ELECTRIC SERVICE INSTALLATION RULES

411 7th Avenue
Pittsburgh, Pennsylvania 15219

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Introduction

These rules are issued for use by Customers, builders, electrical contractors, architects, engineers, etc. The rules require the installation of safe and adequate wiring and electrical equipment, which permits Customers to enjoy the full benefits and convenience of safe electrical service.

Customers shall ensure that new buildings, structures, additions, modifications and any other construction projects keep the minimum clearances required from existing Company supply lines. These minimum clearances are specified in the National Electrical Code, the National Electrical Safety Code and some local building codes. The Customer shall notify and supply construction plans to Customer Service for any project near Duquesne Light Company ("Company") supply lines well in advance of planned construction.

These rules document minimum Company requirements. Municipal and other building codes or special conditions may require installation changes. When this occurs, the parties involved should meet with the Company to resolve the changes, which shall be documented in writing.

Copies of these rules may be obtained at the Company offices or by writing to:

Duquesne Light Customer Service
411 Seventh Ave. (6-1),
Pittsburgh, PA 15219

Scope

These rules shall apply to the installation of, or changes to, the wiring and equipment for receiving electric service. The electric service is intended for the exclusive use of the Customer or Customers.

Company equipment consists of the conductors and apparatus required to deliver energy to the Customer's wiring system, which includes service lines, poles, pole-mounted equipment, conductors, switches, transformers, etc. including such apparatus located in or on Customer owned premises, which may include, as applicable, substations, vaults, pads, conduits, and manholes.

Customer equipment includes service-entrance conductors, service lateral conductors (in most cases), service equipment and all premises wiring and equipment. Customer equipment may also include the structures and enclosures located on customer premises which contain Company equipment.

USE OF THESE RULES SHALL BE AT THE USER'S OWN RISK AND EXPENSE AND USER EXPRESSLY RELEASES DUQUESNE FROM ALL LIABILITY FOR INJURY OR DAMAGE RESULTING FROM OR CAUSED BY SUCH USE INCLUDING, BUT NOT LIMITED TO, ALL PRESENT AND FUTURE DIRECT, INDIRECT, SPECIAL, PUNITIVE AND/OR CONSEQUENTIAL DAMAGES.

1. Company Contact Information

Customer Service (8 a.m. to 5 p.m. Monday through Friday)	412-393-7100
All Emergency Calls	412-393-7000
New Business Department	412-393-4343

A Major Account Representative may need to be directly contacted. Contact the New Business Department or Customer Service to have a Major Account Representative assigned or to obtain the Major Account Representative's direct contact information.

Unless otherwise noted, feedback from the Company's Metering Department can be received through contacting the Company's New Business Department or a Major Account Representative.

2. Definitions

CERTIFIED TEST REPORT: A final report from an equipment manufacturer documenting the actual results from tests performed on the material being provided.

COMMERCIAL TRAILER: A transportable structure, similar to a Mobile Home, for commercial use for construction, display, office, school room, bank, store, etc.

COMPANY: Refers to the Duquesne Light Company.

CUSTOMER: Any person, partnership, association, corporation or other legal entity lawfully receiving service from the Company; or in applicable cases, the property owner, developer or the responsible electrical contractor acting for the Customer.

SERVICE EQUIPMENT: The necessary equipment, consisting of circuit breakers or switches with fuses, and their accessories, located near the point of entrance of the service-entrance conductors to a building area and intended to be the main control and means of cutoff for the electric supply to the premise.

FLOATING BUILDING: A building unit which floats on water, is moored in a permanent location, and is used as a premise. The wiring system is served through connection by permanent wiring to an electric service not located on the premises.

INSPECTION AGENCY: An authority that Customers must have their electrical installation inspected and approved by to certify that the premises wiring, and equipment complies with the required codes and the Company's Electric Service Installation Rules.

LOAD SIDE: The side where electric power leaves a piece of service equipment and travels down the circuit to the next service equipment, device(s), or load.

METERING DEPARTMENT: The Company metering personnel assigned to the community where the service installation is requested or in progress.

MOBILE HOME: A factory-assembled structure or structures which is transportable in one or more sections, that is built on a permanent chassis and designed to be used as a dwelling without a permanent foundation where connected to the required utilities, and includes the plumbing, heating, air conditioning, and electric systems contained therein.

PJM: PJM Interconnection, L.L.C.

READILY ACCESSIBLE: Capable of being reached quickly, for operation, inspection, replacement, without the necessity of climbing over or removing obstacles or resorting to ladders, chairs, etc.

RECREATIONAL VEHICLE: A vehicular type unit primarily designed as temporary living quarters for recreational, camping, or travel use, which has its own motive power or is mounted on or drawn by another vehicle. The basic types are: travel trailer, camping trailer, truck camper, and motor home.

RESIDENTIAL DEVELOPMENT: A planned project by a developer/applicant for electric service and set out in a recorded plot plan of five or more adjoining unoccupied lots for the construction of single family residences, detached or otherwise, or mobile homes and one or more five unit apartment houses, all of which are intended for year-round occupancy, if providing electric service to such project necessitates extending the Company's existing supply lines.

SERVICE DROP: The portion of an overhead service line from the last Company pole or facility to the service point.

SERVICE-ENTRANCE CONDUCTORS: That portion of a Customer's service facilities supplied by the Customer between the Customer's service equipment and the service point for overhead services or the service lateral for underground services.

SERVICE LATERAL: The underground service conductors including risers, from the last Company pole, pull box, splicing chamber, transformer terminals or vault to the service-entrance conductors. When the service point is at the last Company pole, pull box, splicing chamber, transformer terminals or vault, the service lateral is owned

by the customer. When the service point is at the meter in underground residential developments, the service lateral is owned by the Company.

SERVICE LINE: The Company's necessary poles, conductors, transformers, and equipment between the connection to the Company's supply lines and the service point.

SERVICE POINT: The point of connection between Company equipment and Customer equipment. The service point usually determines the division of ownership between Company equipment and Customer equipment. The service point depends on the type of service and is described in applicable sections.

SERVICE POLE: The last Company pole at which the service line begins.

SUPPLY LINE: The Company's overhead or underground wires or cables with the necessary poles or containing structures (ducts or conduits) and other hardware located within the public roadway or located within a utility right-of-way used for the Company's general supply system.

SUPPLY SIDE: The side from which electric power enters a piece of service equipment.

TARIFF: A set of rate schedules, rules, and regulations for providing electric service throughout the Company's service territory. The Company's Tariff is filed and approved by the Pennsylvania Public Utility Commission (PA. P.U.C.).

TOWNHOUSE: One of a continuous row of two or more single family residences, in which the house at each end of the row has one party wall, and each of the intervening houses has two party walls, and where each dwelling unit can be supplied with an individual service line from the Company's supply line in accordance with the Company's construction practices for single family residences.

TRANSFORMED SERVICE: Service provided to a customer at a different voltage than that of the Company's associated supply line, i.e., where the Company transforms the voltage between the customer's service point and the associated supply line.

UNTRANSFORMED SERVICE: Service provided to a customer at the same voltage as the Company's associated supply line; i.e., where the Company does not transform the voltage between the customer's service point and the associated supply line.

3. General Service Requirements

3.1 Rights for All Facilities

(a) The Customer must provide the Company with any rights-of-way, permits, or other applicable approvals necessary to accommodate the Company facilities (such as overhead wires, transformers, crossarms or other equipment) to be located outside of the public right-of-way (even though the pole may be in the public right-of-way).

(b) The Company shall acquire, to the extent necessary, the required State, County or Municipal permit(s) before installing Company facilities in the public right-of-way.

3.2 Rights for Control of Vegetation

(a) The Customer must grant the Company the right to prune, cut or remove trees, underbrush and other obstructions on the Customer's property that interfere or threaten to interfere, in the Company's sole judgment, with the Company's facilities. In connection therewith, the Customer must grant the Company the right to treat with herbicides approved for the removal and control of tress, brush, and undergrowth.

(b) The Company shall perform vegetation management, through means and at frequency as the Company deems appropriate, to remove existing or anticipated interference with the construction, reconstruction, maintenance or operation of the Company's electric facilities, and to maintain the required Company clearances.

Notwithstanding the foregoing, the Customer must perform vegetation management on the Customer's property as necessary to prevent vegetation from interfering with the Service Line(s) serving the Customer. Any vegetation within 10 feet of an energized electric utility line must be performed by qualified line clearance personnel.

3.3 Division of Ownership

The division of ownership of facilities between the Company and the Customer shall be at the Service Point determined by the type of service. Types of services and corresponding service points can be found in Tariff Rule 6.1. The Company reserves the right to designate an alternative Service Point, at its sole discretion, for customers with atypical or specialized service configurations.[1] A further description of Company and Customer equipment follows:

3.3.1 Company Ownership

The Company will provide and own all equipment necessary to supply the Customer's service including, but not limited to, the service line, necessary conductors, switches and transformers up to the Service Point. The Service Point is generally a connection to the service line, service drop, transformer terminals or meter terminals depending on the type of service.

[1] In the event a Customer substation contains transmission facilities, the Company may at its discretion choose to own and maintain the structures and foundations which support the Company owned transmission facilities. The Customer will own and maintain the structures and foundations on the Customer side of the Service Point.

3.3.2 Customer Ownership

The Customer shall own, install, and maintain any conductors, meter base, equipment, or apparatus except the Company meter and meter accessories, as applicable, beyond the Service Point. Examples of Customer equipment are service-entrance conductors, conduits, service equipment and premises wiring.

The Customer shall also own the substation structures, vault enclosures, concrete pads, meter instrument transformer enclosures, underground conduits and grounding system necessary for the Company to provide service from high voltage lines to Customer premises as described in applicable sections that follow.

3.4 Codes

In addition to the rules listed herein, the Customer must comply with the applicable requirements of, but not limited to, the National Electrical Code (NEC), the Occupational Safety and Health Act, local building and safety codes, state codes, and federal codes.

3.5 Inspection

3.5.1 Customer Installation Inspection

The Customer must have their electrical installation inspected and approved by one of the following authorities to certify that the premises wiring, and equipment complies with the required codes and these Electric Service Installation Rules.

(a) The Bureau of Building Inspection when the property is in the City of Pittsburgh. The Customer must obtain the services of an electrical contractor registered to perform work in the City of Pittsburgh, who will obtain a permit and request the approval.

(b) The authority designated by any applicable municipal ordinance when the property is outside the City of Pittsburgh.

(c) A qualified electrical inspection agency, approved by the Company, where municipal inspection requirements are not applicable.

The Customer must present the Company with satisfactory evidence of the approval of the premises and service wiring by the applicable authorized inspecting authority before the installation is energized.

3.5.2 Company Inspection

The Company will inspect structural and electrical work in substations, vaults and pads for compliance with Company provided plans and service installation rules.

3.6 Service Grounding

The Customer must install service grounding at the service equipment in accordance with the National Electrical Code, the requirements of the inspecting authority having jurisdiction, and these Electric Service Installation Rules.

3.6.1 Services to Be Grounded

The service neutral shall be grounded by the Customer on service installations of the following types:

Phase	Wires	Voltage (V)
1	2	13,200
1	3	120/240
3	4	120/208
3	4	277/480
3	4	2,400/4,160
3	4	13,200/23,000

The Customer must furnish a properly sized grounding conductor from the primary circuit neutral, the transformer neutral grounding point, or the service line neutral to a ground on the supply side of the service equipment. The grounding conductor shall be installed in the same conduit as the service-entrance conductors or in close proximity when there is no conduit.

The following legacy service types, no longer offered for new service installations, will remain grounded:

Phase	Wires	Voltage (V)
1	2	120
1	3	120/208
1	3	230/460

3.6.2 Services Not To Be Grounded

The following types of service will be normally supplied ungrounded. The Customer shall not ground the conductors of these installations without specific written permission from the Company.

Phase	Wires	Voltage (V)
1	2	480
3	3	2,400
3	3	23,000
3	3	138,000

The following legacy service types, no longer offered for new service installations, will remain ungrounded unless otherwise given specific written permission from the Company:

Phase	Wires	Voltage (V)
1	2	230
1	2	460
1	2	2,400
1	2	23,000
3	3	480
3	3	230
3	3	460
3	3	11,500
3	3	69,000
3	3	345,000

3.6.3 Grounding Electrode Conductors

The grounding electrode conductor size shall be not less than No. 6 copper. Larger services shall have grounding electrode conductors sized as specified in article 250-94 of the National Electrical Code. NEC Article 250-23 shall determine where the grounding electrode conductor is connected to the grounded service conductor, except that the meter enclosure (base) shall not be used for this connection because it is not accessible when sealed.

3.6.4 Primary Water Pipe Electrode

The grounding electrode conductor shall be run without splices or joints to a continuous metallic underground water piping system if available. All parts of the water piping system that are likely to become disconnected, such as water meters or service unions, shall be suitably bonded.

The grounding electrode conductor shall be connected to the metal water piping system in the building if one is available. If the water utility does not permit grounding to its system, an insulating bushing may be used outside the building.

3.6.5 Supplemental Electrodes

The metal water piping system shall be supplemented by two electrodes of the type specified in Article 250 of the National Electrical Code. The grounding electrode conductor shall be extended without splices to these electrodes. The supplemental electrodes will become the primary electrodes if a metallic underground water pipe system is not available.

3.7 Access to Customer's Premises

Company representatives, who are properly identified, shall have full and free access to the Customer's premises at all reasonable times for the purpose of reading Company meters, for inspection and repairs, for removal of Company property, or for any other purpose incident to the service. The Company shall have the right to access Customer owned facilities and equipment at all hours for the purposes of responding to an emergency, restoring electric service, rendering the electric facilities safe and reliable, or for the purpose of

reducing the likelihood of damage to the Company's facilities or equipment. The Customer should immediately communicate with the Company in case of any question as to the authority or credentials of Company representatives. A Customer's failure to provide access may be grounds for service termination pursuant to the Company's Tariff.

3.8 Right to Refuse, Modify, Interrupt, Curtail, Terminate, or Discontinue Service

The Company reserves the right to refuse, modify, interrupt, curtail, terminate, or discontinue service in accordance with applicable regulations and the Company's Tariff.

3.9 Connection Charges

The customer shall pay certain of the Company's costs, including overhead, indirect, and taxes, of establishing service to the Customer as provided in this rule and/or the Company's Tariff. Such costs may include:

(a) Costs of "nonstandard service," i.e., any special installations necessary to meet unusual requirements of the customer (see Tariff Rule 8). Any installation or portion of any installation that deviates from the applicable standard service configuration, as described in the relevant Rule(s) herein, constitutes "nonstandard service;" and
(b) Costs and/or damage to the Customer's and/or Company's facilities resulting from customer's failure to provide timely and complete information

These costs do not include, and are in addition to, (i) the Customer's responsibilities to provide in-kind support (which may include, e.g., site preparation, grading, conduit, right-of-way, etc.) necessary to accommodate establishment of service, as provided in the applicable Rules ; (ii) the Customer's costs of its own facilities; or (iii) the Customer's costs of providing Customer information (e.g., engineering drawings, site plans, etc.) required by the Company for purposes of designing or constructing service to the Customer.

4. Electric Services Available and Application Requirements

4.1 Types of Service Available

The type and voltage of electric services shall include those listed in the latest Company Tariff. The type and voltage of electric services shall also depend on the location, size, characteristic of the load to be served and the Company's available facilities. Only one service of each type as to voltage and phase will be supplied under one contract, except where in the judgment of the Company an additional service connection is required. Electric service at different premises, regardless of voltage or phase, must never be combined for billing under one account for the purpose of reducing Company charges.

4.1.1 Street Secondary

These supply lines operate at less than 600 volts at 60 hertz alternating current. The types of service and demand limits for services supplied from street secondary supply lines are shown on Table 4.2.1, and the rules for service installations are given in Section 5. For limits on motor-starting see Section 7.2.

4.1.2 Distribution

These supply lines operate at voltages 2,400 volts or higher but less than 69,000 volts at 60 hertz alternating current. The types of service and demand limits for services supplied from distribution supply

lines are shown on Table 4.2.2, and the rules for service installations are given in Section 6. Services from distribution circuits require transformers and/or special facilities on the Customer's property. For limits on motor-starting see Section 7.2.

4.1.3 Sub-Transmission and Transmission

The types of service and demand limits for services supplied from sub-transmission and transmission supply lines are shown on Table 4.2.3, and rules for service installations are given in Section 6. Contact a Major Account Representative for information on obtaining these services.

4.2 Application Requirements for New Permanent or Temporary Service

On all new service installations, temporary and permanent, the Customer must complete the following requirements to obtain electric service:

(a) Make an application for electric service. (See Section 4.2.2).

(b) Request a service and meter location.

(c) Obtain a wiring approval from the proper electrical inspection agency. See Section 3.3.

(d) A certificate of compliance with the "Building Energy Conservation Act" (PA 222) may be required.

(e) Provide the Company with any rights-of-way, permits, or other applicable approvals, necessary to accommodate Company facilities to be located outside the public right-of-way (See Section 3.1) and for the right to control vegetation in accordance with Section 3.2.

Table 4.2.1: Types of Electric Service, Secondary

Services, and Demand Limits Available from Secondary Supply Lines Operating at Less than 600 V						
Type	Type of Service			Application Limits	Load Limits	
	Voltage (V)	Phase	Wires		Overhead Limits (kVA) Maximum	Underground Limits (kVA) Maximum
A	120/240	1	3	Lighting, Appliances, Resistance Heating, and Motors	50	25
B	120/208	3	4	Lighting and Power	50	150
C	277/480	3	4		N/A	

SERVICE TYPES B & C ARE NOT AVAILABLE AT THE SAME LOCATIONS.

SERVICE TYPES A & B SUPPLY LIGHTING AND POWER LOADS AT LOCATIONS WHERE THESE SERVICES ARE AVAILABLE.

HIGHER LIMITS ARE AVAILABLE AT SOME LOCATIONS. CHECK WITH THE COMPANY. CUSTOMERS WITH DISCONTINUED VOLTAGES NOT REPRESENTED IN TABLE 4.2.1 BUT INCLUDED IN RULE 3 OF THE TARIFF MAY CONTINUE TO RECEIVE THAT VOLTAGE UNTIL A PROPOSED INCREASE IN ELECTRICAL DEMAND REQUIRES A MATERIAL CHANGE.

EXCEPTIONS TO THIS MAY BE DEEMED ACCEPTABLE BY THE COMPANY.

Table 4.2.2: Types of Electric Service Distribution

Services and Demand Limits Available from Distribution Supply Lines, Operating at 2,400 V or Higher with Facilities Located on Customer's Property						
Type of Service			**Supply Line Voltage**			
			2,400/4,160 V		**13,200/23,000 V**	
Voltage (V)	**Phase**	**Wire**	**Overhead Limits (kVA) Min.-Max.**	**Underground Limits (kVA) Min.-Max.**	**Overhead Limits (kVA) Min.-Max.**	**Underground Limits (kVA) Min.-Max.**
120/240	1	3	1-50	1-50	1-100	1-100
120/208	3	4	30-300	50-500	30-300	50-1,500
277/480	3	4	N/A	150-500	50-500	150-2,000
480	3	3	50-500	150-500	50-500	150-2,000
2,400/4,160	3	4	150-500	150-500	150-500	225-2,000
13,200	1	2	N/A	N/A	Determined by Company When Requested	Determined by Company When Requested
13,200/23,000	3	4	N/A	N/A	500-2,000	500-2,000

HIGHER LIMITS ARE AVAILABLE AT SOME LOCATIONS. CHECK WITH THE COMPANY.

Table 4.2.3: Types of Electric Service, Sub-transmission & Transmission

Services and Demand Limits Available from Sub-transmission and Transmission Supply Lines						
Type of Service			Supply Line Voltage Three-Phase, Four-Wire Circuits			
			23,000	69,000	138,000	345,000
Voltage (V)	Phase	Wires	One Bank Limits (kVA) Min.-Max.	Limits (kVA) Min.-Max.	Limits (kVA) Min.-Max.	Limits (kVA) Min.-Max.
120/208	3	4	300-1,500	N/A		
277/480	3	4	300-3,000			
2,400/4,160	3	4	300-10,000			
23,000	3	3	Available			
13,200/23,000	3	4	Some Locations			
138,000	3	3	N/A			
345,000	3	3	N/A			

CHECK WITH THE COMPANY FOR kVA LIMITS FOR AVAILABLE SERVICES.

4.2.1 Temporary Services

The Company will provide the Customer service for construction or other purposes on a temporary basis at a cost determined by the Company. The gross bill for Company charges shall include all fixed, demand and energy charges for Company charges in accordance with the Company's Tariff.

For temporary service during construction in overhead areas where the service line will eventually be transferred to the building, the Customer shall install a structure as shown in Figure 1 or a structure of similar strength. Such a structure shall be located not in excess of one span (100 feet or less depending on wire size) from the Company's service pole so that the service drop can be transferred to the building.

For temporary service in residential areas with underground supply lines, the Customer will furnish and install a temporary service pedestal as shown in Figure 2.

For temporary service in other underground areas or where no Company facilities exist, contact Customer Service. For all temporary services, the Customer must supply a lock for the service equipment and keep it locked at all times. A key must be provided to the Company to provide access for aforesaid reasons in Section 3.7.

4.2.2 Application for Service

The Customer must submit the following information to the Company by contacting the New Business Department.

Information to be supplied by the Customer must include:

(a) Customer's name, service address, mailing address, and telephone number.

(b) Type, capacity, and location of service desired.

(c) The size, phase and number of motors, ranges, water heaters, air conditioners, electric space heating units, instantaneous equipment, electric vehicles charging facilities, and other major appliances; and if other than residential, the total connected lighting and other loads in kilowatts.

(d) Size and configuration of the service-entrance conductors.

(e) Size of hub required in cases where the Company supplies the meter socket.

(f) Name, address and phone number of the electrical contractor.

4.2.3 Service and Meter Location Request

Upon receipt of the Customer's complete service application (see Section 4.2.2), the Company will provide the following information:

(a) A work order number.

(b) The type and capacity of the electric service.

(c) The type and size of the meter socket or other meter equipment.

(d) The available fault current, if requested.

(e) The Company may specify a location on the building to which it will provide service and to where the Customer will install the service entrance and meter.

