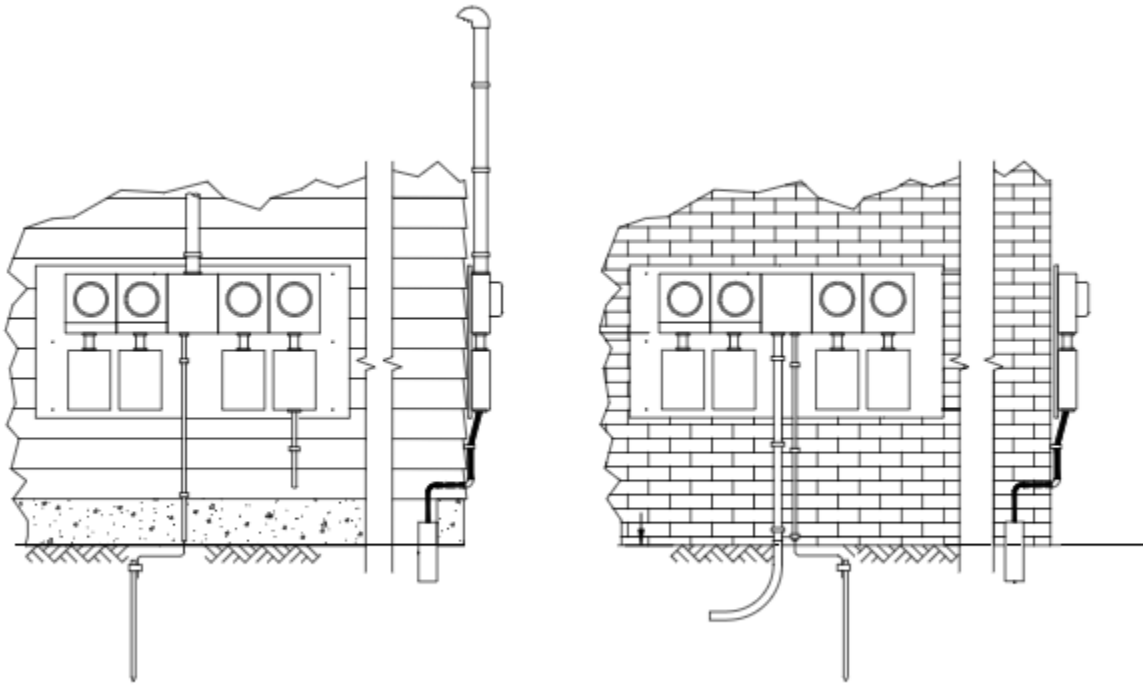
Electric Meter Installation Handbook



Effective February 1, 2024

Norwich Public Utilities

Electric Meter Installation Handbook

This handbook is effective February 1, 2024.

All earlier guides and publications pertaining to Electric Service and Metering Installations should be destroyed.

This guide is provided to assist customers, contractors, engineers, developers, electricians, architects, and inspectors in planning and installing electric distribution and services.

These regulations and policies are intended to provide safety and speed of service connection by providing uniform and equitable requirements for electric service.

The standards herein are designed to complement and not conflict with any applicable City, County, or Community Ordinances, the National Electrical Safety Code, or the National Electrical Code.

Norwich Public Utilities standards and clearances may exceed the National Electrical Safety Code and National Electric Code requirements.

There is no single rule or inspection that will cover all circumstances. Norwich Public Utilities welcomes and encourages inquiries about unusual and special cases, as well as clarification of our requirements and standards. Any deviations from the specifications in this booklet must be approved in advance by Norwich Public Utilities.

Norwich Public Utilities

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100 General Information

100.01 Introduction

This handbook, issued by Norwich Public Utilities (NPU), provides an overview of NPU's policies and procedures for obtaining an electric service. It is specifically tailored to guide our valued customers, electrical contractors, consulting engineers, architects, and electrical inspectors. The primary goal of this handbook is to familiarize you with the diverse range of electric services offered by NPU, helping you identify the most suitable option for your specific needs.

This booklet primarily focuses on low-voltage services (480 volts and below). It includes information on the different types of electric service offered, service conditions, and material and construction standards in the Customer's electric service and meter installation. For service voltages exceeding 480 volts, please contact NPU for additional information at (860) 887-2555. At NPU, we eagerly look forward to the opportunity to collaborate with you, ensuring that we not only meet but exceed all your electrical energy and service requirements.

100.02 Territory Served

Norwich Public Utilities provides electric service to the City of Norwich, Connecticut with limited service to surrounding communities.

Our Administrative and Operations Office is located at:

16 SOUTH GOLDEN STREET
NORWICH, CONNECTICUIT 06360
TEL: (860) 887-2555

100.03 Contact Information

For inquiries or assistance regarding new services or upgrades, please reach out to NPU's Customer Service at (860) 887-2555 and specifically request a Project Coordinator.

100.04 Definitions

The term “NPU” when used herein shall mean Norwich Public Utilities.

The term “customer” when used shall mean any person or company applying for, receiving, using, or agreeing to take a service provided by Norwich Public Utilities.

The term “service point” when used shall mean the point of connection between Norwich Public Utilities infrastructure and the premises wiring.

The term “PURA” when used herein shall mean Public Utilities Regulatory Authority.

The term “NESC” when used herein shall mean the current edition of the National Electric Safety Code as adopted by Norwich Public Utilities at the time of distribution installation.

The term “NEC” when used herein shall mean the current edition of the National Electric Code as adopted by the local authority having jurisdiction at the time of construction.

The term “unauthorized person” when used herein shall mean any person or company who has not contacted Norwich Public Utilities and received authorization before the removing or otherwise disabling of an electric utility meter.

The term “residential” when used herein shall mean any dwelling unit, garage, storage building shelter/gazebo or other structure or equipment that is used solely for private (non-business) purposes.

The term “commercial/industrial” when used herein shall mean all non-residential services.

The term “hot sequence metering” when used herein shall mean the service disconnect is on the load (customer’s) side of the meter.

The term “cold sequence metering” when used herein shall mean the service disconnect is on the line side of the meter.

200 Safety and Code Clearence

200.01 Introduction

NPU is committed to operating its Electric Distribution System with the highest level of care and safety for both the public and its employees. In line with this commitment, NPU utilizes the National Electrical Safety Code (NESC) for the design, construction, maintenance, and operation of the Electric Distribution System. NPU adheres to the applicable NESC in effect at the time of the metering infrastructure installation.

In situations where a hazardous condition arises, NPU retains the right to deny and/or terminate service without warning.

Exclusive authorization is granted solely to designated personnel for work on utility poles and equipment, aligning with Connecticut General Statutes, Occupational Safety & Health Administration (OSHA) regulations, and NPU's internal safety protocols.

200.02 Overhead Line Safety Notice

At NPU, the safety and well-being of our employees, customers, and contractors take precedence. To adhere to these standards, we insist on maintaining a distance of 11 feet from any Norwich Public Utilities line. When undertaking tasks around our lines, such as siding, painting, cleaning gutters, or working near our equipment, we emphasize the importance of exercising extreme caution. We strongly encourage you to contact NPU at least 2 business days in advance to coordinate a “cover-up” for the designated area. It is essential to recognize that any markings or coverings observed on our wires should not be interpreted as insulation.

It is strictly prohibited to remove or relocate existing NPU overhead or underground equipment without NPU approval. Entry or opening of existing electrical infrastructure, including but not limited to hand holes, transformer pads, and switch vaults, is not allowed.

Heavy machinery, such as cranes and backhoes, must never operate within 11 feet of our overhead lines. Consult OSHA's approach regulations for guidance.

It is imperative never to change or install fuses or breakers for a main switch or branch circuits that are not the correct size for the installation, as per NEC standards.

To mitigate electrical sources feeding back into our grid and posing a threat to utility workers, the proper installation of emergency generators or other power sources is crucial.

Customers installing primary voltage cutouts or disconnecting switches on privately owned systems must ensure operation by a qualified individual, as defined by OSHA.

Contact with our wires poses serious risks, including harm or death. Exercise caution around downed, low-hanging, or burning wires, treating them as if they are "LIVE" powered.

Report any downed, low-hanging, or burning wires promptly to NPU, the police, or the fire department. For assistance, call NPU at: (860) 887-2555.

200.03 Call Before You Dig Law

Connecticut law establishes that the person working on grading or excavation must contact CBYD and wait until underground facilities have been identified. Digging into subterranean electrical lines can bring serious damage or death to the operator and others, as well as service disruption to a large area. **Before digging, notify CBYD by calling 811**. Customers will not be charged for the services of trained specialists who will locate electrical facilities. More information about this can be found at www.CBYD.com.

200.04 Clearances

The illustration section (500) of this handbook contain illustrations of current electrical safety code clearances. These diagrams are designed to serve as a guide, not to provide all the information that may be required in specific situations. For more information about clearances, visit the most recent edition of the NESC.

The minimum clearance between any building or other structure and any line, overhead distribution facility, or electric utility pole shall be maintained in accordance with this document or the NESC’s rules, whichever is greater.

Minimum clearance between signs, chimneys, radio and television antennas, storage tanks, and other structures, and any line, overhead distribution facility, or electric utility pole shall be maintained in accordance with this document or the NESC's rules, whichever is greater.

Overhead distribution facilities must maintain minimum clearance above streets, alleyways, parking lots, rights-of-way, easements, and other public areas in accordance with the provisions of this document or the NESC’s rules, whichever is greater.

Any person or company proposing any action that would result in a violation of the minimum clearances, or any person or company proposing to change the use or grade of land that would conflict with the herein guidelines, must notify NPU 90 days prior to the proposed action. NPU will investigate the feasibility of relocating or reconstructing such line, distribution facility, and/or electric utility pole in conflict with the planned action, to meet clearance requirements, after receiving such notice. NPU will conduct the necessary work at the expense of the customer whose proposed action violates the minimum clearance standard if it is judged that such relocation or reconstruction is practicable.

If it is found that relocation of the line, distribution facility, and/or electric utility pole is not practicable, NPU may impose further measures to avoid a breach of the minimum clearance standard. Any

action required by NPU under this section shall be completed at the expense of the customer whose proposed action does not meet the minimum clearance standard.

300 Services

300.01 Residential Service

As a general rule, each dwelling unit in a building that contains more than one residential dwelling unit will be separately metered. Inquiries regarding exceptions to this must be referred to NPU in advance of any project.

300.02 Non-Residential Service

As a general rule, each unit in a building that contains more than one non-residential (commercial) unit will be separately metered. Inquiries regarding application of this must be referred to NPU in advance of any project.

300.03 Service Types

The following service characteristics are generally standard; however, all types of service are not available in all locations, those that are available shall be obtained from NPU before any wiring is installed or equipment purchased. In cases of multiple occupancy installations, the combined load may be such that the characteristics of the service required will be different from that which the individual customer's loads might indicate. In such cases NPU reserves the right to determine the type of service which will be supplied at 60 hertz. The maximum capacities listed below may be exceeded, under certain conditions, with prior NPU approval.

120 volts, single-phase, two-wire, (up to and including 60 Amps)

For highway signs, trailers, traffic controllers, CATV amplifiers or other small power loads. The service from NPU's facilities up to, and including, the meter shall be a 120/240 volt, single-phase, three-wire circuit. NPU approval must always be obtained in advance.

120/240 volts, single-phase, three-wire

For general lighting and/or heating and cooking, and small power loads with individual motors generally not over 5 hp. Where the total load exceeds 50 KVA, NPU may at its option, require the customer to arrange the wiring for three-phase service.

120/208 volts, single-phase, three-wire, (from four-wire system)

For general lighting and/or heating and cooking, and small power loads with motors generally not over 5 hp. Where the total load exceeds 40 KVA, NPU may, at its option, require the customer to arrange the wiring for three-phase, four-wire service.

120/208 volts, three-phase, four-wire, Grounded Wye

For large lighting loads, or combination lighting, heating/cooling, and power. Single-phase load shall be balanced between phases.

