RULES AND REGULATIONS FOR ELECTRIC SERVICE



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General Information

101. Introduction

The Braintree Electric Light Department ("The Department") hereby sets forth its "Rules and Regulations for Electric Service" for the purpose of 1) fostering a better exchange of information among the Department and its Customers regarding the requirements and availability of the electric service from the Department and 2) presenting in written form in one place the Department's general conditions and requirements of service.

The information and requirements stated herein and as they may be amended are an integral part of and subject to the Department's Schedule of Rates and its Terms and Conditions filed from time to time with the Massachusetts Department of Telecommunications and Energy.

The Rules and Regulations are in addition and supplementary to the applicable national, state and local electrical and safety code and to by-laws and regulations passed by governmental authorities having jurisdiction.

The Rules and Regulations are on file with the Department in its main office located at 150 Potter Road, Braintree, Massachusetts and are available in booklet form upon request from the Department.

102. Revisions

The Schedule of Rates and the Rules and Regulations of Electric Service may be revised, amended, supplemented and otherwise changed from time to time by the Department, and such change, when effective, will supersede the relevant portions of the present Rules and Regulations.

103. Effect of Service Applications

The provisions of these Rules and Regulations and the Schedule of Rates apply to everyone receiving service from the Department when effective without regard to whether a service application has been made by the Customer or accepted by the Department under Article 200 hereof. Receipt of Service shall constitute the receiver of the service a "Customer" of the Department as the Term is used in the Schedule of Rates and in these Rules and Regulations.

104. Inclusions in Contracts and Rates

These Rules and Regulations shall be deemed to be part of every contract for service entered into by the Department and shall govern all classes of service where applicable, unless specifically modified by a provision contained in a particular rate or special written contract with a Customer.

105. Statement by Agents

No representative of the Department has authority to modify any rule, provision, or rate contained in this Schedule of Rates and Rules and Regulations, or to bind the Department for any promise or representation contrary thereto.

106. Organization of the Department

The Department has three separate Divisions organized for the purpose of administering and enforcing the Rules and Regulations set forth herein.

a. Engineering Division

This Division assists residential, commercial and industrial Customers and assigns the rate or rates that appear to be most advantageous to the Customer consistent with Article 107. The Engineering Division also makes inspections for service connections pursuant to these Rules and Regulations.

b. Business Division

This Division receives the information from the Customer to order a service turned on or off. They also collect Customer deposits and assist the Customer by answering questions regarding payment of bills, residential rates, and interest charges, heating budgets and electric usage by appliances.

c. Meter Division

This Division makes inspections of meter and load management installations to ensure compliance and consistency with the Rules and Regulations.

107. Choice of Rate

Every Customer is entitled to request service under the lowest rate applicable to the service supplied during each calendar year. The Department will provide Customer information upon request to aid such Customers in selection of the most advantageous rate available. Unless specifically stated contrary, all rates are based on the supply of service to the Customer throughout the twelve months of the year, and changes from one rate to another will not be made for periods of less the twelve months. The Department will not be liable for any claim that service provided to any Customer might have been less expensive or more advantageous to such Customer if supplied under a different rate.

General Requirements for Service

201. Where to Apply for Service

All requests for installation of a new service, turn-off and alterations to existing service may be made at the Department's principle business office located at 150 Potter Road, Braintree, MA 02184 or by telephone at 781-348-BELD (2353). Business hours are 7:30 a.m. - 4:30 p.m. Monday – Friday (Thursdays 7:30 a.m. – 7:00 p.m.).

Forty-eight hours notice is required on all requests to disconnect or reconnect existing service. It is essential that an application for new or additional service or notification of changes to existing service be made as early as possible so that, when required, engineering and construction details may be arranged and construction of the new or changed facilities may be completed on the date required.

202. Application and Notice Requirements

All new Customers are required to complete a written application form provided by the Department and signed by the person or entity responsible for payments of electric bills together with any applicable security deposit (deposit information may be obtained from the business office).

The application form provided by the Department shall include information the Department may deem essential to supply service to the applicants. The Customer remains responsible for all usage until a final bill has been issued as provided under Article 403.

203. Availability of Service

Prior to ordering equipment for the start of construction by the Customer or his or her agent he or she should make sure of the availability of the service desired and determine if the Department has requirements additional to those contained herein for such service. Designation of service entrance and meter locations must be made before wiring specific to such locations is installed.

The Department does not accept responsibility for information given orally by the Customer relative to the type of service available at specific locations unless an authorized representative of the Department confirms such information in writing.

204. Unauthorized Use

The use of service without notice to the Department will render the user liable for any amount of service supplied to the premise since the last reading of the meter whether or not such reading may precede said user's occupancy as shown on the Department's books. Whenever any service has been obtained at a premise on an unmetered basis, or any authorized service has been obtained at any premise to persons unknown, or for which payments have not been made due to a question of Customer identity, the owner of record of such premise shall be liable to the Department.

205. Character of Service

The Character of Service, which the Department will supply, will be that available in the locality in which the service is to be furnished. Except as may be especially provided in a particular rate or in these Rules and Regulations, the Department does not offer to supply service of non-standard characteristics.

206. Single Point of Delivery

Where service is supplied to a Customer at more than one point of delivery, each point of delivery will be considered an independent Customer, and the bill will be rendered accordingly unless otherwise specifically provided for in the rate.

207. Compliance With Availability

The use of the Department's service shall not be for purposes other than those covered by the availability provision of the particular rate under which service is supplied.

208. Multi-Unit Residential Service

Separate dwelling units, whether within the same building or in separate buildings on the same residential premises, shall be considered separate Customers. Such multi-dwelling units will be metered and billed individually wherever practicable, provided the wiring on the Customer's side of the meter and related matters are in conformity with the State and Local Sanitary and Building codes. If a residence is a multi-dwelling unit, or if for some other reason, including but not limited to violations of the State Local Sanitary and Building Codes caused by the wiring on the premises, it is impractical in the judgment of the Department or the Department is unauthorized to meter separately individual dwelling units, any service supplied through one or several meters will be the responsibility of the owner of record of the premises under the applicable residential or general service rate and said owner will be responsible for bills in said units.

209. Refusals to Serve

The Department reserves the right to refuse to supply service to new Customers or to supply additional load to an existing Customer if it is unable to do so under a standard rate, the Customer fails to fulfill the application requirements as set forth under Article 202, or if the Department is unable to obtain the necessary equipment, facilities, capital or capacity required for the purpose of furnishing such service to loads of unusual characteristics which might affect the cost or quality of service supplied to other Customers of the Department. The Department may require a Customer having such unusual loads to install special regulating and protective equipment at the Customer's cost in accordance with the Department's specifications as a condition of service. Customers refused service have the right of appeal under Chapter 164, section 60 of the General Laws of Massachusetts.

210. Unmetered Service

All services will be metered. Unauthorized acceptance of unmetered service by a meter which had been tampered with or rendered inaccurate by a Customer shall be considered unauthorized use and shall subject such Customer to liability for such service on an estimated basis, in addition to any other applicable regulatory, civil and criminal liabilities which might be imposed upon such Customer.

General Conditions of Supply and Use of Service

301. Quality of Service

The Department endeavors to furnish adequate and reliable service but does not guarantee continuous service, and, to the extent authorized by applicable law, it shall not be liable for direct or consequential losses or damages of any kind resulting from any stoppage, interruption, variations or diminution of service caused by the Customer's acts or omissions, acts of the public enemy, a state of war, requirements of Federal, State or Municipal authorities, strikes, acts of God or the elements, accidents, operating conditions or contingencies or other causes.

When a part or parts of the interconnected generation, transmission or distribution system is threatened by a condition affecting the integrity of the supply of electricity or when a condition of actual or threatened shortage of available energy supplies and resources exists, the Department may, in its sole judgment, curtail, allocate, or interrupt service to any Customer or Customers. Such curtailment, allocation or interruption shall, where possible or practicable, be in accordance with the terms and conditions of any applicable energy emergency or load curtailment plan which shall be adopted by energy dispatching and control centers in which the Department is a participant.

The Department does not undertake regulating the voltage or frequency of its service more closely than is standard commercial practice. If a Customer requires voltage or frequency regulation that is more refined, he/she shall furnish, install, maintain and operate the necessary apparatus at his/her own expense.

302. Temporary Service

Temporary service is available to any Customer who can be served from the Department's existing lines or facilities. For such temporary service the Customer shall pay the total cost of installation and removal of any poles, wires, transformers, meter equipment or other facilities that may be necessary. Service will be billed under any regular rate applicable to the type of service supplied. The Department may require an advance payment covering the estimated cost of installation and disconnection use of service or both. See Article 807 for technical specifications.

303. Suspension of Service for Repairs

The Department reserves the right to curtail or temporarily interrupt from time to time the Customer's service in order that repairs, replacements or changes may be made in the Department's facilities either on or off the Customer's premises. The Customer will normally be notified in advance to the extent practicable except in cases of emergency. Nothing in this section shall be deemed to require the Department to make such repairs, replacements or changes at times other than the Department's normal business hours (Refer to Article 201).

304. Resale of Service

Any service rendered is furnished by the Department to the Customer for the purpose and class of service specified in the applicable part of the Schedule of Rates, and such service, except as provided in Article 305 concerning service resupply for residential customers, shall not be resold to others or used for other purposes.

305. Resupply of Service for Residential Customers

When service is resupplied to others by a retail Customer of the Department, each building or premise will be considered a separate Customer and the service will be furnished to the tenants as an incident to tenancy with the cost included as an integral part of the rent. The same rule shall apply to the greatest extent possible in the case of service supplied to any condominium or homeowner's association, where the cost of such service shall be incidental to the association's fee to its members. Resupply of service as provided in this Article shall require prior written consent of the Department.

306. Suitability of Customer Apparatus

All Customer apparatus shall be suitable for compatible operation with the service supplied by the Department and the Customer shall not use the service for any purpose or with any apparatus which would cause a disturbance on the lines, mains or systems of the Department sufficient to impair or render unsafe the service supplied by the Department to its other Customers. The Customer shall be liable for any damages resulting on the Department's apparatus or facilities or to other Customers caused by failure to comply with any provisions of this article.

307. Compliance With Bylaws

Before the Department will furnish service, the Customer shall comply with all applicable bylaws, ordinances, codes and requirements of Federal, State and Municipal bodies and shall be required to furnish at the Department's request, satisfactory evidence of such compliance.

308. Inspection Certificates

Approval in writing by the Town Wiring Inspector is required before any new service will be energized.