When the service entrance location is not specified, the Customer must choose a location on the building which best satisfies the following requirements:

(a) Single family dwellings will normally have their service entrance located on a corner which is nearest to the Company's supply line.
(b) When supplied from overhead lines, the service entrance must be located at the corner nearest to a Company pole that will serve the building.
(c) New meter locations must be chosen to eliminate house to house connections and service line drops over roofs, awnings and other structures.
(d) New meter locations must be located at a minimum distance of 3 feet from any gas meter.
(e) A service entrance from underground lines must be located at the corner nearest to the transformer installation or underground service enclosure that will serve the building.
(f) The service entrance location must not require the Company's service line to cross an adjacent property.

Metering equipment will be delivered to the job site according to Section 8.2 and meter locations will be determined as described in Section 8.

Permission to locate the meter socket at another location may be granted by the Metering Department in special cases. The Company has the right to reject the Customer’s proposed service location. Other questions concerning meter locations and installations will be answered by the Metering Department.

4.3 Rewires Changes and Additions

All existing electrical services have a maximum design capacity. The Customer shall provide the Company with information on any proposed changes or additions before new equipment is ordered. The Company will determine if changes to its supply facilities are necessary and whether the service and equipment are

compatible. Changes or additions to Customer's service wiring or equipment are subject to the same Company rules as new services.

Wiring and service equipment that has been changed will not be energized by the Company until such wiring and service equipment is inspected and approved as specified in Section 3.3.

For any service wiring changes for which the Company has not specified a new meter location, the Customer must comply with the following general guidelines:

(a) Residential meters located indoors must be moved to outdoor locations as specified below and in Section 4.2.3(e), unless otherwise approved by the Company.

(b) Meters other than residential may be required to be moved outdoors.

(c) New meter locations shall be chosen to eliminate house to house connections and service line drops over roofs, awnings, and other structures.

(d) Meters must be readily accessible to Company representatives. The best location is on the side of the building at the front corner nearest to the Company's service pole or underground service point.

(e) For base mounted transformers that include metering transformers, the meter itself must be located outside of the building under normal circumstances. Any other configuration requires prior review and approval from the Company.

Contact the Metering Department if there are problems applying these guidelines.

5. Services from Company Secondary Supply Lines (Operating at Less Than 600 V)

This section contains rules for the installation of equipment for providing electric service from Company street-secondary supply lines operating at less than 600 volts. In areas where the Company has both overhead and underground supply lines, the method of providing service to a Customer will be at the sole discretion of the Company. The rules in this section apply to standard service installations. The Customer must obtain the Company’s expressed approval for certain non-standard private, public authority or municipal projects that may not conform to the rules in this section.

5.1 Underground Service

For electric service in an area already having underground electric facilities, apply for service as described in Sections 5.1.1 through 5.1.4.

5.1.1 Residential Underground Service

For service in ả residential plan already having underground electric facilities, call the New Business Department. The New Business Department must also be contacted by customers regarding new residential developments of five or more units of single family residences, mobile homes, townhouses, or apartments for an explanation of Tariff Rule 13.2 and a copy of the Company’s "Procedures and Construction Standards for Underground Residential Distribution Systems".

For a typical residential underground service, the Company will install and maintain the service lateral up to the meter base. The Customer is responsible for the installation of the meter socket, service-entrance conductors and all trenching and backfilling. See Figure 3A, BEFORE YOU DIG! CONTACT PENNSYLVANIA ONE-CALL at 1-800-242-1776.

5.1.2 Areas Designated As Underground

Typical underground service connections are shown in Figure 3. In these areas, other than those covered by Tariff Rule 13.2, the Company will own and install the necessary junction boxes or manholes for the underground service line in the street and the conduit extending not more than 18 inches within the Customer's property line.

(a) Where the building is at the Customer's property line and has a basement, the Customer must furnish and install a terminal box where the conduit enters the basement.

(b) Where the building is at the Customer's property line and does not have a basement, the Customer must furnish and install an elbow of 36 inch radius, necessary conduit, and a terminal box on the first floor.

(c) Dimensions of the terminal box mentioned in (a) and (b) shall be obtained from the Metering Department. The box shall be mounted no less than one foot above the floor.

(d) Where permission to use enclosures other than a terminal box has been obtained from the Metering Department, the Company will terminate its cables in a meter socket, an instrument transformer cabinet, or a Customer's switch box.

(e) Where the building is not at the Customer's property line, the Customer must, at the Company's option, either furnish and install a junction box at the property line or furnish and install conduit from the property line to a terminal box or meter cabinet at the building.

(f) The Company will furnish and install the service cable from the manhole to the Customer's terminal box or junction box at the property line. When the terminal box or meter cabinet is not at the property line, the Customer must pay the Company, in advance, for the Company's estimated costs associated with the service cable (and other associated facilities, as applicable) on the Customer's property.

5.1.3 Underground Service from Overhead Lines

Where an underground service line is installed from the Company's overhead, street secondary supply lines, the Customer shall furnish, install, own, and maintain the service cable and conduit in its entirety including:

(a) Not more than two metallic or PVC Schedule 80 conduit elbows at the base of the pole to extend above the ground surface.

(b) A PVC Schedule 80 conduit, with proper fastenings, from the top of each elbow to a point not less than 8 feet nor more than 11 feet above the ground level.

(c) A PVC Schedule 80 conduit on the supply side of the meter socket.

When the terminal pole is not wood, the installation shall be made as specified by the Company.

The Customer shall furnish and install the underground conductors that shall be of sufficient length to reach three feet above the lowest conductor of the street-secondary supply line. The Customer shall coil and tie the remaining length of cable above the conduit on the pole. The Company will complete the installation and make the connection to its lines.

If a pole is replaced or relocated, the Customer shall be responsible for transferring or relocating the conduit and cable from the old pole to the new pole.

The Customer must secure any permits or other approvals (e.g., street opening permits, homeowner's association approvals, etc.) required for the work. To the extent the work requires the Company to obtain any permits or other approvals, the Customer shall pay the Company, in advance, for the Company's estimated costs of obtaining such permits or other approvals.

Where an underground service line is installed from the Company's overhead, street secondary supply lines, the Company shall furnish, install, own, and maintain the following:

(a) PVC cable guard (U-Guard) per the latest NEMA TC-19 specification, with proper fastenings from the top of each metallic or to a point one foot below the lowest conductor of the street secondary supply line or 40" above the communications space.

5.1.4 Cable and Conduit

Wire or cable installed by the Customer shall be of a type approved for underground use.

Customers should realize that the replacement of underground cable is difficult and expensive. Such cable should be liberally sized to minimize voltage drop and to handle future loads. The Company recommends cables rated not less than 200 amperes for a single family dwelling. Cable sizes exceeding 250 MCM require special metering for single family applications. (See Section 8.4).

5.2 Overhead Service from Overhead Lines

Where overhead service is permitted, the following types of overhead service will be provided.

5.2.1 Overhead Service To A Building

The Company will furnish and install an overhead service line, (service drop), up to 100 feet within the property line nearest the Company's facilities to a point of attachment at the Customer's building and will make the necessary connections to the Customer's service-entrance conductors at that point. The location and details of this service connection are covered in Section 4.2.3. For most services, the Company will furnish and install the service drop anchor at a location identified by the Customer as having sufficient strength.

When Customer electrical load necessitates use of a heavy service drop, the Company will provide the mechanical hardware necessary (5/8" through-bolt, clevis bracket and spool insulator) to fasten the Company's service drop to the building. The Customer shall install the hardware at a point nearest the location designated by the Company and that the Customer determines has sufficient strength to withstand a minimum of 1,000 pounds tension. If use of a 5/8" through-bolt is not feasible, the Customer must notify the Company and obtain permission to use a suitable 5/8" anchor bolt. The Customer shall furnish and install the 5/8" anchor bolt and install the clevis bracket and spool insulator provided by the Company.

The Customer must maintain the strength of the building, service mast, attachment anchors or any other structure supporting service drop conductors for the life of the service and for any subsequent service changes.

The Customer's service-entrance conductors shall extend up the building to a point high enough to provide the following minimum clearances for the Company's service drop, and be at least 12" above the point of service drop attachment to prevent siphoning of moisture into the service cable or conduit:

Over sidewalks and the ground 10 feet.

Over residential driveways 12 feet.

Over commercial driveways, alleys, streets, etc. 18 feet.

See Figure 5 for a drawing of a typical overhead service connection to a building and important note.

When the Customer's building is not high enough to provide the minimum ground clearance requirements, the Customer shall install a suitable support, such as a service mast, for attaching the service line. This support or mast shall not be used for any purpose other than the electric service installation. The service mast shall be 2" diameter or larger rigid galvanized steel conduit, clamped to the building by two-hole conduit straps anchored by 5/16 inch minimum diameter lag screws of sufficient length to hold the mast securely. The conduit straps are to be spaced no more than 32 inches apart and top strap is to be placed within 12 inches of the building roof. Conduit couplings shall not be used in the top 10 feet of mast length. The service mast shall be installed as described in Figure 6 or 7.

5.2.2 Overhead Service to a Pole or Structure

The Company's overhead service line may end on a Customer's pole when approved by the Company. The Company will furnish, install and connect an overhead service line up to 100 feet within the property line to the Customer's pole or structure. The Company may extend an overhead service line beyond this 100 feet within the Customer's property line at its discretion and upon receipt, in advance, of the Company's estimated costs of such lengths exceeding this point.

The Customer's pole shall be yellow pine or cedar, and properly treated. The Company can approve other pole types and will specify the minimum height and strength. The pole shall be set plumb and true, and if of wood, at least five feet deep. The pole may require an anchor.

If the Customer continues this service line either overhead or underground to a building, the best metering equipment location is at the building. Pole mounted meter installations are permitted as shown in Figures 8 and 9. For clearances see Section 5.2.1 and Figure 5.

The Company will furnish and install the Customer's pole at Customer request and expense. The Customer's cost will be determined by the Company. The Customer will own and maintain the pole.

The company's overhead service line may end on a structure other than a building or pole when approved by the Metering Department.

5.2.3 Overhead Service Drops Over or Near Swimming Pools

The installation of a service drop above or near a swimming pool or the installation of a swimming pool beneath a service drop is not recommended. A Customer insisting on such an installation shall comply with the applicable requirements of the 2017 National Electrical Code, including Section 680-9.

5.2.4 Overhead Service Drops Over a Roof

The installation of service drops above a roof should be avoided. When a service drop must be run over a roof the installation shall comply with the applicable requirements of the National Electrical Code, including Section 230-24.

5.2.5 Overhead Service Drops Over a Window

When a service drop must be run over the top level of a window the installation shall comply with the applicable requirements of the National Electric Code, including Section 232-2.

5.3 Mobile Homes, Recreational Vehicles, Floating Buildings, Commercial Trailers, and Service Pedestals

Service lines will not be connected directly to a mobile home or trailer except when the structure is mounted on a permanent foundation. The structure will then be treated as a conventional premise.

5.3.1 Mobile Homes - Up to Four Units

An overhead service to a Customer's pole will be provided in accordance with Section 5.2.2, as shown in Figure 9. Underground service may be installed by the Customer to an approved meter and service pedestal in accordance with Section 5.1, and 5.3.5 and as shown in Figure 10.

5.3.2 Mobile Homes - Five or More Units

For new developments of five or more mobile homes the developer shall contact a Company Major Account Representative for an explanation of Tariff Rule 13.2.

5.3.3 Recreational Vehicles and Floating Buildings

Recreational vehicles, floating buildings and river craft will usually be served by the operators of private or public camps or marinas. However, if one is to be located for permanent residential occupancy, the service installation requirements to a pole, or meter and service pedestal will apply. The Company will not supply an electric service directly connected to a vehicle, floating building or water craft. Temporary service will be provided as in Section 4.2.

5.3.4 Commercial Trailers

Commercial trailers for temporary use will be connected under the provisions of Section 4.2. For service to permanent Commercial Trailers, contact a Major Account Representative.

5.3.5 Meter and Service Pedestal

The meter and service pedestal shall be made of a corrosion resistant material and shall be installed plumb and rigid by a method equivalent to one of the following (See Figure 10):

(a) Setting the pedestal in concrete.

(b) Bolting to the surface of a concrete pad.

(c) Extending the pedestal a minimum distance of two feet below grade and pouring a concrete pad around the pedestal at grade level.

A stabilizer foot of at least 48 square inches attached to the bottom end of the pedestal will greatly aid rigidity. The pedestal shall be mounted so that the top of the meter will be between 3-1/2 and 5 feet above the finished grade. Prior to installation, the meter and service pedestal must have approval from the Meter Department.

5.3.6 Service-Entrance Capacity

Service-entrance capacity to the point of metering for a mobile home shall be not less than 100 amperes. Mobile homes with permanently installed electric space heating shall be subject to the same conditions as conventional housing under Section 5.6.

5.4 Service-Entrance Conductors

The service-entrance conductors shall consist of approved service-entrance cable, conductors in rigid or intermediate conduit (thin wall or flexible conduit is not acceptable), or other Company approved wiring methods. The Customer shall be responsible for maintaining the service-entrance conductors in a satisfactory condition at all times. Service-entrance conductors should be liberally sized to minimize voltage drop, especially for long service runs.

5.4.1 Service-Entrance Conductors, Underground

See Section 5.1 for the division of responsibility and ownership for underground services. The Company recommends a minimum ampacity of 200 amperes for underground service-entrance conductors. Special metering may be required as described in Section 5.1.4 and Section 8.4.

5.4.2 Service-Entrance Conductors, Overhead

Service-entrance conductors to overhead lines shall be equipped with a rainproof service head or a fitting approved by the inspection agency having jurisdiction and shall extend at least 3 feet beyond the fitting for connection to the service line. This service head shall have a clearance of not less than 3 feet from windows, doors, porches, fire escapes or similar accessible locations. Not more than two sets of service-entrance conductors will be connected to an overhead service line, unless written approval has been obtained from the Metering Department. Non-metallic conduit used above ground shall be PVC Schedule 80. See Section 5.2 and Figures 7, 8 and 9.

5.5 Residential Service-Entrance Ampacity Without Electric Space Heating

For a residential service installation, including mobile homes, without permanently installed electric space heating, the service-entrance conductors shall have an ampacity not less than 100 amperes.

Where two or more residential service installations without permanently installed electric space heating are combined on one set of service-entrance conductors, the minimum ampacity of the service-entrance conductors shall be as follows:

Number of Installations	Minimum Ampacity (A)
2	125
3	150
4	175
5 or 6	200

Where more than six residential service installations are combined on one set of service-entrance conductors, the minimum service ampacity shall be determined by the calculations outlined in Article 220 of the National Electrical Code but shall be not less than 200 amperes.

5.6 Residential Service-Entrance Ampacity with Electric Space Heating

For a residential service installation with permanently installed electric space heating, the minimum ampacity of the service- entrance conductors shall be determined by the calculations outlined in Article 220 of the National Electrical Code but shall be not less than as follows:

Space Heating Load (kW)	Minimum Ampacity (A)
5 or Less	100
6 – 20	150
21 – 28	175
29 – 36	200

5.7 Residential Service Equipment

All service equipment shall be located at a readily accessible place near the point where the service-entrance conductors enter the building.

All service equipment must have a minimum interrupting capacity equal to the available fault current but in no case less than 10,000 amperes.

5.8 Commercial/Industrial Service Requirements

Commercial and industrial service-entrance conductors and equipment shall have a minimum ampacity of 100 amperes and meet the available fault current interrupting requirements. The actual service ampacity shall be determined by the installed electrical loads and the requirements of the National Electrical Code. The Customer must provide the required service size when applying for service as specified in Section 4.

5.9 Ground-fault Protection

Ground-fault protection of equipment must be provided for all grounded-wye electrical services with service equipment rated 1,000 amperes or more at 277/480 volts and rated 2,000 amperes or more at 120/208 volts. The Company reserves the right to waive this requirement for 120/208 volt service equipment, where in the Company's sole discretion, the Company determines that the service equipment will select with the Company's protective equipment. See Section 6.10 for more on customer's Service Equipment.

6. Services from Company Distribution, Subtransmission and Transmission Lines (Operating at 2,400/4,160 V or Greater)

This section contains rules for the installation of equipment on private property for providing electric service from Company supply lines operating at 2,400/4,160 volts or higher.

6.1 Overhead Service Lines

Where electric service is supplied from overhead supply lines, the Company will provide and install an overhead primary service line, including poles, conductors, and other equipment from the supply line to the service point (see Tariff Rule 6.1). This point may be the secondary terminals of the main transformer for

transformed service, or the metering terminals for untransformed service. The Customer must provide and maintain a right-of-way under terms satisfactory to the Company including the ability to access facilities and maintain clearances and applicable codes. The title to this line shall vest in the Company.

The Customer may be required to contribute to the cost of construction of this service line in accordance with Section 3.9.

6.2 Underground Service Lines

In locations where the only supply lines are underground or the Company has an agreement with a governmental agency or a group of Customers to provide underground service in a specific area, or the Company decides underground service is in the best interest of the Company, the Company will provide and install necessary manholes, junction boxes, and conduits within the right-of-way.

In locations where the supply lines are overhead and underground service is supplied, the Customer must install that portion of the duct line within the street area or contribute to the Company the installed cost of that portion of the duct or conduit. In either case the Company will retain ownership of the equipment in the utility right-of-way.

The Customer shall provide, install, maintain, and own all necessary manholes, vaults, junction boxes, and conduits on private property in accordance with Company specifications.

The Company will provide and install a primary service cable between its street facilities and the substation, vault, pad, or pole. Where the underground service cable ends on a pole, the Company will install the terminal pole. The Customer shall provide a right-of-way under terms satisfactory to the Company for this service cable and any required pole. The title to this cable and pole shall vest in the Company.

The Customer may be required to contribute to the cost of construction of this service cable and pole in accordance with Section 3.9.

6.3 Service to Underground Residential Developments (URD)

For new developments of five or more single family residences, row-houses, mobile homes, or apartment units where underground construction is required, customers must contact the New Business Department. Additionally, for existing developments, customers should contact the appropriate Major Account Representative for an explanation of the distribution of responsibility.

6.4 Location of Equipment

The Customer must provide a location of size and arrangement suitable to the Company for the installation of line switches, primary buses, transformers, and associated equipment, in accordance with these rules. Such transformers and equipment must be installed in or on a suitable structure or enclosure specified by the Company, such as a substation, vault, pad, or pole installation. The Customer must provide a suitable location, accessible directly from the street or an unobstructed driveway, for the installation and removal of such equipment. The Customer must ensure that Company representatives have ready access to such location and equipment at all times.

6.5 Installations on Poles

Transformed service furnished from a pole-mounted installation on Customer property can be supplied when the loads are within the overhead capacity limits shown on Table 4.1.2.

6.5.1 Overhead Services

The Company will furnish and install an overhead service drop up to 100 feet within the Customer's property line (for 23 kV service or less) the Customer's building or other suitable support approved by the Company. The Company will make the necessary connection to the Customer's service-entrance conductors at that point.

6.5.2 Underground Services

When service-entrance conductors are installed underground, the Customer must furnish, install, own, and maintain the service cable and conduit in its entirety including:

(a) Not more than two PVC Schedule 80 conduit elbows shall be installed at the base of the pole to a minimum of 6 inches above final grade. If more than two conduits are required, contact the Company.

(b) A PVC Schedule 80 Conduit with proper fastenings from the top of each elbow to a point not less than 8 feet nor more than 11 feet above the final (finished) ground level.

A typical underground service installation is shown in Figure 6.

The Customer must furnish cable of sufficient length to reach the secondary terminals of the transformer(s). The Customer must install the cable in the underground portion of the duct or conduit and in the conduit on the pole and must coil it at the top of this conduit. The Company will complete the installation and make the connection to its facilities.

When service-entrance conductors are installed underground, the Company will furnish, install, own, and maintain the following:

(a) PVC Schedule 40 cable guard (U-Guard) with proper fastenings, to extend from the top of each metallic or PVC Schedule 80 Conduit to a point approximately 24 inches below the bottom of the transformer(s).

6.5.3 Meter Transformer Poles

For 2,400/4,160 volt services, the Company will furnish, install, own, and maintain the transformer and metering pole, if required. These poles will be located on private property (consistent with and subject to suitable rights-of-way and easements, which the Customer must deliver to the Company) and are a part of the service line for which the Customer may be required to make a contribution in accordance with Section 3.9 of these rules. For metering of 2,400/4,160 volt services, see Section 8.10.

6.6 Untransformed Service

6.6.1 Underground

Where untransformed service is supplied underground, the Company will furnish the metering equipment as described in Section 8.9. The Customer must furnish and install an enclosure approved by the Company to house the terminals of the service line and the metering transformers. The Customer must also furnish and install the service-entrance conductors from the termination of the service line to the service equipment.

6.6.2 Overhead

Where untransformed service is supplied overhead, see Section 8.10 for the metering requirements. The Customer must furnish and install all construction beyond the service point, which is usually at the Company's metering terminals. Overhead conductors of sufficient length must be provided by the Customer to permit the Company to connect the Customer's service-entrance conductors to the service point. The service point will be determined by service requirements and designated by the Company.

6.7 Transformed Service Installations from Substations, Vaults, or Pads

Where transformed service is furnished from equipment in a substation, in a vault, or on a pad, the Company will furnish and install the transformers, meters, and meter wiring. See Section 8.8 for the metering requirements. Except for residential developments where Tariff Rule 13.2 applies, the Customer must furnish and install the service-entrance conductors beginning at the secondary terminals of the Company's transformer(s). The Customer must furnish and install the connectors for attaching the conductors to the transformer terminals. The Company will be responsible for making the final connections to the transformer. The service-entrance conductors at the secondary terminals of the transformer must be of a flexible type, and the connectors must be of the type specified by the Company.

The Customer must furnish, install, maintain, and own the physical structure and wiring; protection and control wiring; and the protective grounding system necessary to support the installation of the Company's transformers and equipment. The Company will provide plans and instructions for the installation as follows:

6.7.1 Physical Structure and Wiring

The Customer must furnish, install, and maintain in accordance with drawings furnished by the Company, all foundations, structures, control rooms, walls, steel for mounting equipment, pulling eyes, fences, hatches, doors, ladders, underground conduits, stone, gates, means for adequate drainage and ventilation, and similar items which constitute the substation, vault, or pad installation. The Customer must also provide and install, as applicable per Company requirements, conduit, wiring, HVAC, and 120/240 volt, single-phase or 120/208 volt, three-phase service and equipment to supply the Company's substation equipment (communications, lights, battery chargers, relay testers, air compressors, etc.).