277/480 volt, four-wire, Grounded Wye

This installation is normally for power installations having demands of not less than 50 KVA. Single-phase load shall be balanced between phases. This service can be used to power equipment that requires 480 volt three-wire connection.

300.04 Overhead Secondary Service

For single phase service, NPU will furnish, install, own, and maintain the overhead service drop, running from its secondary distribution system to a designated point on the customer's premises up to 400 Amps. It shall be the responsibility of the owner or contractor to have the point of attachment determined by NPU so that a solid fastening for the service drop may be incorporated in the building. The customer shall install a standard hook or eye bolt that can hold 700 Lbs. of tension. For services to low buildings or where the style of building construction does not readily permit the installation of the standard hook or eye bolt, the customer will, with NPU approval, install a mast type service or provide an alternate means of attachment for the service drop. Refer to Appendix A for further information.

In accordance with the NEC, service drops shall be attached to buildings or other structures identified for use with service conductors. Per the NEC, "vegetation such as trees shall not be used for support of overhead service conductors."

For polyphase service, the customer shall be responsible for the cost of any overhead service drop.

300.05.01 Service Drop Clearances

In general, the ground clearance for triplex and quadraplex service drops, including drip loops, shall be not less than 12 feet for spaces accessible to pedestrians only, 15 feet over residential driveways, 18 feet over public ways, and 24 feet over railroads.
Where the height of attachment to a building does not permit the service drop, including the drip loop, to meet the above clearances, the ground clearance for building services, including the drip loop, with voltages of 150 volts or less to ground and consisting of triplex or quadraplex cable may be reduced to 10 feet over areas accessible to pedestrians only and 12 feet over residential driveways.

The above clearances are the minimum required at 120 degrees Fahrenheit final sag or 32 degrees Fahrenheit and ½ inch or radial ice, whichever produces the greatest sag (NESC requirement).

In order to obtain satisfactory clearances with low types of buildings, it may be necessary that special construction, as needed to provide a suitable point of attachment for the service drop, be furnished and installed by the customer, subject to NPU's approval. See Appendix A for rigid steel mast type construction.

The above clearances are based upon NESC and NEC minimum requirements.

300.05.02 Rigid Conduit

In order to avoid damage to meter enclosures or service entrance equipment, rigid conduit shall not be installed between a pole and a building where the pole is not solidly attached to the building and independent movement might occur.

300.05.03 Single Service Drop

Only one service drop connected to the same overhead mains will be attached to any one building, and only one set of service entrance conductors shall be connected to each service drop except in cases specifically permitted by the NEC or where special permission has been obtained from the "authority having jurisdiction." The drop may consist of parallel service cables for capacity. Overhead services may be provided up to and including 400 Ampere total switch frame capacity unless prior approval from NPU.

300.06 Residential Cut and Reconnect Policy

Master electricians with an E1 license are allowed to perform cuts and reconnects on overhead services if they have the proper permit for the work to be performed. All additional requirements of this policy are in Appendix A and must be adhered to. Violations of this policy may result in the revocation of an electrician's privilege to perform cuts and reconnects.

300.07 Underground Secondary Service

Residential underground services to operate below 150 volts to ground may be installed in customer owned conduit in a trench provided by the customer and meeting NPU standards and specifications as outlined below and in illustration 500.03 in the drawing section.
For single family dwellings, if requested by customer, NPU will furnish and install required cable at customer's expense. All other installations will be furnished and installed by the customer. The following table lists the standard underground services available from NPU:

TABLE 1.1 NPU STANDARD UG SERVICE OPTIONS

SERVICE SIZE	Meter Socket	Size	Max. Length	Min. Conduit
100 A	100/125	#2 AL Triplex	150'	2 1/2"
100 A	200	#4/0 AL Triplex	440'	3"
200 A	200	#4/0 AL Triplex	220'	3"
400 A	320*	(2) #4/0 AL Triplex	220'	4"

*The 320-amp meter socket must be provided with twin line side lugs to accommodate connection of the parallel #4/0 triplex cable.

If the cable is furnished and installed by the customer, particular notice should be made of the maintenance provisions of Cable and Duct maintenance section of this guide. The maximum length of customer owned residential underground secondary shall be in accordance with NPU Standard UG Service Option Table 1.1 in this guide. For services or conductor sizes other than those listed in NPU Standard UG Service Option Table 1.1, prior NPU approval is needed. Where service runs exceed, the lengths listed in NPU Standard UG Service Option Table 1.1 or become impractical, a primary underground feed to a padmount transformer will be required.

There shall not be more than (6) conductors per spade for a single phase padmount. Three phase padmount transformers have different conductor per spade requirements due to transformer size prior NPU approval is necessary. Cases involving more conductors than these limits must be referred to NPU for special design and prior approval. NPU will make all primary connections to the padmount transformers. However, on customer owned cable, the customer must provide all lugs and associated hardware and install them on the cable.

For any underground service, splices or taps should be avoided. If splices or taps (as permitted in the NEC are required, then they must be in an enclosure or rated underground structure such as a handhole. Any splices on NPU's side of the meter socket must be accessible for inspection by NPU. Note, by choosing the appropriate meter socket, splicing for the purpose of "downsizing" conductors may be avoided.

300.08 Solar Installations

All solar installations require a production meter. Refer to illustration 500.11 for a one-line illustration of a typical solar installation.

Due to the complexity and variations of these installations, NPU requires the submission of an interconnection application package prior to the commencement of the system installation. Please visit norwichpublicutilities.com or call us at (860) 887-2555.

300.0 Service Equipment

Voltage, current, interrupting duty, and ground fault current must all be properly rated in the metering and service equipment.

Service equipment must be placed on the load side (hot sequence) of self-contained meters. Installations with multiple meter positions exceeding 200 Amps are excluded from hot sequence metering.

400 Metering

400.01 General

The customer shall furnish and install NPU-approved meter mounting devices, including but not limited to outdoor enclosures, instrument transformer cabinets, risers, grounding electrodes, conductors and indoor test or connection block cabinets in accordance with the requirements in this guide and the NEC.

All metallic equipment used for metering purposes shall be properly bonded and grounded as required by this guide and the NEC. For services with instrument transformer-rated metering, See illustration 500.07 for further detail.

A meter socket (enclosure) shall be permanently and solidly mounted before the meter is installed. All outside meter enclosures must be secured by screws, #12 minimum, which are stainless steel or zinc, or cadmium coated (no washers permitted). Wherever a meter enclosure is mounted on siding (no backboard), use of screws that accommodate a Phillips and/or slotted style screwdriver is requested. Self-contained meter sockets attached to a building shall not be secured such that cables will prevent subsequent access to the mounting screws. This requirement is to allow for future "floating" of the meter socket.

NPU will furnish and install all meters. When required, current transformers (CTs), voltage transformers (VTs), test switches and control cable for installation in the customer's approved equipment will be furnished by NPU.

As a rule, all electricity sold (delivered) to one customer on one building will be measured (metered) at one point. Furthermore, the metering should be located at, or near, the point of delivery and at

delivery voltage whenever it is practicable to do so. Alternative arrangements must be discussed and approved by NPU in advance.

The customer shall make a reasonable effort to separate residential and non-residential use for metering purposes.

400.02 Before Meter Installation

Ensure you inform Connecticut (CT) Call Before You Dig by dialing 811 prior to commencing any excavation.

NPU account and account deposit requirements must have been satisfied.

Make arrangements for the installation by other utilities.

Provide the necessary permanent easements and permits (including environmental) to cover the location of NPU's facilities including aerial lines, underground cable and equipment, and transformers. This includes city and state permits for conduit under the public way.

City and town requirements shall have been met, and equipment must pass inspection, before the installation of a meter.

400.03 Meter Access

Access to any meter for reading, maintenance, repair, replacement, or testing is essential to ensure accuracy and reliability of the metering infrastructure. Each customer, at the request of NPU, shall arrange for NPU to access the metering devices within two weeks from the date of NPU's first request. Services may be discontinued until access is granted.

Subject to the consent of the customer, which consent shall not be unreasonably withheld, NPU shall have the right of access to the customer's property at all hours for any purpose related to the furnishing of service. The failure of the customer to consent to such access may result in, at the determination of NPU, the discontinuation of the service to the customer until furnishings can be completed and quality assured.

There should be no obstruction or storage of other materials preventing access to the meter.

The metering infrastructure shall not be placed above or behind a furnace, water heater, dryer, or other such arrangement limiting access to the meter.

400.04 Meter Maintenance

The customer is solely responsible for the maintenance and repair of the meter socket(s), which will necessitate the services of a certified licensed electrician. For the temporary disruption of electric service while repairs are being conducted, NPU must be notified.

The customer shall own and maintain all attachments to the meter, including but not limited to meter sockets, disconnect switches, and breakers.

The customer shall protect the meter from any negligent damage and may be required to install bollards to do so.

Any negligent damage to the meter shall be charged a negligent damage fee at meter cost. Subsequent damage to the meter in the same fiscal year will result in (1.5) times the meter cost and any service charge associated with the repair/removal and installation of a new meter. See Appendix D for rates.

400.04.01 Moving and Removing Meters and Metering Equipment

The customer shall not tamper with or otherwise interfere with NPU meter(s) or other equipment's normal operation, or in any way interfere with the appropriate meter registration of the electric energy used. These are crimes that are punishable under the law.

Meter(s) and/or meter seal shall be connected, disconnected, moved, or removed by authorized NPU employees(s) and/or licensed electricians who request prior approval to pull and set the meter.

400.05 Meter Sockets and Installation

400.05.01 Meter Sizes for Typical Installation

One (1) position, single-phase, 200-amp and 320-amp, 4 terminal socket.

Two (2) through six (6), single-phase, 200-amp, 4 terminal socket.

One (1) position, single-phase, 200-amp, 5 terminal sockets for 120/208 volts socket (5^{th} terminal located in the 9 o’clock position).

One (1) position, three-phase, 200-amp, 7 terminal socket.

A main disconnect is required ahead of the meters for meter centers, or stacks, with more than six positions.

400.05.02 Meter Sockets

The customer is responsible for all meter sockets. A list of meter socket catalog numbers approved for the NPU system is in Appendix B.

All meter sockets shall have an independent test laboratory listing agency label certifying compliance, UL label (listed). Any modifications of the meter socket will void the UL listing and manufacturer’s warranty, making it non-approved metering equipment.

All meter sockets shall be ringless with a receiver bracket with a 7/16-inch or 9/16-inch knockout and a hasp provision for NPU meter seal. All self-contained meter sockets shall be compatible with Class 200 rated and 320 rated watt-hour meters.

A safety arc flash shield is required on all self-contained meter positions.

Meter sockets (Form 12S) for the use of three wire 120/208 volt must have a fifth jaw terminal located in the 9 o’clock position, connected to the neutral.

Hubs must be specified when required.

All self-contained meter sockets must be rated for 600 volts.

All self-contained meter sockets shall have a manual single handle lever operated bypass. When in its bypass position, the operating lever shall prevent the cover from being installed All Horn -type and Sliding-Type bypasses will not be permitted.

200 amp or less meter sockets may be supplied with non-clamping (Temporary/Outdoor Lighting/ CAT V/Telephone Installation)

200 amp and 320 amp must be supplied with clamping.

All self-contained meter sockets shall be compatible with Class 200 rated and 320 rated watt-hour meters.

Overhead type meter sockets shall have a hub opening at the top center of individual sockets, or at the top of the central wiring space of ganged meter sockets.

Underground meter socket types shall have correct knockout to accept the appropriate slip joint. The bottom left side knockout is for line conductors only. The bottom right-side knockouts are for load conductors. All 320-amp meter sockets must have a 4-inch knockout.

Bolted or lay-in type terminals and terminal blocks shall have a hex head or Allen head terminal screws. 3/8-inch diameter stud terminals are required if parallel conductors are needed (two maximum). See Below for guidelines for typical underground meter socket connector accommodations.