309. Responsibility of Customer

In all cases the Customer is responsible for maintaining facilities, wiring and appliances that are suitable and proper for the safe and satisfactory reception and use of the service to be furnished by the Department.

All apparatus or facilities provided by the Department to supply service shall remain its sole property whether or not affixed to the Customer's property, and shall be returned to the Department by the Customer in the condition received, ordinary wear and tear excepted. The Customer shall pay any damages caused by the Customer to the Department's property (including damage occurring as a result of the Customer's failure to take reasonable precautions to protect such property and damage).

310. Liability of the Department

Service is delivered to the Customer at the point where the service connection is maintained. Liability for direct, indirect or consequential damages of any kind, resulting in injuries to persons or property arising out of (or traceable to) trouble/defects in the apparatus, piping, wiring facilities or equipment or any cause occurring beyond the point where the service connection of the Department terminates, shall be that of the Customer. Neither by conducting an inspection of or providing assistance to the Customer's equipment, nor in any other way, does the Department give any warranty, expressed or implied as to the adequacy, safety or other characteristics of any equipment, wires, appliances or unauthorized devices owned and/or used by the Customer.

311. Liabilities

- A. The Department shall not be responsible for any failure to supply electric services nor for the interruption, abnormal voltage of the supply or any damage resulting from the restoration of services, unless such failure, interruption, abnormal voltage or damage is due to the Department's willful misconduct or gross negligence.
- B. The Department shall not be liable for interruption, abnormal voltage, discontinuance or reversal of its service due to causes beyond its immediate control whether by accident, labor difficulties, condition of fuel supply, attitude of any public authority, or failure to receive electricity for which it contracted, or due to the operation in accordance with good utility practice of an emergency load reduction program by the Department or with whom it had contracted for a supply of electricity, or inability for any other reason to maintain uninterrupted and continuous service.
- C. The Department shall not be liable for damages to person or property of the Customer or any other persons resulting from the use of electricity due to the presence of the Department's appliances and equipment on the Customer's premises.
- D. For non-residential Customers served under general services rates, the Department shall not be liable in contract, in tort (including negligence under G.L. c.258 and Mass. G.L. c.93A) strict liability or otherwise for any special, indirect, or consequential damages whatsoever including, but not limited to loss of profits or revenue, loss of use of equipment, cost of temporary equipment, overtime, business interruption, spoilage of goods, claims of the Customers or other economic harm.
- E. Neither by inspection, nor by non-rejection, nor in any other way does the Department give any warranty, expressed or implied, as to the adequacy, safety or other characteristic of any equipment, wiring or devices installed on the Customer's premises. The Department shall not be liable for damages resulting in any way from the supplying of or use of electricity or from the presence or operation of the Company's service conductors, appurtenances or other equipment on the Customer's premises.
- F. The Customer assumes full responsibility for the proper use of electricity furnished by the Department. The Customer also assumes full responsibility for the condition, suitability, and safety of any and all wires, cables, devices or appurtenances energized by electricity on the Customer's premises, or owned or controlled by the Customer that are not the Department's property. The customer shall indemnify and save harmless the Department from and against any and all claims, expenses, legal fees, losses, suits, awards, or judgments for injuries to, or death of, persons, or damage of any kind to persons or property arising directly or indirectly by reason of 1) the routine presence, or use of electricity over the wires, cables, devices or appurtenances owned or controlled by the Customer or 2) the failure of the Customer to perform any of his or her duties and obligations as set forth in the Tariffs and the Terms and Conditions and Requirements for service where such failure creates safety hazards or 3) the Customer's improper use of electricity or electric wires, cables, devices, or appurtenances. Except as otherwise provided by law, the Department shall be liable for damages claimed to have resulted from the Department's conduct of its business only when the Department, its employees or agents have acted in a grossly negligent or intentionally wrongful manner.

312. Changes in Customer's Condition or Installation

The Customer shall give advance notice to the Department of any proposed change in the Customer's load or other conditions of use or of any change of purpose or location of his/her installation. Such change in the Customer's service conditions or installation shall not be made until such notice has been given and permission has been received from the Department. Failure to give notice of such changes shall render the Customer liable for any damage to the meters or other apparatus and equipment of the Department caused by the changed conditions or installation.

313. Rights of Way

The Department shall not be required to extend its facilities for the purpose of rendering service until it has satisfactory rights-of-way or easements to permit the installation, operation and maintenance of its facilities. To the extent required, the Customer, without expense to the Department, shall grant to or secure for the Department such rights-of-way or easements acceptable to the Department whether across property controlled by the Customer or by others.

314. Rights on Customer's Premises

In accepting service, the Customer shall thereby agree to furnish the Department, without charge, a suitable location for all of the property and equipment of the Department, including metering, necessary in furnishing such service. The Department shall have access to the Customer's premises for the purpose of installing, reading, inspecting, repairing, removing, replacing, disconnecting, or otherwise maintaining its meters, equipment, and facilities, and for all proper purposes. The Customer shall furnish the Department with keys to all meter rooms.

315. Changes in Location

If the Department places its overhead wires underground or changes the location of any of its service facilities, it may require that such changes, as may be necessary in the Customer's portion of the service connection or which may directly or indirectly benefit the Customer, be made at the expense of the Customer. If shrubs and/or other landscaping is installed or placed so that it screens BELD's equipment (meters, transformers, switchgear, etc...) from view, it shall be placed and maintained so as to allow access to BELD's equipment for maintenance and inspection. Detailed requirements are available from the Engineering Division.

Payment Terms

401. Billing Period

The normal billing period shall be that on which the particular rates are based (usually one month).

402. Payment for Service

All bills for electric service or facilities furnished by the Department to the Customer shall be due and payable by residential customers within 45 days of receipt. Payments shall be applied first to unpaid balances, including late payment charges. The Department shall charge customers \$30.00 for each returned check.

403. Final Bill

The Customer shall be liable for service taken until notice of termination has been received and confirmed by the Department and until such time as the meter is read and disconnected. The bill for service rendered up to the date of termination will be labeled "final bill" and is payable upon receipt.

404. Reconnection Charge

A reconnection charge will be made to Customers normally taking service under an all-year-round rate if the meter is disconnected and reconnected within twelve months.

405. Late Payment Charge

On each monthly bill for non-residential customers, the balance that has been unpaid for 30 days shall be subject to a late payment charge of 1.5% per month of such unpaid balance, including prior late payment charges.

Standard Characteristics and Technical Specifications

501. Standard Service Characteristics

The following types of service are generally standard but not all types are available at all locations. To find which are available at the Customer's location, he/she should consult the Engineering Division prior to the installation or purchase of equipment. Other service voltages are available only by negotiation with the Department and may involve additional cost to the Customer. The size and type of load must warrant such a service installation. Customers contemplating primary service shall consult with the Engineering Division for Department Policy.

- **A. 120/240 Volts, 3-wire, single-phase:** Most commonly used for residential and small commercial Customers with up to 50 kVA of load and with individual motors not over 5 hp. 60-Amp minimum required.
- **B. 120/208Y Volts, for single-phase, 3-wire service (open-wye application, 3-phase, 4-wire system):** May be available to customers who are located in a 120/208Y-Volt, 3-phase area if the connected load is less than 50 kVA. 60-Amp minimum required. 150-Amp maximum.
- C. 208Y/120 Volts, 4-wire, 3-phase: For Customers with loads larger than can be served via 120/240 Volts single-phase.
- **D. 480Y/277 Volts, 4-wire, 3-phase.** Normally for commercial and industrial service installations with loads larger than can be served via 120/240V single-phase. If 3-phase is allowed for loads less than 50kVA, the additional cost above the cost of a single-phase service may be at the expense of the Customer. 60-Amp minimum required.

502. Fire Alarms

All fire alarm circuits shall be metered. If required by the authority having jurisdiction that the fire alarm service connection be installed ahead of the normal metering, than a second meter for the fire alarm shall be installed. The Customer shall pay the entire cost of metering the fire alarm service.

503. Unbalanced Load

The Customer shall at all times take and use energy in such a manner that the load will be balanced between phases to within 10%. The Department reserves the right to require the Customer to make necessary changes at his/her expense to correct an unbalanced condition in its load.

504. Final Connections

The Department will connect the Customer's wiring to the Department's facilities for permanent or temporary service and it will not permit unauthorized persons to connect to Department conductors or equipment.

505. Short Circuit Currents

The Department's Engineering Division will provide short circuit current rating upon request.

506. Number of Services

A building or other structure served shall be supplied by only one service. The Braintree Electric Light Department will connect only one service drop or one set of service laterals to one set of service entrance conductors per building. The only exception to this rule will be for capacity requirements.

507. Voltage Sensitive Equipment

Customers owning or planning to purchase computers, reproduction, X-ray or data processing equipment or similar devices should be aware that this type of equipment or similar devices can be extremely sensitive to power system transients or loss of voltage. Customers should consult the manufacturer of their equipment for suitable devices to protect against the foregoing.

Overhead Service

601. Installation of Service

- A. Single-phase, 120/240-Volt overhead services with a maximum length of 120 feet from the existing distribution system shall be installed by the Department at no cost to the Customer.
- B. Three-phase, 120/208-Volt or 277/480-Volt overhead services with a maximum of 150 kVA capacity and with a maximum length of 100 feet from the existing distribution system shall be installed by the Department at no cost to the Customer if applicable.

If additional length for this provision of service is required under A or B, it may be authorized for an additional charge subject to the prior approval of the Engineering Division.

602. Point of Attachment and Clearance

The service drop shall be attached to the building or other structure at a suitable point, determined by the Department, which is not less than 10 feet nor more than 25 feet above the finished grade level. The service drop shall be accessible from a ladder without climbing on a roof and shall be at a height to permit the following minimum clearance.

- A. **Vertical Clearance Above Ground:** All wiring for service drop conductors, including the drip loop, when not in excess of 600 Volts, shall have the following clearances above ground:
 - 18 Feet above roads, streets, alleys and parking lots subject to truck traffic.
 - 15 Feet above finished grade, sidewalk or from any platform from which they might be reached. Reduced clearances shall be permitted as follows when the service drop conductors are supported on and cabled together with an effectively grounded bare messenger:
 - 12 Feet above finished grade of residential driveways or commercial areas not subject to truck traffic where the supply conductors are limited to 300 Volts to the ground.
 - 12 Feet above grade for swimming pools where more than a 25-foot distance exists (measured in any direction) from pool swimming area or diving platform to the service drop conductors and the conductors are limited to 300 Volts to ground.

Also see Horizontal Clearance below.

