ATCO Electric

YUKON

Customer Metering and Services Guide

Revised: May 2023

About this Guide

The intent of this guide is to provide direction for customers, consultants and electrical contractors either requiring or installing an electrical service that will be energized by ATCO Electric Yukon. This guide provides specifications for metering configurations for most services under 750 volts.

The **metering** and service specifications outlined in this publication must also comply with all applicable requirements of Part I of the current Canadian Electrical Code, the Alberta Electrical Utility Code (AEUC) and ATCO 's "Terms and Conditions", available on our website. All metering and service installations must meet these requirements. Where the design, application, location, or construction of the installation does not conform to these requirements or violates any other related Act or Code regulations, ATCO will not install metering or energize the service.

This publication and additional materials are available on the ATCO website at atcoelectricyukon.com.

Installations *NOT* covered by this Guide

Special arrangements can be made for installing service connections not specified in this guide with approval prior to installation. Consult ATCO Electric Yukon Operations and Engineering for special arrangements.

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GLOSSARY

AEUC – Alberta Electrical Utility Code

AEY – ATCO Electric Yukon

CEC − Canadian Electrical Code, Part I and Amendments

CSA − Canadian Standards Association

CT – Current transformer

Demand − The average value of power over a specified interval of time. The most common quantities are kilowatt (kW) and kilovolt-ampere (kVA) demands.

Energy − The integral of active power with respect to time, for example, kilowatt-hour (kWh).

Ground – The conductor that only carries current under a fault condition, not to be used as neutral.

Harmonics − The distortions to the voltage and current waveforms from their normal sinusoidal shape.

Instrument Transformer Metering − Using a transformer in a metering circuit to step down the current and/or the voltage to a level that can be accommodated safely by the meter.

Interval Data Metering − Revenue meters that have mass memory data storage capability.

Lockable – Provision for the Company to lock the device with a padlock, usually in the form of a hinged hasp. The Company will provide the padlock.

Measurement Canada – The federal agency that is responsible for ensuring that businesses and consumers receive fair and accurate measure in financial transactions involving goods and services. The agency develops and administers the laws and requirements governing measurement; evaluates, approves, and certifies measuring devices; and investigates complaints of suspected inaccurate measurement.

Meter Base – Typically a socket style device for the connection to a self-contained meter.

Meter Socket and Test Switch Enclosure – Meter socket with a pre-wired metering test switch for use with current and/or voltage transformers enclosed in a metal housing.

Multiple Service − A service to a building such as an apartment building or shopping centre that has two or more units and a common service entrance in which each unit is served and metered separately.

Network – Two-phase wires and the neutral from a three-phase, 4-wire wye system that forms a 3-wire service for residential type loads.

Neutral – The conductor from the transformer star point that carries the unbalanced load current and provides a reference point for the metering potentials, the “grounded” conductor.

Point of Service – The point at which the Company's service conductors are connected to the conductors or apparatus of a customer.

Rural Service – A service in a rural area.

Self-Contained Meter − A meter designed to accommodate the full line current and voltage of the circuit.

The Company – Yukon Electrical Company Ltd is the legal name of the Company, doing business as ATCO Electric Yukon.

ULC – UL Canada, safety evaluation and certification of electrical devices in Canada

VT – Voltage transformer

1 GENERAL INFORMATION

1.1 TYPES OF METERING

The type of metering specified by the Company shall depend on the class of service, size of load to be served and the applicable rate, for example, energy, kW, or kVA demand. The Company shall install, maintain, and own all meters, except for meters owned by Yukon Energy Corporation (YEC).

All meters will be sealed, maintained, and tested according to Measurement Canada standards.

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

1.1.1 SELF-CONTAINED METERING

Self-contained metering is used for metering loads where the main breaker does not exceed 200 amperes and the phase to phase voltage is not greater than 480 volts for single-phase services or 600 volts for three-phase services.

1.1.2 INSTRUMENT METERING

Instrument metering is used for metering loads where the main breaker is greater than 200 amperes and/or when the phase to phase voltage is over 480 volts for single-phase services or 600 volts for three-phase services.

1.1.3 ENERGY AND DEMAND METERS

Where a service is billed under a distribution rate with measured demand charge, a demand meter is required. Residential services require energy only meters.

