TRAVERSE CITY
LIGHT & POWER

EST. 1912

# Electric Service Requirements

**Traverse City Light & Power Offices**
**1131 Hastings Street**
**Traverse City, MI 49686**

**Call to Apply for Electric Service**
**(231) 922-4940**

**Electronic version can be viewed at www.tclp.org**

**First published on May 13, 2020**

**Revision Sheet**

| Date | Section | Change |
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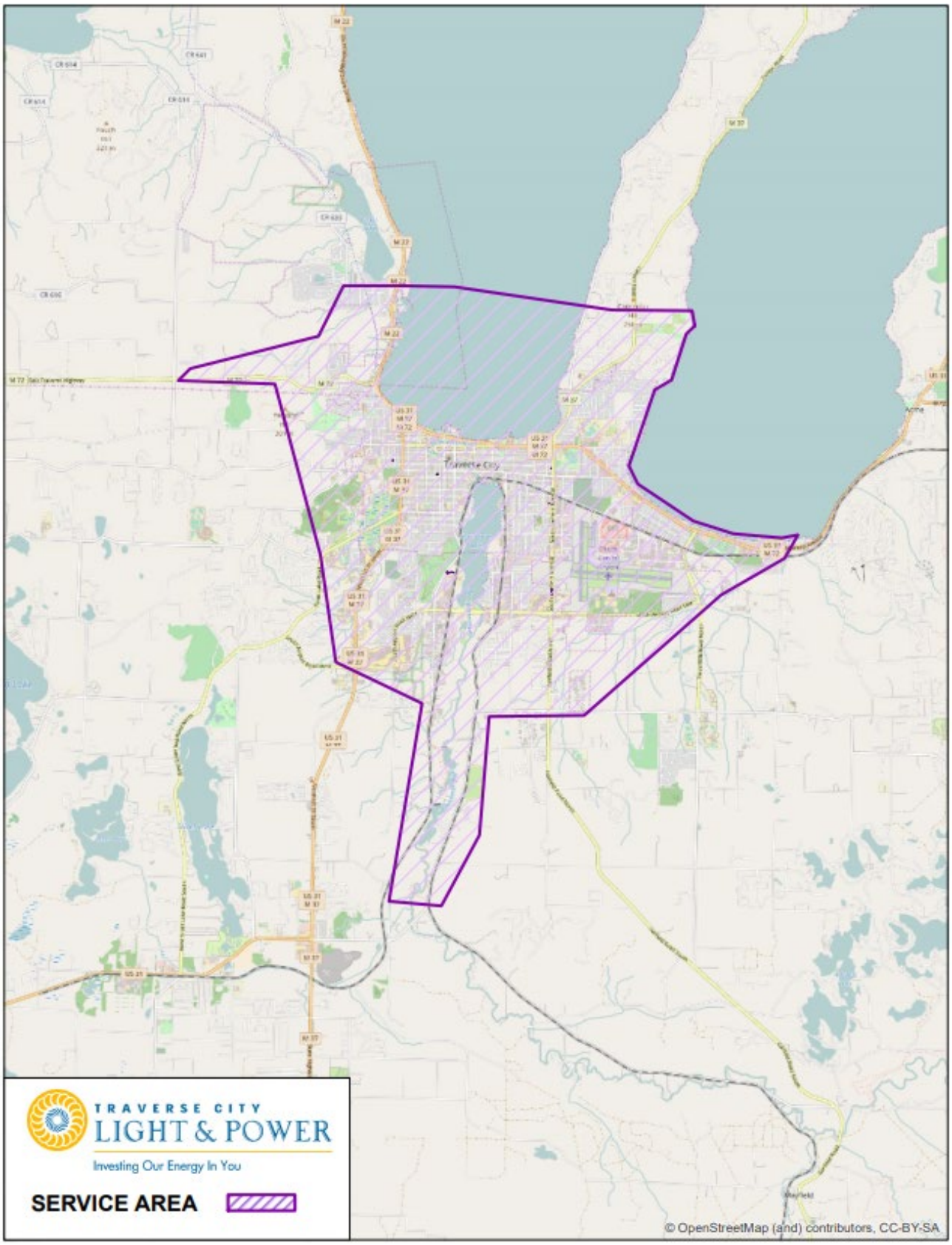
TRAVERSE CITY
LIGHT & POWER
Investing Our Energy In You
SERVICE AREA
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# Executive Director Preface

This manual has been created in an effort to provide clarity and consistency on the technical construction requirements for customers requesting new or upgraded service. The requirements contained herein promote safe construction practices that will help reduce unanticipated project costs and delays. Additionally, the requirements will allow TCL&P to provide better service by promoting standard construction and accessibility to facilities. While intended as a complete guide for technical requirements of service, situations may arise that require updates in the future. Therefore, customers are encouraged to reference the online version of this at tclp.org and to contact TCL&P in advance for situations not covered so that the matter can be resolved prior to construction.

*Tim Arends*

Tim Arends
Executive Director

# Definitions

**Ampere Interrupting Capacity (AIC) –** A rating indicating the maximum amount of *Fault Current* the device has been tested for.
**Bonding –** Creation of a conductive path for the flow of electrical energy, typically for the purposes of *grounding*.
**Company –** In this manual it refers to Traverse City Light and Power.
**Current Transformer (CT) –** *Company*-owned devices that reduce the current to a meter to a useable level via a known ratio.
**Customer –** Party (or their agent) currently receiving or requesting TCL&P electric service.
**Direct-Connect meter base –** A meter base connected to *Customer*'s load without *CT*s.
**Drip loop –** The slack loop formed in overhead service wire at the *Customer*'s *Weatherhead* where *Customer* and *Company*-owned conductors are connected.
**Fault Current –** The current that occurs along a path of minimal impedance because of short circuit conditions.
**Flicker –** Common term for fluctuations in delivered voltage, often caused by motor or compressor starts.
**Grounding –** Proper conductive electrical pathway to earth.
**Guying –** Cables and related attachments used to secure or guide facilities or equipment (typically poles) against linear forces.
**House Meter –** A non-residential meter that is used in multiple-occupancy buildings for common purposes such as irrigation, laundry rooms, common area lighting, or fire suppression.
**Handhole –** A below ground box where secondary underground wires may be connected also referred to as a *Junction Box*.
**Instrument-Rated Meters –** Meters where the load currents are above 320A and require the use of current or potential transformers.
**Junction Box –** See *Handhole.*
**Lever Bypass –** A lever inside of a *Direct-Connect meter base* that connects the line and load jaws and allows current to flow with or without the meter in place so the meter may be removed while maintaining service to the *Customer*.
**Manufactured Home –** A prefabricated house that can be assembled in sections.
**Meter –** A device that measures electrical consumption and/or demand over a period.
**Meter Socket or Meter Base –** Equipment that meters are plugged into in order to measure electrical consumption and demand.
**Meter Pedestal –** A freestanding meter base that contains a meter socket and disconnect switches.
**Mobile Home –** A prefabricated home with a permanent chassis for mobile transportation.
**National Electrical Code (NEC) –** Adoptable standard for electrical wiring of residential, commercial and industrial building wiring, published by the National Fire Protection Association.
**National Electrical Safety Code (NESC) –** Standard for safe installation, operation and maintenance of electric transmission and distribution lines as well as communication systems. Published by the IEEE.
**Net Metering –** Additive and subtractive metering for approved *Customer*-owned and operated generation connected in parallel to TCL&P distribution lines.
**Overhead Service –** *Company*-owned overhead lines supply service to *Point of Delivery*.
**Plumb –** Truly vertical.
**Point of Delivery –** The connection point between *Customer*-owned and maintained facilities and those facilities that are TCL&P-owned and maintained. For overhead facilities, this is normally