- 10 Feet above grade where accessible to pedestrians only and the service drop conductors are limited to 150 Volts to ground.
- B. **Horizontal Clearance:** Service-drop conductors shall have a horizontal clearance from swimming pools as outlined in the Massachusetts Electrical Code.
- C. Clearance Over Roof: In general, secondary service drop conductors shall not pass over roofs. When this is unavoidable, conductors shall have the following minimum clearances:
 8 Feet above the highest point of roofs over which the conductors pass. Reduced clearances shall be permitted as follows where the supply conductors are limited to 150 Volts to ground:

3 Feet above a roof which has a slope of not less than 4 inches in 12 inches.

18 Inches - above a roof when the service drop conductors pass over no more than 4 feet of the over-hanging portion of the roof for the purpose of terminating at a through-the-roof service raceway or approved support.

603. Overhead Line Extensions

Any line extension in excess of one hundred fifty feet required to provide service to a Customer shall be subject to prior approval by the Engineering Division. The Engineering Division may assess extra charges and conditions for the construction of any such extensions and reserves the right to limit the length of any such extension.

604. Overhead

For a single Customer, the Department will furnish and maintain one overhead service drop. The Department may charge in cases where there are multiple conductors per phase, or the size of the conductors is greater than 4/0, or when other circumstances exist that cause hardship for the Department.

605. Maximum Span of Wires

The maximum single-span distance BELD will run its overhead service drop conductors to the point of service attachment is 120 feet. Building heights, large conductors or the necessity for street, driveway or sidewalk crossings may reduce the maximum permissible spans.

606. Ownership of Private Property Construction

The arrangements described in the above articles shall be contingent upon the property owner transferring ownership of private property construction to the Department. If the customer does not elect to do so, the entire service installation on private property shall be owned and maintained by the Owner or Customer. In the latter case, the Customer shall contract with other parties for all private property construction, provided such construction is carried out in accordance with standard specifications furnished by the Department.

607. Connection to Electric Supply

The service connection by the Department will not be made unless all wiring on the Customer's premises is in accordance with the Massachusetts Electrical Code and the inspection authority having jurisdiction has given approval.

The Customer shall leave a minimum of 30 inches of conductor extending beyond the weather cap.

Underground Service – 600 Volts or Below

701. Installation of Service

In areas where the Department maintains an underground distribution system, the Department shall furnish underground service. The Customer shall install and maintain the underground service from the Department-owned transformer pad or underground hand hole to the Customer's building. The Engineering Division shall approve the hand hole location. Underground Service Cable installed by the Customer shall be single conductor copper or aluminum with extruded dielectric insulation and shall be installed in conduit. No direct burial cable shall be installed for services.

702. Connection in Hand Hole

A <u>MINIMUM</u> of 6 feet of cable shall extend out of the hand hole or transformer for proper joining purposes. Upon completion and inspection of the work, the Department shall make the final connection between the Customer's cable and the Department's cable.

703. Installation of Service on Private Property

The Customer will be responsible for the installation of a service on private property. The Customer shall consult with the Department as to the location of the service. The Department shall make all final connections to the Department's equipment. All installations shall have the approval of the Wiring Inspector.

704. Underground Distribution for Development

The construction for underground residential distribution system in new multi-unit residential developments shall be subject to prior approval by the Department and to such terms and conditions as the Department may require.

705. Underground Conductors

Customer owned underground cables should not be installed in the same trench with Department owned cables. A separate trench for conductors shall be spaced as to maintain a horizontal separation of 5 feet from all conductors rated over 600 Volts.

706. Installation of Service

When the Customer desires an underground service from the Department's overhead system, the service shall be installed as follows:

- A. **Riser Pole:** Whether the riser is to be located in the street or on private property, the Customer shall furnish underground service conductors of sufficient length to reach the Department's secondary conductors on the pole or the transformer secondary terminals. The Department shall supply this measurement. The Customer shall also provide mechanical protection for these conductors in the form of galvanized steel conduit, securely fastened to the pole, to a point ten feet above ground. The Department will furnish and install that portion of the riser above the 10-foot conduit supplied by the Customer. Installation of riser conduit and grounding for metallic conduit by the Customer shall be in accordance with **Figure 1** (See following page). The Department shall specify location of riser on pole.
- B. **Riser Pole in Street:** The riser conduit and any required underground construction shall be furnished and installed by the Customer. Should a construction permit be required for excavation of the public way, it shall be obtained at the Customer's expense. All construction shall be furnished, installed, owned and maintained by the Customer.

If the Department is required to change the location of the pole on which an underground service terminates, the necessary changes to the underground service shall be at the Customer's expense.

C. **Riser Pole on Private Property:** The Department shall furnish and install protection for the cable above the 10-foot conduit supplied by the Customer and make the connections between the riser conductors and overhead conductors.

The riser conduit, service conductors and underground construction to the building shall be furnished, installed, owned and maintained by the Customer.

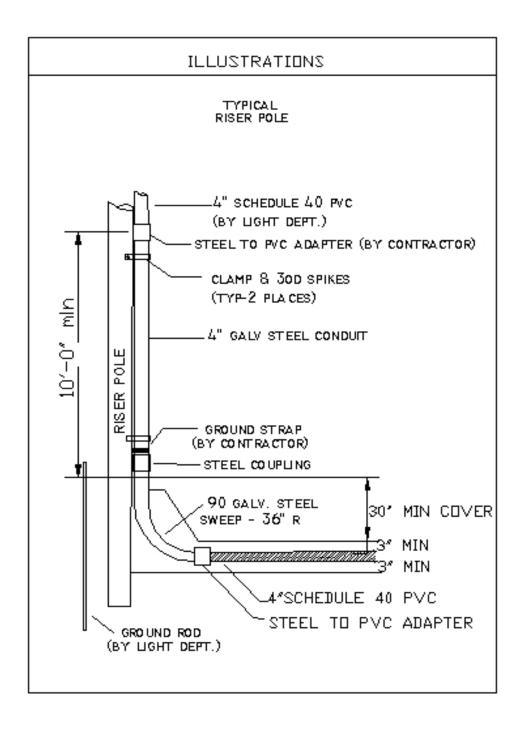


Figure 1

If the riser pole is required only because of the underground service and would not be necessary for a normal overhead service drop, the cost of this pole shall be borne by the Customer. The Department shall specify the location of the riser on the pole.

707. Underground Policy

For the purpose of Braintree Electric Light Department's future planning and aligning its policy with that of the Town, it will be the policy of the Light Department that new construction be placed underground. Only the Municipal Light Board may grant exceptions to this policy. Exceptions will be granted only in cases of extreme hardship and/or whenever there is an obvious benefit to the Department and the Customer.

All underground services will install communications conduit for Department communications (i.e. automatic meter reading - AMR). Specifications for all types of service installations should be obtained from the Engineering Division. Inspection, by the Department, of communications conduit installation is required before service will be provided.

Service Entrance

801. Size of Conductors

Size of service-entrance conductors or approved cables shall be provided for each type of service.

Size of Customer-installed service entrance conductors shall be in accordance with the Massachusetts Electrical Code.

802. Service Equipment

One or more service switch(s) or circuit breaker(s) may be installed as part of the permanent wiring for each service entrance. These devices shall conform to the following:

- A. Any service equipment located on the line side of meters must be enclosed type, with facilities for sealing by the Department. Fuse replacement or breaker reset must be possible without disturbing enclosure seal.
- B. Marking of Multiple Disconnects: Where multiple service equipment is provided for either commercial or dwelling occupancy, each disconnecting means shall be marked in a conspicuous, legible, and permanent manner to indicate which portion of the installation it controls.
- C. All services with multiple disconnects shall have the capability to lock each individual disconnect in the off position.

DISCONNECTING MEANS: It is required that a separate disconnecting means be supplied ahead of the CTs on each current transformer rated meter.

803. Assigning Location of Service and Metering Equipment

The Department shall assign the locations of the service and metering equipment. No wiring dependent upon service entrance and meter locations shall be started until the Department has assigned these locations and the inspection authority having jurisdiction has approved them. Contractors shall notify the Department of their intent to do work at least seven days in advance to allow the Department time to assign locations.

804. Unmetered Conductors

Unmetered conductors on Customer's premises shall not be installed in the same raceway or conduit with metered conductors. When unmetered conductors are run through basements or other areas not containing Department equipment, Department approval must be obtained.

The Department reserves the rights to seal all access to unmetered wiring. Wire ways, etc. containing unmetered conductors must have provisions for sealing or locking.

805. Anchorage for Service Drop Conductors

A service bolt or other suitable support is required on all buildings or structures to obtain a suitable anchorage for the service drop conductors. Where a service bolt is required, it may be obtained from the Engineering Division.

806. Low Buildings

Where there is not sufficient building height to provide the required service-drop clearances above ground, the Customer shall furnish, install and maintain a proper service mast. The service mast must be properly installed to provide the necessary mechanical strength to anchor Department service conductors. An unguyed mast shall be 2" minimum, or larger as required, galvanized rigid conduit. See <u>Figure 2</u> on the following page.

807. Temporary Service

The Customer shall provide a service structure that meets the requirements of a permanent installation with respect to service drop clearances, metering, grounding and safety. The service entrance equipment may be installed on a pole set five feet in the ground, or on a braced timber structure as shown in <u>Figure 3</u> (on the following 2^{nd} page) for Overhead and **Figure 4** (on the following 3^{rd} page) for Underground.

The temporary structure shall, whenever possible, be located adjacent to the permanent building so that the service may be transferred to the point of permanent attachment when the construction is completed.

808. Wiring Methods

Service entrance cables and conduit shall normally be exposed for their entire length, except when they pass through building walls or are encased in two inches of concrete. The service disconnecting means shall be installed either inside or outside a building or structure at a readily accessible location nearest the point of entrance of the service entrance conductors.

809. Aluminum or Other Siding to be Installed on Existing Building

To assure continuity of service, the Customer should notify the Department ten days before installation is started. This shall give the Department time to inspect the service drop attachments and advise the Customer of any metering or service problems that could result from the installation of siding. Check with the inspection authority having jurisdiction for additional service requirements on aluminum siding. No service entrance cable is allowed on aluminum siding.

810. Connection to Department's Conductors

A minimum length of 30 inches for each conductor shall be left at the upper end of the service entrance to provide for connections to Department's service conductors. The Department shall make connections to Department lines.