1.2 STANDARD THREE-PHASE METERING CONFIGURATION

All new three-phase services are to be 4-wire wye (Star) systems, metered three-element, with the neutral (grounded conductor) forming part of the metering circuit. The neutral conductor must be connected between the transformer or point of supply and the metering point of all three-phase, 4-wire wye systems. The neutral must be grounded at the main service disconnect. The use of an isolated neutral block is necessary when the metering point is on the load side of the main service disconnect.

1.3 PRIMARY METERING

Primary metering is available for multi-voltages or services normally over 1000 kVA. If primary metering is desirable, the customer is not responsible for metering. The Company will supply and install all the metering materials.

1.4 PADMOUNT METERING

Padmount metering is available for services greater than 200 amperes and the padmount transformer serves only a single customer. If padmount metering is desirable, the customer is not responsible for metering. The Company will supply and install all the metering materials.

1.5 CLEARANCES FOR CUSTOMER OWNED OVERHEAD CONDUCTORS

When the customer supplies and installs secondary overhead conductors, the conductor clearance shall satisfy CEC and Yukon Electrical Inspections requirements.

1.6 STANDARD SUPPLY VOLTAGES

The following tables show the Company's standard overhead and underground voltage, phase, and load configurations. Not all standard voltages are available at all service locations.

Table 1-1 Standard Overhead Supply Voltages

Service Voltage	Phase/Wire	Transformer Load Range (kVA)	Full Load Range Line Amperes (A)	
120/240	single-phase, 3-wire	25 to 100	@ 120 V 83 to 400*	@ 240 V 41 to 400*
120/208Y	three-phase, 4-wire	30 to 150	83 to 400*	
277/480Y	three-phase, 4-wire	30 to 150	36 to 180	
347/600Y	three-phase, 4-wire	75 to 150	72 to 144	

*Note: Full load amperes limited by standard overhead conductor sizes. Customer owned riser and underground cable to overhead transformer may be able to provide full capacity of transformer size.

Table 1-2 Standard Underground Supply Voltages

Service Voltage	Phase/Wire	Transformer Load Range (kVA)	Full Load Range Line Amperes (A)	
120/240	single-phase, 3-wire	50 to 167	@ 120 V 416 to 1391	@ 240 V 208 to 696
120/208Y	three-phase, 4-wire	75 to 750	208 to 2082	
277/480Y	three-phase, 4-wire	75 to 2500	90 to 2500**	
347/600Y	three-phase, 4-wire	150 to 2500	144 to 2406	

**Note: Full load amperes limited by standard conductor size (500MCM Cu) and number of cables attached to a standard transformer (6).

1.7 NON-STANDARD VOLTAGES OR TRANSFORMER RANGES

Non-standard service may be provided at any required voltage or transformer range under mutually, satisfactory agreed terms. Requests for non-standard voltage supply or transformer ranges must be approved by the Company.

1.8 VOLTAGE OPERATING CONDITIONS

All services are alternating current 60 hertz. The normal system voltage and voltage limits at the service entrance are as specified in the CSA CAN3-C235-83 - Preferred Voltage Levels for AC Systems, 0 to 50,000 volts. The Company maintains the steady state voltage within the following limits as stipulated in CSA CAN3 C235.

Table 1-3 Voltages Recommended by CSA CAN3 C235

Type	Low $SUPE_{99}$ 99.9%	$SUPE_{95}$ 95%	Declared V_d	$SOPE_{95}$ 95%	$SOPE_{99}$ 99.9%
single-phase	106	110	120	125	127
	212	220	240	250	254
	424	440	480	500	508
	530	550	600	625	635
three-phase, 4-wire	110/190	112/194	120/208	125/216	127/220
	220/380	224/194	240/416	250/432	254/440
	245/424	254/440	277/480	288/500	293/508
	306/530	318/550	347/600	360/625	367/635
three-phase, 3-wire	212	220	240	250	254
	424	440	480	500	508
	530	550	600	625	635
% 10 minute	**-11.7**	**-8.3**	**--**	**+4.2**	**+5.5**

SUPE – Steady state Under Potential SOPE – Steady state Over Potential

Table 1-3 states that 99.9% of the time the utility will not drop below $SUPE_{99}$ and that 95% of the time, the utility will not drop below $SUPE_{95}$. According to IEEE standard 1159, long duration voltage variations are greater than 1 minute; thus, the indicators above will capture these variations.