the connections just outside of the *Customer*'s *Weatherhead*; for underground, this is typically at the termination of TCL&P's wire in the metering equipment.
**Post –** pressure treated wood or steel structure that is used to support a meter base.
**Power Factor –** The ratio of Real power used to do the work and the Apparent power that is being supplied. A *Power Factor* of 1.0 is ideal in that all power supplied is used to do work.
**Primary Voltage Service –** Voltage at the *Point of Delivery* is greater than 600 volts. Metering equipment for primary voltage service will be installed, owned and maintained by TCL&P.
**Pull Box –** A box in which the *Company* terminates its underground electrical conductors.
**Qualified Workers –** Workers who are trained and have a working knowledge to perform the work within the OSHA clearances required for the job. Qualification is determined by the Employer; however, the electrical utility may cease work if non-*Qualified Workers* are breaching *NESC* clearances.
**Raceway –** A channel designed to contain electrically conductive wires, cables or bars.
**Secondary Pedestals –** Aboveground metal or plastic boxes that are used to make *Secondary Voltage* wire connections.
**Secondary Voltage –** 600 volts or less.
**Self-Contained Meter** – Installations that do not require current transformation (see *Direct-Connect meter base*).
**Select Backfill Material –** Sand or soil material used to cover electrical conduit or conductors where sharp or foreign objects such as larger rocks are removed.
**Service –** Electrical energy supply service.
**Service Entrance Conductors –** *Customer*-owned conductors on the load side of the *Point of Delivery*.
**Service Equipment –** Equipment including, but not limited to, disconnects, meter base(s), or breaker panels owned by the *Customer* and connected to the *Customer*-owned conductors
**Service Trench –** Trench for the installation of underground conductors from the *Company*'s last facility to the *Point of Delivery*.
**Spoils –** Material removed during the creation of a trench that is placed above ground, adjacent to the trench.
**Switchboard –** A large frame or panels containing metering equipment, switches and protective devices.
**Tariff –** TCL&P's published rules and rates for the delivery of electrical service.
**Test Switch –** A device that allows the isolation of current and voltage sources by the *Company*.
**Underground Service –** *Company*-owned underground lines supply service to *Point of Delivery.*
**Unused Facilities –** *Company* equipment that is not currently being utilized to provide service to *Customer*s or is not subject to existing contracts to remain in place.
**Weatherhead –** a weatherproof cap typically on the end of a *Customer*-owned mast or *Raceway* where overhead-fed *Customer*-owned wires enter a building or continue on to feed metering equipment.

# Acronyms

**A –** Amperes or Amps
**AIC –** Ampere Interrupting Capacity
**CT** – Current Transformer
**ESR –** Electric Service Requirements
**EV –** Electric Vehicle
**IEEE -** Institute of Electrical and Electronics Engineers
**kV -** Kilovolt
**kVA –** Kilovolt Ampere
**kVAR –** Kilovolt-Ampere Reactive
**kVARh -** Kilovolt-Ampere Reactive Hour
**kW -** Kilowatt
**kWh –** Kilowatt Hour
**NEC –** National Electrical Code
**NESC –** National Electrical Safety Code
**OSHA –** Occupational Safety and Health Administration
**PUE –** Public Utility Easement
**PVC –** Polyvinyl Chloride
**TCL&P –** Traverse City Light & Power
**V –** Volts

# Introduction

The Traverse City Light and Power (TCL&P or '*Company*') Electric Service Requirements Manual is intended to be used for clarification of the *Company*'s requirements for electric service and clearances to be maintained around its facilities before, during, and after construction. It is not intended to encompass additional requirements that local, state, or federal government agencies may have for *Customer*-owned facilities.

This manual is intended to meet or exceed requirements of the *National Electrical Safety Code* (*NESC*) and the *National Electrical Code* (*NEC*) where applicable.

***NOTE*: As updates will take place from time to time, it is imperative that Customers and contractors reference online versions of this manual at *www.tclp.org*, as printed versions may be out of date. Please contact TCL&P at (231) 922-4940 or at *website@tclp.org* with any corrections, suggestions, questions or for situations not covered in this manual.**

# Obtaining New or Upgraded Service

**Applying for Service**
*Customer*s requesting new service or an upgrade of existing services must fill out an application that provides TCL&P the information needed to design any necessary changes to electrical facilities to serve the load. The application also provides the *Customer* with information regarding the process. In some cases, more extensive plans and/or electrical load information will be requested.

Apply online at the link below:

Electric Service Form

***NOTE*: It is very important that service applications be submitted to TCL&P early in the process, as design, material, and construction lead times can vary.**

# Company & Customer Responsibilities

a. **Consulting the Power Company**
While this manual is intended to provide the detailed requirements for service, it is not possible for all situations to be addressed. The *Customer* shall contact TCL&P to request clarification and written approval as necessary for special scenarios or deviations from the requirements in this manual. In addition, certain items such as meter socket locations and conduit system design require consultation with TCL&P prior to installation. Failure to obtain advanced written approval in these instances may result in denial of service until corrections are made.

b. **Adding Load & Equipment**
*Customer*s are responsible to notify TCL&P in advance of adding equipment or electrical load that could negatively affect the service to the *Customer* or others. TCL&P will require information about the load being added in order to verify that its facilities are capable of handling the additional load. If damage is caused to TCL&P equipment due to unannounced additional *Customer* load, the *Customer* will be responsible for all costs associated with the repair or replacement of damaged equipment and no line extension allowance will be applicable.

c. **Installation Materials & Labor**
Unless otherwise specified in writing, TCL&P or its contractors will supply and install *Company*-owned materials and the *Customer* shall supply and install its own materials. As further detailed in the *Company*'s *Rules and Regulations* the *Company* may supply *Direct-Connect* meter sockets to be installed, owned and maintained by the *Customer* (see **Metering Requirements**). Additionally, *Customer*s may opt to provide and install the conduit systems that have been designed by TCL&P (see **Underground Service Requirements**).