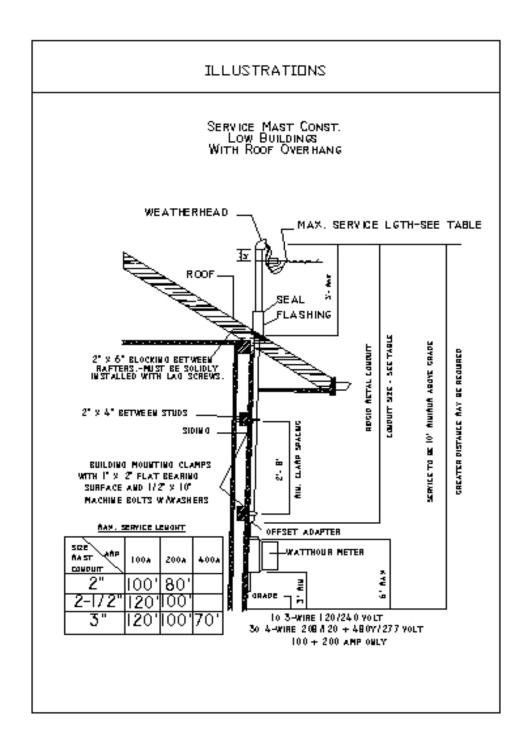


Figure 2

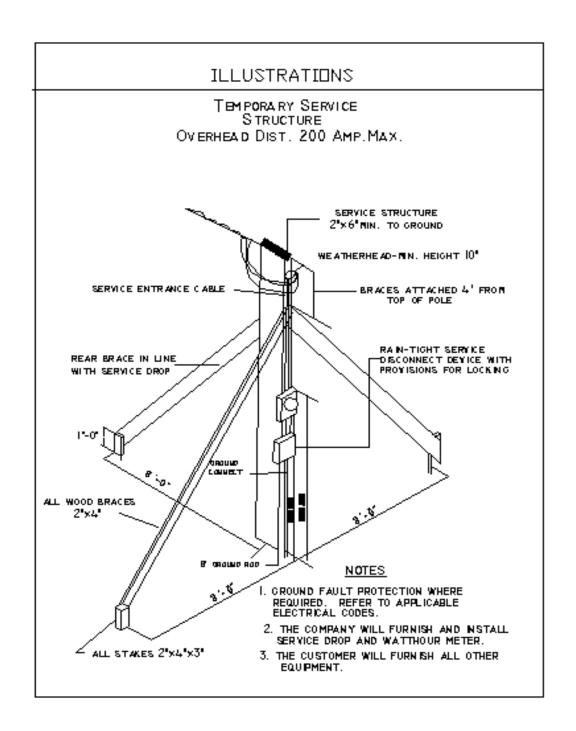


Figure 3

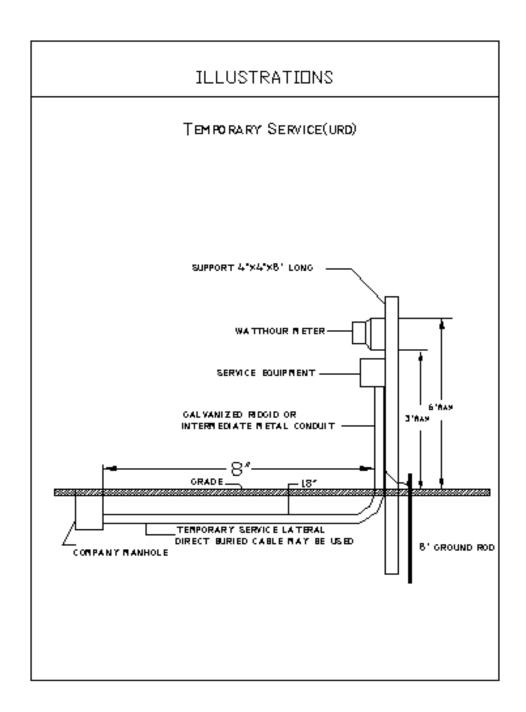


Figure 4

Primary Service Located on Private Property

901. Customer Requirements

Those commercial and industrial Customers whose total load exceeds the limit which may be installed on a pole (usually 150 KVA), may be required to provide space on private property for Department-owned transformers and protective equipment. An outside installation would consist of a pad-mount transformer or a small industrial substation.

902. Pad-Mount Transformer

This type of private property installation is available in both overhead and underground distribution areas. Location of a pad-mounted transformer shall be designated or approved by the Department.

Wiring and Voltage Requirements

1001. Fluctuating Loads

Electric welders, furnaces, boilers, compressors, pumps, molding machines or similar equipment with load fluctuations should not be installed except under conditions specified by the Department. The Department should be advised of the proposed installation of equipment of this type. Voltage dips caused by load fluctuations, regardless of their frequency, shall not cause undue disturbance to other Customers nor hinder the Department in maintaining proper voltage conditions. Where a dedicated transformer serves Customers from single-phase lines, welders shall conform to NEMA Standards and draw no more than 46 Amperes at 240 Volts.

1002. Grounding

All grounding shall be done in accordance with the Massachusetts Electrical Code enforced by the inspection authority having jurisdiction. The Department shall not be liable for damage to the property of the Customer resulting from unbalanced voltage conditions due to the opening of a grounding neutral service conductor.

1003. Grounding Secondary AC Service

Where the secondary system is grounded at any point, the grounded conductor shall be run to each individual service. Services having a grounded conductor shall have that conductor and the service equipment grounded on the Customer's premises by connecting the grounding electrode conductor to the grounded service conductor of the distribution system on the supply side of the service disconnecting means. This connection should be made within the service entrance equipment enclosure.

An underground metallic water pipe, either local or supplying a community shall always be used as a part of the grounding electrode system where such pipes are available. One or more acceptable grounding electrodes, as required by the Massachusetts Electrical Code for other grounding electrodes and equipment grounding, shall supplement it. To minimize the hazard of electrical shock, all metallic water piping systems inside a building shall be bonded to the grounding electrode. Where extensive metal in or on buildings may become energized, adequate bonding to the grounding electrode shall provide additional safety.

1004. Power Factor

Maintenance of high power factor is of the utmost importance to both Customer and Department in the operation of their distribution systems. The Department should be consulted in advance regarding all installations likely to develop low power factors in order that such conditions may be rectified by measures adapted to each proposed installation. If the Customer's power factor should drop below 90%, the Department will investigate the reason(s) for this drop. The Department may deem it necessary to impose a power factor correction charge.

1005. Power Factor Correction Capacitors

When the Customer desires to install capacitors for the purpose of power factor correction, the Department should be consulted prior to the ordering of such equipment.

Approval by the Department for all capacitor installations is required to assure that service to other Customers will not be adversely affected by the manner in which such equipment is installed and operated.

1006. Power Supply to Voltage Sensitive Equipment

Customers who install computers, x-ray equipment, emergency devices or other voltage sensitive equipment are advised that auxiliary devices must be employed to filter out voltage spikes and to adjust for voltage variations. The Department is not responsible for voltage variations that may be caused by switching, lightning surges, motor vehicles hitting utility poles or conditions of an emergency nature.

Meters

1101. General

All energy supplied by the Department shall be measured by appropriate meters for billing purposes. The installation of meters and metering equipment shall comply with the requirements set forth in this Article. The Department shall furnish and install all meters required for billing purposes. Where the nature of the Customer's site or structure requires the installation of non-standard metering equipment, the Department may assess charges for the reimbursement of the costs incurred for installation of such equipment and /or may impose other terms and conditions regarding the metering of service provided to the Customer.

1102. Metering Tampering - Warning

Do not tamper with meters, instrument transformers, metering devices or Department wiring under penalty of law. Any unmetered electric service is unlawful and can result in termination of service. See excerpt form General Laws in the back of this booklet (Chapter 164, Sections 127 and 127A).

Meter sealing rings, locking devices and meter seals shall not be cut or removed. Any property of the Department shall not be moved, removed or altered in regard to wiring or connections by other than authorized employees of the Department.

1103. Meter and Equipment Seals

Department authorization is required before removing Department seals in order to work on Customer equipment or for any other reason.

1104. Standard Meter Installations

For each meter installation, the Meter Division will specify the type of metering. Self- contained socket metering is standard where the load side capacity is not more than 150 Amperes. Following are the standard meter installations normally specified for the various types of service installations.

All 200-Amp and 400-Amp, self-contained services shall have a single handle, manually operated, bypass type meter socket.

A. Single-Phase Service, 120/240 Volts

When the load side capacity is 400 Amps or less, socket type metering shall be installed. A 4-terminal meter trough is required. When the service goes from 200 Amps to 400 Amps, a 400-Amp, class 320 continuous rating socket, Millbank catalog #U2448-X or equivalent will be used. See <u>Figure 5a</u> and <u>Figure 5b</u> on the following page.

B. AC Secondary Network, 3-Wire (Two Phases and Neutral) Service, 120/208Y Volts

When the load side capacity does not exceed 150 Amperes, socket type metering shall be installed. A 5-terminal meter trough is required. The fifth terminal shall be at the 9 o'clock position and connected to the neutral block in the meter trough. See **Figure 6a** on the following 2nd page.

C. Three-Phase, 4-Wire Service, 208Y/120 Volts

- When the load side capacity is 400 Amps or less, socket type metering shall be installed. A 7-terminal meter trough is required. See <u>Figure 6b</u> (on the following 2nd page).
- When the service goes from 200 Amps to 400 Amps, a 400-Amp, class 320 continuous rating socket, Millbank catalog #U2594-X or equivalent will be used and will be cold sequenced with service disconnect means clearly marked for, and in sight of, the meter.
- When the capacity is in excess of 400 Amps, current transformers shall be installed and the Meter Division must be contacted for installation requirements.
- The conductor run between the instrument transformer and the meter shall be kept to a minimum, and shall not exceed 50 feet. These sockets shall be installed by the Customer and connected to a CT cabinet enclosure with a 1¼" rigid steel or emt conduit. The conduit must be one continuous run without junction boxes or LBs unless given special permission by the Department.

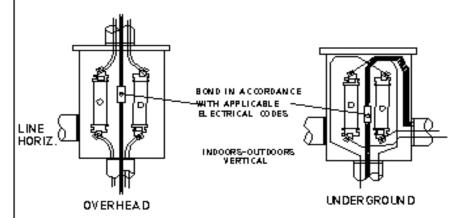
D. Three-Phase, 4-Wire Service, 480Y/277 Volts

- When the load side capacity is 400 Amps or less, socket type metering shall be installed. A 7-terminal meter trough is required. See **Figure 6b** on the following 2nd page.
- When the service goes from 200 Amps to 400 Amps, a 400-Amp, class 320 continuous rating socket, Millbank catalog #U2594-X or equivalent will be used and will be cold sequenced with service disconnect means clearly marked for, and in sight of, the meter.
- When the load side capacity is more than 400 Amps, current transformers shall be used and the Meter Division must be contacted for installation requirements.
- The conductor run between the instrument transformer and the meter shall be kept to a minimum and shall not exceed 50 feet. These sockets shall be installed by the Customer and connected to a CT cabinet enclosure with a 11/4" rigid steel or emt conduit. The conduit must be one continuous run without junction boxes or LBs unless given special permission by the Department.
- When the load side capacity is 400 Amps or less, socket type metering shall be installed. A 7-terminal meter trough is required. See **Figure 6b** on the following 2nd page.