6.7.2 Protection and Control Wiring

The Customer must furnish, install, and maintain all conduit for the protection and control wiring shown on the drawings for the permanent sections of the installation. The Company will provide and install the conduit for all relay and control wiring in the above grade section of the installation as noted on the plans furnished by the Company.

6.7.3 Protective Grounding

The grounding installation is important to public safety and must be completed according to Company drawings. The Customer must furnish and install the grounding system as described in plans supplied by the Company. Generally, the Customer must do the following:

(a) Provide and install ground rods, ground bus, and ground grid.

(b) Provide and install flexible connections from all gates and doors to adjacent stationary sections of the fence, metal siding, or door frames.

(c) Ground all equipment, metallic conduit, supports, post barriers, and fence.

The Company may take ground resistance readings prior to construction to determine the grounding requirements. The Customer must notify the Company prior to backfilling so that the Company can inspect the grounding installation. The grounding system will be tested by the Company after completion to determine if it is adequate (reference Ground Grid Testing Procedure). At the Company's discretion, in lieu of the Company testing the ground grid, the Customer may have an independent third party test the ground grid and provide the results to the Company.

The Company will connect its facilities to the Customer's grounding system.

The Customer's service equipment must be grounded according to Section 3.4 and the requirements of the inspecting authority. When the Customer's service equipment is the first disconnecting device on the load side of the Company's transformers, the Customer must connect the structure or frame of the Customer's service equipment to the grounding system described above.

6.8 Instrument Transformers for Protection and Control

The Company's protection and control scheme for a service installation may require the installation of instrument transformers in the Customer's service-entrance conductors. Where the Company determines that instrument transformers must be installed on the supply side of the service point, the Company shall provide, test, install, and maintain such instrument transformers.

Where the Company determines that instrument transformers must be installed on the load side of the service point, the Customer must provide, test, install, and maintain such instrument transformers. Furthermore, the Customer must provide certified test reports for such instrument transformers, completed by a Company-approved independent third party, to the Company.

The Customer shall provide current transformers for use by the Company for any protective devices on the Customer side of the service point. Current transformers are provided and installed by the equipment manufacturer internal to the protective device. The Company will specify the ratio and thermal rating of any necessary current transformers.

Since potential transformers are generally external to protective devices, the Company will provide potential transformers. The Company may, at its discretion upon Customer request, allow the Customer to provide potential transformers.

The Customer must provide test reports for any current or potential transformers supplied by the Customer. The Company reserves the right to reject current or potential transformers based upon test reports. Current or potential transformer installations must provide for easy removal and replacement of the Company-owned transformer(s).

The Company's protection and control scheme for a service installation may require the installation of instrument transformers in the Customer's service-entrance conductors. When the Company determines that instrument transformers can be installed on the supply side of the Customer's service equipment, then the instrument transformers must be provided, tested, and installed by the Customer. The Customer must provide copies of the test reports to the Company. When the protection and control scheme requires instrument transformers on the load side of the Customer's service equipment, they must be specified by the Company but supplied by the Customer as an integral part of the service equipment. The instrument transformer installations must provide for easy removal and replacement of the transformers.

The Customer must provide certified test reports and curves for each instrument transformer supplied. Excitation, phase angle, and ratio correction factor data are required for current transformers. Phase angle

and ratio correction factor data are required for voltage transformers. The instrument transformers must be approved by the Company before installation.

Instrument transformers used for metering are covered in Section 8 and are in addition to those covered here.

6.9 Customer's Service-Entrance Conductors

The Customer's service-entrance conductors between the service point and the Customer's service equipment must be subject to inspection and approval by the Company. All service-entrance conductors must be adequately supported to withstand the mechanical and electrical stresses of the available short-circuit current. If the service-entrance conductors enter a building that is accessible to non-qualified persons, the conductors must be in a cable tray, conduit, or enclosure, which must contain no conductors other than the service-entrance conductors of that particular service. A qualified person is one that is familiar with the construction and operation of the apparatus and the hazards involved.

The Customer must provide single-line drawings and schematics for load-side protection and control schemes, including any key-interlock scheme, for review by the Company.

When the customer service equipment is a circuit breaker, the customer must provide a shunt trip coil in each service entrance breaker for the Company's exclusive use (trip coil voltage will be specified by the Company).

For safety and ease of obtaining clearance, the Company recommends that the Customer install a single switching device (breaker with visible disconnect, or switch and fuse), providing a single point of disconnection and protection for each service. However, up to six such devices will be accepted to isolate the Customer from the service if (1) they are of equal capacity, (2) they are located adjacent to each other, and (3) each performs all functions described at the beginning of Section 6.9.

The Customer must provide the Company with access to the service-entrance conductors in order for the Company to test for voltage and apply safety grounds required for maintenance work. Such access must be located on the load side of the instrument transformers and on the supply side of the Customer's service equipment.

All main service disconnects and overcurrent devices must be clearly identified with a permanent type of marking.

The ground-fault protection may consist of overcurrent devices, a combination of overcurrent devices and current transformers, or other equivalent protective equipment. Such equipment must operate to cause the service disconnecting means to open all ungrounded conductors of the faulted circuit.

6.9.1 Service Equipment, 2,400/4,160 Volts Or Higher

Where service is furnished at 2,400/4,160 volts or higher, the Customer's service equipment must provide visual clearance for the service conductors and consist of circuit breakers or fusible load-break switches of the following types:

(a) Either a draw out or stationary power circuit breaker. Stationary circuit breakers must have a disconnecting switch (preferably interlocked) on the supply side to provide the visual clearance. Circuit breakers must be equipped with current transformers and overcurrent relays for each service phase and a ground relay for three-phase services. The relays must be set to coordinate with Company protection. Special cases may require additional protective equipment or controls to ensure proper operation and coordination. The source of tripping energy should be

from a battery (minimum 48 volts DC) with an adequate charger. Other types of trip sources require the approval of the Company.

(b) A load-break air, oil, vacuum, or gas switch, plus fuses of proper size and rating installed on the load side of the load-break switch. The open position of the contacts of the switch must be readily visible. Switches without contacts visible in the open position must have a disconnecting switch (preferably interlocked) on the supply side to provide the visual clearance.

There is an exception: for special outdoor installations subject to the Company's approval, several circuits may be connected to one load-break air switch with separate fuses or circuit breakers for each circuit. Such fuses or circuit breakers must be located in the same substation area and be readily accessible from the load-break switch. The load-break switch and the circuits controlled by it must be permanently identified.

6.9.2 Service Equipment, Ratings, and Settings

Service equipment (circuit breaker or switch and fuse) must have a rating adequate to withstand and interrupt the maximum short-circuit current to which it may be subjected and must be capable of being coordinated with the Company's protective equipment. The amount of such short-circuit current may be obtained from the Company after the service voltage and type of connection to the Company's system have been determined.

The Customer must provide the Company with the service voltage, load characteristics, and type of connection to the Company's system. The Customer must determine maximum settings or fuse ratings for the Customer's protective equipment. The Customer must be sure that all details of protection coordination are satisfactory to the Company before purchasing the service equipment and prior to energization.

The Customer may not subsequently increase the maximum circuit breaker settings or fuse ratings permitted for the Customer's protective equipment, except by written permission of the Company. The Customer is responsible for damage to Company equipment caused by improper Customer circuit breaker settings or fuse ratings.

6.10 Location of Service Equipment

All of the Customer's service equipment must be located in the Customer's area, as differentiated from the area containing Company equipment, and must be installed as close as practicable to the fence, wall, or other boundary separating the area containing the Company equipment from the Customer's area. Convenient access to the service equipment must be provided for Company personnel.

6.11 Maintenance of Service Equipment

The Customer must maintain all customer-owned facilities so as to ensure their proper operation at all times. The Company shall require the Customer to demonstrate that the service equipment has been maintained and will operate properly. The demonstration may include, but is not limited to, a station battery and battery charger inspection, fuse inspection, circuit breaker trip checks, circuit verification checks, relay operating checks, switch operating checks, etc. In addition to service equipment, the Customer must also maintain the control building, all structures, and vegetation, in order to maintain safe operating conditions. The Customer is responsible for damage to Company equipment caused by the failure of service equipment to operate properly.

6.12 Mobile Substation Connection Requirements

The Company may use a mobile substation as a future, temporary source of supply during the course of maintenance, inspection, or tests by the Company. Upon request by the Company, the Customer must provide a parking space at least l5 by 25 feet for the mobile substation. The location of the parking space must be such that 50 foot conductors can be used to connect the mobile substation to the service line and to the load side of the service equipment. The parking space must not block the Company's access for removal or replacement of transformers and equipment.

The Customer must provide suitable connectors for a single connection point per phase on the load side of the service equipment to permit connection of the mobile substation. The Customer must also provide openings in both the Company and Customer portions of the substation or vault to accommodate the conductors from the mobile substation.

7. Equipment Protection Requirements and Operating Limitations

This section requires the Customer to provide protection that will prevent damage to utilization equipment from normal operations on the Company's supply system. It also provides operating limits for Customer motors and equipment designed to prevent excessive voltage fluctuations and equipment operating problems.

Equipment covered in this section includes motors, welders, heating equipment, voltage sensitive devices, generators, electric vehicle chargers, harmonic producing equipment and other equipment requiring special considerations and protection.

Motors and equipment can have special load requirements that cause excessive voltage and harmonic changes to the Company's system. The Customer must report any equipment that can cause such changes to the Company's system when applying for service. The Customer must also report any new equipment that may significantly increase their electric demand beyond historic levels, such as instantaneous electric water heaters or electric snow melting equipment. Examples of such equipment are detailed in this section. When the Company must install extra capacity or special equipment to protect against Company system problems caused by the Customer's equipment, the Customer shall pay the Company's incremental costs.

7.1 Required Equipment Protection on Three-Phase Services

The Customer must install protective devices for all three-phase equipment and single-phase equipment connected phase-to-phase, especially motors. This protection is necessary to prevent damage from the loss of a phase, cross phasing, or reduced voltage. Single-phase motors or equipment connected phase-to-phase can remain energized at a reduced voltage when one of the phases supplying the equipment is lost. The protective devices, usually loss-of-phase relays or under-voltage relays, must shut down all equipment until they are manually restarted, or they must have a time delay that does not automatically restart the motor before it is sufficiently cooled, per National Electric Code Article 430.

Three-phase motors must be provided with reverse-phase relays and circuit breakers to disconnect the motor and prevent injury in case of phase reversal for equipment including but not limited to, elevators, cranes, etc.

Motors and their controls must shut down upon loss of voltage until they are manually restarted, except when these provisions would cause a hazard, such as in the case of fire pumps. The use of three overcurrent units in motor controls for three-phase motors is required since the 1971 edition of the National Electrical Code.

It is recommended that motor controls installed prior to this requirement be modified to include three overcurrent units.

The Company will not be responsible in any way for damage to Customer's equipment due to the failure of the Customer to provide adequate protective devices or due to any failures of such devices.

7.2 Motor-Starting Current Limits

Motors started at rated voltage require inrush currents several times their full-load ratings. The high starting (locked-rotor) currents create voltage dips, which may cause objectionable light flicker and problems operating other equipment. The Company has established the following maximum motor-starting current-limits to keep the high currents and voltage dips within industry standards.

(a) Single-Phase 120/240 Volt Services

Motors with locked-rotor currents of 50 amperes or less when operated at 120 volts, or 150 amperes or less at 240 volts, may be started at line voltage.

(b) Single-Phase 120/208 Volt Services

Motors with locked-rotor currents of 50 amperes or less when operated at 120 volts, or 150 amperes or less at 208 volts, may be started at line voltage.

To ensure supply facilities are adequate, the Customer must notify the Company when 208 volt or 230 volt single-phase motors sized 3 horsepower or larger are installed on the system. In addition, motors having locked-rotor currents higher than 100 amperes must be reported.

(c) Three-Phase 120/208 Volt Services

Three-phase motors with locked-rotor currents less than 160 amperes or rated not higher than 10 horsepower may be started at line voltage.

(d) Motors Larger Than 15 Horsepower

Motors larger than 15 horsepower can be started at full line voltage in many locations depending on the Company's facilities and the Customer's requirements. The Customer must contact the Company for specific motor starting limits and recommendations. It is important for the Customer to request starting limits as soon as the motor size is chosen, so the Company can make the detailed analysis required.

The Company’s analysis includes calculating the inrush current of the Customer’s motor(s) and assessing the consequential voltage dip that will occur. Dependent of the Customer’s location on the Company’s system, the results of the study will provide a maximum possible motor size that can be started across the line. Any motors that are sized greater than the limit must employ reduced voltage starting equipment such as variable frequency drives (VFDs) or soft starters. Where a motor is started with a reduced-voltage starter, the motor starting current limits must not be exceeded during the entire starting period.

Motor starting limits were established to reduce excessive voltage dips, or fluctuations, at the Customer’s secondary voltage, as well as the Company’s primary voltage.

When a motor is started at line voltage, the Company will either use the rated locked-rotor current from the code letter provided by the Customer, or – in the absence of this information – a mid-range locked-rotor current will be assumed.

7.3 Load Limits for Welders and Other Fluctuating Loads

Welders and other fluctuating loads can cause voltage and harmonic disturbances to the Customer's service and the Company's system. Fluctuating loads include pulsed-power output devices, start-up drives, arc furnaces, and other equipment with rapidly changing electrical demands. Input limits are:

(a) Single-Phase 120/240 Volt Services

The input current to a single-phase arc welder or other fluctuating load must not exceed 37 amperes when connected across 240 volts on a 120/240 volt single-phase service to a single occupancy building or residence. Welders and fluctuating loads are not permitted to be connected to120 volt services.

(b) Other Services

Welders and fluctuating loads are generally not permitted to be connected on 120/208 volt services. Customers must contact their Major Account Representative to request service for larger welders and fluctuating loads on other services. It is important to request service limits as soon as the welder or fluctuating load size is chosen so the Company can make the detailed analysis required. When the load requires the Company to install facilities in excess of those required for a normal installation, the Customer shall pay the Company, in advance, the Company's estimated costs associated with such installation.

7.4 Electric Space Heating Requirements Including Heat Pumps and Air Conditioners

Electric space heating and central air conditioning require special Company attention because the supply facilities may have to be increased. The air conditioner or heat pump compressor motors must also meet the motor starting current limitations as described in Section 7.2. To ensure that the Company can be ready to supply electric service for heating or cooling when required, the Customer must apply for service or notify the Company as soon as the load is determined.

When electric furnaces, boilers, heat pumps, or duct heaters are installed, resistance units rated larger than 48 amperes must be subdivided and staged. Each resistance unit must not exceed 48 amperes. A 20 second time interval must be maintained between the switching of each stage. The time intervals must be maintained while increasing or decreasing the load.

Separate thermostatically controlled space heating units rated 48 amperes or less need not be staged.

The motor starting limits will allow the installation of single-phase heat pumps and air conditioners rated up to five tons. Some 4 and 5 ton units may require the installation of a control to prevent the compressor and outdoor fan from starting together to keep within the 150 ampere locked-rotor limitation.

7.5 Electric Water Heater Requirements

Electric water heaters are classified as either "Storage-Type" with a storage tank capacity of at least 5 gallons or "Instantaneous-Type" with virtually no storage capacity. All water heaters must conform to Article 422-13 of the National Electrical Code and be approved by the inspection authority having jurisdiction. Each water heater must be specifically equipped with an approved pressure-temperature relief valve and a temperature limiting means, in addition to the control thermostat, which will disconnect all ungrounded conductors at a maximum available temperature setting of not more than 190°F.

7.5.1 Storage-Type Water Heaters

Each storage-type water heater for use on single-phase services must have a maximum heating element size of 5,500 watts. The water heater may have both lower and upper heating elements, but they must be interlocked to prevent simultaneous operation. Storage-type water heaters rated 10 kW or less can be operated on any three-phase service. Larger storage-type, three-phase water heaters can be operated at many service locations. Customers desiring to use a larger storage-type water heater must acquire prior approval from the Company.

7.5.2 Instantaneous-Type Water Heaters

Instantaneous-type water heaters usually require a much larger heating element size than a storage-type delivering the same volume of water. The size of the heating element and the frequency of operation can cause excessive voltage fluctuations to the Customer and adjacent Customers. The Company may also have to provide larger supply facilities for an instantaneous-type water heater than would normally be required for a storage-type. For this reason, Customers must notify the Company at least 120 days prior to any installation, and must pay, in advance, the Company's estimated costs of installing additional facilities, if any, to accommodate the increased load.

Each instantaneous-type water heater for use on a single-phase service must have a maximum heating element size of 5,500 watts. Individual 120 volt units may be utilized on 15 and 20 ampere branch circuits when in compliance with Article 210-23(a) of the National Electrical Code. Instantaneous-type water heaters rated 10 kW or less can be operated on any three-phase service. Larger instantaneous-type three-phase water heaters can be operated at many locations. A Customer desiring to use a larger instantaneous water heater must notify the Company by contacting their Major Account Representative at least 120 days prior to any installation, and must pay, in advance, the Company's estimated costs of installing additional facilities.

7.6 Computers, Video, X-Ray, and Other Electronic Voltage Sensitive Equipment

The operation of some equipment, such as computers, video, x-ray, and other electronic voltage-sensitive equipment may be affected by slight voltage fluctuations. In some cases, the Customer may have to install Power Conditioning or Uninterruptible Power Supply (UPS) equipment to achieve satisfactory operation.

7.7 Snow Melting Equipment

Where equipment is installed for melting snow by means of electric resistance heaters in driveways, sidewalks, or similar areas, the Company is to be contacted so that adequate transformer capacity may be installed. Costs for Company facilities in excess of normal requirements will be paid by the Customer.

7.8 Electric Vehicles

Customers who are installing electric vehicle (EV) charging for use beyond their own personal or fleet vehicle are required to notify the Company by e-mailing ElectricVehicles@duqlight.com at least 120 days in advance of the planned installation date. Examples include workplace employee charging, public charging, or multi-unit dwelling charging.

Customers are also encouraged to notify the Company prior to installing residential charging stations at single-family residences, as they may be eligible for Company-sponsored incentive programs.

7.9 Customer Owned and Operated Electric Generating Equipment, Non-Parallel Operation

The Customer must contact the Company before connecting a generator to ensure that it will not back feed into the Company's system. See Section 9, Parallel Operation of Customer Owned Generation, for additional requirements regarding electric generating equipment that operates in parallel with the Company's system.

7.10 Harmonic Producing Equipment

Customers operating harmonic producing equipment such as rectifiers, silicon controlled rectifier or semiconductor controlled rectifier (SCR) drives, power supplies, inverters, arc-furnaces, welders, etc., must limit the voltage and current distortion caused by their equipment at the point of interconnection to the Company's system to within limits specified by IEEE Standard 519.

7.11 Customer Lightning and Surge Protection

The Company provides surge protection on all of its overhead lines to prevent damage from lightning. While it is not the Company's responsibility to protect Customer equipment, this protection has generally proven adequate to prevent damage to normal Customer appliances such as motors, ranges, washers, dryers, lighting, electron tube-type radios and television sets, and other non-solid-state equipment in all but the most severe lightning conditions. However, appliance manufacturers have incorporated solid-state microprocessor-type components in most modern appliances such as microwave ovens, televisions, DVD and High Definition media players, home theater equipment, and computers. The Company recommends that all Customers make sure that their service is grounded effectively as required in Section 3.4 and provide surge protection devices as described below.

A secondary surge protector should be installed at the service by a qualified electrical contractor. These devices, sometimes referred to as low voltage lightning arresters, are available in several configurations from electrical suppliers. A surge protector at the service dissipates the energy from large surges to ground.

A surge-suppressor plug-in device should be placed between all appliances, computers and equipment with solid-state or microprocessor components and the outlets supplying them. These devices dissipate the short time, low energy surges, which are typically caused by the operation of other home appliances and are available from most appliance or hardware stores.

Only the use of both a secondary surge protector at the service and a surge suppressor plug-in device for each appliance will provide the high level of protection required for solid-state equipment. Houses or buildings in areas exposed to direct lightning may require lightning rod systems on their roof to dissipate direct lightning strokes. Outdoor TV, radio, and satellite dish antennas shall also be protected with proper lightning arresters and grounding systems. Other utilities such as telephone and cable TV companies should be consulted to see if additional lightning or surge protection is required for their systems.

The Company will not be responsible for damage to Customer's appliances or other equipment because the Customer or electrical contractor did not provide adequate lightning or surge protection devices, or due to any failures of such devices.

8. Meters and Metering Equipment

8.1 Equipment Ownership

The Company will furnish, own, and install all meters. Customers are responsible for furnishing self-contained single-phase meter sockets. The Company shall supply any self-contained three-phase and/or transformer rated sockets. All instrument transformers will be furnished and owned by the Company. Instrument transformer cabinets, where required, must be furnished and installed by the Customer.

8.2 Method of Obtaining

When installing a new service or rewiring an existing service, the Customer must notify the Company as required in Section 4.2 or 4.3. The Company will approve the location and type of meter socket to be used.

Single-phase self-contained sockets approved by the Company are available from local electrical equipment suppliers. They must comply with the following requirements:

(a) Shall be Underwriters Laboratories Listed.

(b) Shall have a Meter socket code on bottom.

(c) Shall have a horned bypass.

(d) Shall have a Company label reading:

APPROVED FOR DUQUESNE LIGHT SERVICE AREA

(e) Shall not have lugs for service, telephone, or cable grounding.

(f) Shall not be a socket/switch combination (excluding mobile homes and temporary services).

Two hundred ampere, three-phase meter sockets, transockets, transformer rated meter sockets, meter enclosures, and metering transformers will be delivered to the Customer at the job location by the Company Representative following approval by the Metering Department.

8.3 Removal

Only authorized Company representatives are permitted to install or remove a meter. Upon Customer request and payment of any applicable fees, the Company will remove the meter and if necessary, disconnect service from the pole.

The Customer is responsible for removing and re-installing the weather head and service-entrance cable and remounting the meter socket as described in Section 8.5. The Customer shall mark the location of a suitable stud to facilitate the re-installation of the brackets and service line by the Company. Work on service-entrance cables and meter sockets must be done by qualified electrical contractors and requires a wiring approval. Upon completion of the building work in the area of the service-entrance equipment, the Company will re-attach and re-connect the incoming service line and reseal the meter.