***<u>NOTE</u>: After applying for service and discussing the project with the TCL&P designer, TCL&P supplied metering equipment can be picked up at TCL&P's offices at 1131 Hastings Street, Traverse City, MI 49686. Requests for metering equipment should be done by calling (231) 922-4940 prior to arrival.***

**d. Vegetation and Accessibility**

The *Customer* shall be responsible to ensure that trees, shrubs, vegetation and other obstructions do not interfere with TCL&P access to its equipment including poles and overhead facilities, underground equipment, and metering. The TCL&P Designer will inform *Customer*s of any required vegetation management or site work needed in order to provide service. For any tree work required within 10' of overhead lines, contact TCL&P as detailed in bullet point **"g"** within this section.

**e. Protection of Customer Equipment**

All equipment necessary for the protection of *Customer* equipment is to be located on the *Customer*'s side of the Point of Deliver and is to be installed, owned, operated and maintained by the *Customer*. *Customer*s shall own and maintain electrical *Service Equipment* that is rated to withstand available *Fault Current*. TCL&P will provide a calculated maximum available *Fault Current* at the *Point of Delivery* upon request.

**f. Point of Delivery**

Unless otherwise provisioned in special contracts, *Customer*s are responsible for maintenance of *Customer*-owned facilities at or beyond the *Point of Delivery*.

**g. Activity Near Overhead Power Lines**

*Customer*s and their contractors must comply with local, state and federal laws with respect to performing activities near TCL&P overhead and underground lines and equipment in order to avoid injury, loss or damage. In the event that the *Customer* or contractor must perform work within 10' (20' with a crane or lifting equipment) of TCL&P overhead lines, please contact TCL&P at (231) 922-4940 with as much advance notice as possible. This allows TCL&P time to review the work required to make it safe (e.g.; de-energization, mechanical barriers, relocating the lines). TCL&P reserves the right to request stoppage of the work being performed unsafely in the vicinity of its lines until the work site can be made safe. Any related TCL&P work will be the cost responsibility of the *Customer* or contractor requesting it.

**h. Excavation Activities and Underground Lines**

Any *Customer* or contractor excavation requires underground utilities to be located first. Per Michigan statute Act 174 of Public Act 2013, the excavator must provide notice of at least three (3) full business days to MISS DIG 811 by phoning 811 or (800) 482-7171, or utilizing the online Remote Ticket Entry or E-Locate program at http://newtin.missdig.org/newtinweb/missdig_e-locate.html#divLogIn.

Additionally, there are rules surrounding the types of excavation that can be done which can be referenced on the MISS DIG website www.missdig.org.

**i. Disconnecting/Reconnecting to Company conductors**

*Company*-owned wire is only to be connected and/or disconnected from *Customer* facilities by TCL&P crews or their qualified contractors and **never** by *Customer*s or their contractors, even if just for temporary purposes. Additionally, *Customer*s shall not cut meter seals or remove meters in an effort to disconnect service. To request disconnection or reconnection, please call (231)922-4940; note that charges may apply for temporary disconnections requiring a crew or if requested outside of normal workhours. An electrical inspection may be required by the Electrical Inspecting Authority having jurisdiction prior to reconnection.

***NOTE:* Unused Facilities that occur because of service disconnection may be removed by the Company. In that event, a Customer request for reconnection would be treated as a request for new service under the Line Extension Policy in the Company's Tariff and subject to the provisions of this manual.**

**j. Easements and Permits**

TCL&P Designer will identify and specify easements and/or permits required for *Company*-owned facilities. The *Customer* is responsible to provide or obtain these land rights as specified in the *Company*'s Tariff Rates and Regulations. Typically, TCL&P will prepare easements and permits for its facilities and the *Customer* will prepare any public utility easements on its development plats per utility instructions. All required land rights must be acquired to the TCL&P Designer's satisfaction prior to TCL&P facility installation. These land rights will provide for the placement of TCL&P facilities and free access to install and maintain the equipment, along with the right for removal of obstructions such as structures, *Customer*-equipment, debris, trees, and vegetation.

# Service Standards

**a. Service Configurations**

60 Hz, alternating current service is available in the following configurations:

| # of Phases | Delivery Voltage | Wire Configuration | Limitations |
|---|---|---|---|
| Single | 120 V | 2 wire, grounded | 100 A; 1 HP |
| Single / Poly | 120/208 V* | 3 wire, grounded | 2500 A; load distributed evenly on all phases |
| Single | 120/240 V | 3 wire, grounded | 800 A; 3 HP** |
| Three | 120 V/208 Y | 4 wire, wye grounded | 2500 A |
| Three | 120 V/240 Delta* | 4 wire, grounded | 800 A |
| Three | 277 V/480 Y | 4 wire, wye grounded | 3000 A |
| Three | 7.97/13.8 kV* | 4 wire, primary voltage | |

**only available when pre-approved by TCL&P Designer*
***larger HP allowed with TCL&P Designer approval*

**b. Power Quality**

TCL&P will strive to provide requested voltages listed above with as few variances as possible from the standard. If the nature of a *Customer*'s electrical equipment is such that it creates power quality issues for other TCL&P *Customer*s, the *Customer* shall make required adjustments at their expense to eliminate the power quality issues or have TCL&P make system adjustments at *Customer*'s expense. It is vital that the *Customer*

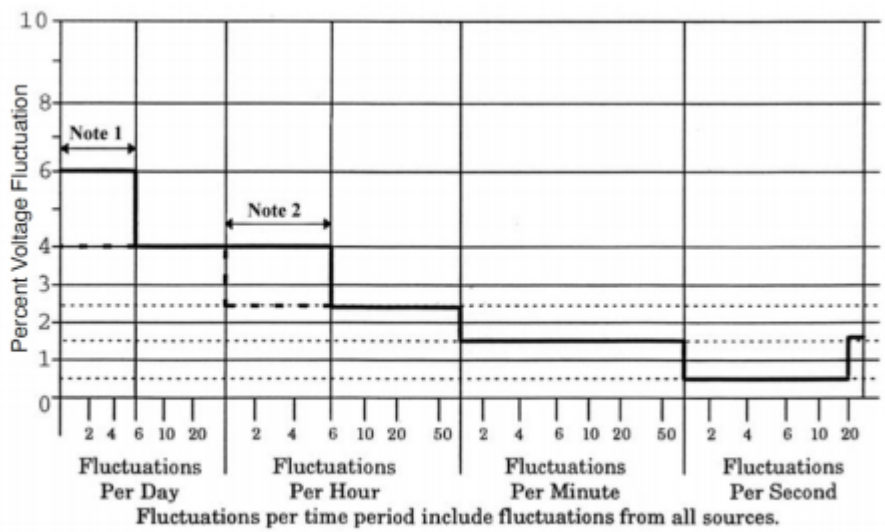
provide TCL&P information on any equipment to be added that could cause issues for other *Customer*s prior to its addition.