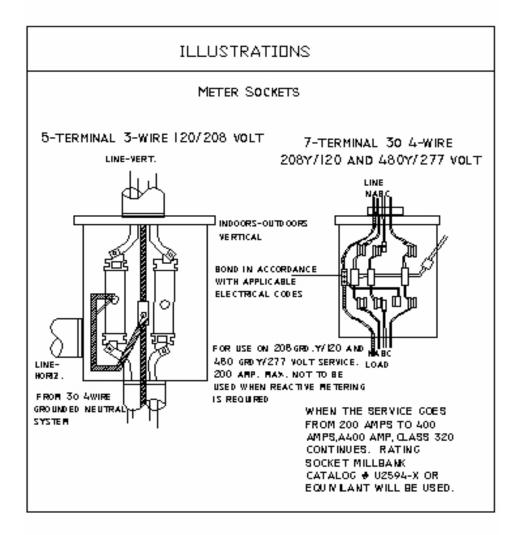
ILLUSTRATIONS

METER SOCKETS

4-TERMINAL 3-WIRE 120/240 VOLT LINE VERT.



WHEN THE SERVICE GOES FROM 200 AMPS TO 400 AMPS A 400 AMP, CLASS 320 CONTINUOUS RATING SOCKET MILLBANK CATALOG #U2448-X OR EQUIVALENT WILL BE USED.



1105. Meter Bypasses

All 200-Amp and 400-Amp services shall have manually operated bypass type meter sockets. Bypasses are not designed for and must not be used as load breaking devices. The bypass mechanism must meet the following requirements. See <u>Figure 7</u> on the following page.

- 1. Only manual bypasses are permitted.
- 2. The bypass must have a mechanism operated by a single handle.
- 3. The non-bypassed, in-service position of the operating mechanism must be visible when the meter is installed
- 4. It must not be possible to replace the meter socket cover when the operating mechanism handle is in the bypassed position.
- 5. 200-Amp and 400-Amp seven terminal sockets with bypasses must have a mechanism, which locks the meter blades in the socket jaws.

Meter sockets with bypasses whose operating mechanism is not visible when the meter is installed or bypasses which require auxiliary equipment such as straps, jumpers, etc., are not allowed.

1106. Primary Service

The Engineering Division shall furnish specific requirements for metering.

1107. Grounding of Meter Sockets

- A. Where the meter socket is installed on the line side of the service disconnecting means, the socket shall be grounded by bonding (neutral) conductor.
- B. Where the socket is installed on the load side of the service disconnecting means, the socket shall be grounded by means of an equipment-grounding conductor. The grounded (neutral) conductor shall be insulated from the grounded parts of the socket.

1108. Meter Locations

400 Amps and under.

Residential metering equipment shall be installed on the line side of the service disconnecting means (hot sequence), for all services.

Over 400 Amps

Metering equipment for any service over 400 Amps shall require an instrument transformer enclosure installed on the load side (cold sequence) of a sealable disconnecting means that can be locked in the off position. Each individual instrument transformer installation must have a separate disconnecting means.

Outdoor meter locations are required for most installations. Each location shall be readily accessible for testing and maintenance. Service will not be provided if reaching the meter requires Department employees to use adjacent property, climb fences or other obstructions, or cause damage to the Customer's shrubbery or flowerbeds in gaining access to the meter. The meter socket shall not protrude over the sidewalk or driveway. Meters on garages shall be located so that they will not be damaged by motor vehicles.

A. When subject to damage: The Customer is responsible for damage to Department metering equipment. Meters installed in isolated locations or in such areas where accidental or malicious damage may be anticipated will be located within a Department approved enclosure furnished, installed and maintained by the Customer. Hasps shall be provided on such enclosure for the installation of Department padlocks.

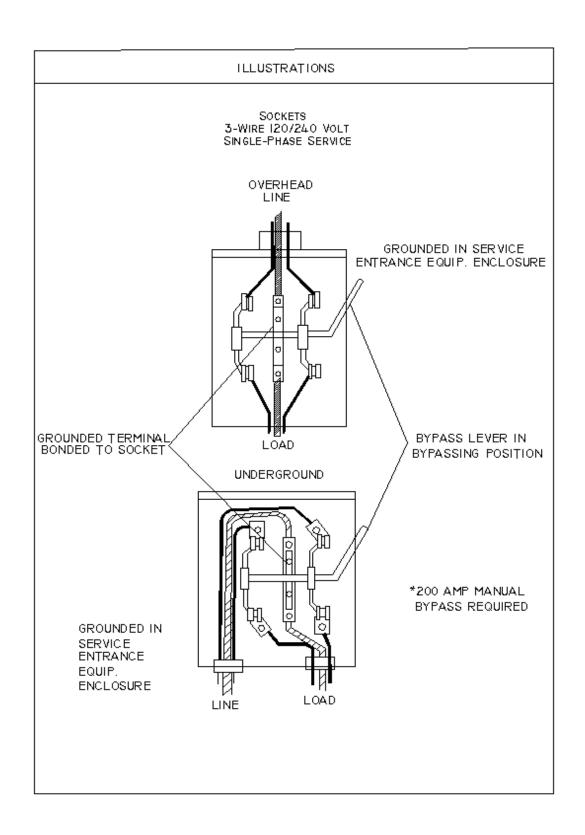


Figure 7

- B. **Indoor Locations:** In multiple-occupancy buildings for residential or commercial use where four (4) or more meters are needed, the meters may be installed inside a meter room. There should only be one (1) meter room per building. Keys to such meter room will be provided to the Department.
- C. Unacceptable Locations: Metering equipment shall not be installed in locations subject to excessive moisture, dust, heat or chemical fumes or in locations which are hazardous or inaccessible. Meter locations are not acceptable in living spaces, bedrooms, bathrooms toilets, closets, kitchens, kitchenettes, stairways or under stairways, display windows, attics, boiler rooms, elevator shafts, over doors, stoves or sinks, directly under, in the rear of or close to steam, gas, water or drain pipes or near moving machinery.
 - Meters in garages or adjacent to driveways shall be so located that they cannot be damaged by motor vehicles.
 - Meter sockets for use with large instrument transformer rated installations are normally larger than sockets for self-contained metering so as to provide a space for the meter test switch. These sockets shall be furnished by the Department and installed by the Customer.

1109. Meter Height

Meter sockets or troughs should be mounted so that the face of the meter is five feet above the final grade. In no instance shall any meter be installed with the top of the meter more than six feet and the bottom of the meter less than three feet above the final grade. A clear area of three feet is required in front of each meter.

1110. Mounting

Meter sockets and meter breaker centers shall be mounted plumb and firmly secured to supports. Where supports are attached to masonry or concrete walls, expansion bolts or anchors shall be used. Wood plugs driven into holes in masonry, concrete, plaster or similar materials are not acceptable.

1111. Identification of Meter Sockets and Customer Disconnecting Means

All meter sockets and Customer disconnecting means shall be plainly and permanently marked for proper suite, floor, office, etc. by the electrical contractor or owner. Service shall not be provided to a building that has unidentified meter sockets.

Where suites, offices, apartments or other areas are not assigned numbers by the building owner, the electrical contractor shall clearly designate the location of each tenant's premises, such as: "Basement Front," "1st Floor Right," or "2nd Floor Rear". Such locations shall be determined from a position facing the front of the building from the outside.

1112. Unmetered Conductors

Unmetered conductors on Customer's premises shall not be installed in the same raceway or conduit with metered conductors. All wire ways, main disconnects, switchgear, etc. containing unmetered conductors must have provisions for sealing to restrict access before service is energized.

1113. Unmetered Supply Conductors

Compartments enclosing unmetered supply conductors shall be accessible through hinged doors or removable panels provided with hardware for the installation of seals as specified by the Department.

1114. Fuses

The contractor shall supply all fuses before leaving the job. It is recommended that spare fuses be furnished for each Customer.

In all installations where special types of fuses, such as high interrupting capacity or current limiting fuses are used it is very important that the Customer maintain a stock of replacement fuses.

1115. Security

All cabinets, switches, circuit breakers and other enclosures giving access to unmetered wiring shall be equipped with approved locking provisions.

The service switch or circuit breaker, when installed on the line side of the meter shall be so designated that the unmetered wiring is inaccessible. The locking device should not have to be removed even during the renewal of fuses.

Instrument Transformer Installations

1116. Instrument Transformer Installations

For all installations requiring instrument transformers, the transformers shall be furnished by the Department without charge and installed by the Customer. All current transformers supplied by the Department shall be the 12-inch, bar type CTs. For uniformity, these will be installed with the white polarity mark to the "line side". See **Figure 8** on the following page.

1117. Customer-Supplied Instrument Transformer Cabinets

Instrument transformers shall be mounted in one of the following ways.

- A. Separate compartments at switchgear or other service equipment. Such compartments shall have:
 - 1. A barrier which physically isolates the instrument transformers from all other service equipment.
 - 2. A separate door for the compartment with a padlock hasp.
 - 3. The raceway(s) for all meter wiring for instrument transformers shall extend into the Instrument Transformer Cabinet.
- B. A separate 30"x 30" x 10" double door, hinged cover CT cabinet with a padlock hasp and, on all three-phase installations, an insulated groundable neutral assembly for all service neutrals.

Either A or B must be supplied by the Customer.

1118. Uses of Instrument Transformer Cabinets

Instrument transformer cabinets shall not be used as junction boxes or for branch circuit wire ways. Service conductors shall enter and leave the cabinet as one circuit with no branches, regardless of the number of conductors per phase. Line side connections to other meters shall not be made in the transformer cabinet.

Except for Department owned metering equipment, no instruments, meters or other equipment shall be placed in the instrument transformer cabinets or compartments or connected to the secondary of metering transformers.

1119. Department-Supplied "CT" TYPE Meter Sockets

These sockets shall be installed by the Customer and connected to the CT cabinet enclosure with a $1\frac{1}{4}$ rigid steel or emt conduit. The conduit shall not exceed 50 feet and must be one continuous piece without junction boxes or LBs unless given special permission by the Department. Secondary metering conductors shall be furnished and installed by the Department.