BREAKING OF METER SEALS AND REMOVAL OF METERS BY CUSTOMERS OR ELECTRICAL CONTRACTORS, WITHOUT COMPANY APPROVAL, IS PROHIBITED.

8.4 Types and Sizes

The type and size of metering equipment will be determined by the Company. It will be based on the type of service and size of service-entrance conductors used by the Customer.

Single-phase services having only a single conductor per line of 250 KCM or less with load up to 35 kVA will be metered with self-contained meters in meter sockets. A self-contained meter is one without separately mounted instrument transformers. Single-phase services having only a single conductor per line, with loads over 35 kVA, will be metered with meters mounted on Transockets as shown in Figure 13. Allowable wire sizes, for Transockets, are 250 KCM through 750 KCM aluminum and 4/0 through 500 KCM copper. Transockets are meter-mounting assemblies having built-in current transformers. Information regarding meter sockets for single-phase service is shown in Table I.

Two hundred amp three-phase services having only a single conductor per line of 4/0 or less will be metered with self-contained meters in meter sockets as shown in Figure 12. Three-phase services having only a single conductor per line of 4/0 through 500 KCM including 750 KCM aluminum, will be metered with meters mounted on Transockets as shown in Figure 13. Information regarding meter-mounting equipment for three-phase service is shown in Table II, and Table III.

The Customer shall specify either the proper hub size required, or a hub-opening blank-off plate. See Table II. No reducers are permitted. All other hardware required for connection of the Customer s conduit or cable shall be furnished and installed by the Customer.

All service installations with conductors larger than the above, or with more than one-conductor per line, require separately mounted current transformers. They will be metered using 11-inch by 18-inch transformer rated sockets as shown in Figure 15.

8.5 Location and Installation

All newly installed meter sockets will be located outdoors, unless otherwise approved by the Metering Department. The Customer shall provide and maintain space to accommodate the meters. This space shall be readily accessible to Company representatives.

Meter-mounting equipment for various kinds of service installations shall be installed so that the top of the socket or enclosure will be the following distances above the final ground level or floor:

Residential……....	3’ 6” to 6’
Mobile home pedestal……..	3’ 6” to 5’
Free Standing Meter Installations (See Figure 21) Contact the Metering Department for Instructions……..	5’
Meter enclosures with doors opening up to an overhead position……...	6’
All transockets…….....	5’ to 6’
All other non-residential installations……..……	5’ to 6’
Apartment group installations with combination meter and breaker assemblies mounted indoors…….	See Figure 19

Locations which interfere with pedestrian or vehicular traffic are prohibited, without prior approval by the Company. A level three-foot clear space in front of the meter, suitable for a repairman to work from, shall be provided and maintained at all times.

The Customer shall install the meter socket or transformer cabinet so that it is plumb, tight and level. All mounting holes provided in the meter socket shall be used, and no additional mounting holes shall be drilled.

Sockets mounted hardware shall be installed into brick, concrete block, studs or the equivalent. On metal, vinyl or wood lap siding, a backing of 3/4 inch thick outdoor plywood shall be attached to two studs and shall be of sufficient strength to securely mount the socket.

Meter sockets may be mounted on a Customer's pole or support structure. Approval for such an installation shall be obtained from the Metering Department. A pole-mounted meter is shown in Figure 8. An example of a support structure is shown in Figure 23.

Where aluminum conductors are used, an oxidation inhibitor shall be applied in a proper manner to all conductors before they are placed into the meter socket terminals.

The meter socket or the instrument-transformer cabinet must be located on the supply side of the Customer's disconnect, except for multimeter installations having more than five meters.

Meter sockets for use on single-phase, 120/208 volt services shall have a fifth terminal mounted in the 9 o'clock position. The Customer shall provide, install and connect the fifth terminal shown in Figure 16.

Metered and unmetered conductors shall not be installed in the same meter socket, conduit, wire way, or wiring trough. Meter sockets shall not be used as junction boxes. All cabinets, pull boxes, and wire ways or wiring troughs which contain unmetered conductors shall have provisions for an anti-tamper Company seal.

In all three-phase installations the service-entrance conductors shall be identified at the service head or fitting in accordance with the connections at the meter socket or transocket. This is necessary to ensure proper metering.

For the proper method of connecting line and load conductors, see Figure 16 for meter sockets and Figure 17 and Figure 18 for transocket assemblies.

8.5.1 Meter Socket Grounding

Meter sockets or enclosures shall not be used for the purpose of grounding cable TV, telephone, or any other service lines.

Self-contained meter sockets and transockets shall not be separately grounded unless the electrical inspection agency requires the neutral conductor to be isolated in the socket, or the socket is used on an ungrounded 230 volt service.

All instrument transformer rated sockets and enclosures shall be grounded. Refer to Figure 23.

Refer to Section 3.4 Service Grounding for more information.

8.6 Multimeter Installations

Meters for all Customers in a multiple-occupancy building must be grouped in a minimum of locations. For all multimeter installations, the Customer must first submit a detailed plan to, and receive approval from, the Company. Only upon approval may the Customer begin meter installation.

The meter socket and main service equipment for each individually metered load source must be clearly and permanently identified by the Customer. The permanent marking must be located on a non-removable surface of the meter socket. If changes in apartment numbers are made after the meters are set, the Customer must notify the Company immediately.

For installations of two to six meters, the service-entrance conductors shall enter the top or bottom of the meter socket, as shown in Figure 19. When entering the top, a hub shall be used. Unused hub openings shall be covered with a closure plate.

For multimeter installations of more than six meters, a circuit breaker or a switch with fuses shall be installed on the supply side of the meters. The unmetered conductors shall be brought out of the switch or breaker compartment in metallic conduit to a sealable wire way or wiring trough. All taps to the meter socket shall be made in the wire way or wiring trough as shown in Figure 20.

If the Customer elects to use prewired, combination multiple meter and breaker panels for multimeter installations, the complete panels shall be furnished by the Customer. Prior to purchasing, the details of all equipment and the installation plan must be submitted to the Customer Representative for approval by the Meter Department. Only upon approval shall the Customer purchase the necessary equipment. The essential requirements for this equipment are the use of Belleville-type washers and oxide inhibitor on all aluminum to aluminum connections, provision for installation of a fifth terminal in the 9 o'clock position of each 120/240 volt, single-phase meter socket, sealable separate compartments for unmetered wiring, and no metered and unmetered wiring in the same compartment. A typical installation of prewired equipment is shown in Figure 21.

8.7 Instrument Transformer Installations

When instrument transformers are required, they shall normally be mounted in an instrument transformer cabinet or in a metal-clad switchgear compartment. The Meter Department reserves the right to approve an alternate location if space limitations do not provide for a conventional installation.

Instrument transformers will be furnished and delivered to the job location by Company Representatives. The Customer shall mount the instrument transformers, then furnish and install 1 1/2 inch rigid, intermediate, or PVC schedule 40 conduit (thin wall or flexible conduit is not acceptable) from the instrument transformer cabinet or compartment to the meter location designated by the Company Representative. PVC schedule 80 conduit is required for underground conduit runs. All PVC conduits will require a #6 insulated stranded ground provided by the Customer. All conduit lines will require a pull line. Conduit runs longer than 50' and/or runs that require more than two 90 degree elbows require approval from the Company Representative.

8.7.1 Instrument Transformer Cabinets

Instrument transformer cabinets shall not be used as junction boxes. Connections to other meters or current transformers shall not be made in the instrument transformer cabinet. However, for more than one conductor per line installations, it is permissible for individual conductors to feed different circuits on the load side of the current transformers.

Instrument transformer cabinets shall be of sufficient size to contain all the instrument transformers and conductors, and must be located and constructed so as to accommodate possible future removal and replacement of the transformers. The instrument cabinet size is determined by the size and number of conductors, the point of entrance and exit of conductors, and the size, type, and number of instrument transformers, as per Table III. Recommended minimum sizes for instrument transformer cabinets are shown in Table III. For all services higher than 480 volts, and for any questions about a specific installation regarding the minimum allowable size of the instrument transformer cabinet consult the Major Account Representative for approval from the Metering Department.

Instrument transformer cabinets must have hinged double doors. Cabinets that are 10” by 24” by 32” or smaller may have a hinged single door. All instrument transformer cabinet doors must be sealable with pad lock type meter-sealing devices. A minimum 3’ of clearance must be provided and maintained in front of the cabinet to allow the cabinet doors to be fully opened, and to allow the removal and installation of the instrument transformers.

8.7.2 Instrument Transformers in Cabinets

Instrument transformers must be mounted so that they may be readily removed or replaced. Instrument transformers must be mounted on a 3/4 inch plywood panel or on mounting plates or brackets, and must not be mounted directly on the back surface of instrument transformer cabinets. The polarity marks (dot) shall face the supply side. The conductors shall be broken on the supply side of the current transformer and reconnected with adequate bolted connectors. See Figure 18. For metering potential connections, a 12 inch #12 stranded & insulated pigtail per phase shall be provided by the Customer. In installations where the service is four-wire but the load is three-wire, a neutral conductor shall be extended to the current transformer compartment.

8.7.3 Instrument Transformers in Switchgear

When instrument transformers are installed in Customer's metal-clad switchgear, the Customer must arrange to furnish detailed drawings of the riser diagram, switchgear, and instrument transformer arrangement. These drawings shall be forwarded to their Major Account Representative for acceptance and approval before constructing the switchgear. The Meter Department on request will supply information on the size, type and number of instrument transformers to be furnished.

The instrument transformer compartment must be completely separated by a rigid barrier from the rest of the switchgear. The compartment must have hinged doors which are lockable with a Company pad lock type sealing device, and be large enough to contain the required number of through-type current transformers and voltage transformers for services of 277/480V and higher. The design shall be such that the transformers can be readily installed or changed after the switchgear is in place. Removable sections of bus bar shall be provided as the primary conductor of the current transformers, and shall be the same ampacity as the bus bar entering and exiting the compartment. It may also be necessary to parallel narrower bars to accommodate the current transformers supplied by the Company.

The instrument transformers must be installed by the Customer. They shall be located on the supply side of the main switch or circuit breaker. The service-entrance conductors shall be completely enclosed in conduit or raceway from the service point to where they enter the switchgear instrument transformer compartment. All service and metering conductors exiting the instrument transformer compartment shall not be returned to the compartment. Voltage connections for metering shall be provided in the compartment. These connections shall be on each phase bus on the supply side of the current transformers, and for three-phase, four-wire services shall also be on the neutral. In installations where the service is four-wire but the load is three-wire, a neutral conductor shall be extended to the current transformer compartment.

8.8 Primary Voltage Service - Underground

Where untransformed service is furnished underground, the Company will furnish the metering transformers, meters and meter socket. The Customer shall furnish and install an enclosure approved by the Company to house the terminations of the service line and the metering transformers. The Customer shall install the metering transformers and make all primary connections to these transformers. The Customer shall install the meter socket at a location determined by the Company in compliance with Section 8.7.

Enclosure Requirements for Customers:

(a) The enclosure must be provided and installed by the Customer.

(b) The utility company will supply the instrument transformers and Meter Socket(s).

(c) The contractor will mount the equipment, provide the wire for, and perform the primary connections to the instrument transformers.

(d) The socket may be mounted directly to the enclosure.

(e) A 1-1/2 inch all-thread nipple will be used to connect the meter socket to a non-metallic (6" x 6" x 4") enclosure inside the main enclosure.

(f) The connections must be sealed to keep water from entering.

(g) Flexible, weatherproof, non-metallic, 1", conduit will connect from the inside enclosure to the closest current transformer (CT) and another piece to the closest voltage transformer (VT).

(h) Shorter pieces of conduit will be used to connect CT to CT and VT to VT.

(i) Please call Customer Service to arrange delivery of CTs, VTs, and Meter Socket.

(j) The Company's Metering Department will supply and perform the secondary wiring.

8.9 Primary Voltage Service - Overhead

Where service greater than 600 volts is furnished overhead, the metering transformers will be installed on a Company pole. The Company will furnish and install the metering pole or poles on the Customer's property at a location approved by the Company complete with the instrument transformers and metering equipment. When the Company determines that the meter socket can be mounted on the primary metering pole, the Company will furnish and install the entire metering installation. The Customer shall not attach any equipment other than their service-entrance conductors to the Company's metering pole.

9. Parallel Operation of Customer Owned Generation

To ensure Customer safety, Company employee safety, and adequate, reliable service to all Customers, all Customer owned generation that is operating in parallel with the Company's service must adhere to the requirements discussed in this section. All Customers must apply for and receive Company approval for all interconnected generation systems operated in parallel with the Company's distribution system. The Company's interconnection application process is described on the Company's website (https://www.duquesnelight.com/energy-money-savings/customer-owned-generation). Customers may not, under any circumstances, install or operate a generator in parallel with the Company's distribution facilities except as provided herein and in the Company's Facility Interconnection Requirements (https://duquesnelight.com/docs/default-source/default-document-library/standards-for-connection.pdf?sfvrsn=5717a442_0) and in accordance with applicable regulations and the Company's tariff.

9.1 Electrical Requirements

All interconnected systems must be constructed, wired, and installed per the applicable NEC code(s), and all applicable state and local requirements. As part of the interconnection application process, the Customer will be required to produce a wiring approval from a qualified electrical inspector verifying that the system(s) to be interconnected conform to all applicable electrical requirements.

9.2 Device Requirements

9.2.1 Inverters

All inverters used on the Company system must be up to the current IEEE Std. 1547 UL 1741 standard in order to be permitted for installation and operation on the Company electrical system. No exceptions will be made. Additionally, all inverters must comply with voltage ride through guidance provided in the PJM Guideline for Ride Through Performance of Distribution-Connection Generators.

9.2.2 Utility Accessible Disconnect (UAD)

All systems must be capable of being isolated from the Company system by means of a lockable, visible-break, isolation device that is accessible by the Company at all times. The isolation device must be installed, owned, and maintained by the Customer and be located between the generation system and the point of interconnection.

The Customer may elect to provide the Company access to an isolation device that is contained in a building or area that may be unoccupied and locked or not otherwise readily accessible to the Company, by installing a lockbox provided by the Company that must provide ready access to a UAD. The Customer must install the lockbox in a location that is readily accessible by the Company and the Customer must permit the Company to affix a placard in a location of its choosing that provides clear instruction to the Company operating personnel on access to the UAD.

The UAD must meet the following criteria:

(a) Lowest point can be no lower than 36” from level ground.

(b) Highest point can be no higher than 60” from level ground.

(c) Must be capable of isolating all sources of generation from the Company electric grid.

9.3 System Upgrades and Modifications

As part of the interconnection application process, the Company reviews the Customer’s proposed generation equipment, as well as the Company distribution facilities to which the generation facilities would interconnect. Consistent with applicable regulations, the Company reserves the right to require upgrades or modifications to the Customer’s and/or the Company’s facilities, at the Customer’s expense, as may be necessary to ensure safe and reliable interconnection of the Customer’s generation equipment.

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Table I

SINGLE-PHASE METERING EQUIPMENT

Meter Socket Code	Maximum Amperes	Service Conductor Size	Approximate Socket Size in Inches			Type Of Service	Service Application
			D	W	L		
S-100	100	Maximum Size: #1 AWG	3-1/2	8-1/2	10	Overhead Only	100 Amperes or Less and services requiring current transformers
U-150	150	1/0-2/0	4-1/2	8-1/2	14	Underground Only	150 Amperes or less
S-200	200	1/0 250 KCM	4-1/2	8-1/2	14	Overhead Only	150 & 200 Amperes Residential
U-200	200	1/0 250 KCM	4-1/2	8-1/2	14	Underground Only	200 Amperes Residential
400 Ampere Transocket	400	250-750 KCM	11	24	30	Overhead Or Underground	200 to 400 Ampere with demands over 35 kVA
GV2	150	GV & GH Line Side: 1/0 to 250 KCM Load Side Maximum: 2/0 Al or 1/0 Cu GH - # - 2 Line Side: 1/0 to 600 KCM Load Side Maximum: 250 KCM	4	8-1/4	20	Overhead Only	Vertical 2 position gang socket for two individual 150 ampere services
GH-2 GH-2-2	150 200		4-3/4 5	20-1/2 28	12 16	Overhead Or Underground	Horizontal gang meter sockets for 2 to 6 positions GH For individual services rated 150 amperes or less, total service requirements SHALL NOT EXCEED 300 amperes for Cu or 225 Amperes for Al GH - # - 2 For individual services rated 200 amperes or less, total service requirements SHALL NOT EXCEED 400 Amperes for Cu or 400 Amperes for Al
GH-3 GH-3-2	150 200		4-3/4 5	32-1/2 36	12 16	Overhead Or Underground	
GH-4 GH-4-2	150 200		4-3/4 5	41 45	12 16	Overhead Or Underground	
GH-5 GH-5-2	150 200		4-3/4 5	49 55	12 16	Overhead Or Underground	
GH-6 GH-6-2	150 200	Side Maximum 250 KCM	4-3/4 5	57-1/2 62	12 16	Overhead Or Underground	
Instrument-Cabinet Installations	200 And Up	One or More Per Phase	8 x 14 inch Single Meter Socket Overhead or Underground See Table III				Where The Service Size Exceeds Those Described Above

Table II

THREE-PHASE METERING EQUIPMENT

Customer s Service Conductor Size Copper (Cu) or Aluminum (Al)	Instrument-Transformer Cabinet Required?	Meter Socket or Transocket Required	Hub Sizes Available
#6 AWG thru 4/0AWG	No	12 x 18 Inch Single Meter Socket 8 Terminal for 3-Phase, 3-Wire 7 Terminal for 3-Phase, 4-Wire	Detachable 1-1/2", 2" or 2-1/2"
250 KCM to 500 KCM for Cu 750 KCM for Al	No	400 Ampere Transocket 24 x 30 Inch	Detachable 2-1/2", 3" 3-1/2" or 4"
Larger Than 500 KCM Cu 750 KCM Al	Yes See Table III	11 x 18 Inch Single Socket See Note	Detachable 1-1/4" or 1-1/2"
More Than One Conductor Per Phase	Yes See Table III	11 x 18 Inch Single Socket See Note	Detachable 1-1/4" or 1-1/2"

All transockets, current transformers, duplex sockets and meter enclosures will be delivered to the Customer at the job location by the Company s representative.

Instrument transformer cabinets shall be furnished and installed by the Customer.

All meter sockets, transockets, transformer rated meter sockets and other enclosures are suitable for either indoor or outdoor use.

Note: Where multiple circuit totalizing meters or other special meters are required and where meters are subject to vandalism, meter enclosures may be supplied.

Table III

RECOMMENDED INSTRUMENT-TRANSFORMER CABINET SIZES

Installation Type	Installation Voltage	Max # of Conductors per Phase	Conductor Service Size (KCM)	Transformer Cabinet Size Inches	Number of Hinged Doors Required
1-Phase	120/240	1	750 or Less	24 x 24 x 10	1
		2	500 or Less	24 x 32 x 10	1
		3	600 to 750	24 x 42 x 12*	2
		4	500 or Less	24 x 42 x 12*	2
3-Phase 4-Wire	120/208	1	500 or Less	24 x 32 x 10	1
		1	600 to 750	24 x 42 x 12*	1
		2	750 or Less	24 x 42 x 12*	2
		3	500 or Less	24 x 42 x 12*	2
		3	600 to 750	38 x 60 x 18**	2
		4	750 or Less	38 x 60 x 18	2
3-Phase 4-Wire	277/480	1	750 or Less	24 x 42 x 12*	2
		2	500 or Less	24 x 42 x 12*	2
		2	600 to 750	38 x 60 x 18	2
		3	750 or Less	38 x 60 x 18	2
		4	750 or Less	38 x 60 x 18	2

The sizes listed are minimums. There may be cases where a larger cabinet is necessary based on factors listed in Section 8.7.1.

*If a 24 x 42 x 12 cabinet is not available, one 36 x 36 x 10 may be substituted.

*** If a 38 x 42 x 12 cabinet is not available, a 48 x 48 x 18 may be substituted. Instrument cabinets shall be furnished and installed by the Customer.

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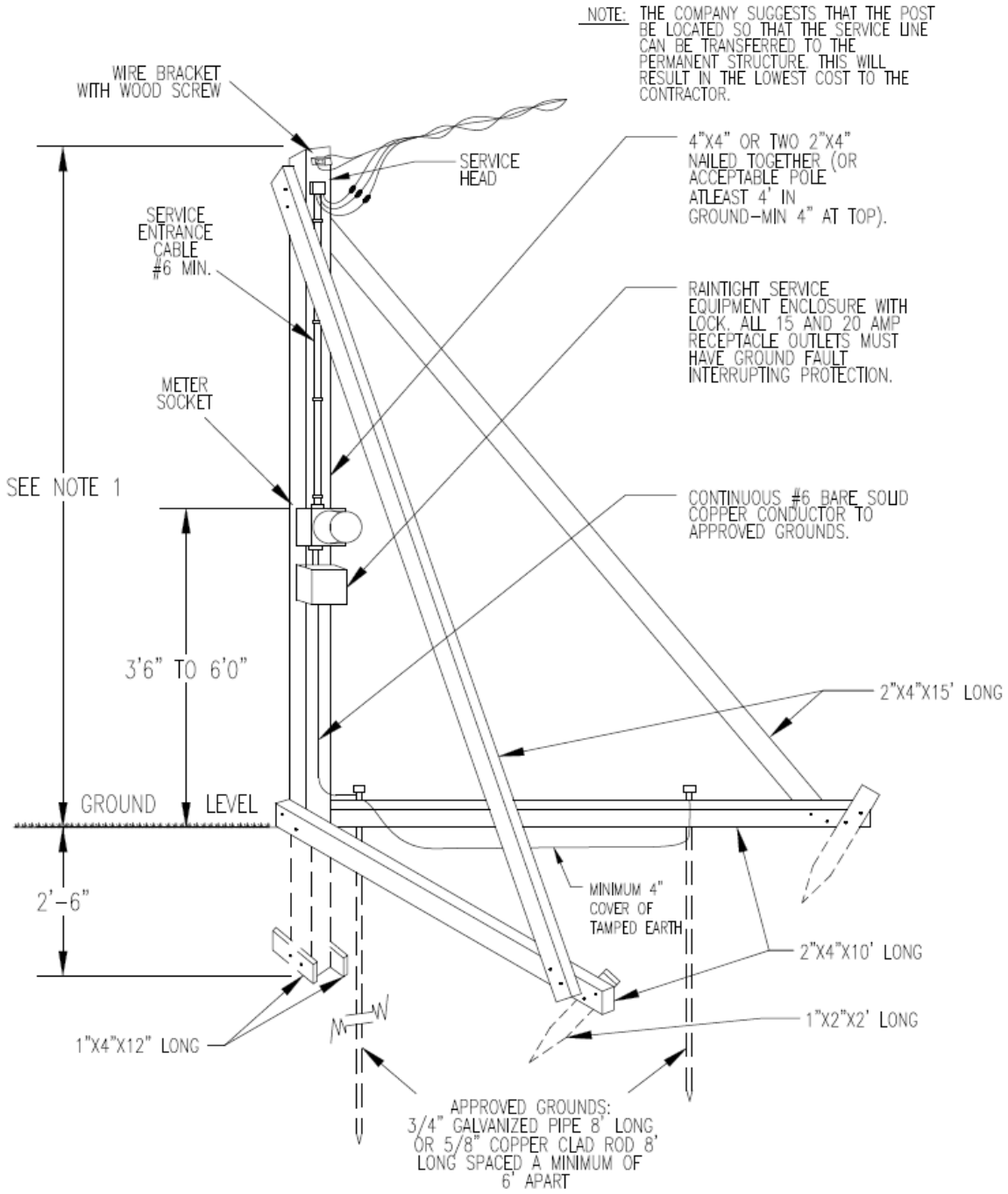


NOTES

1. MINIMUM CLEARANCE IS DEPENDANT UPON TERRAIN OR CARTWAY.
   MINIMUM CLEARANCE OVER SIDEWALK AND GROUND IS 10'.
   MINIMUM CLEARANCE OVER RESIDENTIAL DRIVEWAY IS 12'.
   MINIMUM CLEARANCE OVER COMMERCIAL DRIVEWAY, ROAD, ALLEY, ETC IS 18'.