**i.** Steady State Voltage: TCL&P shall maintain a delivery voltage that is within 5% or less variance from the standard at the *Point of Delivery.*

**ii.** *Flicker*: Where *Customer* equipment creates *flicker* for other *Customer*s at the *Point of Delivery* beyond the limits of Figure 7.1, the *Customer* must make adjustments or pay the *Company*'s costs for the work required to bring the *flicker* to within allowable limits. If the *flicker* is self-induced and not affecting other *Customer*s, the *Customer* may, at their option, choose to tolerate *flicker* that is beyond the values in Figure 7.1.

**iii.** Harmonic Distortion: The *Customer* is responsible to filter devices that can produce harmonic distortion (e.g.; variable speed drives) such that it kept within the limits specified in the IEEE Standard 519, Section 10 as measured at the *Point of Delivery*.

**iv.** Sensitive Equipment: For equipment that is sensitive to voltage fluctuations beyond the allowable limits contained herein, the *Customer* shall be responsible for any power-conditioning devices or device setting changes required for optimum performance.




Notes 1 and 2: During evening hours, use the next lower step.

**Figure 6.1 – TCL&P Flicker Allowances (non-self induced)**

**c. Customer Generation**

**i.** Emergency Backup Generators: In order to prevent backfeed onto TCL&P lines that are de-energized, *Customer*s connecting backup generators to their wiring system must have a code-approved transfer switch that disconnects Service Entrance Conductors from the *Company*'s system prior to connection to the generator. The *Customer* must notify TCL&P prior to connection of a backup generator to their system. Transfer switch installations require inspection by the Grand Traverse or Leelanau County Electrical Inspectors.

**ii.** Net Metering: TCL&P's *Net-Metering* program allows *Customer*s to connect small-scale renewable generation in parallel to the *Company*'s distribution system. The *Customer* must apply to TCL&P prior to installation of *net metering* equipment. The process, rules and application are on the web at **www.tclp.org**.

# Equipment Clearances

This section provides clearance requirements for *Company*-owned equipment for the purposes of installation, operation, maintenance, as well as safety for the *Company* and the public.

a. Equipment clearances illustrated in Figure 7.1 are from the edges of the equipment pad.
b. If the building has an overhang, the measurement is from the overhang.
c. Tripping hazards shall not exist within the minimum clearance spaces below.
d. Bollards or other barriers may be required where equipment is subject to vehicular hazards. Permanently mounted barriers shall not be placed in a manner that will obstruct the doors of the equipment. If this is not possible, removable barriers would be necessary.

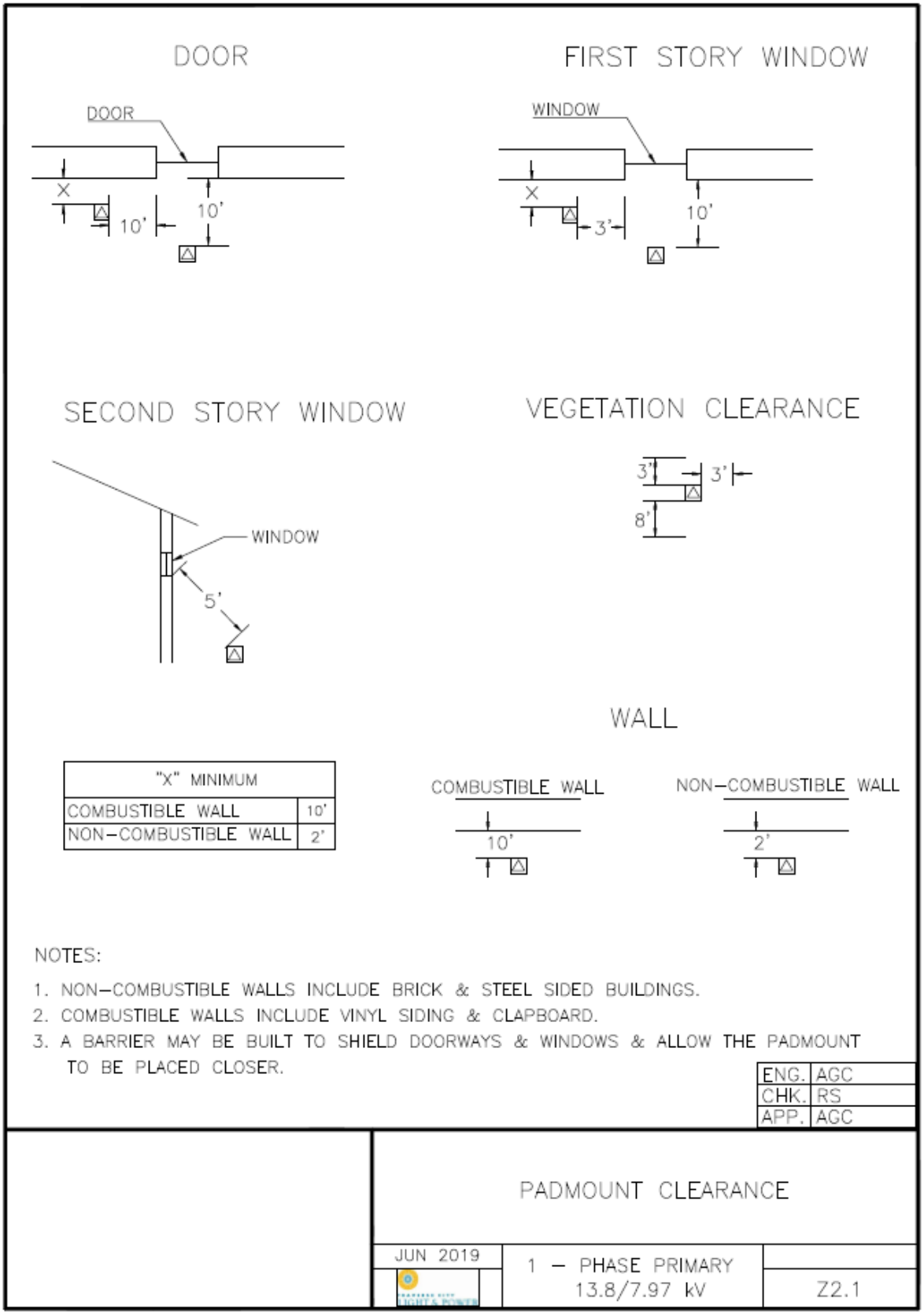



**Figure 7.1 – Padmount Clearances**

# Overhead Service Requirements

**a. Availability**

Under the City of Traverse City ordinance, new electric services within the city limits must be installed underground. In the event of a service upgrade that has existing overhead facilities, TCL&P will work with the property owner on upgrading overhead facilities. Outside of the city limits, your TCL&P Designer will determine availability. Please refer to ***TCL&P Rules and Regulations*** for more information.