Guideline for Typical Underground Meter Socket

Socket Size	Connector Type	Maximum Wire Size	Lug option
100/125 Amp	Lay-In	2/0	--
200 Amp	Lay-In	350	--
320 Amp 3/8" Stud		350	Single (SM)
		600	Single (LG)
		2 (350)	Twin (SM)
		2 (600)	Twin (LG)

400.05.02.01 Self-Contained Metering

Self-contained meters shall generally be used for the following services:

Single-Phase:

VOLTS	MAX. AMPS	WIRE	HOT/COLD SEQUENCE
120/240	400	3	Hot
120/208	200	3 (network meter)	Hot

Polyphase:

VOLTS	MAX. AMPS	WIRE	HOT/COLD SEQUENCE
120/208	400	4 (4wire wye)	Hot
277/480	200	4 (4-wire wye)	Cold

Refer to illustration 500.01 for meter socket connections.

Whenever connection of the grounding electrode conductor is made in the self-contained meter enclosure, it must be “connected to the grounded service conductor (neutral)” per the NEC. The enclosure itself shall not be part of the grounding electrode conductor per the NEC.

For underground residential service installations, meter sockets for use with 4/0 or larger service cable shall be of the “side-wired” (or otherwise wired out away from the meter line side terminals) underground type. For non-residential underground application and for “continuous conduit systems,” the “side-wired” socket is not required; however, it is highly recommended since the meter socket base is less likely to be damaged by frost action. Refer to Appendix B for meter socket requirements and options.

400.05.02.02 Meter By-Pass Requirements

All residential and non-residential 200-amp and 320-amp sockets require a lever bypass. This allows NPU to complete required testing and repair without interrupting service. There will still be times, for safety concerns, that an outage may have to occur, however this requirement limits as many interruptions of service as possible.

Exemption of the by-pass and amperage requirements maybe utilized for:

- Temporary service
- Production meter installation
- Outdoor lighting (ball field, tennis court, etc.)
- CATV or telephone power supply/amplifier
- Non-residential, non-commercial, non-industrial meter installations that require a 120/240 Volt, 60 Amp service or less, are exempt from the lever bypass requirement.

Note: A bypass is required for traffic signal light power supply services.

400.05.03 Meter Installation and Location Requirements

The location of all metering equipment must be approved by NPU / Building Department **prior to installation**. Meters shall be installed in safe and readily accessible outdoor locations when such a location is available.

Whenever it is necessary to install meters indoors, the location shall be chosen with regard to safety, accessibility for reading and maintenance. In general, the meter shall be installed on the ground floor. In certain cases, meters may be installed in groups, in rooms served for this purpose on other floors. Unmetered conductors supplying meters in separate meter room shall be installed in separate metallic conduit. Meters shall not be installed in storage rooms, cabinets, closets, or other locations that may be locked or otherwise made inaccessible.

400.05.03.01 All residential meter sockets shall be installed as follows:

Outdoors and mounted on in an exterior building wall but not under a carport, breezeway, patio, porch, or in any area that can be enclosed, or

Outdoors in a meter pedestal or service entrance section, but not under a carport, breezeway, patio, porch, or in any area that can be enclosed, or

In a room within the building, approved by NPU, for the location of electric meters, and with access only by a door opening to the outside of the building.

Depending on location, NPU may require a communication conduit to be installed to assist our Automatic Meter Infrastructure (AMI).

400.05.03.02 All group or modular metering shall be installed as follows:

Outdoors and mounted on in an exterior building wall but not under a carport, breezeway, patio, porch, or in any area that can be enclosed, or

In a room within the building, approved by NPU for the location of electric meters, and with access only by a door opening to the outside of the building.

Depending on location, NPU may require a communication conduit to be installed to assist our AMI.

Each meter position shall have an individual ringless cover. The design shall be such that removal of the individual cover will expose the socket terminals.

400.05.03.03 All unmetered compartments shall be installed as follows:

Unmetered compartments shall be sealable with padlock type seals.

All outdoor units must be raintight.

All group or modular metering arrangements require prior NPU approval before installation.

All custom-built meter centers and switchgear with instrument transformer enclosure must have individual company approval prior to installation. Arrangement drawings must be submitted to NPU.

All transformer-rated meter mounting devices must have provisions for mounting a test switch.

400.05.03.04 All commercial and industrial meter installations:

Due to the complexity and variations of these installations, commercial and industrial meter installations are designed with input from NPU on a per-job basis.

400.05.03.05 Detach (Self-Supporting) Meter Mounting

Meter sockets may be mounted on separate self-supporting structures, such as for temporary construction services and mobile/modular homes. When this is necessary, the minimum requirements shall be as follows:

- The post(s) or pole(s) shall be of appropriate height for NESC clearance and suitably braced in the direction of the service drop where the service is to be overhead.

- If two or more sockets are to be mounted, supports must be 3” galvanized steel pipe end caps, embedded in concrete with 3/4" weather resistant backer board attached with Unistrut. Cross members shall be spaced appropriately to attach meter sockets and conduit straps, see illustration 500.05.

400.05.03.06 Meter Position

All meter mounting devices shall be installed so that the meters will be upright (plumb). They shall generally be installed with the top of the meter not less than 48 inches or more than 60 inches from the floor or final grade. Exceptions to this height requirement are for installation of group or modular metering, and transformer-rated overall meter enclosures.

Level grade shall be maintained for a minimum of 36 inches in front of the meter enclosure to provide a safe working space. In order to meet this requirement on uneven terrain, as an option, the customer may install a pressure treated wood platform. For module metering, refer to the illustration 500.06.

400.05.03.07 Meter Pedestals

Meter pedestals used with underground services for the exclusive use of electric metering and communication circuits must be approved in advance by NPU. Although a disconnect and overcurrent device (on the meter pedestal) may not be required (by the NEC) for all applications, it is highly recommended as it provides protection for the customer’s cable and allows the customer to disconnect and maintain their conductors without the need of an NPU Line Department visit. Refer to illustration 500.04 and 500.05 for details of a pedestal service.

All pedestal mounted meter enclosures shall be grounded (at a minimum) to a “supplementary” ground rod (5/8” x 8’ min.) installed by the customer/electrician. If a service disconnect is installed, then the grounding must meet all requirements of this guide and the NEC for service entrance grounding.

An NPU approved pre-wired combination meter socket and service disconnect pedestal may be used. It must include a stabilizing means to extend below the frost line (to a minimum of 48 inches below finish grade). The meter pedestal must be installed so that the top of the meter will not be more than 60 inches or less than 48 inches above the finished grade or ground line. Metered and unmetered conductors shall not be run in the same raceway or conduit. Refer to illustration 500.04 and 500.05 pre-wired pedestal requirements. Refer to the Service Entrance section of this guide for more information about requirements to mobile homes, manufactured homes, and travel trailers.

Pole mounted meters shall not be allowed.

400.05.04 Clearance for Metering Equipment

NPU maintains the right to access your premises as necessary for the installation, removal, operation, or maintenance of our facilities, including meter readings and testing. It is essential that the designated access area remains free from obstructions and has the capacity to accommodate heavy vehicles and equipment, when required. Please be aware that we do not assume responsibility for restoring trees, shrubs, and grass damaged due to inadequate access.

A minimum of 36 inches of unobstructed working space must be provided and maintained beneath and in front of all metering equipment, as stipulated by the National Electrical Code (NEC). In cases involving unguarded moving machinery, changes in floor level, etc., a clearance of 72 inches is required in front of all meters. Additionally, a minimum six-inch clearance must be maintained between the nearest obstruction above and on each side of any individual meter or group of meters.

Should space constraints arise in installations where meters are grouped together, it is imperative to seek special layouts from NPU prior to commencing equipment installation. Sufficient clearance must be incorporated into the selection of locations for all metering equipment, ensuring that the doors of cabinets and switches can be fully opened. For detailed clearance requirements in multiple meter installations, please refer to illustration 500.06 in the drawing section.

The National gas codes and standards cover the requirements for gas equipment clearances. **When locating or relocating electric service equipment, where gas equipment has already been installed, the following guidelines should be used** to ensure compliance with the **minimum separation** required between the electric meter or combination meter/disconnect (ignition sources) and **any gas relief valve, vent discharge, filling connection, or regulator vent:**

Gas Container/System Type	Minimum Separation
Propane tank (exchanged)	5 feet
Propane Tank (filled on-site)	10 feet
Propane regulators	5 feet
Natural gas (piped) vented equipment	5 feet

400.05.05 Multiconnection Points

Single terminals of meter sockets, or meter connection blocks, shall not be used as connection points for more than one conductor. Where multiple conductors are used, suitable terminal lugs that comply with the NEC and are acceptable to NPU shall be furnished and installed by the contractor. Stud type terminals are generally required to accommodate double (twin) lug arrangements.

400.05.06 Identification of Meters

Wherever there is more than one meter installed on any one premise, it shall be the customers' responsibility to clearly identify the area served by each meter. Each room or apartment number, floor, or other area, shall be neatly and plainly marked on the service equipment and, if the meter and disconnect are not a single unit, on the inside and outside of the meter enclosure (not on the cover) with permanent marking. Other identifications, such as street address and service classifications (light, heat, or power) when not readily obvious, shall also be provided. For sequence in multiple meter installations refer to illustration 500.06. The customer shall notify NPU of any changes to avoid improper invoicing.

When such a situation arises, the owner of the premises is responsible for rectifying the condition as well as paying any time and material charges incurred by NPU in the process of rectifying the problem.

Meters will not be installed in multiple unit meter installations until all meter sockets have been permanently and precisely identified.

400.05.07 Bonding of Meter Sockets

In the case of a ground-fault, service equipment and enclosures may be called upon to transport large fault currents. As a result, it is critical that meter sockets and metal conduits are properly connected to neutral and ground. Bonding must be done in compliance with the NEC.

400.05.08 Load Splitting

Load splitting will not be permitted in order to avoid demand charges or to change the applicable rate schedule. This section applies to new services as well as changes to current services.

400.05.05 Instrument Transformer Metering

400.05.05.01 Current Transformers (CTs)

NPU must approve the use of CT cabinets in advance. Where CT cabinets are necessary, the customer is responsible for providing and installing them. CT cabinets must have an appropriate latch that NPU can padlock and seal, and they must be positioned next to the relevant meter socket(s). The working environment must be compliant with the NEC. A CT cabinet's maximum height from the floor to the top must not exceed seven feet.

The following services shall generally be arranged for metering with CTs only (no VTs):

Single-Phase:

VOLTS	AMPS	WIRE	HOT/COLD SEQUENCE
120/240	>400	3	Cold

Polyphase:

VOLTS	AMPS	WIRE	HOT/COLD SEQUENCE
120/208	>400	4 (4wire wye)	Cold
120/240	>400	4 (4-wire delta)	Cold
277/480	>400	4 (4wire wye)	Cold

400.05.05.02 Current and Voltage Transformers (CTs & VTs)

Installations (except for “self-contained”) where the voltage of the incoming line is greater than 277 volts to ground (on a grounded line) or greater than 480 volts between conductors (on an ungrounded line) shall generally be arranged for metering with both CTs and VTs.

Customers will not be allowed to connect any equipment to the metering terminals of instrument transformers.

400.05.05.03 Meter Mounting Devices (Transformer Rated)

The customer shall supply and install all meter mounting devices as required. Refer to Meter Mounting Equipment Requirements and Options section. All transformer-rated meter mounting devices shall have provisions for mounting a test switch.

Meter mounting devices shall be properly bonded and grounded by the customer, in accordance with the Grounding and Bonding Section of this Guide and the NEC. This

generally requires connection to a grounding electrode with a grounding electrode conductor no smaller than No.4, stranded copper. Additionally, there must be appropriate bonding to provide an effective ground-fault current path to the (voltage) source neutral.

Meter mounting devices shall be located as near as possible to the instrument transformers at a location approved by NPU. They must not be in vaults. Prior NPU approval is required for any metering conduit that runs in excess of 35 feet.