FIGURE 1. (SEE SECTION 4.2.1)
TYPICAL TEMPORARY SERVICE ENTRANCE POST FOR USE DURING CONSTRUCTION OF BUILDING

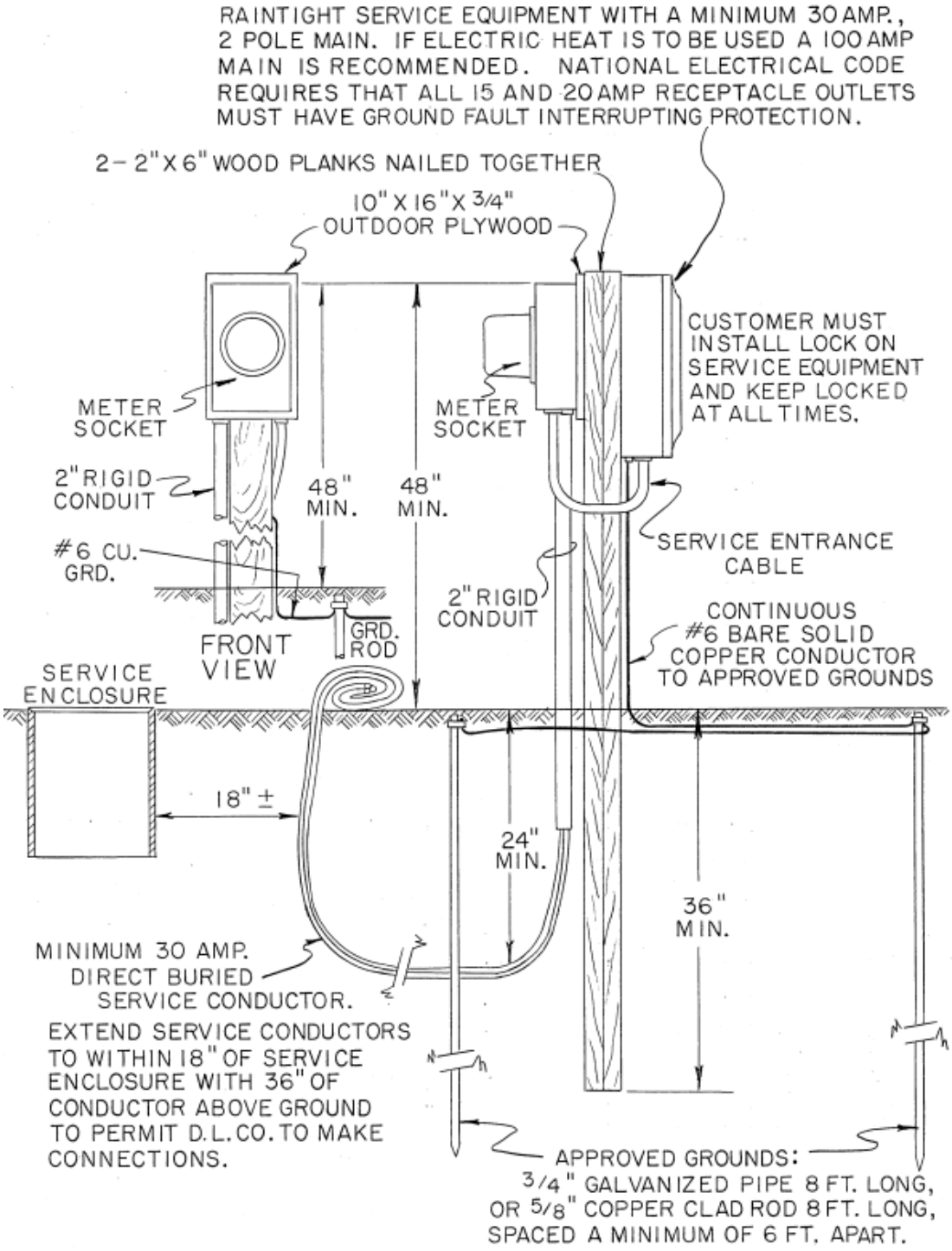
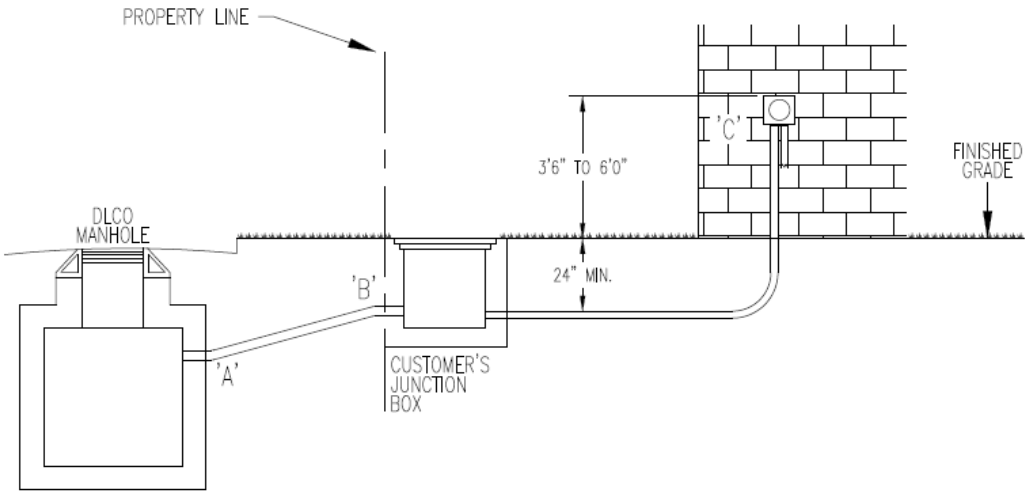
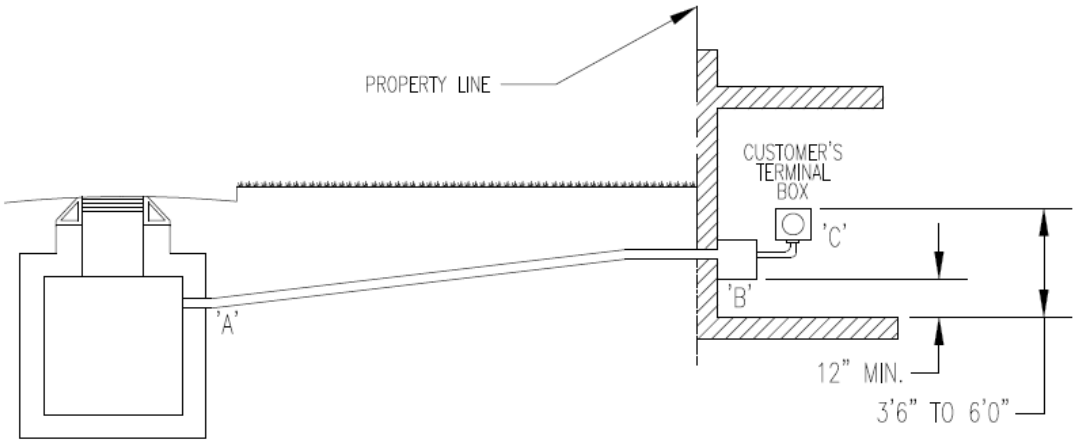


FIGURE 2.
TYPICAL TEMPORARY SERVICE IN UNDERGROUND RESIDENTIAL DEVELOPMENTS



'A – B' – SERVICE LATERAL (FURNISHED, INSTALLED AND MAINTAINED BY DUQUESNE LIGHT COMPANY)

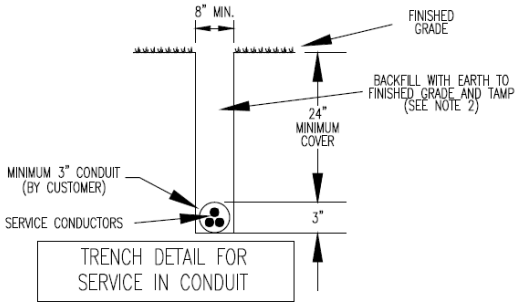
'B – C' – SERVICE ENTRANCE CONDUCTORS, JUNCTION BOX AND CONDUIT (FURNISHED, INSTALLED AND MAINTAINED BY CUSTOMER). CUSTOMER CONNECTS TO SERVICE LATERAL IN JUNCTION BOX PRIOR TO COMPANY ENERGIZING THE SERVICE LATERAL.

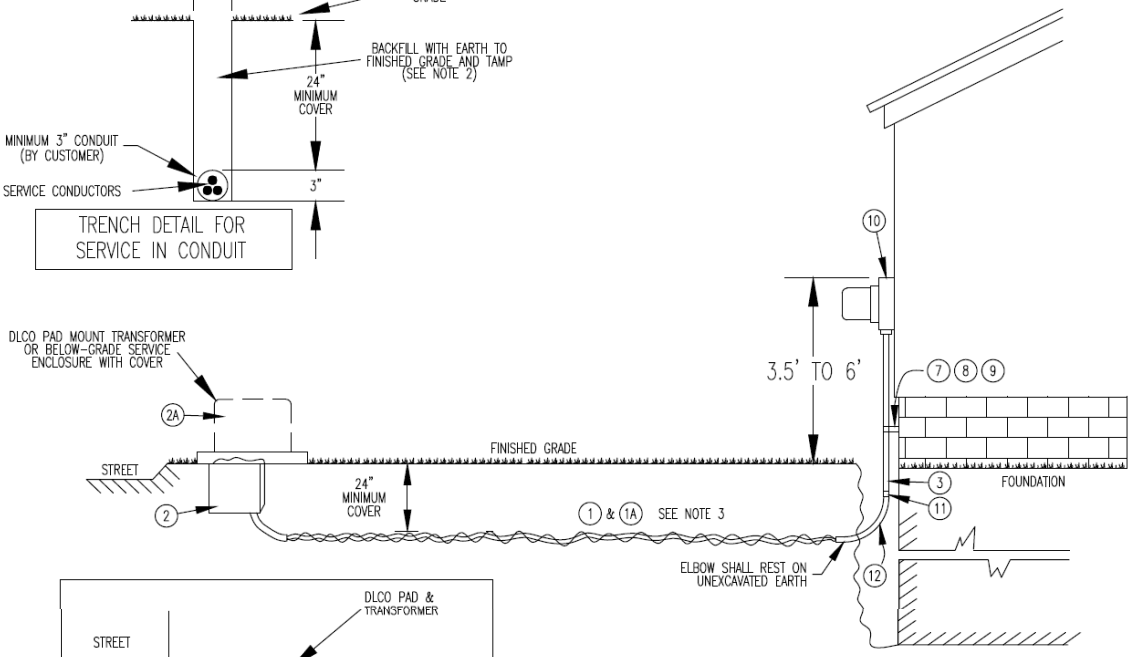


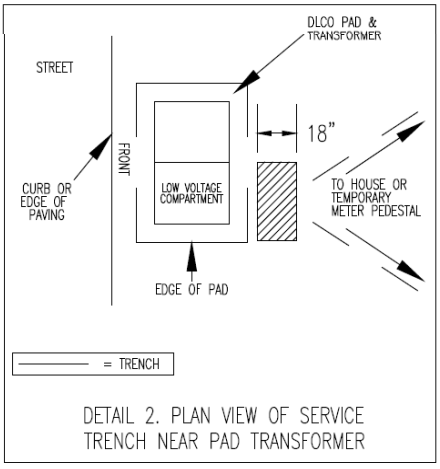
'A – B' – SERVICE LATERAL (FURNISHED, INSTALLED AND MAINTAINED BY DUQUESNE LIGHT COMPANY)

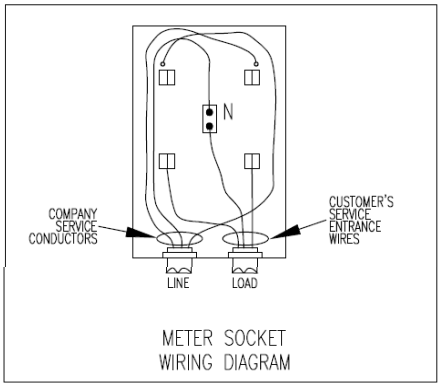
'B – C' – SERVICE ENTRANCE CONDUCTORS, JUNCTION BOX AND CONDUIT (FURNISHED, INSTALLED AND MAINTAINED BY CUSTOMER). CUSTOMER CONNECTS TO SERVICE LATERAL IN JUNCTION BOX PRIOR TO COMPANY ENERGIZING THE SERVICE LATERAL.

FIGURE 3.
TYPICAL UNDERGROUND SERVICE CONNECTION FROM UNDERGROUND SUPPLY LINES 120/240 OR 120/208 VOLT









CUSTOMER'S WORK:

1. FURNISH, INSTALL AND MAINTAIN METER BASE (ITEM (10)).
2. PROVIDE ALL TRENCHING AND BACKFILLING. CUSTOMER TRENCH SHOULD EXTEND TO WITHIN 18" OF COMPANY'S PAD MOUNTED TRANSFORMER OR SERVICE ENCLOSURE (ITEM (2A) & (2)). IF SERVICE IS FROM PAD TRANSFORMER, TRENCH MUST BE SITUATED NEAR RIGHT REAR QUADRANT OF PAD (SEE DETAIL 2 FOR ACCEPTABLE ALTERNATE TRENCH LOCATIONS).
   FOR SERVICE INSTALLATION IN CONDUIT: BOTTOM OF TRENCH SHALL BE UNDISTURBED, TAMPED OR RELATIVELY SMOOTH EARTH.
3. FURNISH, INSTALL AND MAINTAIN CONDUIT (ITEM (1A)) UNDER DRIVEWAYS, SIDEWALKS, PAVED AREAS, AND OTHER AREAS (SUCH AS PATIOS, LANDSCAPE WALLS, ETC.) AS DEEMED NECESSARY BY THE COMPANY. INSTALL FISH LINE TO FACILITATE PULLING IN SERVICE CONDUCTORS. CONDUIT SHOULD BE 3" NOMINAL PVC ELECTRIC UTILITY GRADE CONDUIT, TYPE DB-120 (NEMA TC-6) OR EQUIVALENT.
4. BEFORE COMMENCING AND DIGGING, CUSTOMER MUST CONTACT THE PENNSYLVANIA ONE-CALL SYSTEM: 1-800-242-1776.

DLCO WORK:

5. DLCO TO FURNISH AND INSTALL ALL OTHER ITEMS SHOWN ((2) & (2A)). REFER TO STANDARDS DRAWING URD-11-10.

FIGURE 3A.
TYPICAL SERVICE IN UNDERGROUND RESIDENTIAL DEVELOPMENTS – 120/240 VOLT SINGLE PHASE

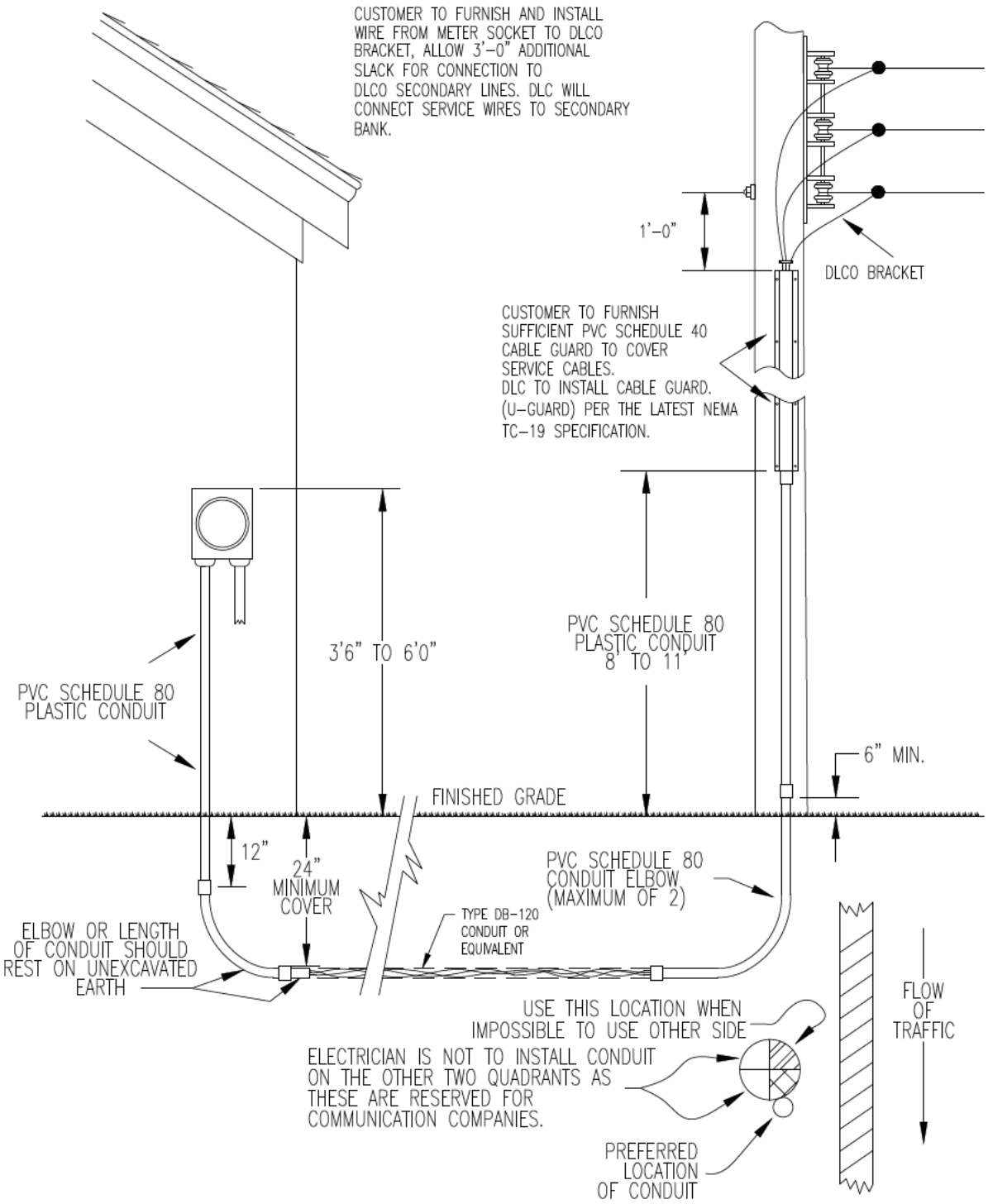


FIGURE 4.
TYPICAL UNDERGROUND SERVICE CONNECTION FROM OVERHEAD LINES 120/240 VOLT SINGLE-PHASE

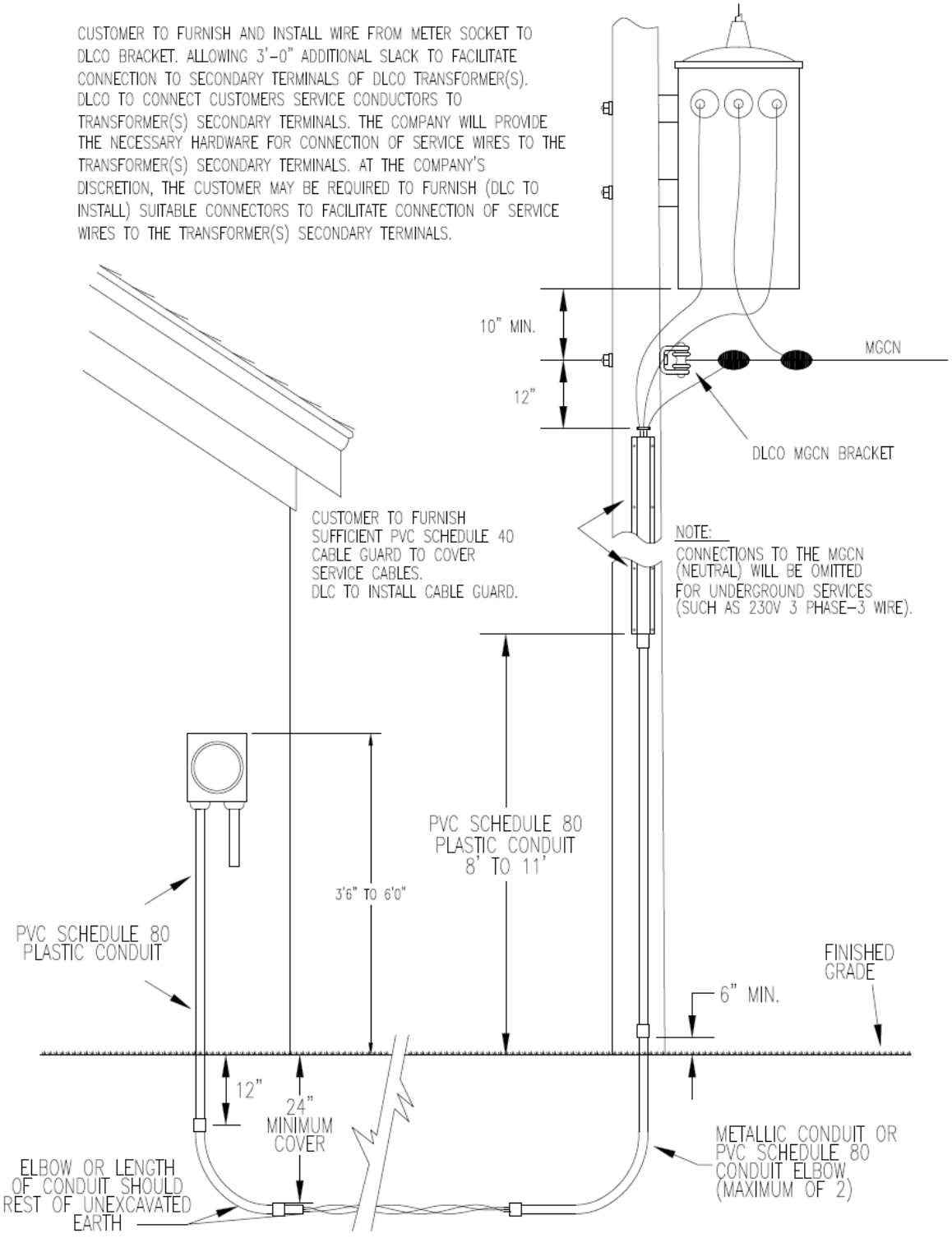


FIGURE 4A.
TYPICAL UNDERGROUND SERVICE CONNECTION
FROM POLE MOUNTED TRANSFORMERS

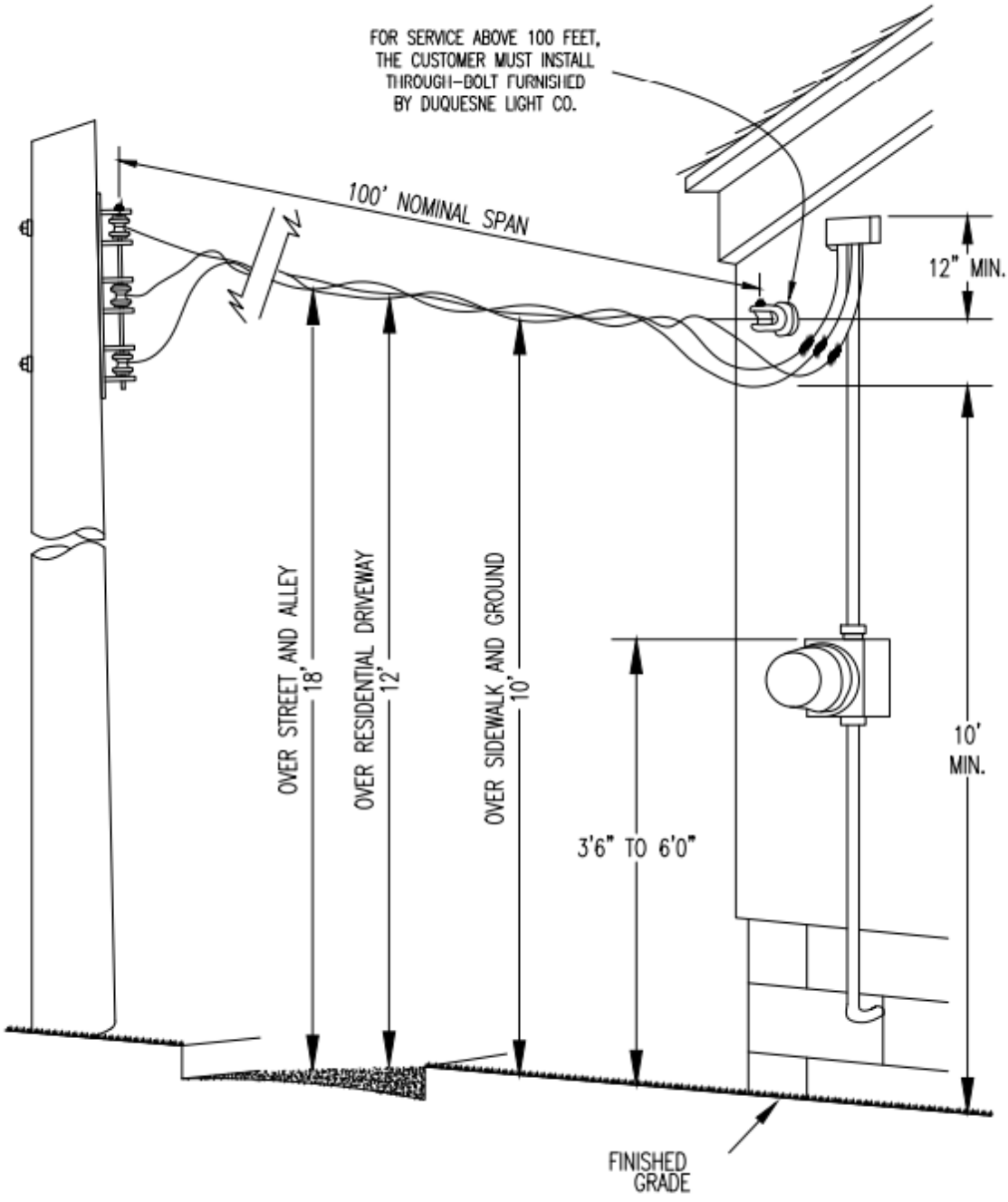


FIGURE 5.
TYPICAL OVERHEAD SERVICE CONNECTION
120/240 VOLT SINGLE-PHASE

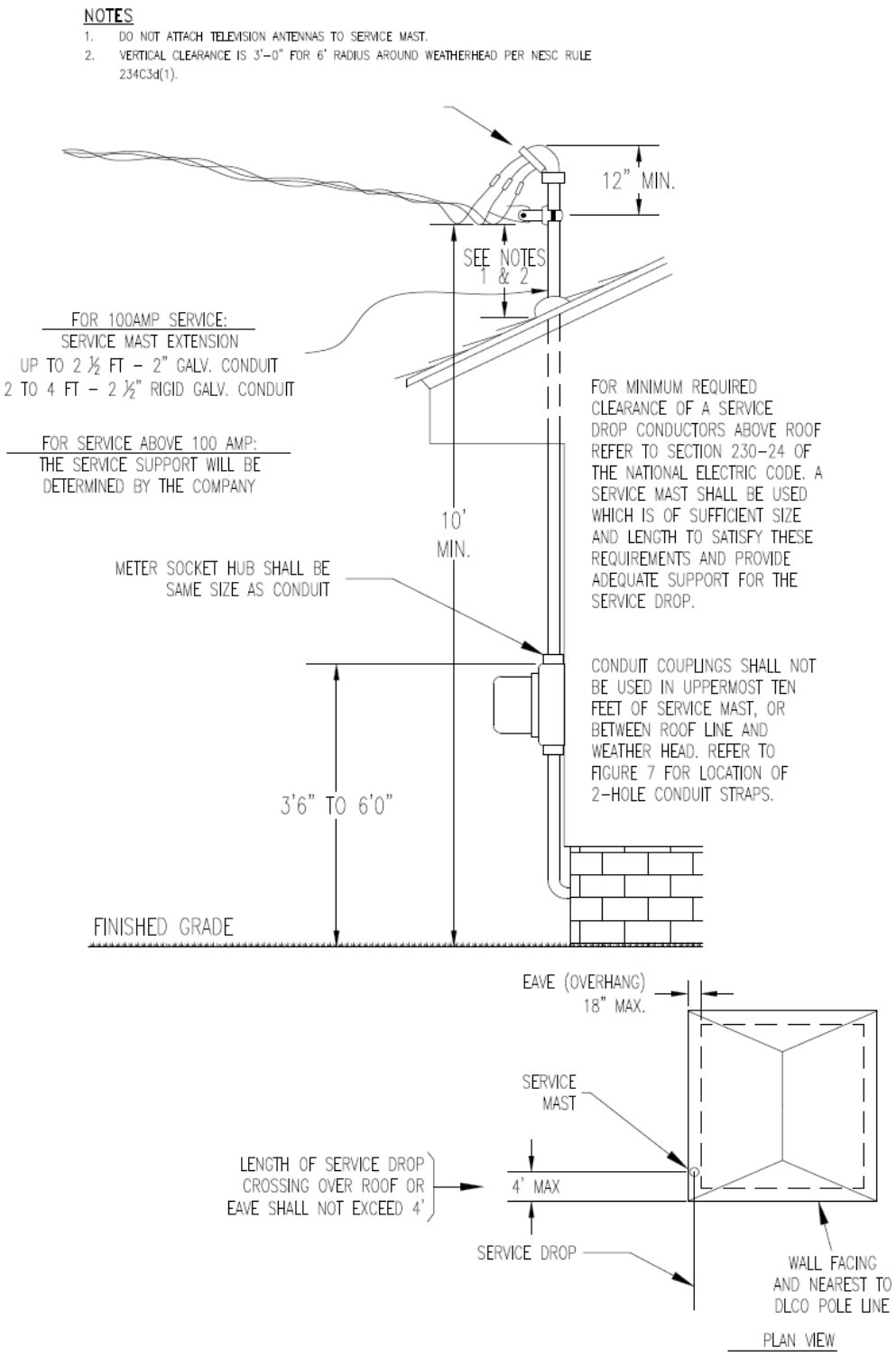


FIGURE 6.
TYPICAL OVERHEAD SERVICE CONNECTION
MAST TYPE, 120/240 VOLT SINGE-PHASE

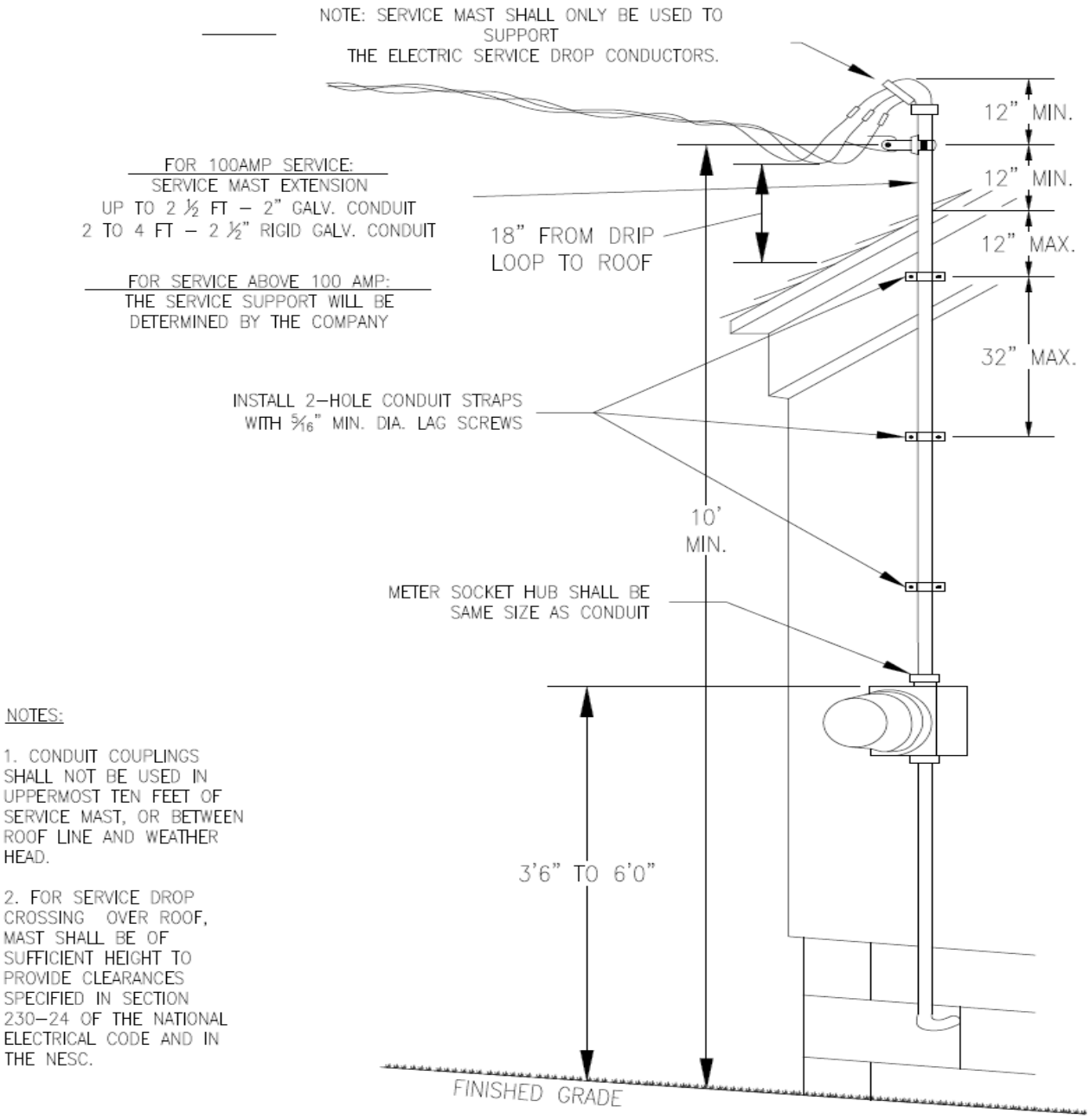
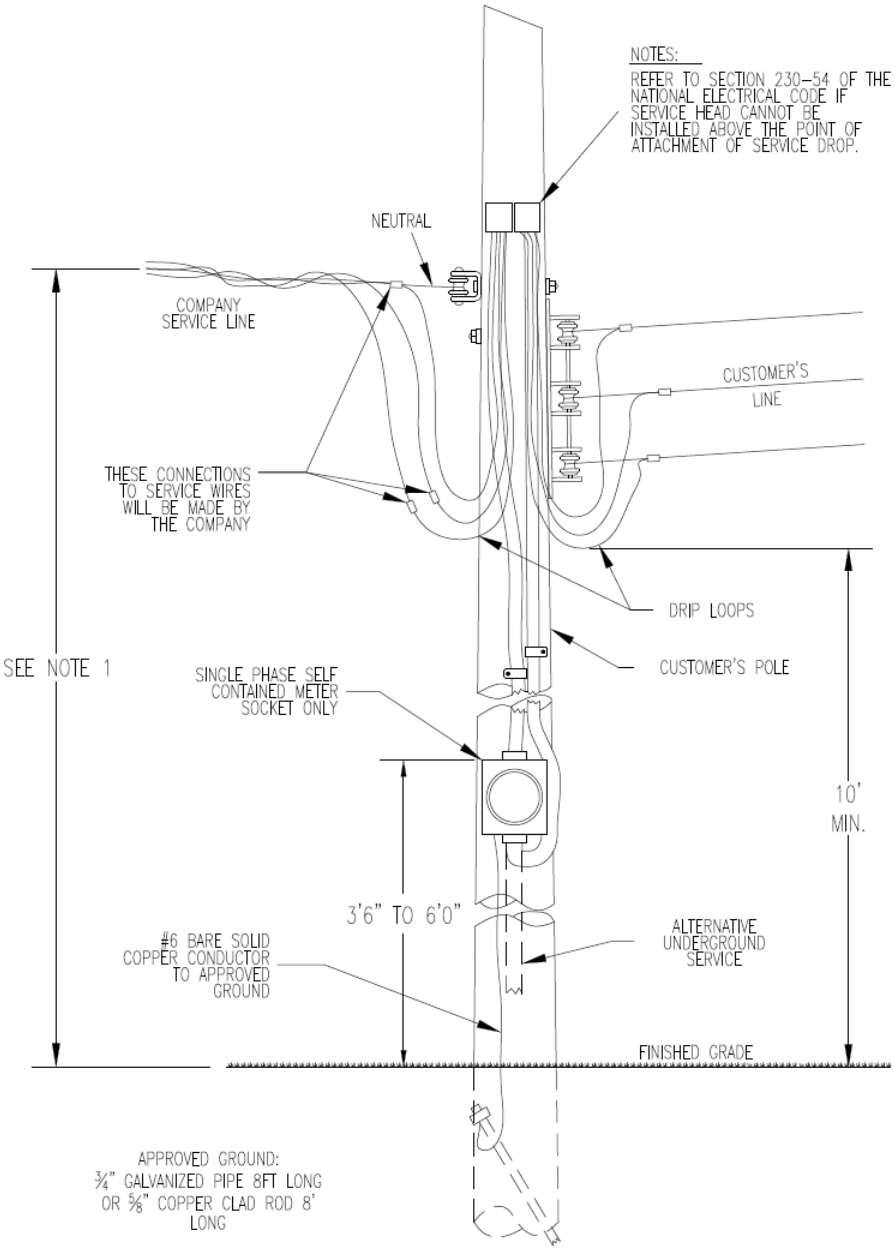


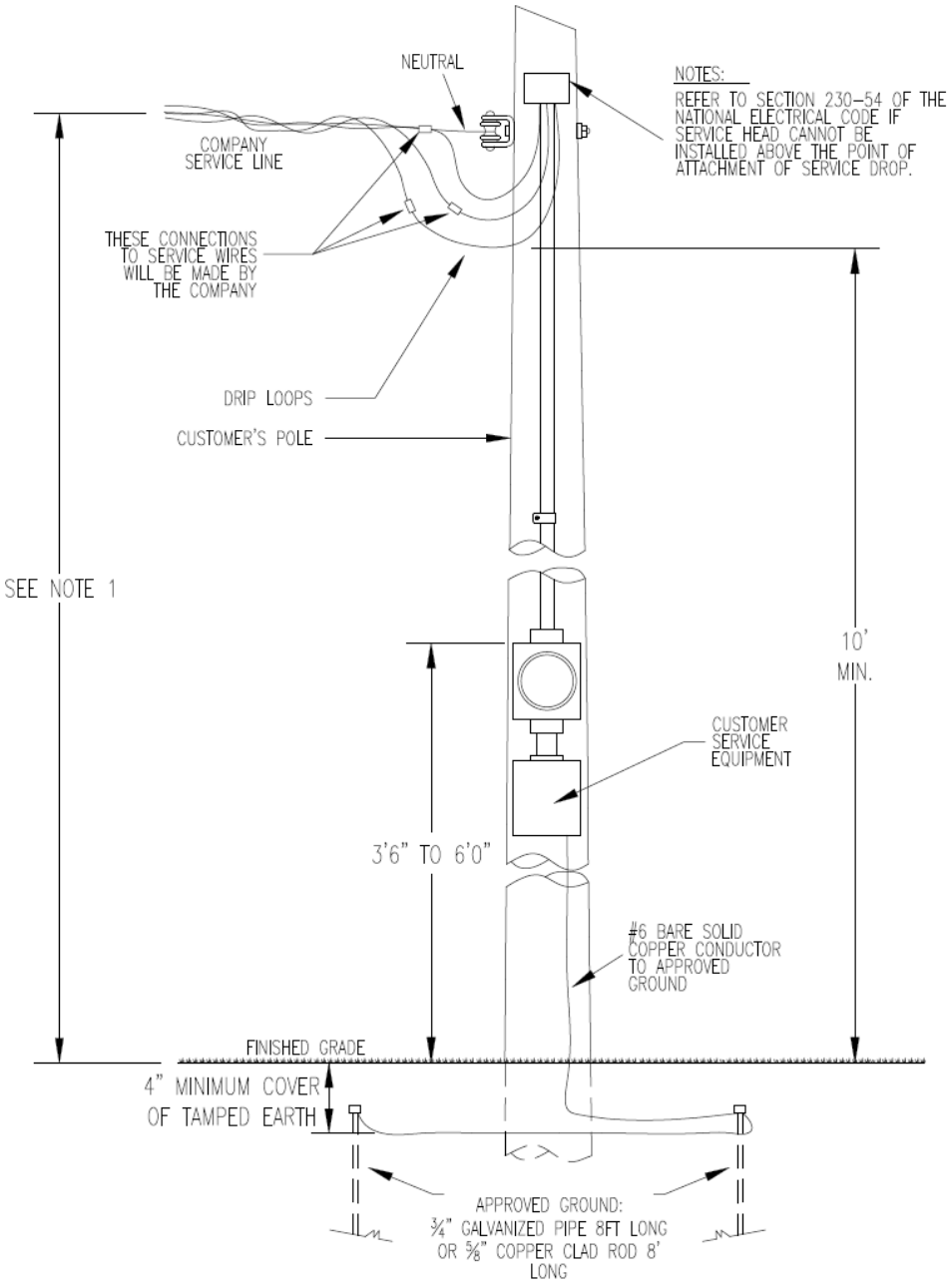
FIGURE 7.
TYPICAL OVERHEAD SERVICE CONNECTION, MAST TYPE
WITH NO ROOF OVERHANG, 120/240 VOLT SINGLE-PHASE



NOTES

1. MINIMUM CLEARANCE IS DEPENDANT UPON TERRAIN OR CARTWAY.
   MINIMUM CLEARANCE OVER SIDEWALK AND GROUND IS 10'.
   MINIMUM CLEARANCE OVER RESIDENTIAL DRIVEWAY IS 12'.
   MINIMUM CLEARANCE OVER COMMERCIAL DRIVEWAY, ROAD, ALLEY, ETC IS 18'.

FIGURE 8.
TYPICAL POLE INSTALLATION FOR
120/240 VOLT SINGLE-PHASE SERVICE
OF 200 AMP OR LESS



NOTES

1. MINIMUM CLEARANCE IS DEPENDANT UPON TERRAIN OR CARTWAY.
   MINIMUM CLEARANCE OVER SIDEWALK AND GROUND IS 10'.
   MINIMUM CLEARANCE OVER RESIDENTIAL DRIVEWAY IS 12'.
   MINIMUM CLEARANCE OVER COMMERCIAL DRIVEWAY, ROAD, ALLEY, ETC IS 18'.

