of 410 KW and operates at 76% power factor, but you want to correct to 95%:

a. Find 95% in the CORRECTED POWER FACTOR row at the top of the page.

b. Find 76% in the ORIGINAL POWER FACTOR column along the left edge of the page. Read from left to right along this row until you reach the 95% column.

c. Read the number at the intersection of the row and column (0.526)

410 KW x 0.526 = 216 KVAR needed to correct your system to 95% power factor.

d. 216 . 3 = 72 KVAR per phase.

Exhibit 12

All meter sockets where potential or current transformers are not required must be purchased by the homeowner or electrician

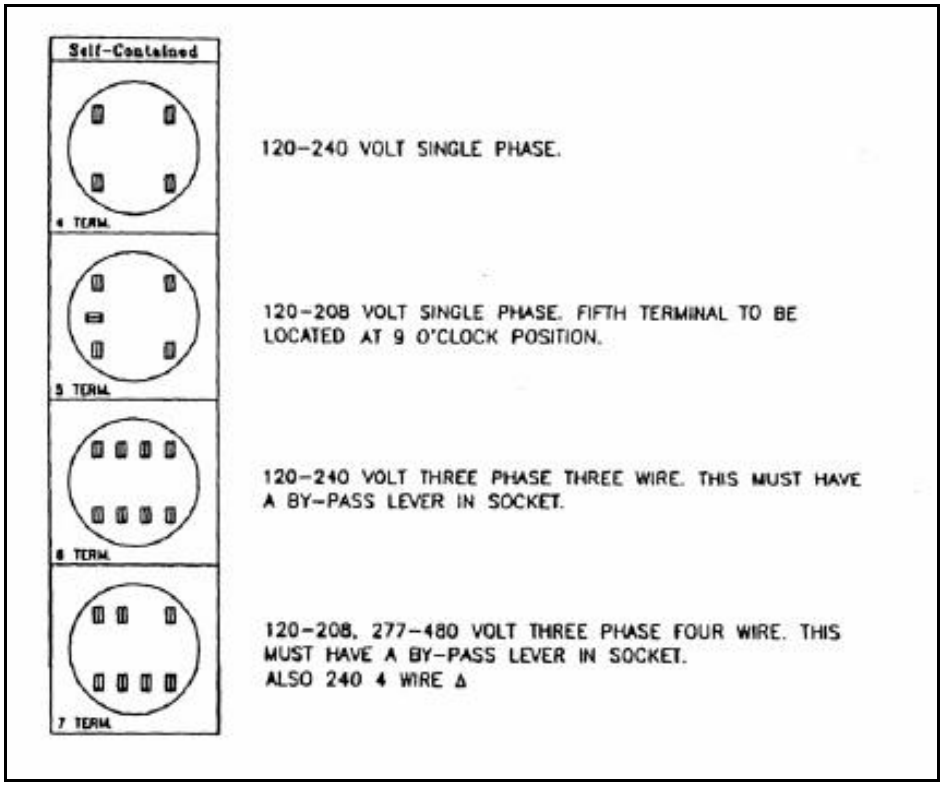

Exhibit 12 Continued

All sockets required for use with potential or current
transformers must be purchased through Lake City Utilities

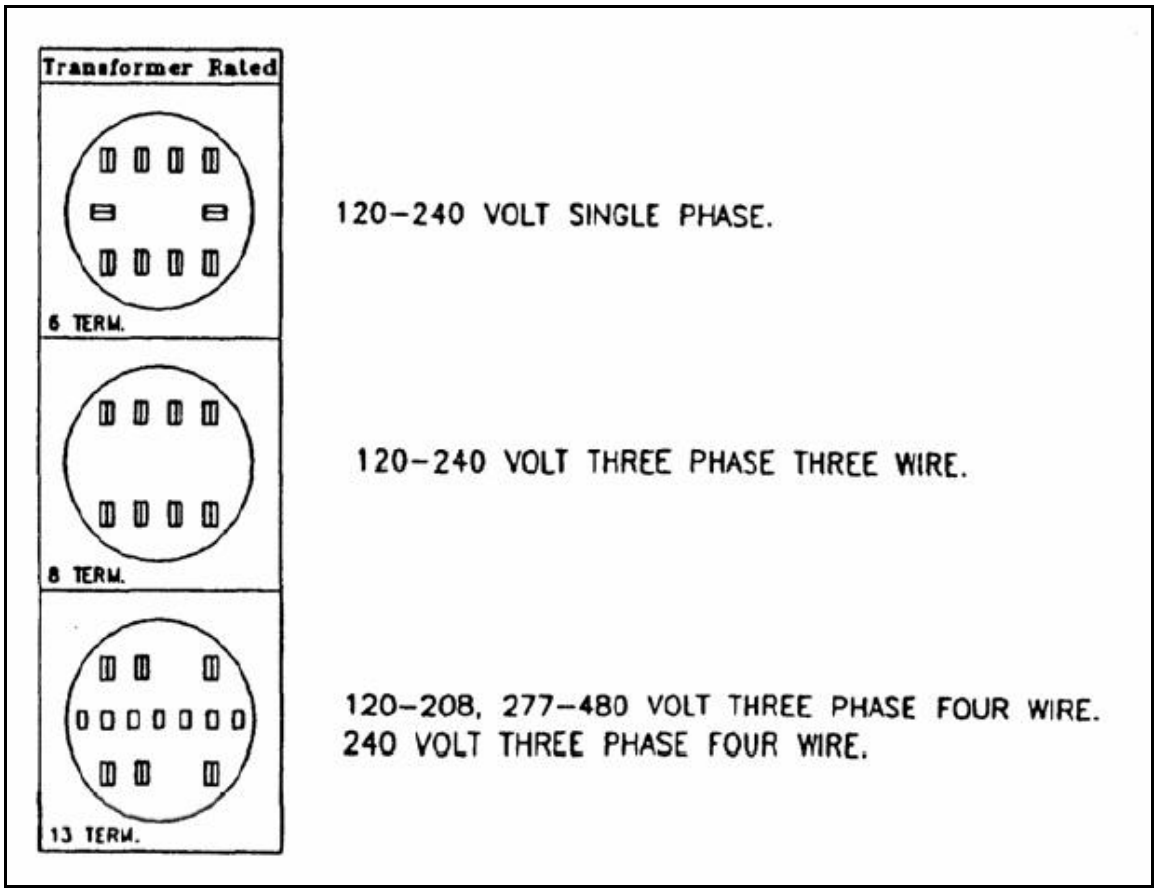

Exhibit 13

Duct Installation at Road Crossings