For additional details, contact The Company for Engineering support.

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1.9 OWNERSHIP OF FACILITIES

The Company retains full title on all equipment, lines, and apparatus which it provides in extending service and metering the electricity supply. Instrument transformers provided by the Company and installed by the customer remain the property of the Company.

1.10 "TERMS & CONDITIONS" AND PRICE SCHEDULES

Information on ATCO's "Terms & Conditions" and Price Schedules are available at any ATCO Electric Yukon office or at atcoelectricyukon.com.

2 APPLICATION FOR SERVICE AND GENERAL REQUIREMENTS

The customer should apply for service early in the planning stage of the project for the Company to meet the customer's needs, to determine the best service arrangement, and to provide the time to obtain necessary equipment.

Contact the local Company office, call 867-633-7000, or see application requirements at atcoelectricyukon.com.

The customer shall provide the Company with the necessary information regarding the type of service, connected loads, timing, service voltage, proof of land ownership, legal land description and a detailed site plan. A service agreement may be required with the Company's "Terms & Conditions" and the price schedule applicable to the service. A customer contribution may be required.

2.1 SERVICE VOLTAGE AND LOCATION

The service voltage is the voltage and phase(s) requested by the customer. Each service will be at one of the standard voltages listed in section 1.6 Standard Supply Voltages and will be metered appropriately. Requests for non-standard voltage supply must be approved by the Company. The service location on the customer's premises is subject to approval of the Company.

2.2 SERVICE ENTRANCE DRAWING REQUIREMENT

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

2.3 ACCESS

The Company has the right and will endeavor to make reasonable arrangements to enter the customer's property or premises to install, inspect, read, change, maintain and remove its facilities.

For Company facilities located within locked customer premises, the customer shall provide a means of access.

In subdivisions, the developer shall provide easement at no cost to the Company where required for access and for providing service extensions to each parcel of property.

2.4 WORKING SPACE AND ELECTRICAL ROOMS

Working Space

Working space around metering equipment shall comply with CEC Rule 2-308 and 2-312.

The customer shall:

- Provide and maintain a minimum working space of 1 m in front the meter, 1 m wide or panel width whichever is greater and 2.2 m headroom with secure footing.
- Keep passageways and working space clear of obstructions and be sure not to use passageways and working space around metering equipment for storage.
- Ensure the room is permanently and visibly identified.

Entrance to, or Exit from, Working Space and Electrical Rooms

Entrance to, and exit from, working space around metering equipment shall comply with CEC Rule 2-310. The customer shall:

- Provide at least one entrance of sufficient area and clearance to give access to the working space about metering equipment.
- Provide unobstructed means of egress in compliance with the National Building Code of Canada.
- Ensure doors or gates are capable of being readily opened from the equipment side without the use of a key or tool.
- Provide two points of exit or a minimum of 1.5 m of unobstructed working space for service up to 1200 amps or more, or rated over 750 volts. The exits shall be arranged in such a manner that a worker would not have to pass by the fault location on the way to exit from the room.

2.5 METER LOCATIONS

All metering and service locations shall be approved by the Company prior to installation.

Meters and metering equipment shall be:

- Located in a safe location.
- Located at a minimum distance in accordance with the requirements of CSA B149.1-10 from any combustible gas relief device or vent. The minimum distance specified in CSA B149.1-10 is 1 m from diesel and 3 m from propane gas.
- Readily accessible by the Company personnel to perform meter changes, testing and meter reads.
- Weatherproof construction or in weatherproof enclosures if mounted outdoors.

Meters and metering equipment shall not be located in unsafe or unsuitable locations such as:

- Alleyways or areas where the meters are unprotected from moving equipment, in the path of water from eaves or rain spout or where the meters may be subject to steam or corrosive hazardous vapors;
- Biologically hazardous areas, poultry/pork or any other livestock facilities where the spread of disease or virus is possible including directly under any vents or fans that move air to or from the building;
- Areas where the ambient temperature is high or where there is too much moisture;
- Open pits;
- Areas near moving machinery;
- Hatchways, closets or stairways;
- Coal bins, rooms or cellars;
- Explosive areas; or
- Areas where there are noticeable vibrations.