Where danger of plow or traffic damage exists, barriers consisting of concrete filled 6-inch IPS steel posts set a minimum of 48 inches deep must be installed for protection of the meter/meter mounting equipment. The posts shall be located so as not to interfere with the opening of doors/covers or restrict access to enclosures.

400.05.05.04 Instrument Transformer Cabinets

For installations where the service voltage does not exceed 480 volts, cabinets for instrument transformers shall be furnished by the customer and be constructed and installed to meet the requirements of the NEC. Cabinet size will need NPU approval prior to installation.

All cabinets shall be constructed so that the cover can be readily opened. The cover shall be attached with hinges. The cabinet must be mounted so that the cover does not interfere with installation or maintenance work. For outdoor locations, cabinets shall be weatherproof or rain tight.
Provision must be made so that the cabinet can be securely sealed with a padlock type seal when the cover is closed. Only NPU owned devices may be installed in cabinets housing meter connection devices or instrument transformers.

NPU reserves the right to modify such enclosures or cabinets to add protective locking, or other devices.

CT only cabinets must be able to accommodate flat base Bar CTs with a height 5 inches, width of 3.5 inches, length of 12.25 inches and weight of 6.5 pounds.

All instrument transformer cabinets must be mounted on substantial wood backboards or contain suitable mounting provisions (inside) such that the instrument transformers can be readily installed and removed. Transformers shall be mounted so that a clearance of at least 2 inches is provided between all transformers, cables, and the sides and top of the cabinet.

All line conductors, including the neutral, shall pass through the instrument transformer cabinet. In addition, all line conductors in the cabinet must be clearly identified (by the customer/electrical), as to, “phase” and “line” or “load”. A neutral connector shall be installed by the customer to provide for connection of the metering neutral. The customer shall mount all instrument transumers and make all primary connections. Secondary (metering) wires are furnished and installed by NPU.

A separate 1 ¼ inch minimum metallic conduit for metering wires between instrument transformer cabinets and meter mounting devices shall be furnished and installed by the customer. This should be either rigid metal conduit (RMC) or intermediate metal conduit (IMC) and be properly bonded to provide an effective ground-fault current path (per this guide and NEC). Advance approval must be obtained from NPU for special construction before installing conduit runs more than 35 feet.

Where danger of plow or traffic damage exists, barriers consisting of concrete filled 6-inch IPS steel posts set a minimum of 48 inches deep must be installed for protection of the meter/meter mounting equipment. The posts shall be located so as not to interfere with the opening of doors/covers or restrict access to enclosures.

For locations where the service voltage exceeds 480 volts, prior NPU approval of the instrument transformer installation is required. This type of installation typically requires primary metering by NPU.

400.05.05.04.01 *Mast or Building Mounted CT Installation*

Mounting of CTs/VTs on the customer's service mast or on the building adjacent to the weatherhead is not permitted.

Note: Except for the case of primary metering, CTs shall not be mounted on poles or pole mounted brackets.

400.05.05.05 Padmount Transformer Installations

Provided there will be only **one customer** served from the padmount transformer, the CTs may be mounted inside the padmount transformer enclosure. VTs shall not be installed in the padmount transformer enclosure. The VTs may, with prior NPU approval, be installed in a separate weatherproof cabinet adjacent to the meter enclosure.

400.05.06 Switchgear Installations

When instrument transformers are to be installed in switchgear, prior NPU approval of transformer compartment plans are required.

Below are the requirements for switchgear instrument transformer compartments:

- "Hot sequence" metering is the standard arrangement.
- The compartment shall be isolated by barriers, and metered and unmetered buses shall be separated by barriers.
- Bus arrangements for low voltage (below 600V) shall accommodate 12-inch-long CT bars (multiple bars are ¼" x 3" x 12").
- Units with voltage above 480 (phase-to-phase), shall have provisions for mounting VTs.
- Any removable or hinged covers over unmetered buses or connections shall have sealing provisions or approved tamper-proof fasteners.

Upon installation of the switchgear, any existing removable CT links/supports must be removed. For all switchgear or transclosure installations, it shall be the responsibility of the customer to install instrument transformers and make primary connections.

For an installation where the neutral conductor does not pass through the instrument transformer compartment, an insulated stranded copper neutral conductor, not smaller than #12 AWG, shall be brought into and connected to an insulated terminal in the instrument transformer compartment.

A 1 ¼ inch (minimum) metallic conduit, furnished and installed by the customer, shall be run continuously from the meter enclosure to the instrument transformer compartment. This conduit shall be either rigid metal conduit (RMC) or intermediate metal conduit (IMC) and be properly bonded to

provide an effective ground-fault current path. See Grounding and Bonding in this Guide and the NEC.

Note: the metering cable/conduit shall not pass through any other vertical sections/compartments of the switchgear.

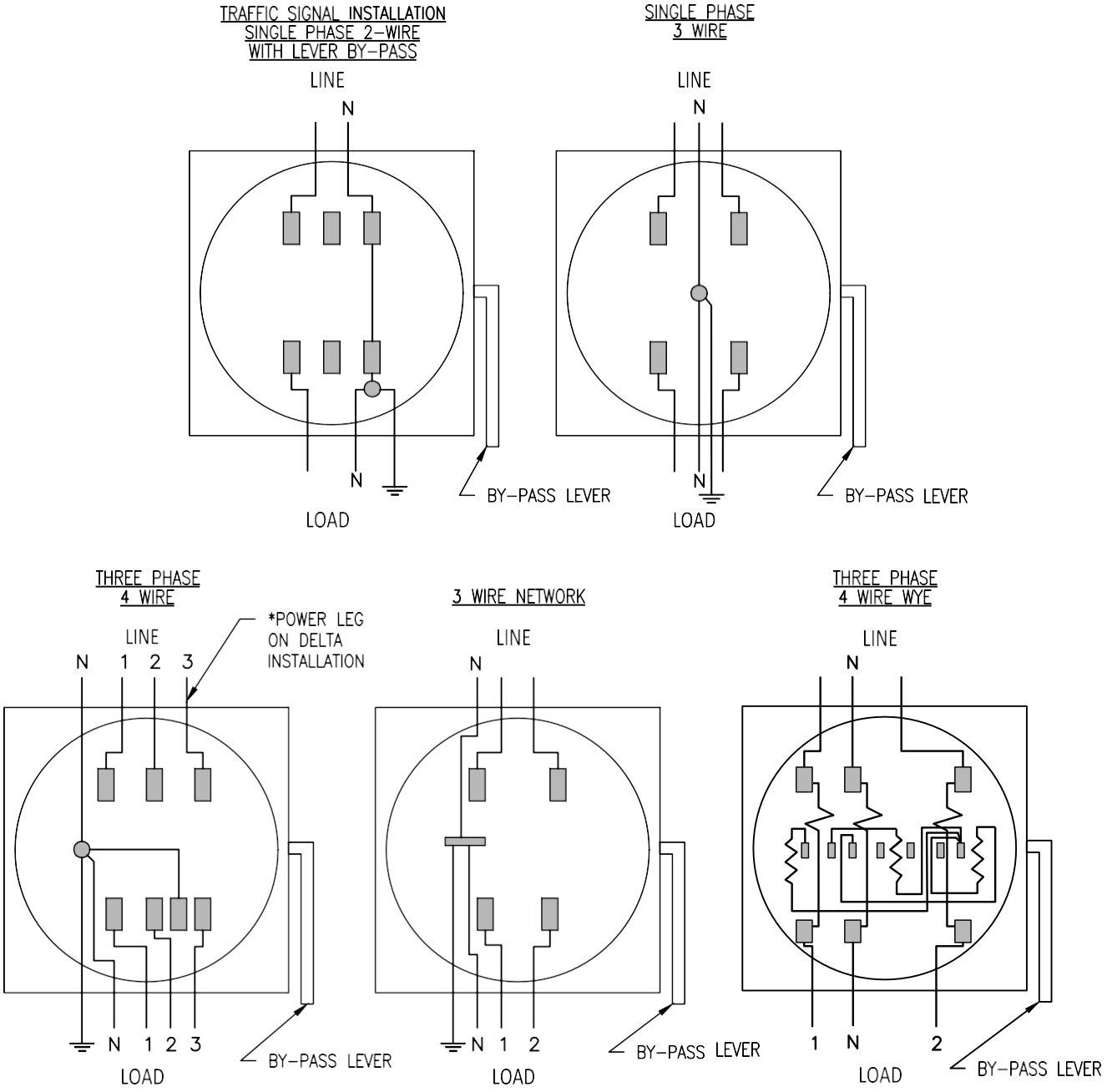
The mounting of NPU meters in switchgear is not recommended and generally will not be approved. Requests for special permission for such installations shall be accompanied by detailed plans showing arrangements of all cables, buses and other apparatus which are adjacent to the proposed meter locations.

All switchgear arrangement drawings must be submitted to NPU for approval prior to purchase and installation.

500 Illustrations

TYPICAL METER SOCKET CONNECTIONS

Illustration 500.01



NOTE:
* THIS LEG IS REQ'D BY THE NATIONAL ELECTRIC CODE TO BE IDENTIFIED ORANGE, AND IN THE CENTER TERMINAL POSITION IN ALL OTHER FNC OSURFS, IE. SWITCHGFAR, MAIN PANELS, ETC.

SCALE: N.T.S.

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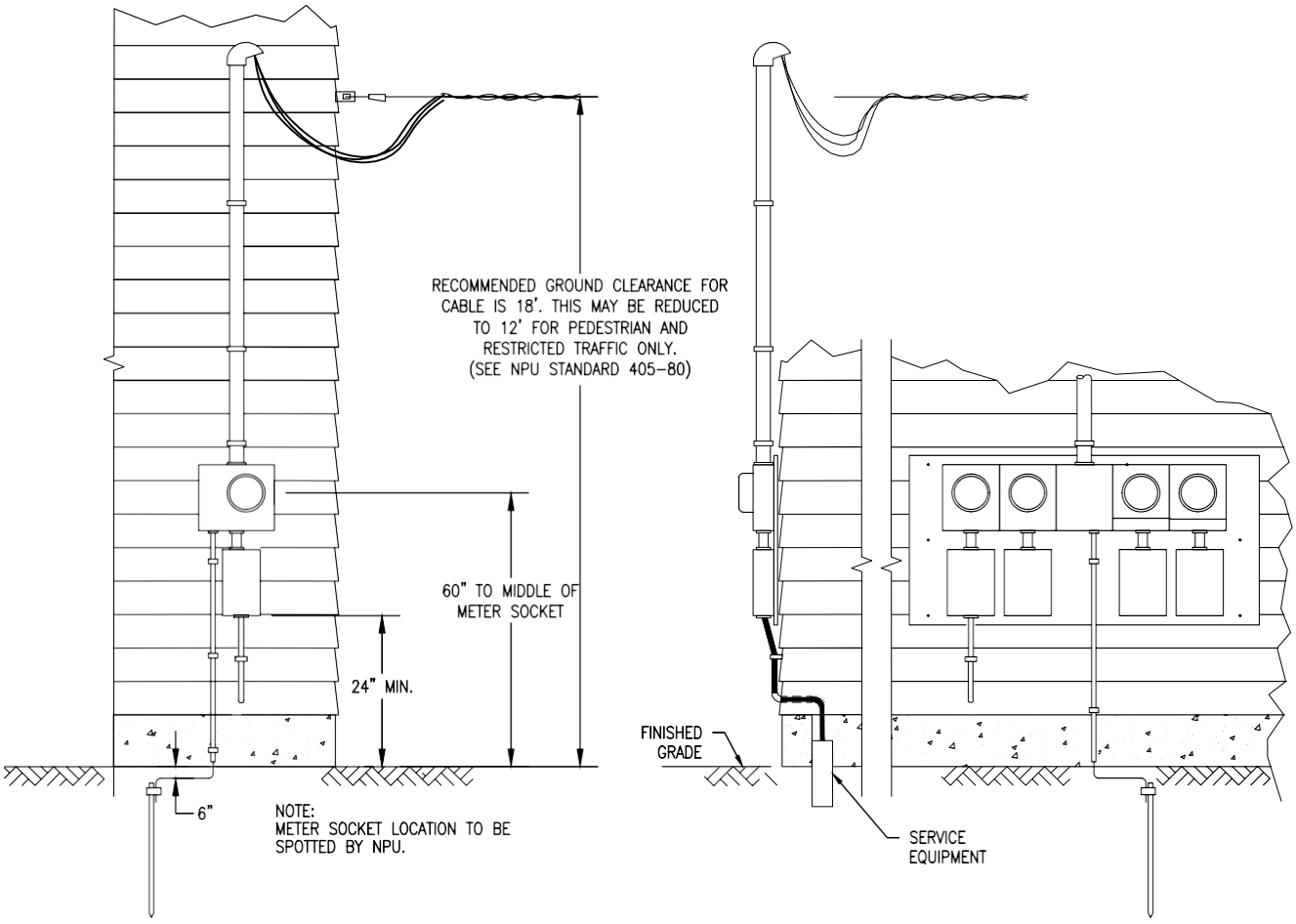
ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