FIGURE 9.
TYPICAL POLE-METER INSTALLATION
FOR A MOBILE HOME OR OTHER USE
120/240 VOLT SINGLE-PHASE

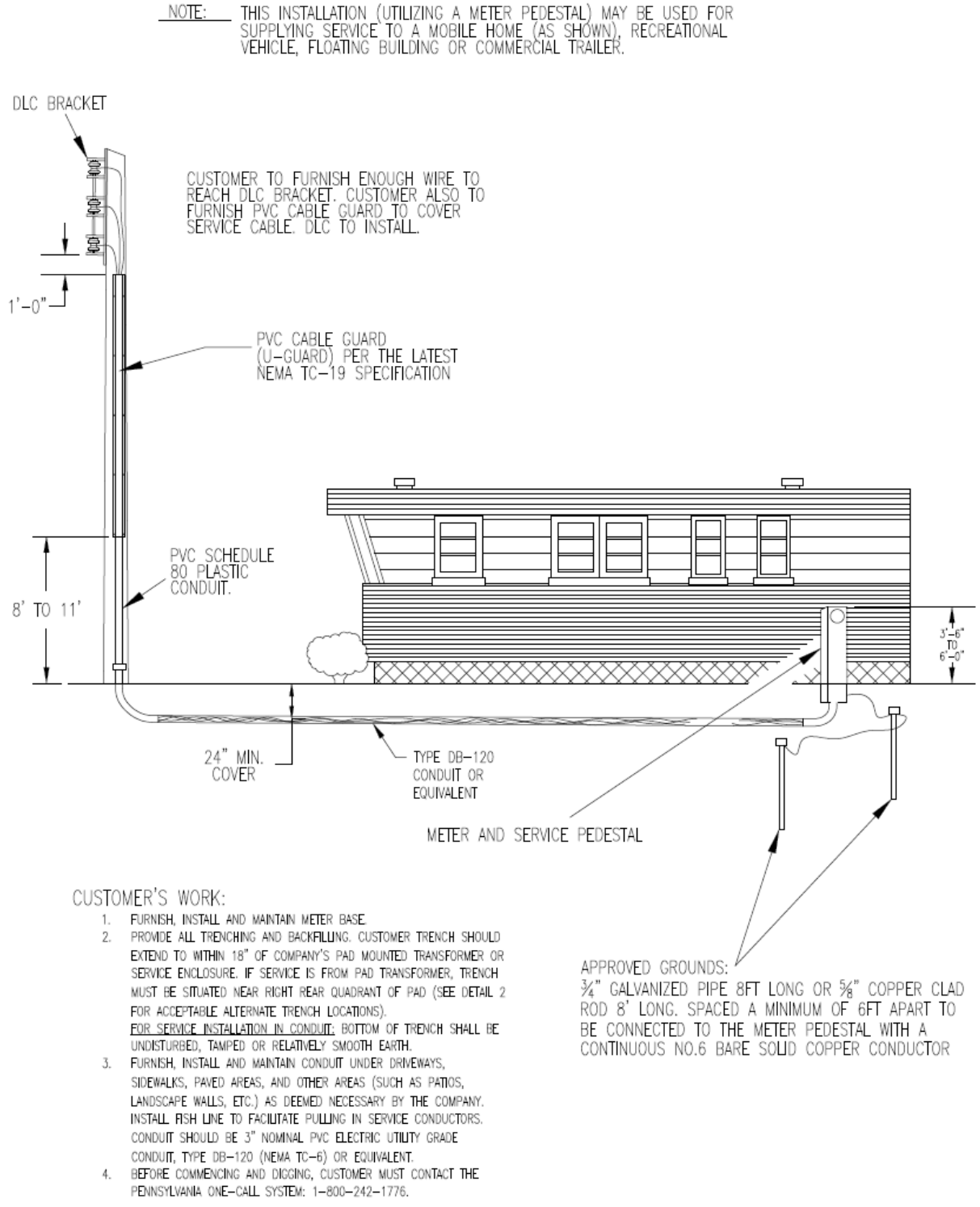
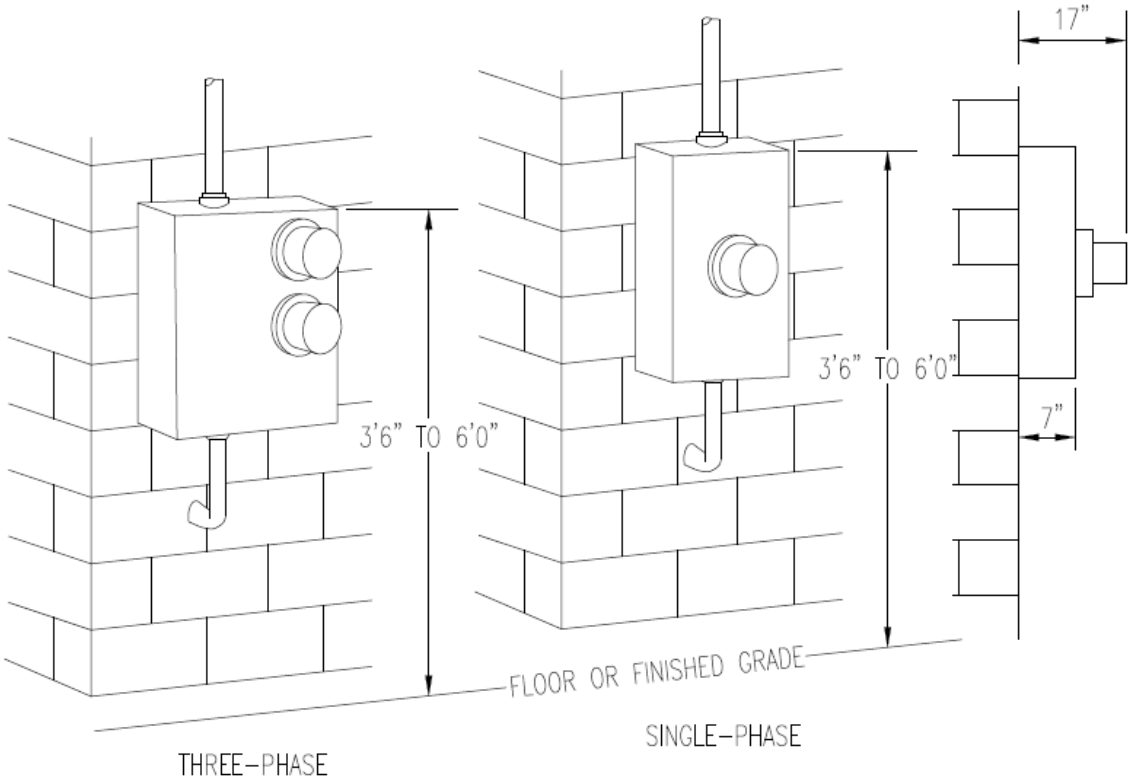


FIGURE 10.
TYPICAL UNDERGROUND SERVICE CONNECTION
FROM OVERHEAD LINES TO A METER AND SERVICE PEDESTAL
120/240 VOLT SINGLE-PHASE

SERVICE–ENTRANCE CONDUCTOR
250 TO 500 MCM, ONE CONDUCTOR
PER PHASE.
400 AMP. TRANSOCKET 24" X 36"

SERVICE–ENTRANCE CONDUCTOR
250 TO 500 MCM, ONE CONDUCTOR
PER LINE. ALSO 4/0 ALUMINUM
WITH OVER 35 KVA LOAD.
TRANSOCKET 24" X 30"



NOTE: A LEVEL THREE FOOT CLEAR SPACE SHALL BE PROVIDED IN FRONT OF ALL METERS AND THAT SPACE MUST BE KEPT CLEAR.

FIGURE 11.
TYPICAL TRANSOCKET METER INSTALLATION
120/240 VOLT SINGLE-PHASE AND
120/208 VOLT OR 230 VOLT THREE-PHASE

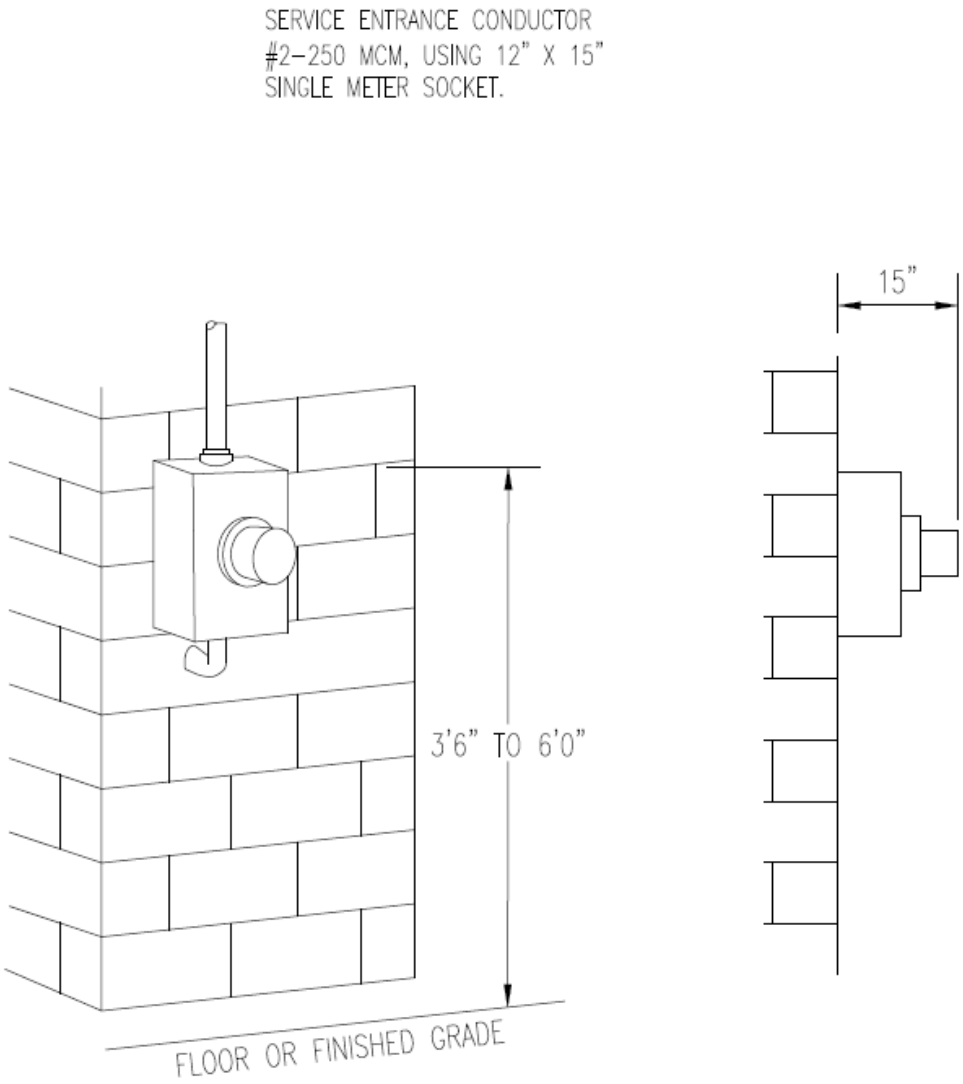
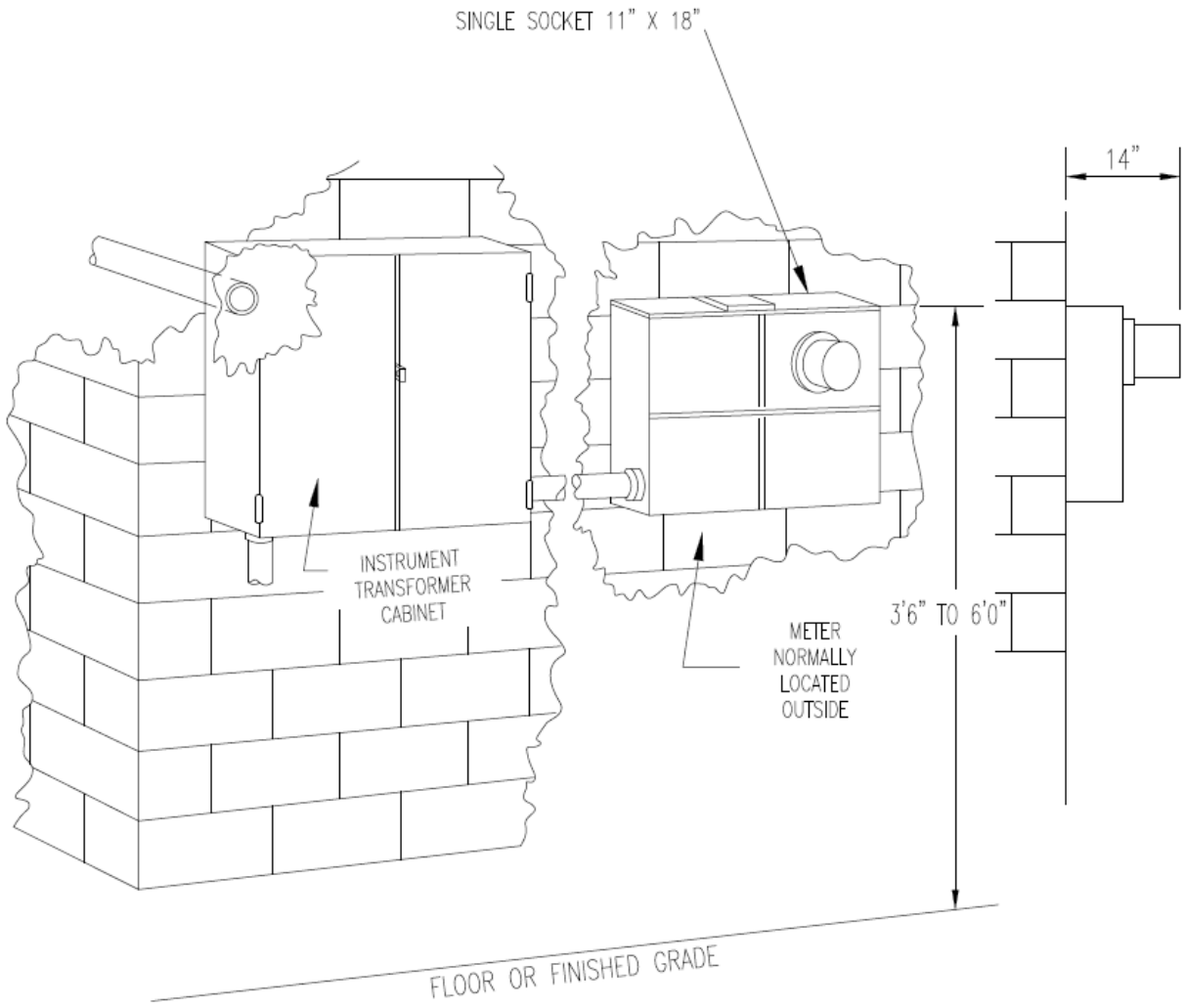


FIGURE 12.
TYPICAL SELF-CONTAINED METER INSTALLATION
120/208 OR 230 VOLT THREE-PHASE



NOTE: A LEVEL THREE FOOT CLEAR SPACE SHALL BE PROVIDED IN FRONT OF ALL METERS AND THAT SPACE MUST BE KEPT CLEAR.

FIGURE 13.
TYPICAL CURRENT TRANSFORMER INSTALLATION
120/240 VOLT SINGLE-PHASE,
120/208, 230, 277/480, OR 460 VOLT THREE-PHASE

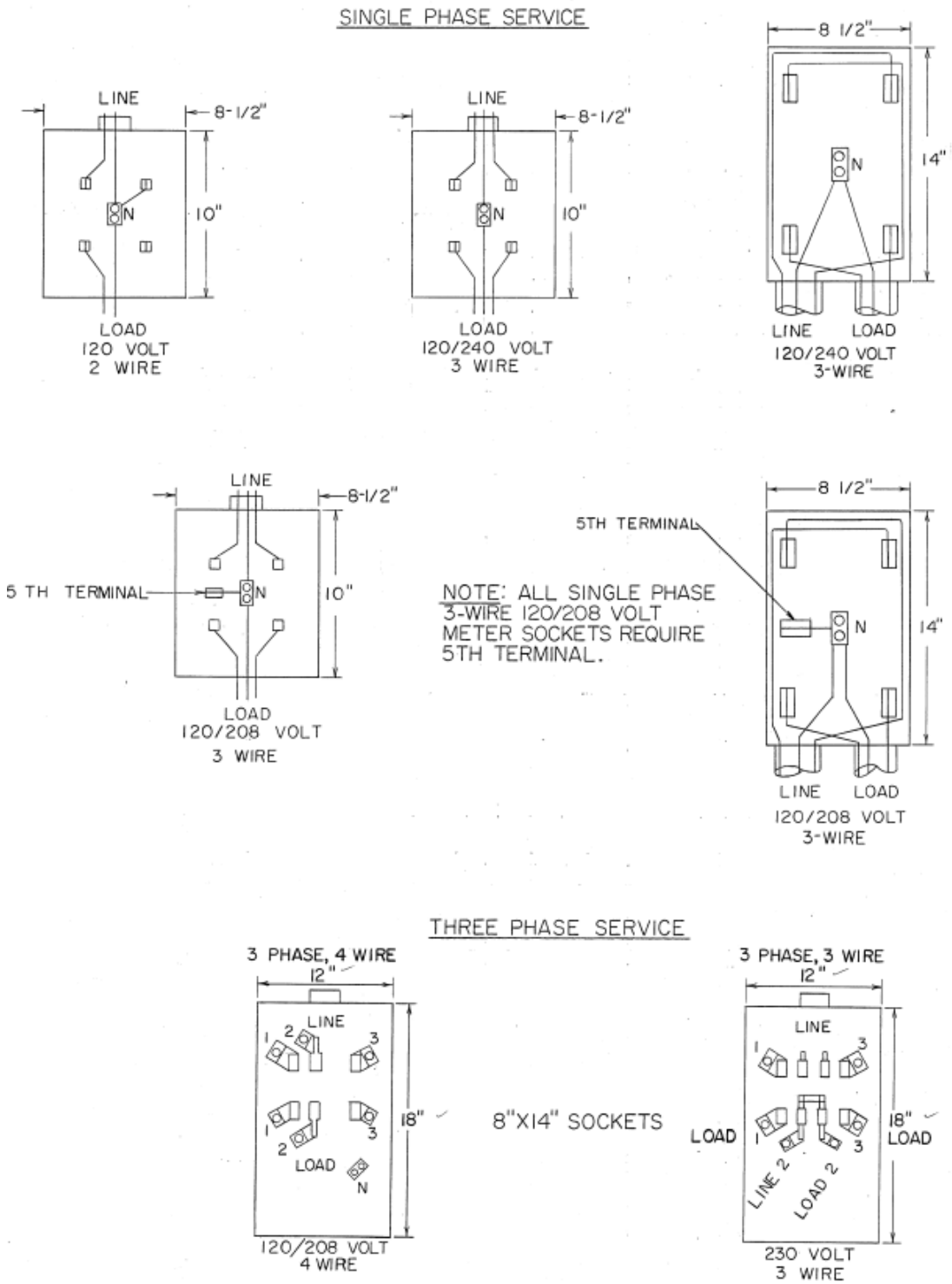
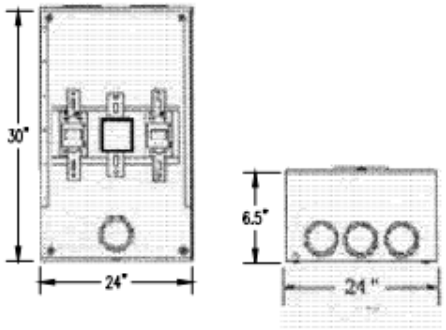
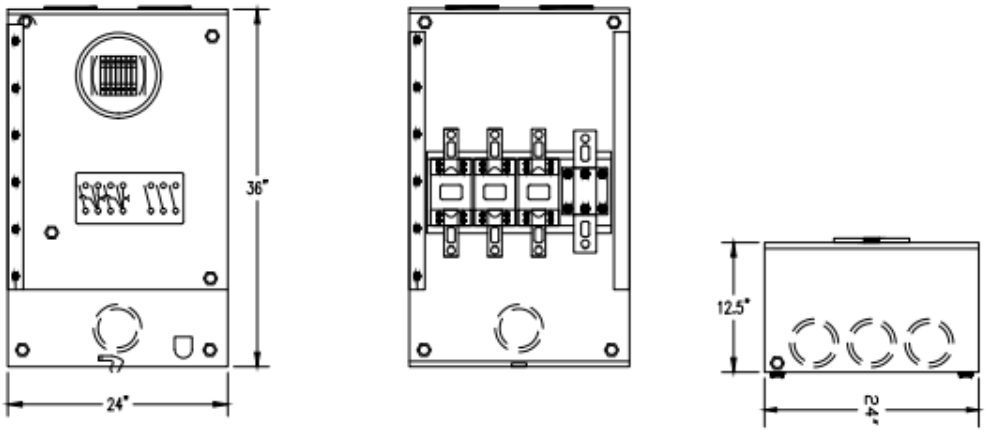


FIGURE 14.
SELF-CONTAINED METER-MOUNTING
EQUIPMENT WIRING DIAGRAMS

SINGLE–PHASE (FOR 120/240 VOLT)
(DLCO STOCK #280780)