**b. Installation Requirements**

**i. Service Length**

Overhead service lengths will be limited to 100' without prior TCL&P Designer approval.

**ii. Point of Attachment**

The *Customer* is responsible to provide a suitable point of attachment for TCL&P's overhead service conductors.

**iii. Service Mast Requirements**

a. Masts shall extend through the roofline unless sufficient clearances can be obtained for TCL&P's service conductors. This will be determined by the TCL&P Designer.
b. The service mast may not be any farther than 48" horizontally from the roof edge.
c. No joints are allowed above the last horizontal support (at roofline) for masts that support TCL&P service conductors.
d. Service mast must be a minimum of 2" rigid metallic conduit. The local Electrical Inspection Authority having Jurisdiction (Grand Traverse or Leelanau County) may have more stringent requirements.
e. Refer to Figure 8.1 for more detail.

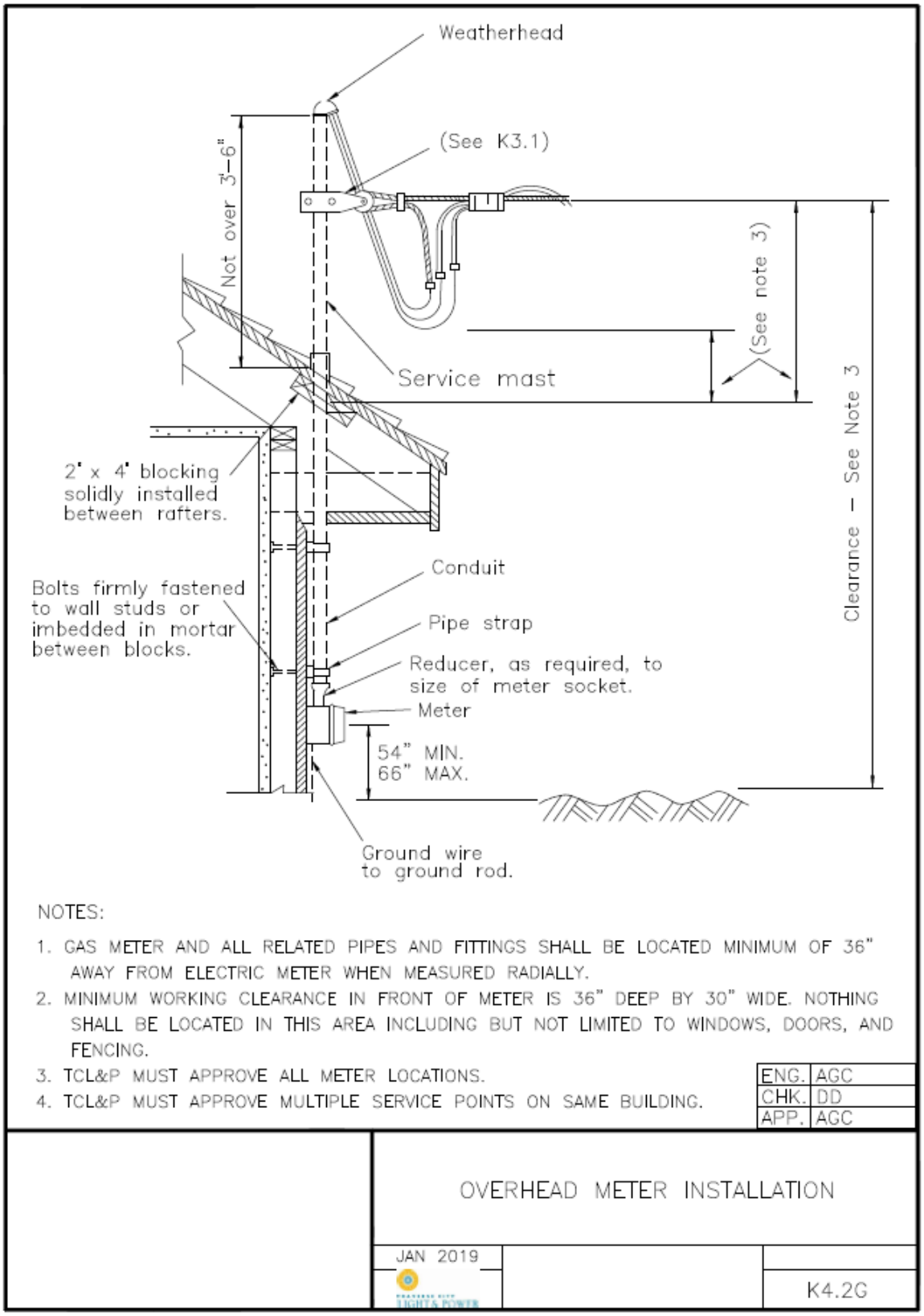



**Figure 8.1 – Overhead Meter Installation**

# Underground Service Requirements

a. **Installation Requirements**

i. **Company-installed conduit**

1. Grade must be within 6" of final before *Company* installation will be scheduled.
2. *Customer* metering equipment shall be installed prior to conduit installation by TCL&P in order to facilitate plumbing into the equipment. In the event that TCL&P agrees to install conduit prior to *Customer* installation of metering equipment, *Customer* shall be responsible to finish the plumbing of the conduit into the metering equipment as per *Company* specifications.

ii. **Customer-installed Conduit**

1. *Customer* may opt to install conduit per the *Company*'s design and specifications, provided that the installation is inspected by TCL&P prior to burial. Trench inspections may be requested with two business days' advance notice by calling (231)922-4940 ext. 243. Conduit installations that are installed without consultation and inspection by TCL&P may be rejected.
2. MISS DIG 811 - Please note that per Michigan statute Act 174 of Public Act 2013, when excavation is required, the excavator must provide notice of at least three (3) full business days to MISS DIG 811 by phoning 811 or (800) 482-7171, or utilizing the online Remote Ticket Entry or E-Locate program at: http://newtin.missdig.org/newtinweb/missdig_e-locate.html#divLogIn.

   Excavation may not start until all underground facilities have been located or the utilities have indicated that no utilities exist in the area by use of MISS DIG's Positive Response.

iii. **Typical Service Conduit Requirements**

This section references conduit requirements for typical scenarios. However, to avoid unplanned additional costs or work, *Customer*s must always consult with the TCL&P Designer prior to construction to determine final conduit design and layout.