The instrument transformer must be located within 50 feet of the meter. When the instrument transformer cabinet is not adjacent to the associated meter, it must be located in an area accessible to Department personnel.

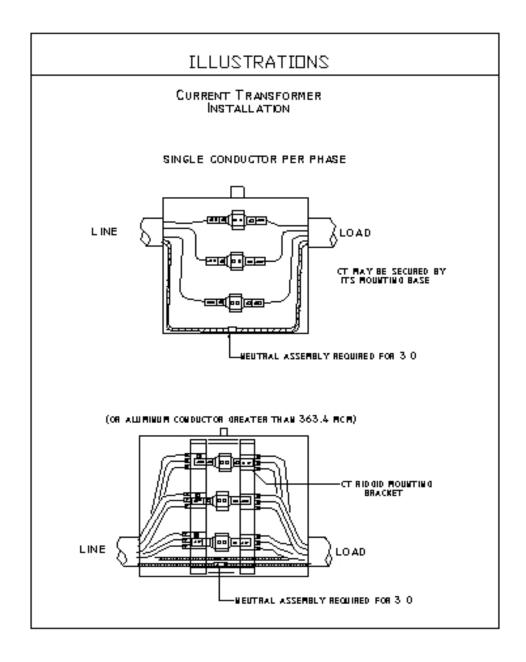


Figure 8

1120. Wiring Current Transformers

Current transformer primary connectors and connections to service conductors shall be supplied and made by the Customer. Unless part of an approved CT assembly, the Department requires NEMA standard 2-hole lugs with ½" bolt holes and ½" silicon bronze bolts, 2 flat washers, 1 lock washer and 1 nut per bolt.

1121. Current Transformer Installation: 4-wire 208Y/120 Volts and 480Y/277 Volts

The current transformer shall be installed with white polarity mark to the line side.

Neutral Assembly Required for Three Phase

Neutral Assembly Required for Three Phase. Meter Division installs necessary secondary wiring for current transformers.

1122. Multiple Conductors

On installations involving multiple conductors per phase, the Customer shall furnish and install an approved rigid mounting for connecting the conductors to the primary terminals of the current transformers. Refer to **Figure 8** on the previous page for details of installation involving multiple conductors per phase.

Where multiple conductors are used or where conductor size is greater than 336.4-mil aluminum, the Customer shall furnish and install a rigid mounting, securely fastened to the transformer enclosure for connecting the conductors to the primary terminals of the current transformers.

1123. Pad-Mounted Metering

If a single Customer is supplied from a pad-mounted transformer, the instrument transformers and meter shall be mounted on the pad-mounted distribution transformer.

1124. Primary Metering

Where primary metering equipment is installed for the Customer's benefit, the Customer shall pay the difference between primary and secondary metering costs.

Utilization Equipment/Motor Specifications

1201. General

Electric service must not be used in such a manner as to cause unusual fluctuations or disturbances in the Department's supply system, and in case of violation of this rule, the Department may discontinue service or require the customer to modify this installation and/or equipment with approved controlling devices. Motor and other installations connected to Department lines must be of a type to use minimum starting current and must conform to the requirements of the Department and the applicable Electrical Code as to wiring, kind of equipment and control devices.

1202. Fluctuating Loads

Welders, X-ray equipment, motors connected to variable load machinery, and other equipment having fluctuating load characteristics may require special facilities for satisfactory service. The Department reserves the right to withhold connection to such loads which are considered detrimental to the service of other Customers. The Engineering Division will advise the Customer regarding these applications.

- A. **Arc Welders:** The Department reserves the right to refuse the supply of service to any AC arc welder which could cause interference or disturb the quality of service to other customers.
- B. **Resistance Welding Machines:** Shall not be installed on Department lines without first obtaining the Department's permission.
- C. **Intermittently Operated Equipment:** Electric furnaces and boilers, heat pumps, x-ray equipment, compressors, pumps, molding machines or similar equipment with load fluctuations at a frequency greater than four times per hour should not be installed except under conditions specified by the Department.

1203. Protective Equipment

Protective devices shall be installed on the load side of meter.

- A. **Protection Against Single-Phase Operation:** Three phase motors shall be protected against the possibility of the failure of any one phase of the supply circuit. Three over-current (overload) units shall be used; one in each phase unless the motor is protected against single-phase operation by other approved means.
- B. Under Voltage Protection: Motors that cannot be safely subjected to full voltage at starting, or motors the starting of which on return of normal voltage after an interruption would endanger life or property, shall be provided with automatic under voltage protection. Such protective device shall insure that with either no voltage or under voltage the motor will be disconnected from the line and the starter will be returned to the "off" position.

The Department recommends the use of time delay under voltage protection because instantaneous under voltage protection will operate on momentary fluctuations of voltage.

- C. **Overload Protection:** All motors should be protected against overload by the installation of adequate over current thermal protective devices or their equivalent, which will operate so as to prevent excessive motor winding temperatures.
- D. **Phase Reversal:** On motors for passenger and freight elevators, cranes and hoists, and other equipment where reverse rotation might cause property damage or injury, an approved reverse-phase relay should be installed so that the motor circuit will be opened in the event of phase reversal or loss of any phase.
 - The operation of this relay and associated circuit breaker should be instantaneous and should be such that the circuit cannot be re-energized until the normal phase relations are restored.
- E. **Damage to Equipment:** The Department shall not be responsible for damage caused to Customer owned equipment where such damage is caused by absence or failure of any of the above protective devices.
- F. **Automatic Restarting:** A motor that can restart automatically after shutdown shall not be installed if its automatic restarting can result in injury to persons.

1204. Water Heaters

Electric water heaters for domestic use in an individual private dwelling or an individual private apartment must be wired to Department specifications for the applicable service voltage and domestic rate. Information regarding application of domestic water heating rates may be obtained from the Department's Business Office. See **Figure 9** and **Figure 10** on the following pages for connection details.

A controlled Water Heater Rate is available to residential Customers using electricity as the sole means for heating water. Elements shall be separately controlled and interlocked so that only one element can be on at a time. A contact in the Load Management control supplied and installed by the Department will be controlled by the utility to hold the water heater out of service during peak loads. Installation of the Department's Load Management control is mandatory for all new construction after 1/1/89 and will be installed by the Customer's electrician under these circumstances.

1205. Central Air Conditioners

In all new residential construction, central air conditioning installations shall be controlled by Load Management controls. The Department will supply these controls at no cost to the Customer, but the Customer's electrician will install the Department's controls during the construction process. The air conditioning compressor will be held out of service for short periods of time during peak loads. See <u>Figure 11</u> for Typical Residential Load Management Installation.

In all new commercial construction, central air conditioning installations shall be controlled by Load Management / EMS controls. Commercial Customers may install their own controls if desired, but they must provide the Department with the opportunity to inspect such installation once complete and provide the Department with all information on customer's EMS system. The Braintree Electric Light Department reserves the right to control Customer's EMS system. Testing of Customer's EMS / Load Management system will be done post inspection. If all conditions cannot be met, the Department will require that the commercial Customer's electrician install the Department's Load Management controls.

See Figure 12 for Central Air Conditioning Load Management connections.

Customer Generation

1301. Customer's Emergency Standby Generator

If the Customer installs a standby generator for the purpose of supplying all or part of its load in the event of a service interruption, the Customer's wiring shall be arranged so that no electrical connection may occur between the Department's service and the Customer's other source of supply. This shall require the installation of a double throw switch or an equivalent arrangement approved by the Department. See **Figure 13**.

The Customer must notify the Engineering Division in advance of installing standby generating equipment and obtain approval for the method of connection.

Precautions must be taken where alternate means of generation are employed, whether emergency or otherwise, so that no possibility of electrical connection may occur between the Department's service and the Customer's other source of supply (i.e. marinas with dockside service, truck docks, etc.).

1302. Customer's Auxiliary Generation

Prior to the installation of solar, wind turbine or other auxiliary generation intended to operate interconnected with the Department, Customers shall notify the Engineering Division to assure proper interfacing. These are precautions that must be taken to maintain adequate safety and quality of service to other Customers. The Customer shall be required to provide protective and synchronizing equipment.

Customers wishing to sell electric energy shall consult with the Engineering Division. Any such sale shall be subject to prior approval of the Department.