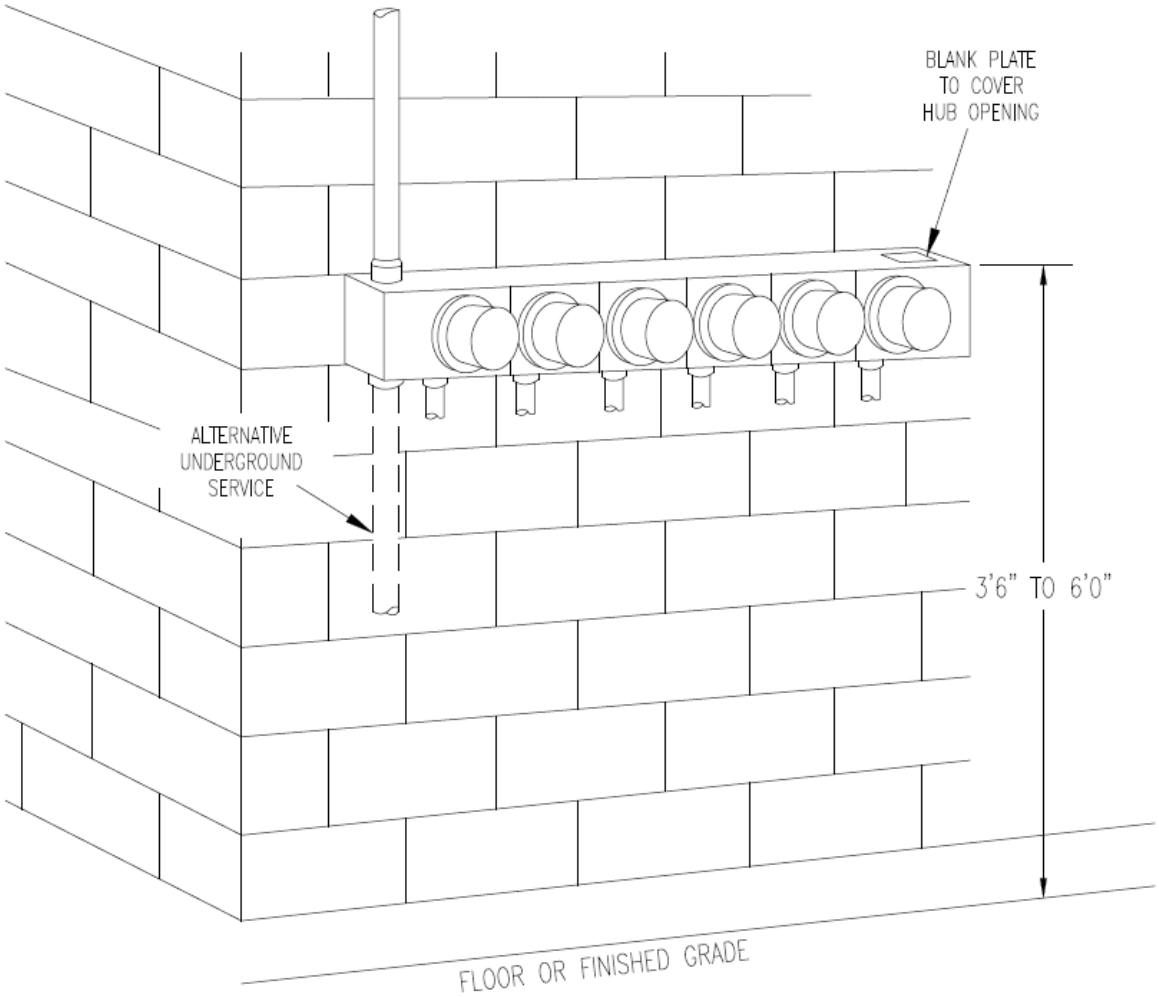
3–PHASE 4–WIRE (FOR 120/208 VOLT)
(DLCO STOCK #280775)



NOTES:

1. ONLY PAN ASSEMBLIES AND PANELS SHOWN. COVERS NOT SHOWN.
2. 3P–3W TRANSOCKET CONTAINS 8 TERMINAL METER BLOCK WITH TIN PLATED TERMINALS.
3. 3P–4W TRANSOCKET CONTAINS 13 TERMINAL METER BLOCK WITH TIN PLATED TERMINALS.
4. KNOCKOUTS ARE PROVIDED FOR EACH TRANSOCKET AS FOLLOWS:
   - THREE (3) 3 1/2" – 4" AND ONE 1/2" KNOCKOUTS IN BOTTOM OF PAN
   - ONE (1) 3 1/2" – 4" KNOCKOUT IN BACK OF PAN NEAR BOTTOM.
5. EACH TRANSOCKET ALSO FEATURES TWO (2) HUB CLOSURES OVER 4" HUB OPENINGS.

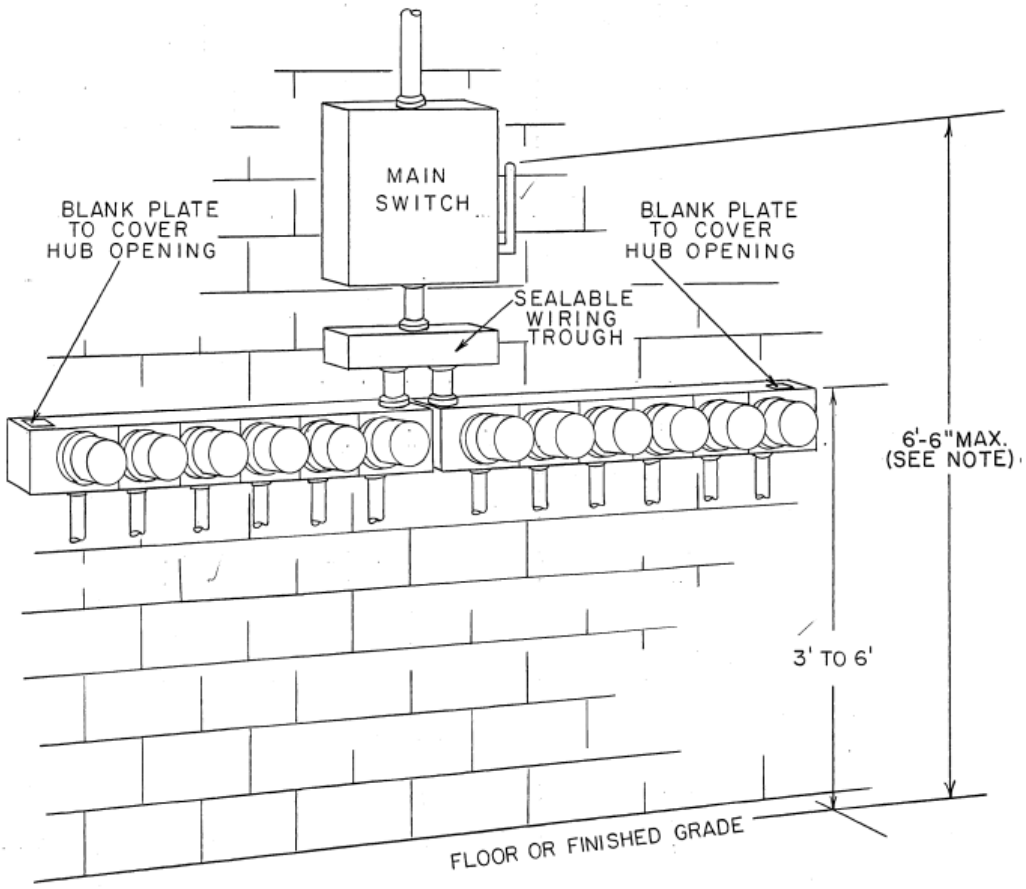
FIGURE 15.
400 AMP TRANSOCKETS FOR 3-PHASE 3-WIRE (3P-3W)
AND 3-PHASE 4-WIRE (3P-4W) SERVICES



NOTES: A LEVEL THREE FOOT CLEAR SPACE SHALL BE PROVIDED IN FRONT OF ALL METERS AND THAT SPACE MUST BE KEPT CLEAR.

FIGURE 16.
TYPICAL SINGLE-PHASE MULTIMETER INSTALLATION
TWO TO SIX METERS
120/240 OR 120/208 VOLT 3-WIRE

NOTE: REFER TO ARTICLE 380-8 OF THE NATIONAL ELECTRICAL CODE FOR SPECIFICATIONS REGARDING INSTALLATION OF SWITCHES AND CIRCUIT BREAKERS.

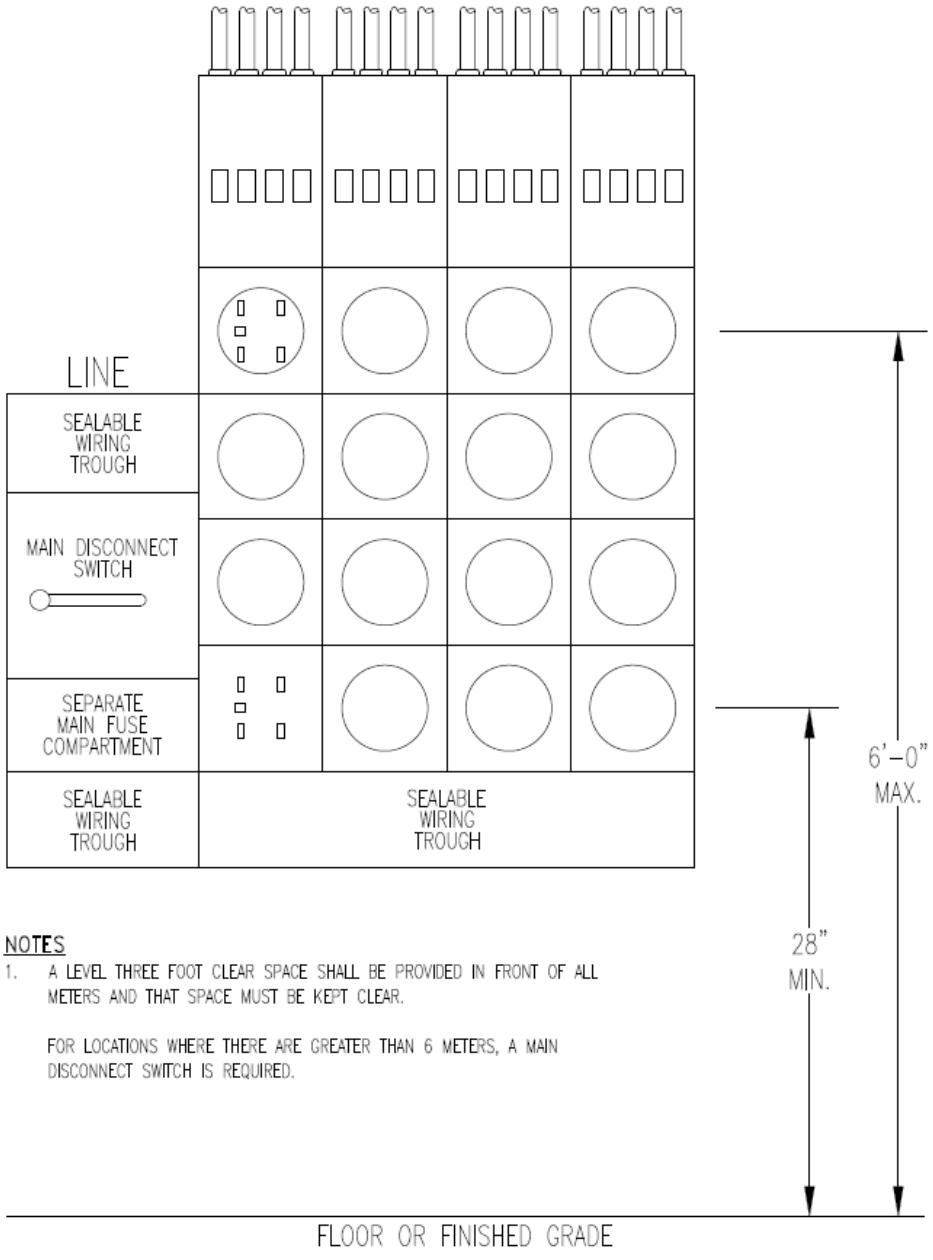


NOTES: ALL SINGLE-PHASE 3-WIRE 120/208 VOLT METER SOCKETS REQUIRE 5TH TERMINAL

A LEVEL THREE FOOT CLEAR SPACE SHALL BE PROVIDED IN FRONT OF ALL METERS AND THAT SPACE MUST BE KEPT CLEAR

FIGURE 17.
TYPICAL SINGLE-PHASE MULTIMETER INSTALLATION
MORE THAN SIX METERS
120/240 OR 120/208 VOLT 3-WIRE

NOTES: CONTACT ENERGY TECHNOLOGY SERVICES AT DUQUESNE LIGHT CO. FOR APPROVAL PRIOR TO PURCHASE OF PREWIRED METER AND BREAKER PANELS.



NOTES

1. A LEVEL THREE FOOT CLEAR SPACE SHALL BE PROVIDED IN FRONT OF ALL METERS AND THAT SPACE MUST BE KEPT CLEAR.

   FOR LOCATIONS WHERE THERE ARE GREATER THAN 6 METERS, A MAIN DISCONNECT SWITCH IS REQUIRED.

FIGURE 19.
TYPICAL SINGLE-PHASE PREWIRED METER
AND BREAKER INSTALLATION
120/240 OR 120/208 VOLT 3-WIRE

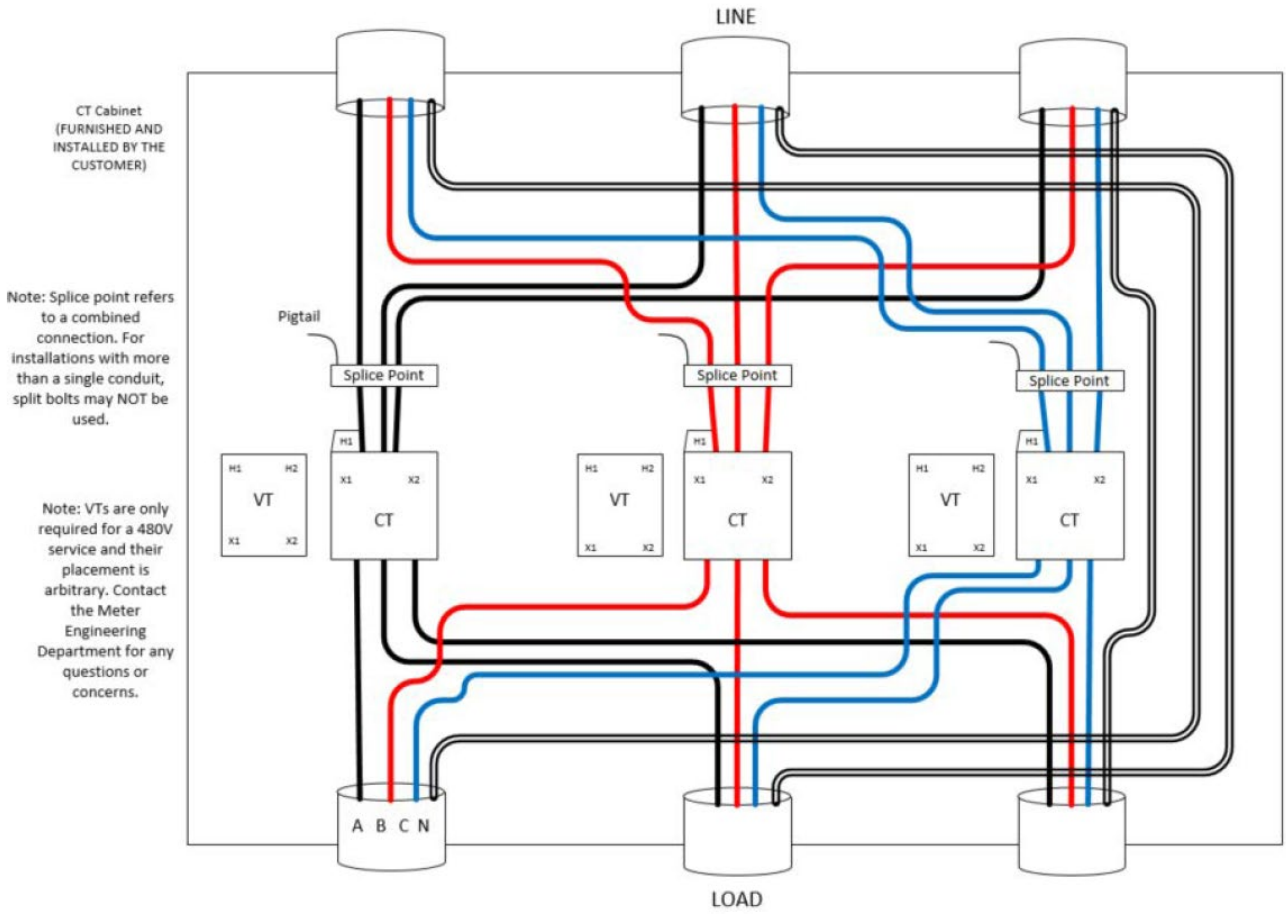
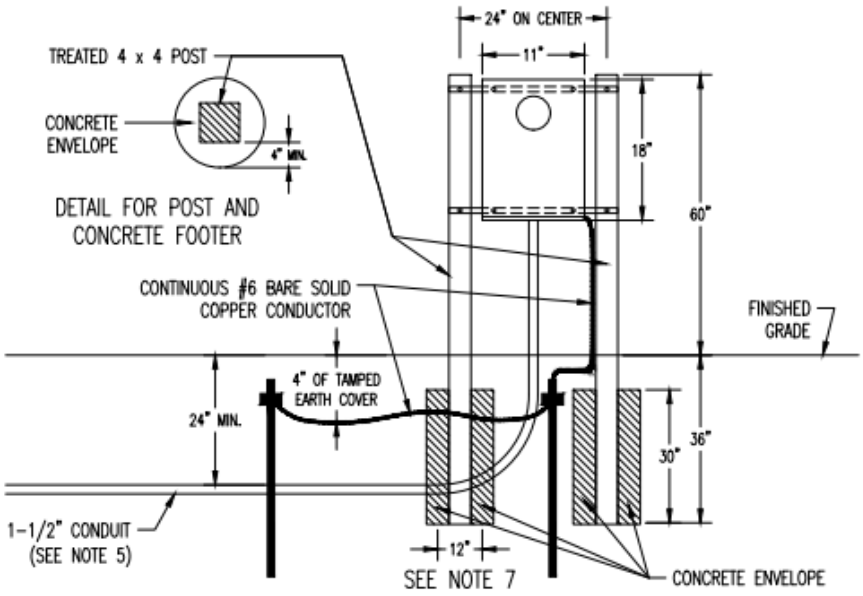


FIGURE 20.
TYPICAL INDOOR/OUTDOOR WALL MOUNTED CURRENT TRANSFORMER (CT) INSTALLATION WITH VOLTAGE TRANSFORMER (VT)



1. CUSTOMER TO CONSTRUCT A METER PEDESTAL FROM 4" x 4" x 8" PRESERVATIVE PRESSURE TREATED WOOD POSTS OR EQUIVALENT. POSTS MADE FROM 2 x 4's NAILED TOGETHER ARE NOT ACCEPTABLE AS A PERMANENT METER SUPPORT STRUCTURE. THE POSTS SHALL BE SET A MINIMUM OF 36" DEEP AND ENCASED IN CONCRETE (PREFERABLY APPLIED AS DRY MIX AND TAMPERED). APPROVAL TO USE OTHER TYPES OF MATERIALS TO CONSTRUCT A METER PEDESTAL SHALL BE OBTAINED FROM THE APPROPRIATE METER DEPARTMENT PRIOR TO STARTING THE INSTALLATION.
2. METER SOCKET FURNISHED BY THE COMPANY (EXCEPT SINGLE-PHASE SELF-CONTAINED), INSTALLED AND MAINTAINED BY THE CUSTOMER.
3. METER SOCKET OR ENCLOSURE IS TO BE ATTACHED TO TWO (2) HORIZONTALLY MOUNTED PIECES 1-1/2" UNISTRUT OR PRESERVATIVE PRESSURE TREATED WOOD 2 x 4's WITH CORROSION RESISTENT BOLTS, NUTS AND WASHERS (MINIMUM OF 4). VERTICAL AND HORIZONTAL MEMBERS ARE TO BE FASTENED TOGETHER WITH GALVANIZED STEEL THRU-BOLTS (LAG TYPE BOLTS ARE NOT ACCEPTABLE).
4. ALL METER COMPONENTS (METER CABINET, CONDUIT, SUPPORTS, ETC.) ARE TO BE BONDED AND CONNECTED TO AN APPROVED GROUND.
5. CUSTOMER TO FURNISH AND INSTALL 1-1/2" SCHEDULE 80 PVC CONDUIT WITH THE CUSTOMER PROVIDED #6 INSULATED GROUND BETWEEN THE METER SOCKET AND INSTRUMENT TRANSFORMER (CT's AND PT's) COMPARTMENT.
6. THE ABOVE DIAGRAM IS INTENDED AS A GUIDE FOR USE WHENEVER A WALL OR SIMILAR SUBSTANTIAL STRUCTURE IS NOT AVAILABLE FOR MOUNTING OF METER SOCKETS OR ENCLOSURES. THIS ALTERNATIVE INSTALLATION CAN TYPICALLY BE USED IN THE FOLLOWING SITUATIONS:
   a. PRIMARY METERING INSTALLATIONS.
   b. PAD OR BASE MOUNTED TRANSFORMER INSTALLATIONS – AS SHOWN IN ABOVE DIAGRAM WHEN METER PEDESTAL IS MORE THAN 10 FEET FROM THE TRANSFORMER PAD. IF CLOSER THAN TEN FEET, THE #6 BARE COPPER GROUND WIRE MAY BE CONNECTED DIRECTLY TO THE GROUND GRID FOR THE TRANSFORMER PAD.
7. WHEN A DRIVEN ROD IS USED FOR GROUNDING, THE MAXIMUM PERMISSIBLE RESISTANCE IS 25 OHMS. IF AN UNDERLYING ROCK STRATUM PREVENTS DRIVING GROUND RODS DOWN UNTIL A RESISTANCE OF LESS THAN 25 OHMS IS REACHED, OTHER RODS MAY BE DRIVEN AT A POINT AT LEAST 6' FROM THE FIRST. IN GENERAL, HOWEVER, ONE DEEP DRIVEN ROD WILL BE BETTER AND MORE ECONOMICAL THAN A CLUSTER OF SHORTER RODS.
8. THIS STRUCTURE MUST BE INSTALLED AT A MINIMUM 3 FEET (3') AWAY FROM THE GROUND GRID TO ACCOUNT FOR STEP POTENTIAL. ADDITIONALLY, IF THIS STRUCTURE IS TO BE ABOVE GRADE, THE METERING CABINET MUST BE AT MINIMUM 6 FEET (6') AWAY FROM THE SWITCH/TRANSFORMER TO ACCOUNT FOR TOUCH POTENTIAL. BY INSTALLING THIS OUTSIDE THE GROUND GRID, THIS DISTANCE WILL NOT BE ENCROACHED AND WILL BE ACCEPTABLE.

FIGURE 21.
ALTERNATE METER SOCKET AND ENCLOSURE
INSTALLATION FOR UNDERGROUND SERVICES