The following table indicates typical conduit size and quantities based upon the *Customer*'s service entrance rating. As conduit sizes and quantities are determined by the service entrance size and the conductor is sized to the *Customer*'s proposed load characteristics, there may be cases where some conduits will be spare and these are to be preserved for future use by TCL&P. This is a guideline; all conduit sizes/configurations are to be determined by the TCL&P Designer.

| Number of Phases | Service Entrance Size | Conduit Size and Count | Sweep Radius |
|---|---|---|---|
| Single | 400A or less | One (1) 3” | 24” |
| Single | 401A to 600A | Two (2) 4” | 36” |
| Single | 601A to 800A | Three (3) 4” | 36” |
| Three | 200A or Less | One (1) 3” | 24” |
| Three | 201A to 400A | One (1) 4” | 36” |
| Three | 401A to 800A | Two (2) 4” | 36” |
| Three | 801A to 1200A | Three (3) 4” | 36” |
| Three | 1201A or More | Consult TCL&P | Consult TCL&P |

1. The maximum degrees of bends in service conduit will typically be 270 degrees or less.
2. All conduit to be schedule 40 gray PVC unless otherwise specified by the TCL&P Designer.
3. *Service Trench* and conduit installation is to be installed per Figure 9.1.
4. All conduit joints are to be assembled completely to the full depth of the coupling system and glued.
5. All conduits, both those initially used as well as any spares, are to be plumbed completely into the *Customer*’s *Service Equipment*.
6. The *Customer* must coordinate with TCL&P for conduit terminating at TCL&P-owned equipment. The *Customer* shall not install conduit within 2’ of existing TCL&P equipment unless directed by TCL&P.
7. *Customer* shall keep the conduit system free of dirt, water and debris prior to TCL&P installing wire. Conduits that are stubbed outside of enclosures are to be temporarily capped or taped to keep the ducts free and clear.
8. TCL&P will not be responsible for additional costs due to improper *Customer* installation of conduit systems, including damage caused by *Customer* backfill or construction area activities.
9. *Customer*-owned and TCL&P-owned conductors will not be installed in the same conduit.

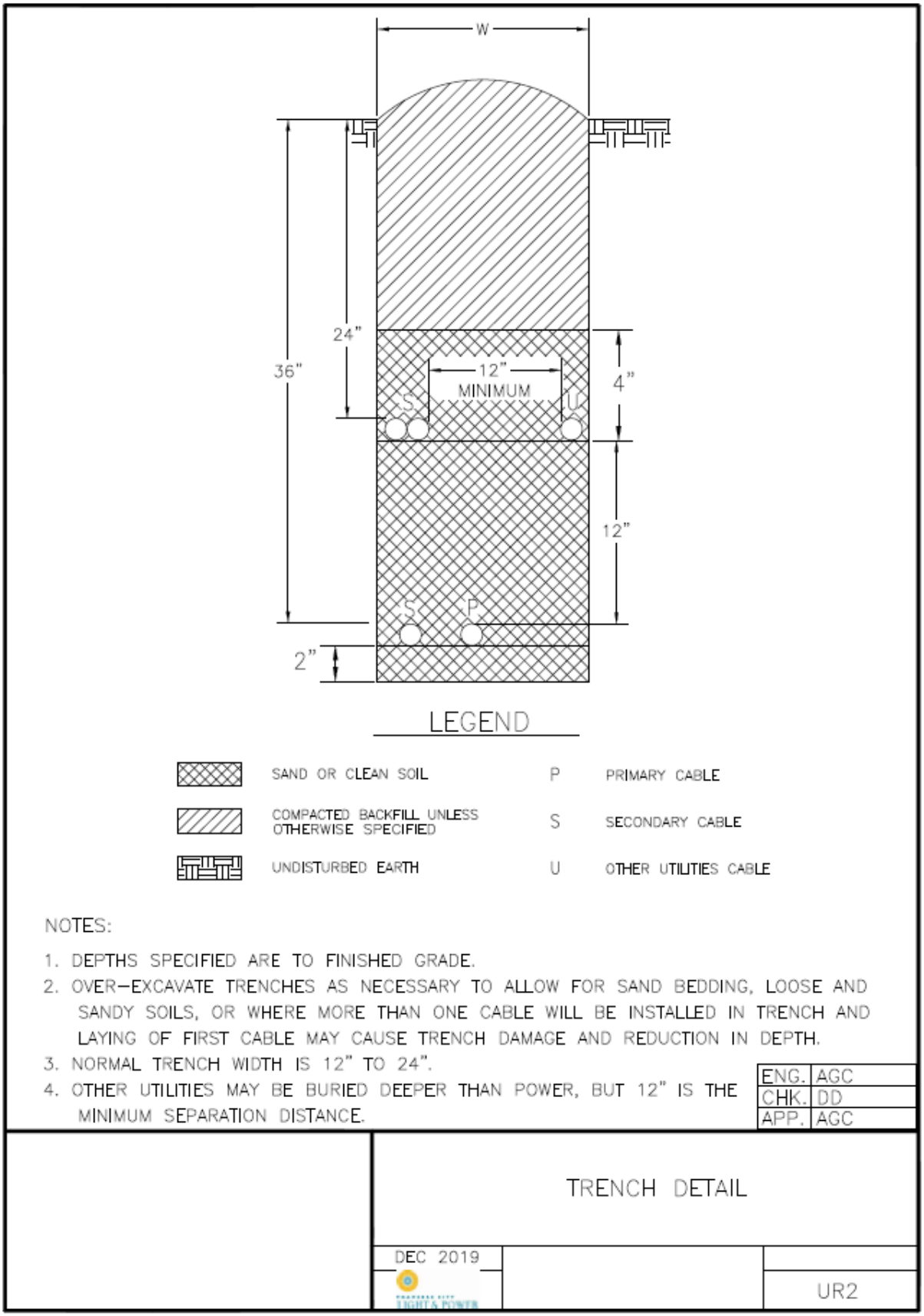



**Figure 9.1** ***Service Trench*** **Detail**

# Metering Requirements

**a. Acceptable Locations and Access**

The *Customer* is to provide 24-hour, 365 day-a-year access to metering equipment in order to allow for operation, maintenance, investigation, testing, and disconnection if needed in an emergency. Non-compliance could result in disconnection of service or even property damage related to gaining access in the event of an emergency.

**b. Clearances**

The *Customer* is responsible to provide and maintain a suitable, accessible space for metering equipment that will allow *Company* personnel to install, operate and maintain metering devices and associated service conductors at all hours. Metering equipment locations and equipment modification must be pre-approved by TCL&P prior to installation. A lack of coordination prior to installation could increase the risk that the installation may be rejected, which can result in additional *Customer* work, cost and delay in obtaining service.

Some locations that are NOT acceptable for metering:

1. In the travel lane of a drive-through or that requires personnel to stand in a vehicular travel lane.
2. Over a stairwell, window well or non-level surface.
3. On a TCL&P-owned pole or equipment (without prior permission).
4. On mobile structures.
5. Within 3' of a property line, unless the property line abuts a public utility easement.
6. Inside a house or building without prior TCL&P permission and permanent access. In the event that a meter room is allowed, any abnormal costs related to necessary meter signal boosting or physical reading will be at the *Customer*'s expense.