2/22/2024 8:18 AM - LUKE.LOEFFEL - 500.01 TYPICAL METER SOCKET CONNECTION.DWG

OVERHEAD SERVICE
400 AMP MAX

Illustration
500.02



SINGLE INSTALLATION

MULTIPLE INSTALLATION 2 THROUGH 6 GANG

NOTES:
1. ALL CONDUIT CONNECTIONS SHALL BE TIGHT.
2. ALL CONDUIT AND SOCKET MOUNTING HARDWARE AND FITTINGS SHALL BE GALVANIZED OR OTHERWISE NON-CORROSIVE. 2-HOLE STRAPS ARE REQ'D ON ALL CONDUIT.
3. ANY EXCEPTIONS TO THE ABOVE MUST HAVE NPU APPROVAL.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

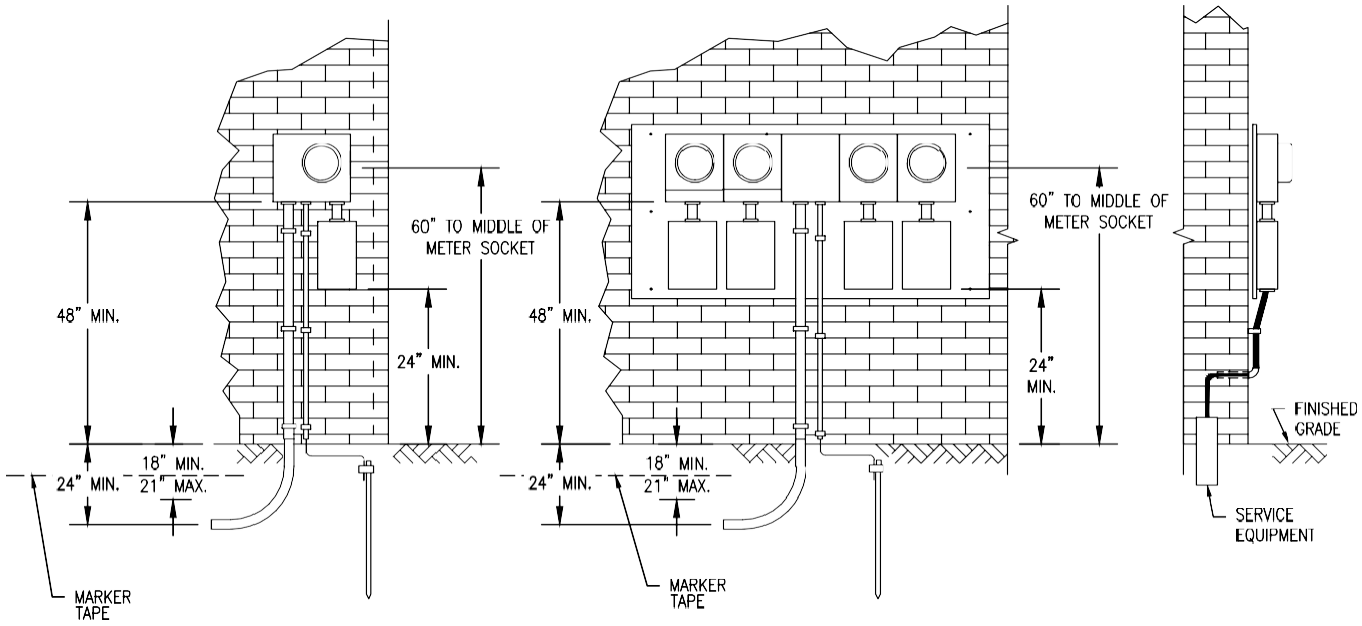
3/5/2024 10:25 AM - LUKE.LOEFFEL - 500.02 OVERHEAD SERVICE - 400 AMP MAX.DWG

UNDERGROUND SERVICE
400 AMP MAX

Illustration
500.03

NOTE:

UNDERGROUND LOCATE REQUIRED.
CALL 811.



SINGLE INSTALLATION

MULTIPLE INSTALLATION 2 THROUGH 6 GANG

NOTES:
1. SERVICE DISCONNECT AND OVERCURRENT DEVICE MAY NOT BE REQ'D FOR ALL APPLICATIONS, BUT IT IS HIGHLY RECOMMENDED IN ORDER TO ALLOW THE CUSTOMER TO DISCONNECT AND MAINTAIN UNDERGROUND CONDUCTORS WITHOUT THE COST OF A NPU LINE CREW VISIT. ANY CABLE INSTALLATION ON THE LINE SIDE OF THE DISCONNECT MUST MEET ALL NPU AND NEC REQUIREMENTS FOR UNDERGROUND SERVICE.
2. CONDUIT, PVC, SCHEDULE 40 OR SCHEDULE 80; AND SLIP JOINT REQUIRED.
3. UNDERGROUND CONDUIT SWEEPS SHALL BE RMC WIDE RADIUS SWEEPS. METALLIC CONDUIT SHALL EXTEND TO 8" ABOVE GRADE.
4. 1/4" YELLOW ROPE (PULL ROPE) REQUIRED TO BE LEFT IN CONDUIT.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

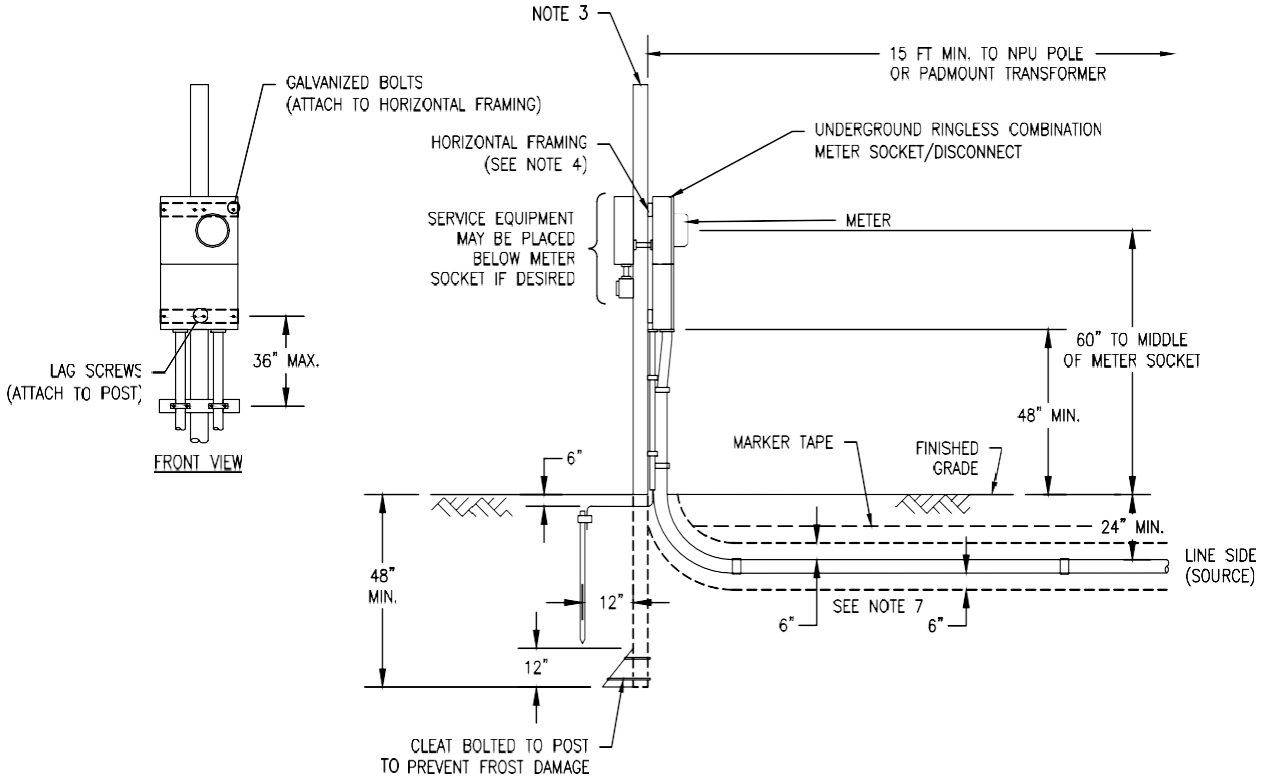
3/5/2024 10:25 AM - LUKE.LOEFFEL - 500.03 UNDERGROUND SERVICE - 400 AMP MAX.DWG

PEDESTAL MOUNTED METER
400 AMP MAX

Illustration
500.04

NOTE:

UNDERGROUND LOCATE REQUIRED.
CALL 811.



NOTES:

1. ALL CONDUIT CONNECTIONS SHALL BE TIGHT.
2. CONDUIT SHALL BE SCHEDULE 40 OR 80 PVC WITH SLIP JOINT.
3. 3/4" WEATHER RESISTANT BACKER BOARD.
4. MANUFACTURED AND UL-LISTED PEDESTALS ARE PREFERRED. ALTERNATIVELY, 4" X 6" PRESSURE TREATED POST MAY BE USED.
5. SERVICE DISCONNECT AND OVERCURRENT DEVICE ON THE PEDESTAL MAY NOT BE REQ'D FOR ALL APPLICATIONS, BUT IT IS HIGHLY RECOMMENDED IN ORDER TO ALLOW THE CUSTOMER TO DISCONNECT AND MAINTAIN UNDERGROUND CONDUCTORS WITHOUT THE COST OF A NPU LINE CREW VISIT. ANY CABLE INSTALLATION THE LINE SIDE OF THE DISCONNECT MUST MEET ALL NPU AND NEC REQUIREMENTS FOR UNDERGROUND SERVICE.
6. THE HORIZONTAL FRAMING SHALL BE 1-5/8" X 1-5/8" 12 GA. MINIMUM GALVANIZED STEEL CHANNEL/STRUT.
7. A 6" BEDDING OF SOIL CONTAINING NO ROCKS SHALL BE PLACED BELOW AND ABOVE THE CONDUIT. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS, AND OTHER DEBRIS. PLASTIC 'ELECTRIC' MARKER TAPE SHALL BE INSTALLED PER NEC SECTION 300.5.
8. UNDERGROUND CONDUIT SWEEPS SHALL BE RMC WIDE RADIUS SWEEPS. METALLIC CONDUIT SHALL EXTEND TO 8" ABOVE GRADE.
9. 1/4" YELLOW ROPE (PULL ROPE) REQUIRED TO BE LEFT IN CONDUIT.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

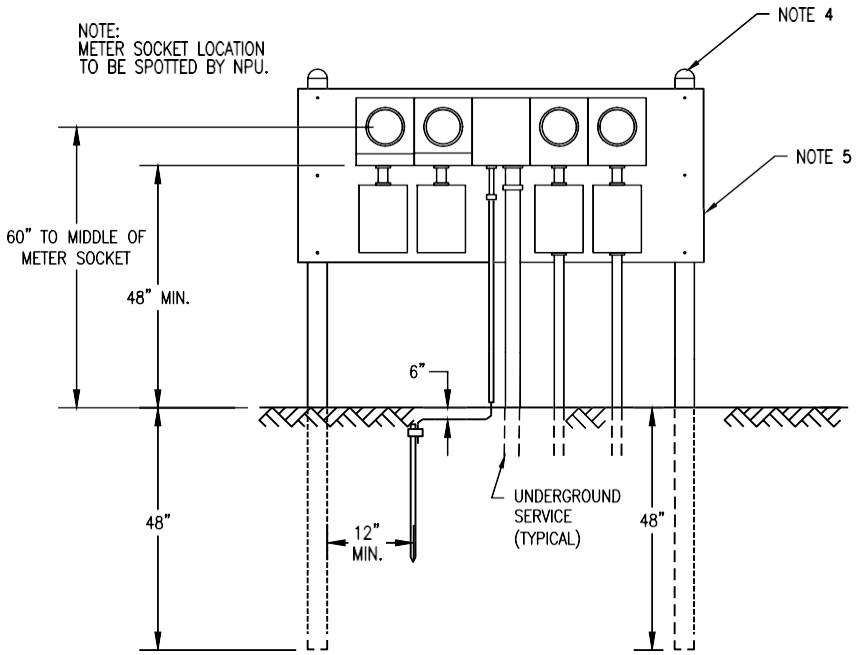
3/5/2024 10:26 AM - LUKE.LOEFFEL - 500.04 PEDESTAL MOUNTED METER - 400 AMP MAX.DWG

PEDESTAL
MULTIPLE METER SERVICE

Illustration
500.05

NOTE:

UNDERGROUND LOCATE REQUIRED.
CALL 811.