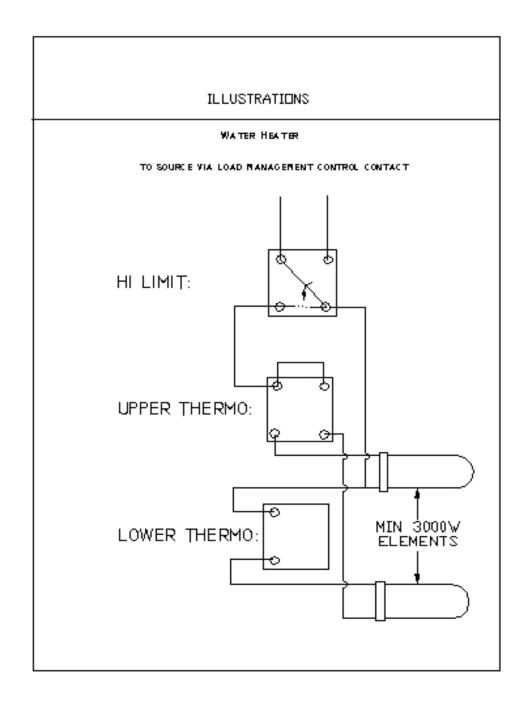


Figure 9

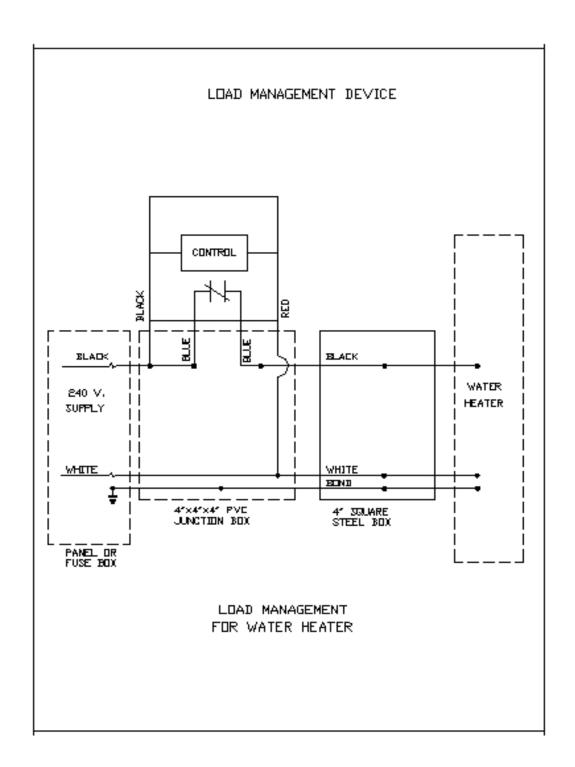


Figure 10

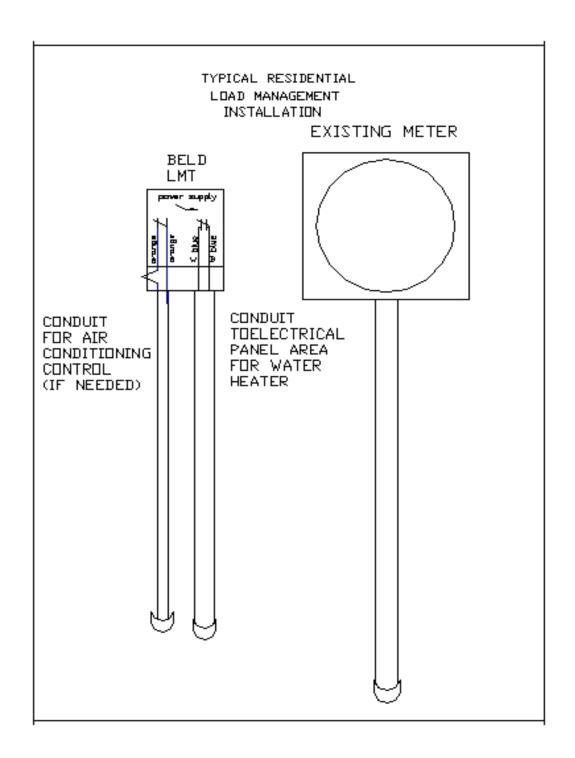


Figure 11

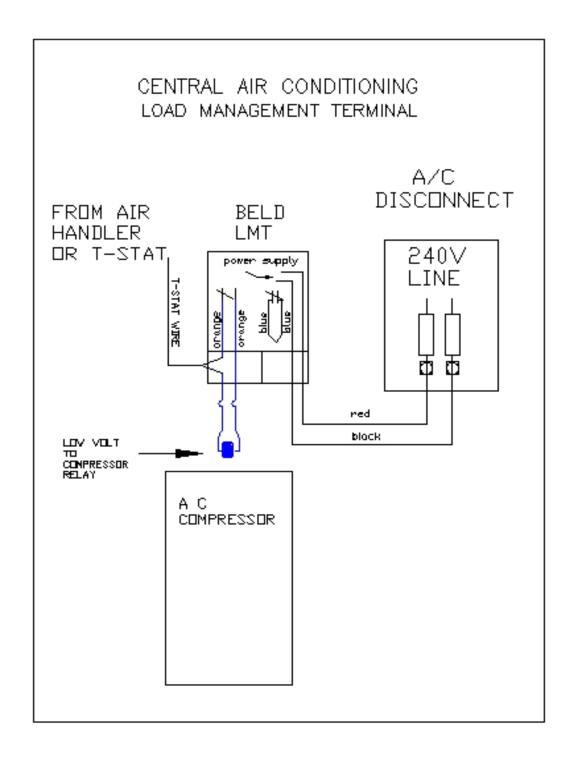


Figure 12

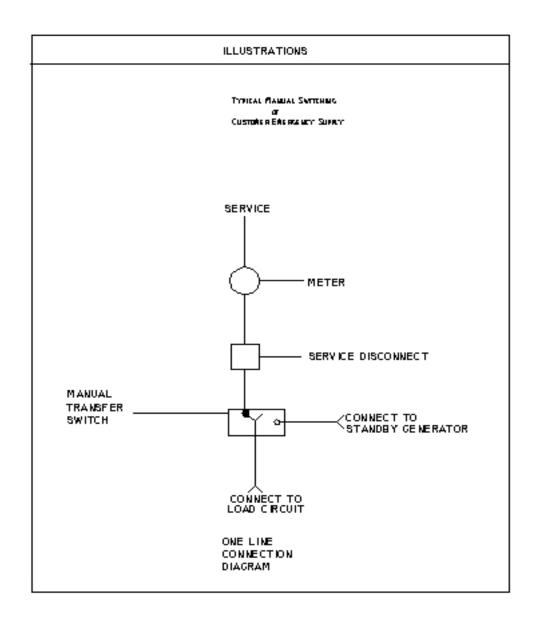


Figure 13

1303. Customer's Cogeneration

A cogeneration facility is defined as a facility that produces electric energy and steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating or cooling purposes. Prior to the design and installation of any equipment, a Customer considering a cogeneration installation shall consult with the Engineering Division for the Department policy.

Communications

1401. Installation of Eliminator or Traps

Where necessary, suitable eliminators or traps shall be installed by the Customer in such a manner as to prevent radio, telephone and television interference feeding back into the supply circuit.

1402. Attachments to Poles Prohibited

The attachment of antenna systems to poles carrying Department conductors is strictly prohibited due to the possibility of serious injuries resulting from accidental contacts. The Department shall remove such attachments immediately upon discovery at Customer expense.

1403. Clearances from Department's conductors

Outdoor antenna, counterpoise and lead-in conductors shall not cross over but may cross under electric light or power circuits provided National Electrical Safety Code conditions are met.

1404. Carrier Equipment

If a Customer's wiring is used for carrying current or a carrier system for remote control of power, communications or signaling purposes, there must be installed suitable filter equipment approved by the Department to keep the Department's distribution system free of any high frequency component produced by the Customer's equipment.

1405. Community Antenna Television (CATV) systems

Requests to install coaxial cable on poles for the distribution of high frequency signals employed in CATV systems shall be referred to the Department. All construction shall conform to Department standards, the Massachusetts Electrical Code Article 820 and any other regulations for CATV pole line attachments.

1406. Private Attachments

Any Customer wishing to attach private communication equipment to Department poles should contact the Engineering Division for information.

1407. Department Communications

All underground services will install communications conduit for Department communications (i.e. automatic meter reading - AMR). Specifications for all types of service installations should be obtained from the Engineering Division. Inspection, by the Department, of communications conduit installation is required before service will be provided.

Excerpts from General Laws of Massachusetts

Chapter 82, Section 40

Contractors Making Excavations in Public Way required to Give Notice Thereof to Public Utility Companies

"No person shall, except in an emergency, contract for, or make an excavation, which shall include, but not be limited to, the discharge of explosives and the demolition of any structure but which shall not be deemed to include gardening or tilling the soil in the case of privately owned land, in any public way, any public utility company right of way or easement, or any privately owned land under which any public utility company, municipal utility department, or natural gas pipeline company maintains underground facilities, including pipes, mains, wires or conduits, unless at least seventy two hours, exclusive of Saturdays, Sundays and legal holidays, but not more than sixty days, before the proposed excavation is to be made such person has given an initial notice in writing of the proposed excavation to such natural gas pipeline companies, public utility companies and municipal utility department supply gas, electricity or telephone service in or to the city or town where such excavation is to be made. Such notice shall set forth the name of the street or the route number of said way and a reasonably accurate description of the location in said way or on private property the excavation is to be made. If such notice cannot be given as aforesaid because of an emergency, it shall be given as soon as may be practicable. Copies of such notice together with a statement certifying that they have been mailed or delivered to such public utility companies as required by the preceding provision of this section shall be filed with the officer or board having charge of any such public way before a permit to excavate may be approved or issued, except in case of any emergency.

Where an excavation is to be made by a contractor as part of the work required by a contract with the Commonwealth or with any political subdivision thereof or other public agency, for the construction, reconstruction, relocation or improvement of a public way or for the installation of a railway track, conduit, sewer or water main, such contractor shall be deemed to have complied with the requirements of this section by giving one such notice setting forth the location and the approximate time required to perform the work involved to each of said companies.

Within seventy two hours, exclusive of Saturdays, Sundays and legal holidays, from the time said notice is received or at such time as said company and the excavator agree in writing, said company shall respond to the original written notice or to subsequent oral or written notice by designating at the locus, the location of pipes, mains, wires or conduits, in that portion of the public way, public utility company right of way or easement or privately owned land in which the excavation is to be made, and the providing of such designation by the company shall constitute primary evidence of an exercise of reasonable precaution by the company s required by this section.

Any such excavation shall be performed in such a manner, and such reasonable precautions taken to avoid damage to the pipes, mains, wires or conduits in use under the surface of said public way, public utility company right of way or easement, or privately owned land, including, but not limited to, any substantial weakening of structural or lateral support of such pies, main, wire, or conduit, penetration or destruction of any pipe, main wire or conduit or the protective coating there of or the severance of any pipe, main or conduit.

When any damage to any such pipe, main, wire or conduit or its protective coating occurs, the public utility company natural gas pipeline company, or municipal utility department shall be notified immediately by the person or public agency responsible for the excavation causing the damage.

The making of an excavation without providing notice or notices required by this section with respect to any proposed excavation which results in any damage to a pipe, main, wire or conduit or its protective coating shall be prima facie evidence in any legal or administrative proceeding that such damage was caused by the negligence of such person.

Notice to the public utility underground plant damage prevention system pursuant to Section seventy-six D of Chapter One hundred and sixty-four (164), which notice provides the information required by this section with respect to any proposed excavation and which is given at least seventy-two hours, exclusive of Saturdays, Sundays and legal holidays, but not more than sixty days, before the proposed excavation is to be made, shall constitute compliance with the notice requirements of this section.

Nothing contained in this section shall be construed to affect or impair local ordinances or by-laws requiring permits to be obtained before excavating in a public way shall be approved or issued by the officer or board having charge of

any such way, except in an emergency, until such time as copies of such notices to public utility companies are filed by the applicant for a permit as required by this section.

Whoever violates any provision of this sections shall be punished by a fine of two-hundred dollars (\$200.) for the first offense and not less than five-hundred dollars (\$500.00) nor more than one-thousand dollars (\$1,000.00) for any subsequent offense (Amended by 1980, 502,1, approved July 14, 1980, effective 90 days thereafter).

Chapter 82, Section 42

"No person, other than acting in the course of his employment, an employee of a public utility company, as defined in Section Three twenty-five shall, except in an emergency and except while engaged in gardening or tilling the soil, make an excavation or change grade, with power equipment, on any privately owned land serviced by a public utility company, municipal utility department or natural gas pipe line company which maintains underground facilities located on such land unless he shall first give notice to the company or department servicing said land at least forty-eight hours before commencing such excavation or change in grade. Such notice shall contain a reasonably accurate description of the location in which the excavation is to be made. If such notice cannot be given, as aforesaid, because of an emergency, it shall be given as soon as may be practicable"

Chapter 164, Section 116

Entry on premises to examine and maintain gas or electric meters.