Figures 10.1 & 10.2 indicate clearances for self-contained and *CT* metering. The *Customer* is to keep the 36" from meter face x 30" working space in front of the meter clear of obstructions, including vegetation. TCL&P may remove vegetation as needed to gain access.

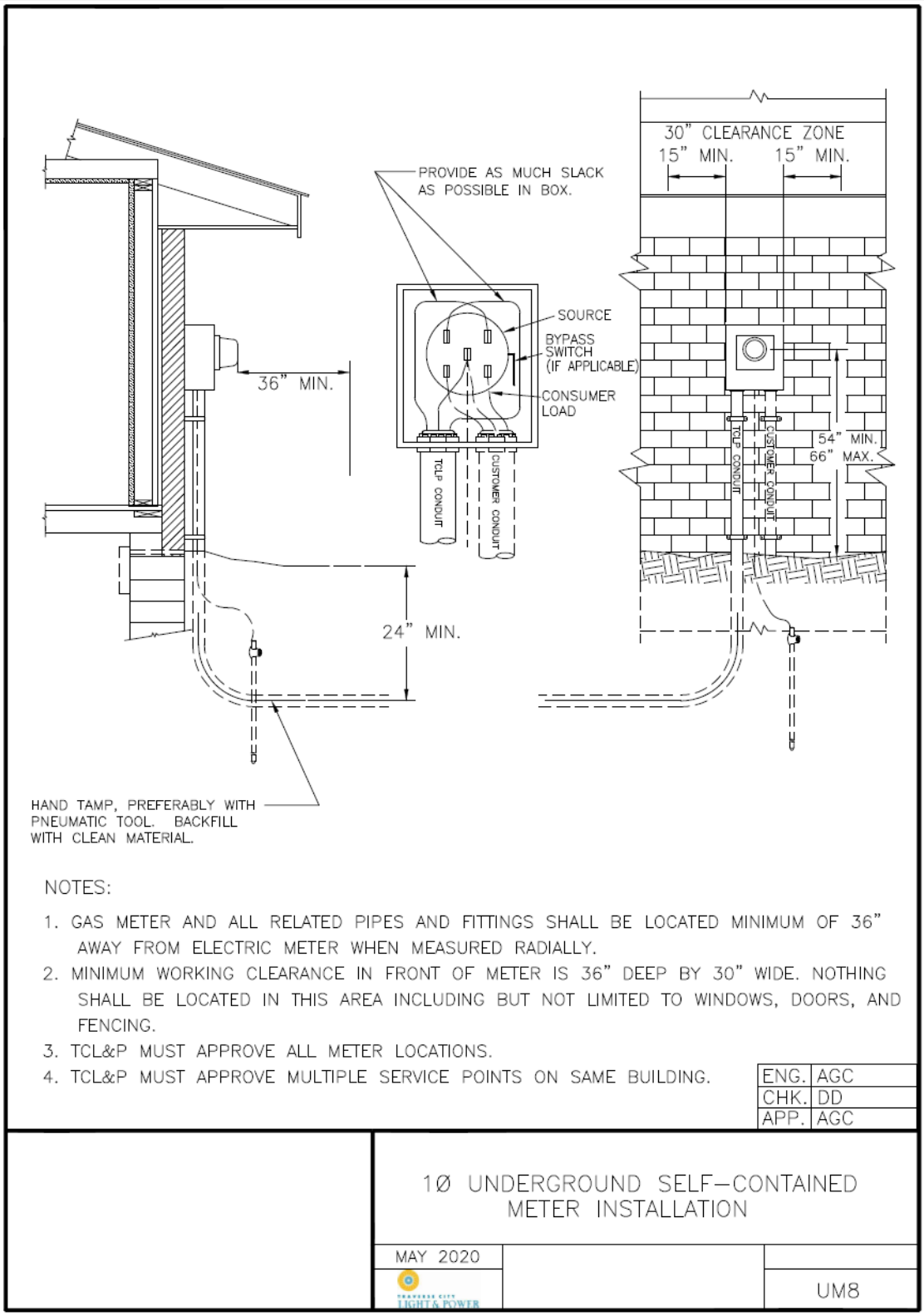
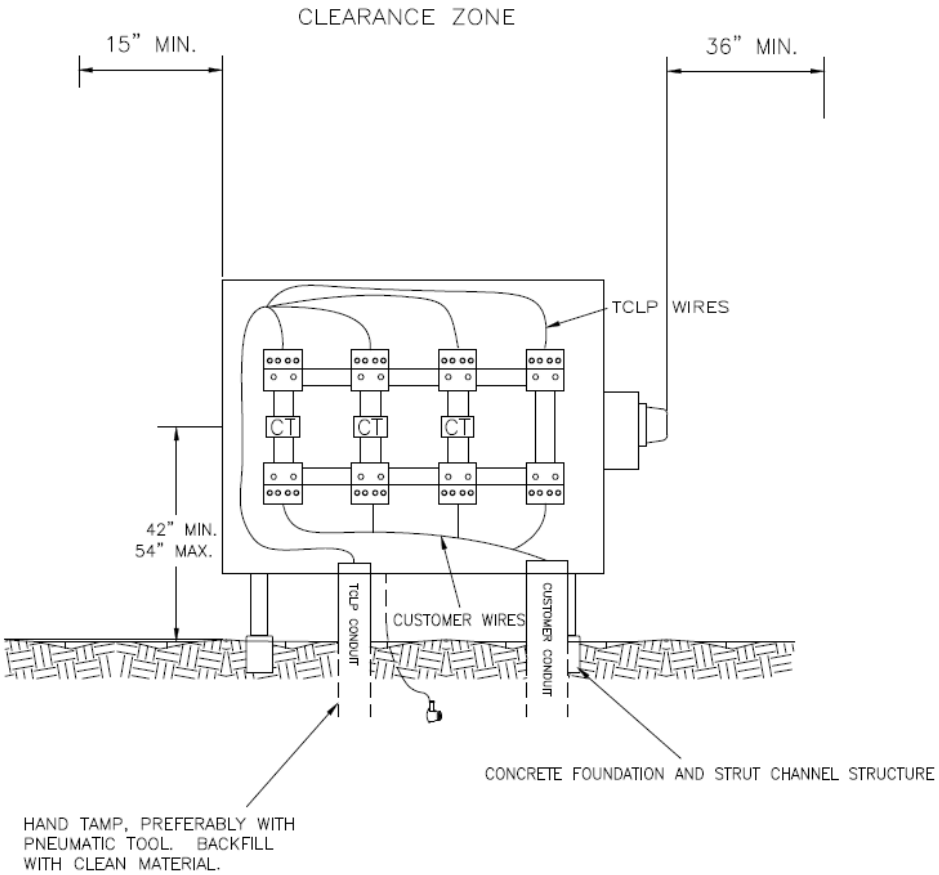