MULTIPLE INSTALLATION 2
THROUGH 6 GANG

NOTES:
1. ALL CONDUIT CONNECTIONS SHALL BE TIGHT.
2. ALL CONDUIT AND SOCKET MOUNTING HARDWARE AND FITTINGS SHALL BE GALVANIZED OR OTHERWISE NON-CORROSIVE.
   2-HOLE STRAPS ARE REQ'D ON ALL CONDUIT.
3. ANY EXCEPTIONS TO THE ABOVE MUST HAVE NPU APPROVAL.
4. SUPPORTS TO BE 3" GALVANIZED STEEL PIPE WITH END CAPS, EMEDDED IN CONCRETE.
5. 3/4" WEATHER RESISTANT BACKER BOARD AND/OR ATTACHED WITH UNISTRUT.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

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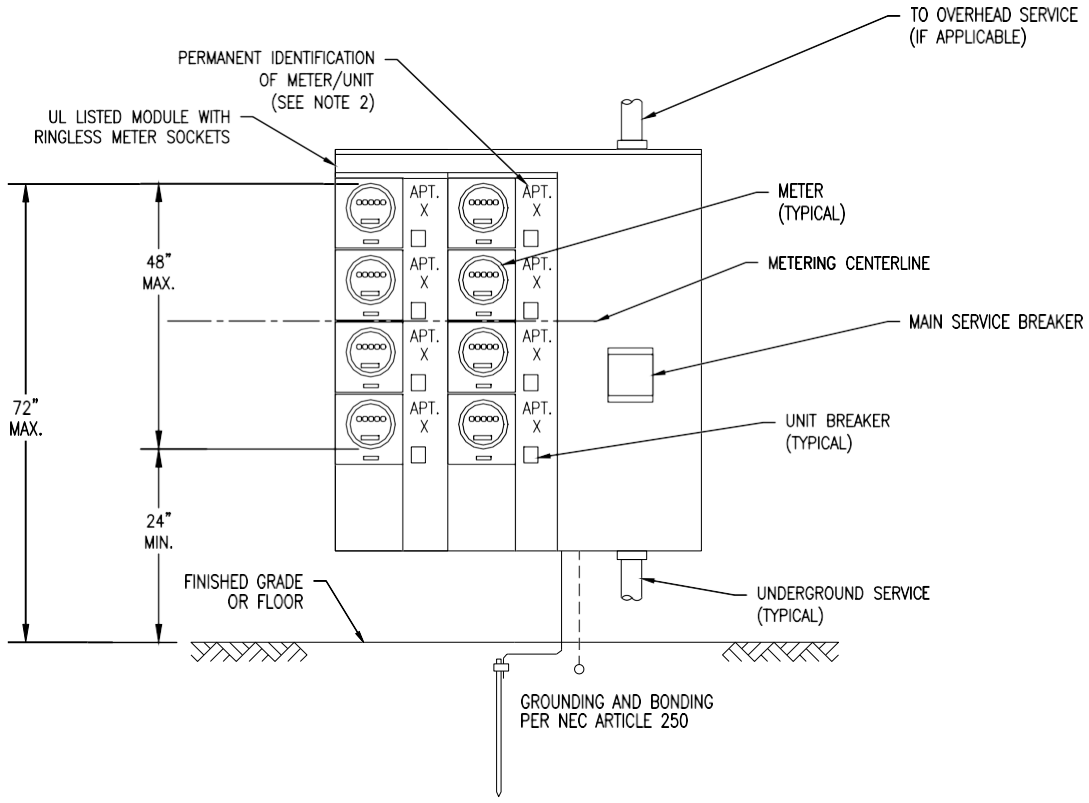
3/5/2024 10:26 AM - LUKE.LOEFFEL - 500.05 PEDESTAL MULTIPLE METER SERVICE.DWG

MODULAR METERING
TYPICAL INSTALLATION

Illustration
500.06



NOTES:
1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.
2. IN GENERAL, METERS SHOULD BE ARRANGED SUCH THAT THERE IS A LOGICAL LEFT-TO-RIGHT AND TOP-TO-BOTTOM NUMBERING SEQUENCE.
3. IF DOORS ARE INSTALLED IN FRONT OF METERS, THE FOLLOWING CLEARANCES APPLY:
   * 12" MINIMUM IN FRONT OF MODULE COVER PLATE
   * 24" MINIMUM ABOVE FINISHED GRADE (TO BOTTOM OF DOORS)

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

3/5/2024 10:26 AM - LUKE.LOEFFEL - 500.06 MODULAR METERING - TYPICAL INSTALLATION.DWG

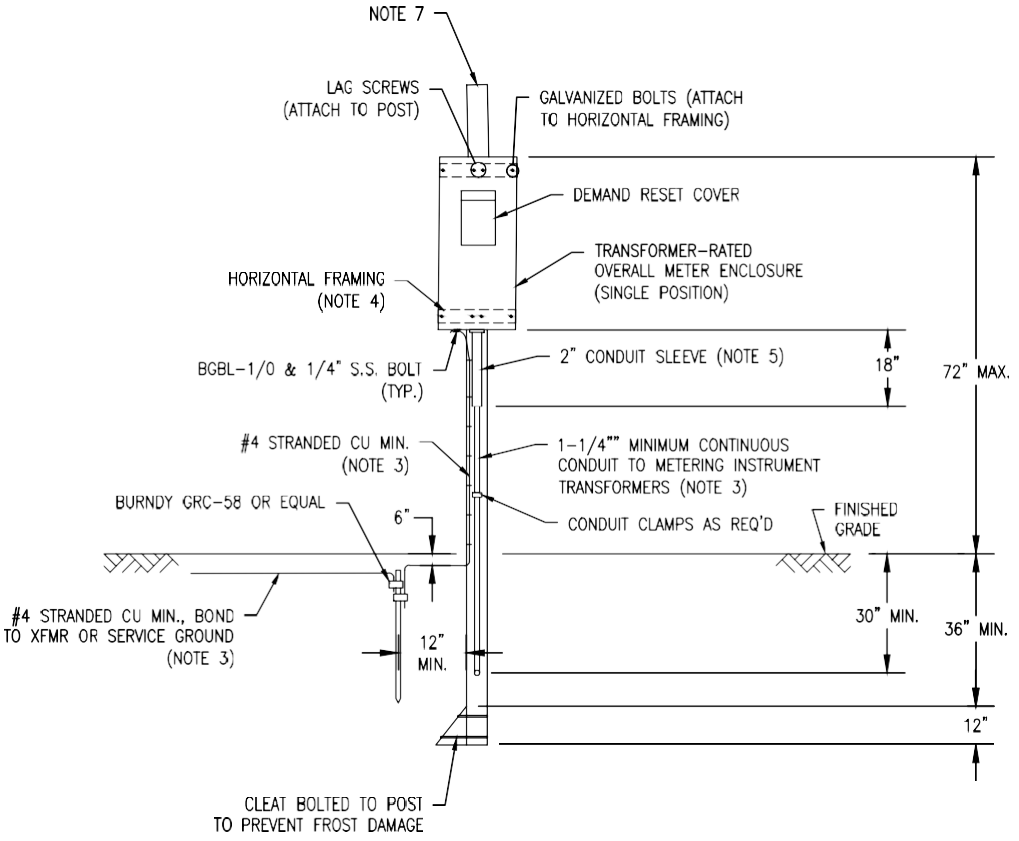
UNDERGROUND OUTDOOR METER ENCLOSURE: SINGLE

Illustration
500.07

NOTE:

TEMPORARY METER SOCKET LOCATION TO BE WITHIN 15' OF NPU FACILITIES.

UNDERGROUND LOCATE REQUIRED.
CALL 811.



NOTES:
1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.
2. A MINIMUM OF 24" CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A PADMOUNT TRANSFORMER FOUNDATION. A MINIMUM OF 15' CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A NPU POLE.
3. METALLIC CONDUIT AND ENCLOSURES SHALL BE BONDED AND GROUNDED PER NEC ARTICLE 250.
4. THE HORIZONTAL FRAMING SHALL BE 1-5/8" X 1-5/8" 12 GA. MIN. GALV. OR 'GOLDGUARD' (OR EQUIVALENT) STEEL CHANNEL/STRUT.
5. A PVC CONDUIT SLIP JOINT (AS SHOWN) SHALL BE PROVIDED. SCH. 80 CONDUIT IS REQ'D WHEREVER SUBJECT TO PHYSICAL DAMAGE.
6. A LEVEL UNOBSTRUCTED AREA SHALL BE MAINTAINED FOR A MINIMUM OF 39" IN FRONT OF THE METER ENCLOSURE.
7. MANUFACTURED AND UL-LISTED PEDESTALS ARE PREFERRED. ALTERNATIVELY, 4" X 6" PRESSURE TREATED POST MAY BE USED.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