"An office or servant of a gas or electric company who is duly authorized in writing by the president, treasurer, agent or secretary of said company and who displays on his outer garment a suitable badge bearing his photograph, issued to him by his employer for the purpose of examining or removing the meters, pipes, wires, fittings and works for supplying or regulating the supply of gas or electricity and of ascertaining the quantity of gas or electricity consumed or supplied; and if any person, directly of indirectly, prevents or hinders such office or servant from so entering such remises or from making such examination or removal, such officer or servant may make complaint to any court or magistrate directed to the sheriff or to any of his deputies, or to a constable of the town where such company is located, commanding him to take sufficient aid and repair to said premises accompanied by such officer or servant, who shall examine such meters, pipes, wires, fittings and works for supplying or regulating the supply of gas or electricity, and ascertain the quantity of gas or electricity consumed or supplied therein, and shall, if required, remove any meters, pipes, wires, fittings and works belonging to the company."

Chapter 164, Section 127

Penalty for Injury to Electric Meter, etc.

"Whoever unlawfully and with intent to avoid payment by himself of another person for a prospective or previously rendered service the charge or compensation for which is measured by a meter or other mechanical device injures or destroys, or suffers to be injured or destroyed, any meter, pipe, conduit, wire, line, pole, lamp or other apparatus belonging to a corporation engaged in the manufacture or sale of electricity or to any person, or whoever unlawfully and with intent to avoid payment by himself or another person for a perspective or previously rendered service prevents an electric meter from duly registering the quantity of electricity supplied, or in any way interferes with its proper action or just registration, or, without the consent of such corporation or person, unlawfully and intentionally diverts or suffers to be diverted any electrical current from any wire of such corporation or person, or otherwise unlawfully and intentionally uses or causes to be used, without the consent of such corporation or person, any electricity manufactured or distributed by such corporation, or charged to such person shall be punished by a fine of not more than one-thousand dollars (\$1,000.00) or by imprisonment for not more than one year, or both":

Chapter 164, Section 127A

Providing for civil penalties in relation to the theft of electricity or gas.

"Whoever unlawfully and intentionally injures or destroys, or suffers to be injured or destroyed, any meter, pipe, conduit, wire, line, pole, lamp or other apparatus belonging to a corporation, including municipal corporations which own municipal lighting plants engaged in the manufacture or sale of electricity or gas to any person, or unlawfully and intentionally prevents an electric or gas meter from duly registering the quantity of electricity or gas supplied, or in any way interferes with its proper action or just registration, or, without the consent of such corporation or otherwise unlawfully and intentionally uses or causes to be used, without the consent of such corporation or

person, any electricity or gas manufactures or distributed by such corporation, or charged to such person for triple the amount damages sustained thereby or One thousand dollars (\$1,000.00) whichever is greater. Damages shall include the value of the electricity or gas used and the cost of equipment repair and replacement. Any damages assessed under the provisions of this section in excess of the actual damages sustained by the corporation or person manufacturing, distributing or selling such electricity or gas shall be paid to the Commonwealth".

Chapter 166, Section 21A

Coming into close proximity to high voltage lines

"No person shall require or permit any employee to operate a crane, power shovel or other such types of construction equipment in close proximity to overhead high voltage lines; not to enter upon any land, building or other premises to engage in construction work, including excavation, demolition, repair or other such work or to erect, install, operate or store in or upon such premises any machinery or construction equipment, including well drilling, pile driving or hoisting equipment, where it is intended to perform such work or operate such equipment in close proximity to overhead high voltage lines unless and until contract with said high voltage lines has been effectively guarded against in the manner hereinafter prescribed. For the purposes of this section and sections twenty-one B to twenty-one G the words "in close proximity to overhead high voltage lines: shall mean within six feet of such lines."

Chapter 166, Section 21B

Protection of overhead high voltage lines.

"The operation or erection of any tools, machinery or equipment, or any part thereof capable of vertical, lateral, or swinging motion; the handling or storage of any supplies, materials or apparatus or the moving of any house or other building, or any part thereof, under, over, by or near overhead high voltage lines, shall be prohibited, if at any time during such operating or other manipulation it is intended or necessary to bring such equipment, tools, materials, buildings or any part thereof within six feet of such overhead high voltage lines, except where such high voltage lines have been effectively guarded against danger from accidental contact by either:

- (1) The erection of mechanical barriers to prevent physical contact with high voltage conductors; or
- (2) De-energizing the high voltage conductors and grounding where necessary. Only in the case of either of such exceptions may the six-foot clearance required be reduced. The required six foot clearance shall not be provided by movement of the conductors through strains impressed by attachments or otherwise upon the structures supporting the overhead high voltage lines, nor upon any equipment, fixtures, or attachments thereon.

If neither (1) or (2) are practicable in the opinion of the utility company or other owner or operator of such overhead lines, and it is necessary to temporarily relocate the high voltage conductors, mutually agreeable arrangements shall be made with the owner or operator of such lines for their temporary relocation.

- (3) In addition to (1) and (2) an insulated cage-type guard or other effective protective device of a type approved by the commission of labor and industries shall be installed about the boom or arm of all hoisting or other such construction equipment, except backhoes or dippers, being operated in proximity of overhead high voltage lines.
- (4) All mechanical barriers and all insulated protective devices referred to herein shall be of such character and construction as are suited to work operations, and adequate for the electrical conditions to be encountered.
- (5) All mechanical barriers and all insulated protective devices shall be maintained in good functioning condition and shall be subject to periodic inspection.

The provision of this section and the preceding section, insofar as they require the erection of mechanical barriers or the de-energizing of high voltage conductors, shall not apply to the transportation of a crane, power shovel or other similar types of construction equipment upon a public way when such equipment is being transported to a construction site."

Chapter 166, Section 21 C

Warnings; operation of equipment near high voltage lines

"The owner, agent or employer responsible for the operation of equipment shall post and maintain in plain view of the operator on each crane derrick, power shovel, drilling rig, hay loader, hay stacker, pile driver, or similar apparatus, any part of which is capable of vertical, lateral or swinging motion, an approved weather-resistant warning sign legible at twelve feet reading "WARNING-Unlawful to operate this equipment within SIX FEET of high voltage lines."

Chapter 166, Section 21 DS

Warning signs; size; posting

"Warning signs shall be placed:

- (1) Within the equipment readily visible to operator of cranes and other equipment when at the controls of such equipment;
- (2) On the outside of equipment in such number and locations as to be readily visible to mechanics or other persons engaged in work operations.

Warning signs shall be not less than five inches in height, nor less than seven inches in width."

Chapter 166, Section 21E

Notification of operation near high voltage lines.

"Before any operations are to be performed within six feet of any overhead high voltage lines, the person or persons responsible for the work to be done shall promptly notify the utility or other company owning or operating the overhead high voltage lines.

The work shall be performed only after satisfactory arrangements have been negotiated between the owner or operator of the lines and the contractor."

Chapter 166, Section 21F

Exemptions; definitions.

"The provisions of sections 21A to 21E inclusive, shall not apply to the construction, reconstruction, operation and maintenance of overhead electrical conductors and their supporting structures and associated equipment by authorized electrical workers; nor to any authorized person engaged in the construction, reconstruction, operation and maintenance of overhead electrical or communications circuits or conductors and their supporting structures and associated equipment of rail transportation system, electrical generating, transmission or distribution systems, or communications systems.

As used in Sections 21A - 21F, inclusive, the words "high voltage" shall mean a voltage in excess of 440 Volts, measured between conductors, or measured between the conductor and the ground; the words "mechanical barrier" shall mean, temporary devices for separating and preventing contact between material or equipment and overhead electrical conductors such as:

- (a) Series of poles or the equivalent;
- (b) Non-conductive enclosure around conductors.
- "De-energizing" shall mean removing the voltage from electrical conductors.
- "Temporary relocation" shall mean:
- (a) Removing electrical conductors from poles;
- (b) Elevating electrical conductors from poles;

(c) Rerouting electrical conductors.

"Authorized person" shall mean:

- (a) employees of a light and power company with respect to the electrical system of such a company, and the employees of a transportation system with respect to the electrical circuits of such system;
- (b) Employees of communication utilities, state, county or municipal agencies having authorized circuit construction on the poles or structures of an electric power company or transportation system or communication system;
- (c) Employees of an industrial plant with respect to the electrical system of such plant;
- (d) Employees of any electrical or communications contractor with respect to work under his supervision.

"Warning sign" shall mean a weather resistant sign of not less than five inches by seven inches with a yellow background and black lettering reading as follows:

"WARNING-Unlawful to operate this equipment within SIX FEET of high voltage lines."

Chapter 166, Section 21G

Violations; fine and penalties

"Whoever violates any of the provisions of sections 21A to 21F inclusive, shall be punished by a fine of not less than one hundred dollars (\$100.00), nor more than one thousand dollars (\$1,000.00) or by imprisonment for not more than one year, or both."

Larceny: General Provisions and Penalties

Chapter 266, Section 30 provides, inter alia...

"Whoever steals, or with intent to defraud obtains by false pretense, or whoever unlawfully, and with intent to steal or embezzle, converts or secretes with intent to convert, the property of another. whether such property is or is not in his possession at the time of such conversion of secreting, shall be guilty of larceny, and shall. . . , if the value of the property stolen exceeds one hundred dollars (\$100.00) be punished by imprisonment in the state prison for not more than five years, or by a fine of not more than six hundred dollars (\$600.00) and imprisonment in jail for not more than two years; or if the value of the property stolen. . .does not exceed one hundred dollars (\$100.00), shall be punished by imprisonment in jail for not more than one year or by a fine of not more than three-hundred dollars (\$300.00)."

Chapter 266, Section 127 - Malicious or Wanton Injuries to Personal Property provides:

"Whoever destroys or injures the personal property of another in any manner or by any means not particularly described or mentioned in this chapter shall, if such destruction or injury is willful and malicious, be punished by imprisonment in the state prison for not more than five years or a fine of not more than \$1,000.00 and imprisonment in jail for not more than one year, or, if such destruction or injury is wanton, shall be punished by a fine of not more than \$500.00 or by imprisonment for not more than one year; but if the value of the property so destroyed as injured is not alleged to exceed \$15.00, the punishment shall be a fine not more than \$15.00 or imprisonment for not more than one month."

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