2.6 SPLITTER BOX LOCATION

A splitter box must not be installed ahead of the meter or service disconnect.

The instrument transformer enclosure **cannot** be used as a splitter box.

2.7 LB's

These are not permitted prior to the meter. Special permission from the Company is required prior to installation. There may be special conditions attached to approval for LBs.

2.8 ELECTRICAL PERMIT

A copy of a signed electrical wiring permit shall be presented to the Company before the electrical service is connected on a new, altered, or relocated service.

2.9 ELECTRICAL BILLING ACCOUNT

The customer shall have the site enrolled and an account opened with the Company before the service can be energized. Any person acting as an agent of a customer may apply for a service connection on behalf of the customer. The agent must provide the Company, in a form acceptable to the Company, verifiable authorization from the customer to make the application.

2.10 RELOCATIONS

Where a building extension encloses or interferes with existing metering, the Company will relocate the service at the customer's expense.

The Company will, at the request of a customer, relocate the facilities installed to service the customer, provided the customer pays all costs of such relocation. There will be no charge to relocate only the meter and overhead service conductors.

2.11 MODIFICATIONS

Customers shall obtain written approval from the Company before modifying an existing service which may affect the metering. The customer may be charged for costs associated with any change required to the Company's facilities due to the service modification.

2.12 LOAD CHANGES

The customer shall advise the Company in writing of any changes to the load requirements so that the Company can determine if service changes are required to accommodate the increased load. The customer shall provide sufficient time for the Company to obtain equipment and make the necessary changes. If the customer has not obtained permission from the Company, the customer can be held responsible for any damage to the Company's property or equipment resulting from a major change in the load.

2.13 HARMONIC LOADING ADDITIONS

The customer shall notify the Company when harmonic-generating loads such as Variable Frequency Drive (VFD) motors are added to an existing utility transformer. Harmonic emission limits to the distribution system are presented in the "System Standard for the Installation of New Loads," found on the ATCO website (atco.com).

Depending on the new harmonic levels, the utility transformer may need to be replaced with a larger transformer to cope with the additional harmonic emissions. As explained in IEEE C57.110-2008, under harmonic conditions, transformers will experience additional heating and stress, and de-rating may be required. The customer shall be responsible for any incremental costs associated with the transformer change.

2.14 HARMONIC DISTORTION

All customers with loads producing harmonic distortion shall comply with the "the "System Standard for the Installation of New Loads," found on the ATCO website (atco.com). This document is largely based on both the IEEE 519−2014 "IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems" and CSA 61000-3-6 with some ATCO adaptations from both standards. ATCO's standard outlines the procedures, information, and technical requirements to be observed from the initial design stages to the energization of the harmonic producing load installation.

2.15 THREE-PHASE LOADS

The customer is responsible for single-phase protection on three-phase loads.

2.16 ELECTRONIC LOADS

The customer is responsible for protecting all sensitive electronic loads against transients caused by such events as lightning or utility switching.

2.17 NON-STANDARD SERVICES

Service and metering requirements not covered in the guide are to be discussed with the Company. The customer shall submit three sets of drawings of the service entrance, service location and service and metering layout to the Company. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. The Company will work with the customer to meet their needs.

2.18 POWER FACTOR

The customer shall design, install, and operate the customer's facilities in such a manner as to maintain a power factor of no less than 90%. The Company may require any customer who is not satisfying this power factor requirement to furnish, install and maintain at no cost to the Company, such corrective equipment as the Company may deem necessary under the circumstances. Power factor is defined in the YUB approved Terms and Conditions.

2.19 ELECTRIC HEAT

Electric heat is not allowed in areas where the primary source of electricity is diesel generation unless approved in advance by the Company in writing.

2.20 SINGLE PHASE MOTOR SIZE

In areas where the primary source of electricity is diesel generation, single phase motors larger than 5 horsepower (3.73kW) are not allowed unless equipped with soft start.