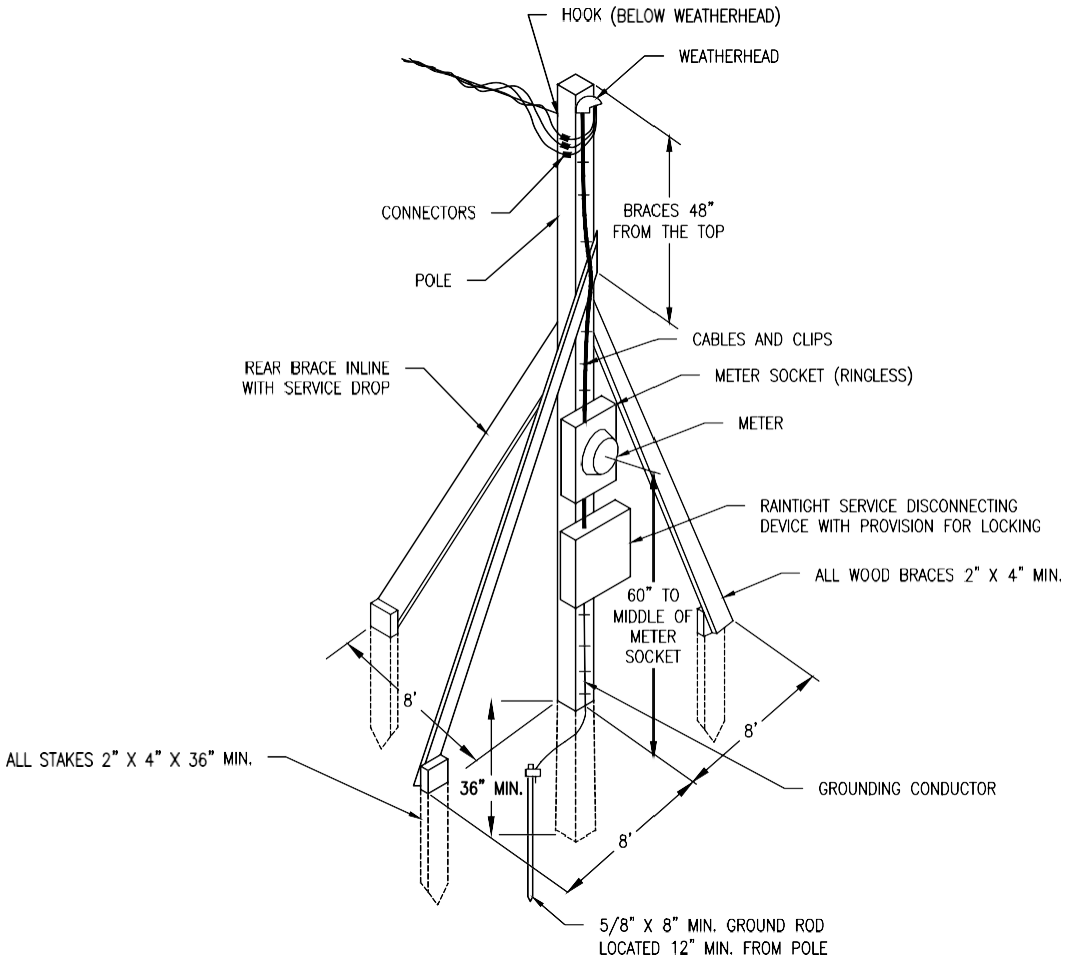
2/22/2024 8:14 AM - LUKE.LOEFFEL - 500.07 UNDERGROUND OUTDOOR METER ENCLOSURE - SINGLE.DWG

TEMPORARY SERVICE OVERHEAD: 200 AMP MAX

Illustration
500.08

NOTE:

UNDERGROUND LOCATE REQUIRED.
CALL 811.



NOTES:
1. ALL CONDUIT CONNECTIONS SHALL BE TIGHT.
2. ALL CONDUIT & SOCKET MOUNTING HARDWARE AND FITTINGS SHALL BE GALVANIZED OR OTHERWISE NON-CORROSIVE. 2-HOLE STRAPS REQ'D ON ALL CONDUIT.
3. SERVICE LOCATION AND TYPE OF CONSTRUCTION MUST BE APPROVED IN ADVANCE BUY A NPU REPRESENTATIVE. THE TYPE OF STRUCTURE SHOWN HERE MAY BE USED ONLY WHERE THE TEMPORARY SERVICE DROOP LENGTH DOES NOT EXCEED 75 FEET.
4. THE POLE MUST BE AT LEAST 5" IN DIAMETER AT THE TOP, OR BE A 6 INCH X 6 INCH TIMBER. (A 4 INCH X 4 INCH TIMBER MAY BE USED WHEN DISTANCE TO THE NPU POLE IS LESS THAN 25 FEET).
5. THE POLE MUST BE TALL ENOUGH TO PERMIT THE ATTACHMENT POINT TO BE AT LEAST 12 FEET ABOVE GROUND WITH A MINIMUM OF 36 INCHES IN GROUND. ADDITIONAL HEIGHT MAY BE REQUIRED FOR PROPER CLEARANCE WHEN THE TEMPORARY SERVICE IS ON THE OPPOSITE SIDE OF THE STREET OR HIGHWAY FROM THE NPU POLE.
6. ALL EQUIPMENT, EXCEPT THE SERVICE DROP, CONNECTORS AND METER, ARE TO BE SUPPLIED, INSTALLED AND MAINTAINED BY THE CONTRACTOR.
7. INSTALLATION OF A TEMPORARY SERVICE ON A CONSTRUCTION SHACK, MAY BE PERMITTED WITH THE APPROVAL OF A NPU REPRESENTATIVE. PER NEC 230.10 TREES SHALL NOT BE USED FOR SUPPORT OF OVERHEAD SERVICE CONDUCTORS.

SCALE: N.T.S.

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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

3/5/2024 10:26 AM - LUKE.LOEFFEL - 500.08 TEMPORARY SERVICE - OVERHEAD 200 AMP MAX.DWG

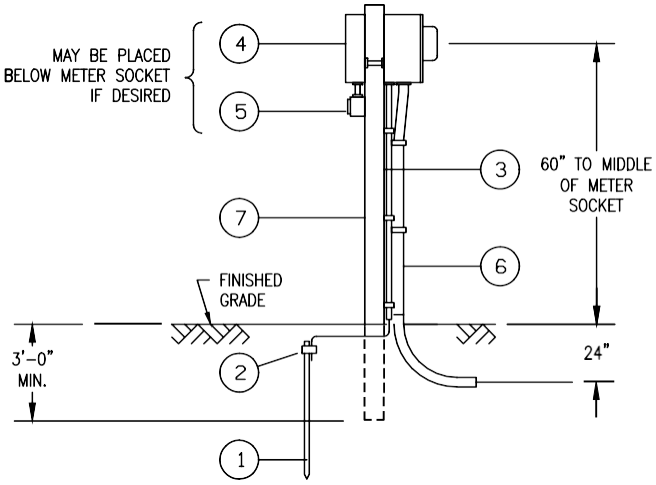
TEMPORARY UNDERGROUND SERVICE: 200 AMP MAX

Illustration
500.09

NOTE:

TEMPORARY METER SOCKET LOCATION TO BE WITHIN 15' OF NPU FACILITIES.

UNDERGROUND LOCATE REQUIRED.
CALL 811.



MATERIALS:
1. GROUND ROD, SIZE 5/8" X 8' COPPERWELD BURIED BELOW FINISHED GRADE.
2. GROUND ROD CLAMP, UL APPROVED.
3. GROUNDING ELECTRODE CONDUCTOR, SIZE NO.6 COPPER (MIN.) IN 1/2" CONDUIT.
4. OVERCURRENT DEVICE APPROVED FOR LOCATION.
5. RECEPTACLES APPROVED FOR LOCATION. GFCI PROTECTION PER NEC.
6. CONDUIT, PVC SCH. 40 OR SCH. 80 MINIMUM, REQ'D. (PER LOCAL JUSRISDICTION).
7. POST, TREATED, 4" X 4" MINIMUM.

NOTES:
A. ALL CONDUIT CONNECTIONS SHALL BE TIGHT.
B. ALL CONDUIT AND SOCKET MOUNTING HARDWARE AND FITTINGS SHALL BE GALVANIZED OR OTHERWISE NONCORROSIVE. 2-HOLE STRAPS ARE REQ'D ON ALL CONDUIT.
C. ANY EXCEPTIONS TO THE ABOVE MUST HAVE NPU APPROVAL.

SCALE: N.T.S.

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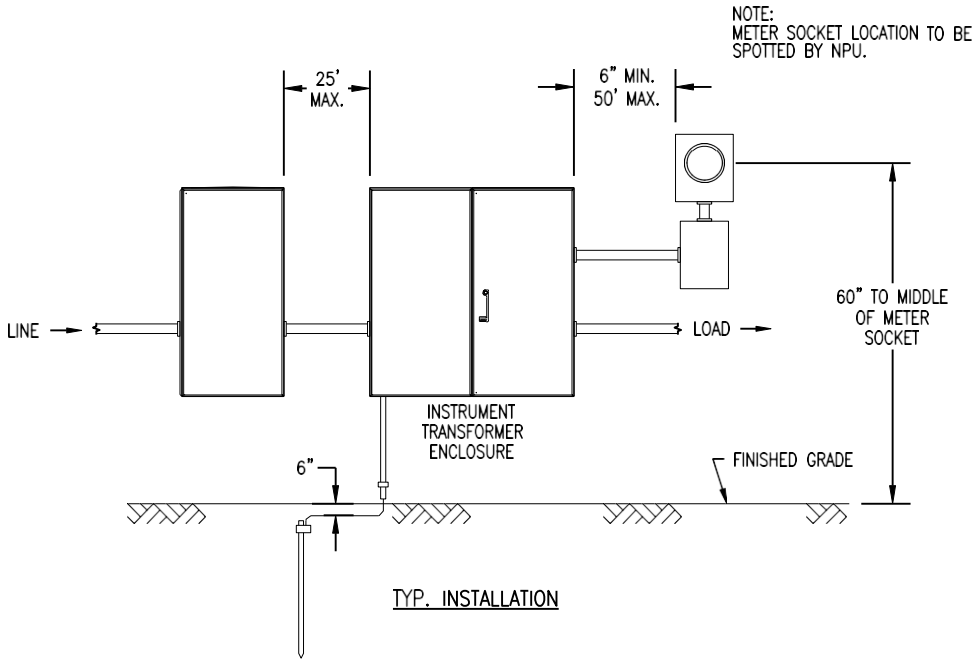
ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

3/5/2024 10:27 AM - LUKE.LOEFFEL - 500.09 TEMPORARY SERVICE - UNDERGROUND 200 AMP MAX.DWG

INSTRUMENT TRANSFORMER

Illustration
500.10



TYP. INSTALLATION

NOTES:
1. 1-1/2" CONDUIT BETWEEN SOCKET & INSTRUMENT TRANSFORMER ENCLOSURE. IF OUTDOOR INSTALLATION ALL HARDWARE AND FITTINGS SHALL BE GALVANIZED OR OTHERWISE NON-CORROSIVE
2. PRE-APPROVED METER SOCKET.
3. INSTRUMENT TRANSFORMER MUST BE SEALABLE.

SCALE: N.T.S.

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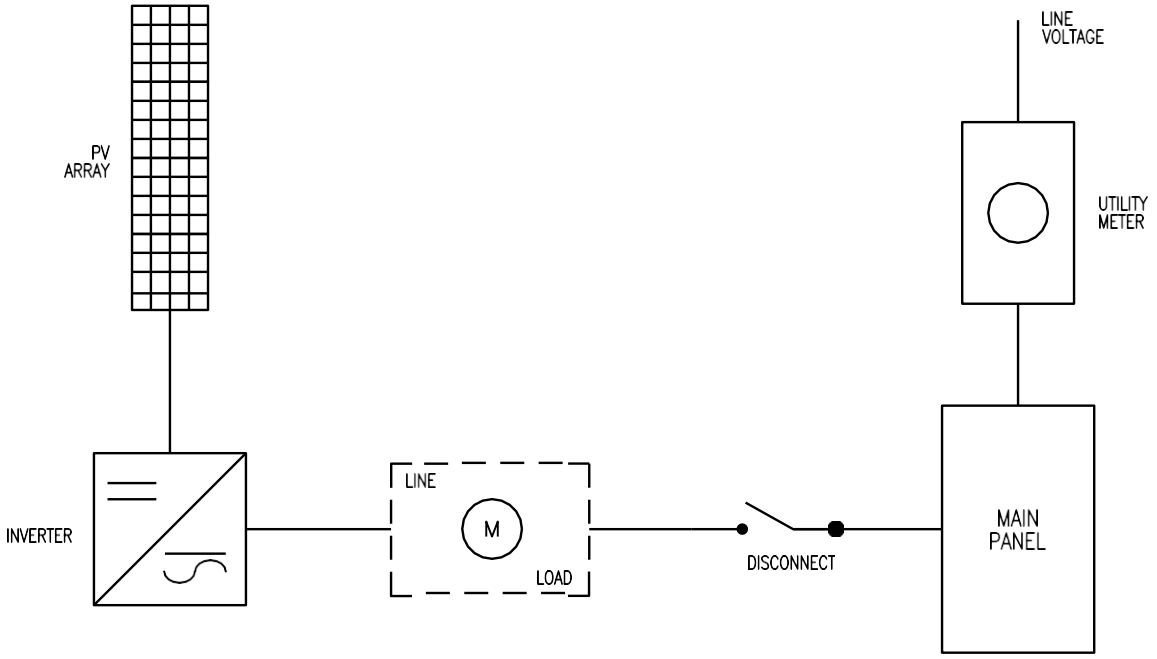
ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

2/22/2024 8:13 AM - LUKE.LOEFFEL - 500.10 INSTRUMENT TRANSFORMER.DWG

TYPICAL SOLAR INSTALLATION

Illustration
500.11



SCALE: N.T.S.