**Figure 10.1 Self-Contained Metering Clearance Detail**




NOTES:

1. GAS METER AND ALL RELATED PIPES AND FITTINGS SHALL BE LOCATED MINIMUM OF 36" AWAY FROM ELECTRIC EQUIPMENT WHEN MEASURED RADIALLY.
2. MINIMUM WORKING CLEARANCE IN FRONT OF METERING EQUIPMENT IS 36" DEEP BY WIDTH SHOWN. NOTHING SHALL BE LOCATED IN THIS AREA INCLUDING BUT NOT LIMITED TO WINDOWS, DOORS, AND FENCING.
3. TCL&P MUST APPROVE ALL METER LOCATIONS.
4. TCL&P MUST APPROVE MULTIPLE SERVICE POINTS ON SAME BUILDING.
5. TCL&P MUST APPROVE STRUT CHANNEL FOUNDATION.

| | |
|---|---|
| ENG. | AGC |
| CHK. | AGC |
| APP. | AGC |

3Ø CT CABINET INSTALLATION
FREE STANDING

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UM9.2

**Figure 10.2 CT Metering (Free Standing) Detail**

**c. Types of Metering Required**

| Type of Service | Service Entrance Size | Metering Requirements |
|---|---|---|
| Residential | <=400A | Direct Connect |
| Residential | >400A | *CT*s |
| Commercial | <400A | Direct Connect |
| Commercial | 400A | Direct Connect, *Lever Bypass* |
| Commercial | >400A | *CT*'s |
| Industrial | All Sizes | Primary Metering (TCL&P Provided) |

**d. Material Supply**

TCL&P will provide single and three phase direct connect meter bases and *CT*/termination cans for *Customer* installation. After applying for service and speaking with the TCL&P Designer, *Customer*s or their contractors may pick up metering equipment at the TCL&P offices located at 1131 Hastings Street. Upon receipt of the equipment, the installation, ownership, and maintenance of the metering equipment becomes the responsibility of the property owner.

***NOTE*: Requests for metering equipment should be done by calling (231) 922-4940 prior to arrival.**

**e. Labeling**

In cases where ganged metering, multiple meters on a building, or stand-alone meters not attached to a building are requested, engraved metal or hard plastic labels with the address/unit number will be required to be permanently affixed to the metering enclosure for identification. TCL&P will not energize the service until the meter bases are labeled.

**f. Residential**

**i. Meter Pack Requirements**

1. Shall be 5 terminal for 1Ø 120/208, fifth terminal shall be in the 9 o'clock position.
2. Shall be hot sequence.
3. Shall be ringless.
4. Shall have *Lever Bypass* for *House Meter* at a minimum.
5. *Customer* shall install a window to the outside to allow the wireless meters to communicate.

**g. Commercial**

**i. Single Meter Requirements**

1. Shall be 4 terminal for 1Ø 120/240.
2. Shall be 5 terminal for 1Ø 120/208, fifth terminal shall be in the 9 o'clock position.
3. Shall be 7 terminal for 3Ø 120/208 or 120/240.
4. Shall be ringless.
5. Shall have *Lever Bypass*.
6. Shall have knockout accommodating a 3" PVC conduit for 200 amp or below bases or 4" for above 200 amp bases.

**ii. Meter Pack Requirements**

1. Shall be 5 terminal for 1Ø 120/208, fifth terminal shall be in the 9 o'clock position.
2. Shall be hot sequence.
3. Shall be ringless.
4. Shall have *Lever Bypass*.
5. *Customer* shall install a window to the outside to allow the wireless meters to communicate.

**iii. CT Requirements**

1. Shall obtain TCL&P Designer approval for transformer *CT* installations.
2. Preferred installation is on the building with a 3' x 3' or 4' x 4' cabinet.
3. *Customer* shall coordinate with TCL&P Metering prior to terminating *Customer*-owned wire. Contact TCL&P Scheduling at (231) 932-4940 extension 243.

**h. Industrial**

**i. Secondary Service Requirements**

1. *Customer* must provide a space to mount a secondary *CT* meter cabinet to the building or space to install a secondary connection cabinet on the premises.

**ii. Primary Service Requirements**

1. *Customer* must provide space to set a primary meter to be owned by TCL&P.
2. *Customer* must own a switchgear with a means of disconnect between their transformers and TCL&P primary meter.
3. *Customer* switchgear must have fuse bays to fuse *Customer* equipment.
4. *Customer* or their contractor must coordinate with TCL&P Designer on fuse sizing for the primary switchgear.

**i. Maintenance and Replacement of Customer-owned Metering Equipment**

Maintenance of Customer-owned meter bases and *CT* cabinets are the responsibility of the *Customer*. If one of these become unusable (e.g.; TCL&P cannot install/replace/maintain meter, CTs or wire) or not securable to the public, the *Customer* must repair or replace the equipment. TCL&P will provide meter bases and simple CT cabinets for *Customer* installation. Any damage from tampering will result in costs to the *Customer.*

***NOTE*: Due to safety issues, there may be interruption in service until such time the equipment is replaced and usable.**

# Other Services

**a. Temporary Construction Service**

In areas of overhead distribution facilities, overhead temporary construction service will be the most common; conversely, in areas of underground distribution facilities, underground temporary construction service will be the most common. Please note that the type of permanent service requested by the *Customer* does not necessarily reflect the type of temporary service that will be provided. To avoid additional delays and *Customer* costs, please allow your TCL&P Designer to determine the location, available voltage, and the type of feed for the temporary construction service.

**i. Overhead Temporary Construction Service Requirements**

1. *Customer* to provide and install a minimum 20' long 6"x6" or utility grade pole installed no less than 5' deep. Note that a longer pole might be necessary in some cases to obtain clearances over the ground.
2. *Customer* to install meter socket, *grounding*, riser and Service Entrance Conductors (minimum size #6CU or #6AL) with at least 24" length outside of the *Weatherhead* for TCL&P to connect to.

**ii. Underground Temporary Construction Service Requirements**

1. *Customer* to provide and install a minimum 8' long 4"x4" or utility grade pole installed no less than 3' in the ground; speak with your TCL&P. Designer to discuss alternatives (e.g.; Unistrut, prebuilt pedestals, etc.)
2. Must be installed within 10' of TCL&P source (as directed by TCL&P Designer).
3. *Customer* to install meter socket, *grounding*, riser and enough service entrance conductor length to connect to the terminals in the TCL&P source equipment (transformer, secondary pedestal, *Handhole*).