2.21 WINTER CONSTRUCTION LIMITATIONS

The winter season is from October 16th to May 14th. We will not install cables in temperatures colder than -20 degrees centigrade. The customer is responsible for snow removal, trench settling & returning trench to final grade and for costs over and above normal summer construction. The Company reserves the right to terminate construction at its discretion to ensure installation quality and reliability is not compromised.

The ground near poles or anchors installed during winter conditions may settle or the pole may lean due to frozen fill. The customer is responsible for any costs related to repair the settled ground or straightening any pole due to installation done in winter conditions.

Should existing weather conditions warrant the start date for winter construction may be earlier than October 16th, and summer season may be later than May 14th

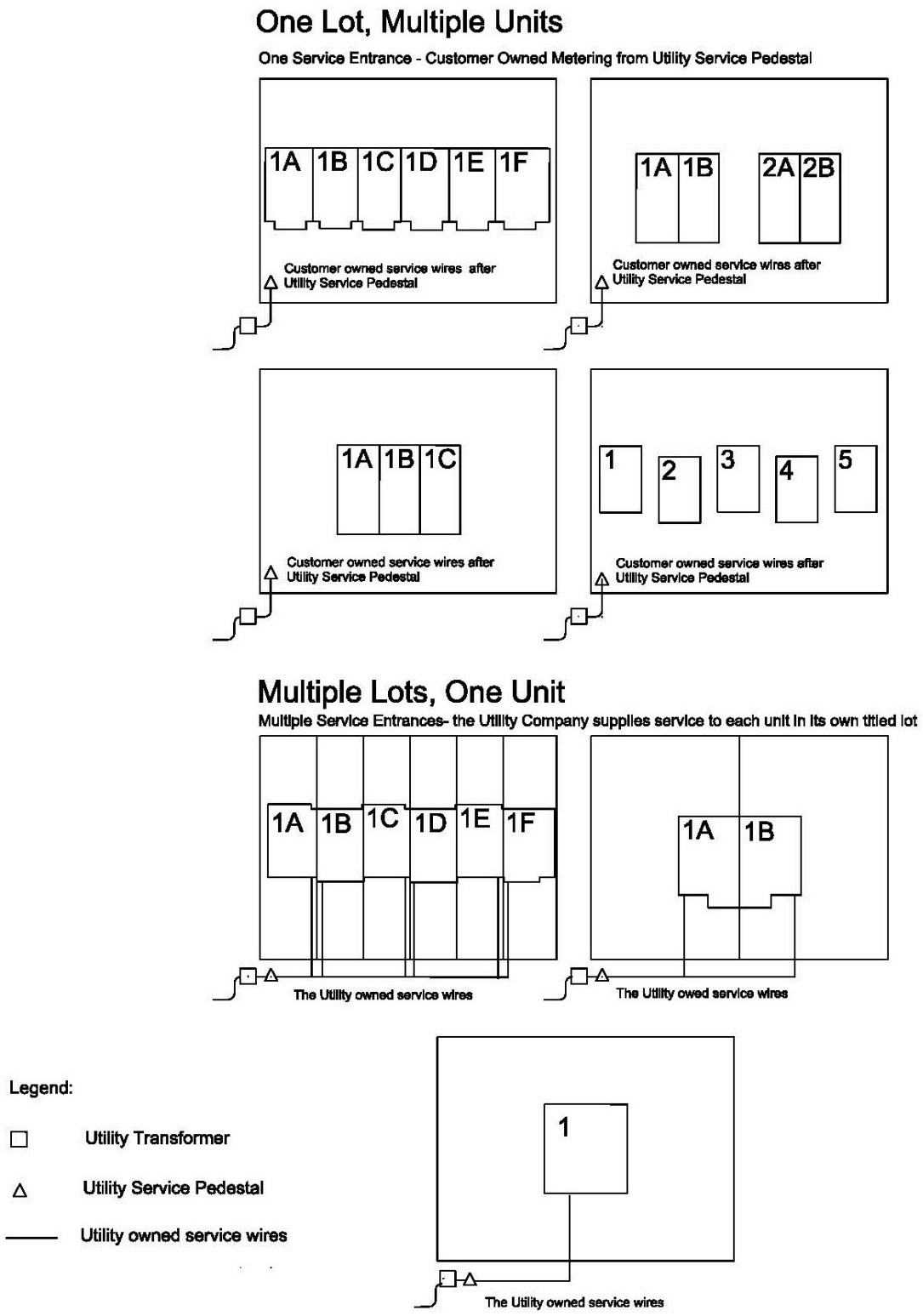
3 RESIDENTIAL SERVICES

Residential services are generally self-contained metering services to an urban or rural house or dwelling.