REVISION	DATE	DRAWN	APPROVED	DESCRIPTION
0	03/07/2024	SJF	NRB	ISSUED FOR USE
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ELECTRICAL DISTRIBUTION CONSTRUCTION STANDARDS

Norwich Public Utilities

2/22/2024 8:17 AM - LUKE.LOEFFEL - 500.11 TYPICAL SOLAR INSTALLATION.DWG

600 Appendix

600.01 Residential Cut and Reconnect Policy

1. Definitions

1.1. Licensed Electrician – A master electrician holding a valid E-1 license issued by the State of Connecticut Department of Consumer Protection – Occupational and Professional Licensing Division. The licensed electrician is responsible for all work performed under this policy.

1.2. E2 License – An E2 license allows the holder to perform electrical work under the employ of a licensed electrician.

1.3. E9 License – An E9 license restricts the holder to residential and light commercial work only.

1.4. City of Norwich Building Official – Duly appointed city official responsible for inspecting and ensuring that electrical work complies with local, state, and federal regulations.

2. Policy

2.1. Master electricians with an E1 license are allowed to perform cuts and reconnects on overhead services if they have the proper permit for the work to be performed. All requirements of this policy must be adhered to. Violations of this policy may result in the revocation of an electrician's privilege to perform cuts and reconnects.

2.1.1. Homeowners are not allowed to cut and reconnect electrical services unless they hold a current E1 license.

2.1.2. If a permit has been issued to a homeowner, an electrician is not allowed to perform any electrical work, including cutting and/or reconnecting the service.

2.1.3. Underground service renewals require a request for NPU to disconnect the service at the pole. Please contact NPU at least 5 days in advance to

request a disconnect. Failure to do so will result in a Same-Day Service charge being applied to the electrician.

2.2. The electrician performing the work shall contact NPU at least 5 days in advance of the work being performed. Failure to notify NPU in advance will result in NPU's Same Day Service charge being applied to the electrician.

2.2.1. The electrician is responsible for obtaining the appropriate permits from the City of Norwich Building Department in advance of starting work.

2.2.2. Electricians will provide the permit number and their license number to NPU when requesting to disconnect or reconnect a service.

2.3. At the homeowner or electrician's request, NPU will disconnect and reconnect an electrical service during normal business hours (0730-1530 Monday-Friday) at no charge. Requests shall be made at least 5 days in advance of the work being performed. Failure to notify NPU in advance will result in NPU's Same Day Service charge being applied to the electrician or the homeowner. Requests for disconnects or reconnects outside of normal business hours will result in NPU's After Hours charge being applied to the electrician.

2.4. If an emergency arises outside of NPU or City of Norwich Building Department hours, NPU will disconnect and/or reconnect a service as required to allow for repair or replacement. However, the electrician must obtain a valid permit on the next business day as required by the State of Connecticut Building Code, Section R105.2.1 – Emergency Repairs. If the requested services are found to be supporting any work outside of emergency repairs, a Same Day Service charge will be applied to the homeowner or electrician.

2.5. During the work, electricians shall perform the following:

2.5.1. Cut the service entrance cable at the point of attachment (weatherhead) on the line side of the existing service drop connectors.

2.5.2. Repair or replace the service as required. If the point of attachment or number of meters is going to be changed or there are existing clearance

conflicts, the electrician must receive NPU approval before starting work. Only NPU personnel are permitted to relocate service drops.

2.5.3. Ensure meters are reinstalled in the same service location from which they were removed.

2.5.3.1. Each meter and meter socket should be marked with the Unit ID (NOT customer name) for the location serviced prior to the start of any work.

2.5.3.2. For multiple meter installations, NPU must verify the meter installation after work is complete.

2.5.4. The service must be reconnected utilizing the properly sized connectors listed below:

- Properly taped or bare Parallel Groove Connector
- Properly taped or bare Pliers-applied Wedge Connector Neutral Conductor

2.5.5. All NPU, National Electric Code (NEC), State and City of Norwich building requirements must be met.

2.5.6. Obtain approval from the City of Norwich Building Department as soon as work is completed

600.02 Approved Metering Equipment

Basic catalog numbers shown herein may have different or additional suffix numbers or letters indicating variations in hubs, addition of fifth terminal, and left or right wiring extension.

Similar style meter sockets will be accepted if they meet the meter socket criteria listed previously in this handbook.

Ringless - 1Ø/3W - Single Position - 100/125/200 A - 4 Terminal - (Temporary/Outdoor Lighting/CAT V/Telephone Installation Only) - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH	EN12L41GRST
	OH/UG	EN12L43GRST
Milbank	OH	U7021-RL-TG-BL
	OH	U7487-RL-TG
Square D	OH	UTRS202B
	OH/UG	UATRS213B

Ringless - 1Ø/3W - Single Position - 200 A - 4 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	EL20L43GRST
	OH/UG	EL20L43GR2N
Milbank	OH	U9800-RRL-QG-BL-NE
	UG	U4721-O-BL
	UG	U3924-XL
	OH/UG	U9801-RXL-QG
Siemens	OH	S40405-02QG
Square D	OH	UTH4203T
	OH/UG	UTH4213T
Talon	OH	40804-01NU
	OH/UG	40404-02QG

Ringless - 1Ø/3W - Single Position - 200 A - 5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton	OH	UBTH4203BCH
Eaton / Cooper B-Line	OH	EL20L41GR1N
	OH/UG	EL20L43GRST
Milbank	OH/UG	U9551-RXL-5T9-IL
Square D	OH	UTH5203T
	OH/UG	UTH5213T
Talon	OH	41505-02QG*
	OH/UG	41605-02QG*
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 1Ø/3W - Single Position - 320 A - 4 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	EL32T44GRST
	OH/UG	EL32T45GR1N
	OH/UG	EL32T46GRST
Milbank	OH/UG	U2448-X
	OH	U1179-RRL-K3-K2
Square D	OH/UG	UTH4330T

Ringless - 1Ø/3W - Single Position - 320 A - 5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	EL32T44GRST
	OH/UG	1008068CH
	OH/UG	EL32T45GR1N
	OH/UG	EL32T46GRST
Milbank	OH/UG	U2448-X-5T9
	OH/UG	U4778-X-BL
Square D	OH/UG	UTH5330T
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 3Ø/4W - Single Position - 200 A - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	EL20L73GRST
	OH/UG	EL20L73GR2N
Milbank	UG	U4910-O-BL
	OH	U9701-RXL-QG
	OH	U9700-RRL-QG-BL
	OH/UG	U9701-RRL-BL
Square D	OH/UG	UTH7213T

Ringless - 3Ø/4W - Single Position - 320 A - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	EL32T75GR1N
	OH/UG	EL32T76GRST
Milbank	OH/UG	U4911-X-BL
	OH/UG	U4911-X-QG-BL
Square D	OH	UTH7300T
Siemens	OH/UG	49007-02FL

Ringless - 1Ø/3W - Two Position - 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20432CGR1N
Milbank	OH/UG	U2872-XT-5T9

Ringless - 1Ø/3W - Three Position - 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20433CGR1N
Milbank	OH/UG	U2873-XT-5T9

Ringless - 1Ø/3W - Four Position - 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20434CGR1N
Milbank	OH/UG	U2874-XT-5T9

Ringless - 1Ø/3W - Five Position - 200 A / 600 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20435CGR1N
Milbank	OH/UG	U2875-XT-5T9

Ringless - 1Ø/3W - Six Position - 200 A / 600 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20436CGR1N
Milbank	OH/UG	U2876-XT-5T9
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 1Ø/3W - Two Position - Socket/Breaker Combination 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	VELMP20432LGRST5K9
Milbank	OH/UG	U4372-XT-5T9

Ringless - 1Ø/3W - Three Position - 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	VELMP20433LGRST5K9
Milbank	OH/UG	U4373-XT-5T9

Ringless - 1Ø/3W - Four Position - 200 A / 400 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	VELMP20434LGRST5K9
Milbank	UG	U4374-XT-5T9

Ringless - 1Ø/3W - Five Position - 200 A / 600 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	VELMP20435LGRST5K9
Milbank	UG	U4375-XT-5T9

Ringless - 1Ø/3W - Six Position - 200 A / 600 A Max - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	VELMP20436LGRST5K9
Milbank	UG	U4376-XT-5T9
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 3Ø/4W - Two Position - 200 A / 400 A Max - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20732CGR1N
Milbank	OH/UG	U2732-XT

Ringless - 3Ø/4W - Three Position - 200 A / 400 A Max - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20733CGR1N
Milbank	OH/UG	U2733-XT

Ringless - 3Ø/4W - Four Position - 200 A / 400 A Max - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20734CGR1N
Milbank	OH/UG	U2734-XT

Ringless - 3Ø/4W - Five Position - 200 A / 600 A Max - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20735CGR1N
Milbank	OH/UG	U2735-XT

Ringless - 3Ø/4W - Six Position - 200 A / 600 A Max - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	HEL20736CGR1N
Milbank	OH/UG	U2736-XT

Ringless - 1Ø/3W - Single Position - Socket/Breaker Combination 200 A - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	ELCB20L24A5GR1N
	OH/UG	EL6C20L24A6GRST
Milbank	OH/UG	U3791N-RXL-200-BL

Ringless - 1Ø/3W - Single Position - Socket/Breaker Combination 320 A - 4/5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	UG	ELCB32C24A4GRST
	OH/UG	ELCB32C24A5GR1N
Milbank	OH/UG	U5890-X-2/200-BL

Ringless - 3Ø/4W - Single Position - Socket/Breaker Combination 200 A - 7 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton / Cooper B-Line	OH/UG	ELCB20L27A5GR1N
Milbank	OH/UG	U5750-RXL-200-BL

Ringless - 1Ø/3W - Single Position - Socket/Breaker Combination Pedestal 200 A - 4 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Milbank	UG	4322-O-BL

Ringless - 1Ø/3W - Single Position - Socket/Breaker Combination Pedestal 200 A - 5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Milbank	UG	4322-O-5T9
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 1Ø/3W - Two Position - Socket/Breaker Combination Pedestal 200 A - 4 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Milbank	UG	4323-O-BL

Ringless - 1Ø/3W - Two Position - Socket/Breaker Combination Pedestal 200 A - 5 Terminal - Lever Bypass - 600 V		
Manufacturer	***Type***	***Catalog Number***
Milbank	UG	4323-O-5T9
****5th Terminal shall be in the 9:00 O'clock position****		

Ringless - 3Ø/3W - Pre-Wired Instrument Transformer - Rated Socket 20A - 8 Terminal - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton		USTS81A300CH
Milbank		UC7444-O-141-NOE

Ringless - 3Ø/4W - Pre-Wired Instrument Transformer - Rated Socket 20A - 13 Terminal - 600 V		
Manufacturer	***Type***	***Catalog Number***
Eaton		USTS131A301CH
Milbank		UC7445-O-311-NOE

Instrument Transformer Mounting Enclosure			
Manufacturer	***Voltage***	***Service Size (A)***	***Catalog Number***
Eaton/Cooper B-Line	208Y/120	400 & 800	363612DDHRTCT1N
	480Y/277	800	484814DDHRTCT1N
Milbank	208Y/120	400 & 800	U1855-O-NE
	480Y/277	800 & 1200	U1856-O-NE

600.03 Repair Rate for Damaged Meters (as of April 2022, subject to change)

Residential Meters			
	Class	***1st Time Damage***	***2nd Time Damage***
	Form 2S, Class 200, 240 Volt Type C2SXD	$180.00	$270.00
	Form 12S, Class 200, 240 Volt Type C2SXD	$237.00	$355.50