General Requirements

- Self-contained metering shall be located on the line side of the customer's main breaker when the line to line voltage does not exceed 300 volts and the main breaker rating does not exceed 200 amperes.
- Metering shall be located on the load side of the customer's main breaker when the line to line voltage exceeds 300 volts. The neutral conductor shall be isolated from the meter socket case.
- Metering shall be located on the outside wall of the house except for rural residential services which may utilize pole metering.
- Where recessed metering is installed in a wall, a clear space of not less than 0.2 m on either side of the centre line of the meter base and 1.0 m in front of the meter is required, to provide the Company access to the meters.
- The centre line of the meter socket shall be 1.3 to 1.8 m with the preferred height of 1.5 m above the finished grade or permanent platform. Meter locations must meet requirements in section 2.5.
- Winter construction (October 16th to May 14th) if required by the customer will involve the trench and backfill being provided at the customers expense and must be approved by the Company in writing. See section 2.21.
- All alternative locations or arrangements must be approved in advance by the Company in writing.
- See Drawing 3-1 Service Options for Residential Lots
- Residential services in urban areas with an overhead electrical system must have overhead services. Residential services in urban areas with an underground electrical system must have underground services. Any deviations need to be approved in advance by the Company.

Drawing 3-1 Service Options for Residential Lots



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3.1 SINGLE-PHASE RESIDENTIAL SERVICES − SELF-CONTAINED METERING

Single-phase, self-contained metering is used for residential services where the main breaker rating does not exceed 200 amperes.

General Requirements

- The standard supply is single-phase, 3-wire 120/240 volts. Some areas may be supplied with 3 wire 120/208 volts.
- Metering shall be located on the line side of the customer's main breaker.
- A 4-jaw meter socket shall be used. For connection details, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V. Customer to confirm supply voltage with the Company.
- For network 3-wire 120/208 volt services, a 5-jaw meter socket shall be used as shown in Drawing 10-2 Socket Connection Diagrams - Network 3-Wire 120/208 V. Customer to confirm supply voltage with the Company.Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V
- Meters can be up to 216 mm (8½") in depth; therefore, sufficient clearance must be taken into consideration when installing the meter on a wall, in a cabinet or in an enclosure.

3.1.1 MOBILE HOME PARKS AND SERVICES TO MULTIPLE SINGLE FAMILY DETACHED HOUSES ON ONE TITLED PROPERTY

General - Mobile Home Parks

Mobile home parks are generally supplied with underground services.

In a mobile home park, the primary wires including transformers will be owned and operated by the company. Any wires after the delivery point will be owned, operated, and maintained by the customer. The meters shall be located in either metering centres or service pedestals. Meters on individual units in a mobile home park will not be permitted.

General - Mobile Home Subdivisions

At mobile home subdivisions where there are individual titled properties the electrical meters will be installed on the individual residences.

The customer shall:

- supply and install the metering centre or meter pedestals with breakers on the line side of the metering.
- have provisions to seal the unmetered sections of the metering centre.
- supply and install the wiring and trenching from utility delivery point (Service Pedestal) to the meter centres.
- operate and maintain this service.
- make the secondary cable connections in the service pedestal under the supervision of utility employee.
- Follow the requirements in section 3.1.3

The company shall:

- supply and install electrical meter/meters.
- provide the supervision for the customer to connect to utility service pedestal.

3.1.2 OVERHEAD RESIDENTIAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 1 m out of the weatherhead and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead including connectors. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.

3.1.3 OVERHEAD RURAL SERVICES ≤ 200A BREAKER CABINET FOR CUSTOMER UNDERGROUND

Also referred to as “Farm Service” or “Rural Breaker Cabinet with Splitter”

The customer shall:

- Supply and install all wiring, equipment, and facilities on the load side of the meter. For details see Drawing 3-2 Overhead Rural Breaker Cabinet with Splitter
- Install 2-inch rigid PVC conduit into the bottom of the metering cabinet for customer cable

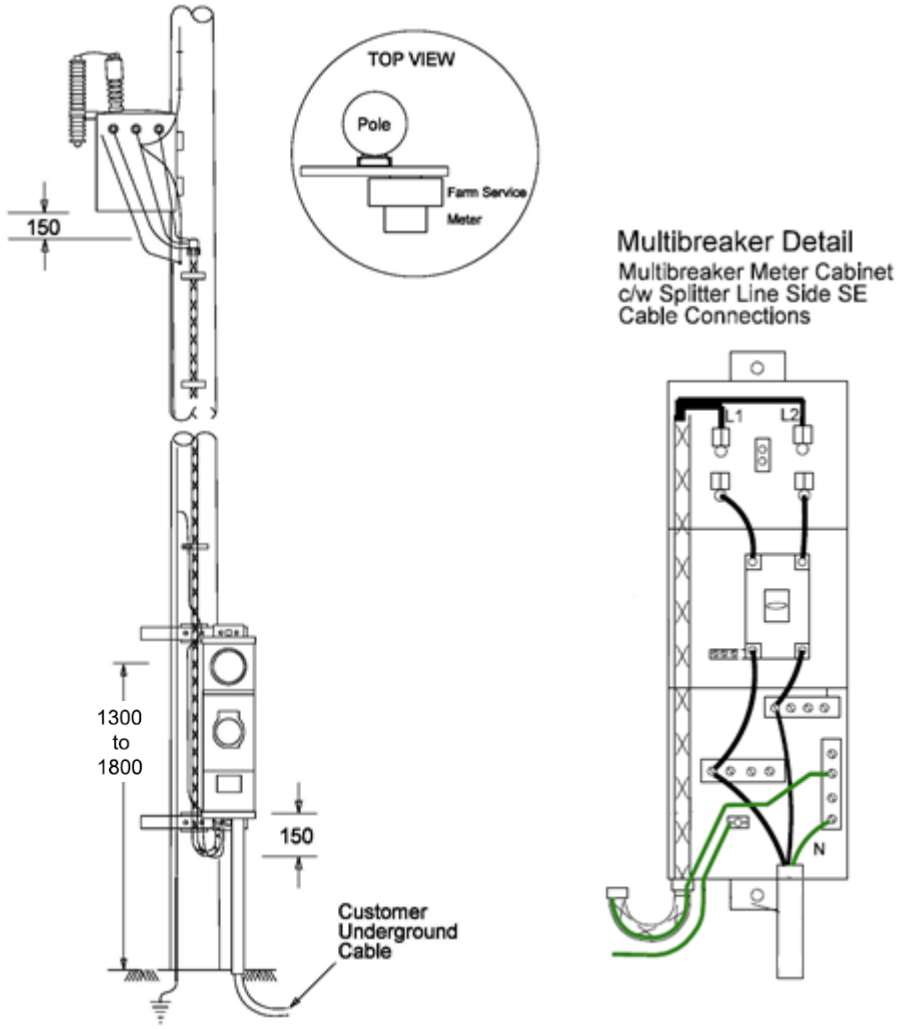
The Company shall:

- Supply and install all primary facilities required for **pole metering** including the multi-breaker meter cabinet, the SE cable, and the pole.
- Supply and install the meter.
- Supply and install the breaker.

Notes:

- The Company owned breaker cannot be considered as the customer service disconnect in the Yukon Territory.
- The standard supply is single-phase, 3-wire 120/240 volts.
- A 4-jaw meter socket shall be used. For the connection diagram, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V.

Drawing 3-2 Overhead Rural Breaker Cabinet with Splitter



Notes:

1. Meter height can be raised to prevent cattle rubbing.
2. If possible, ensure that placement of equipment is such that it does not obstruct the view of pole details, showing height and class, etc.
3. Point of Service is at the breaker.
4. The breaker is provided and owned by the Company.
5. Customer must install rigid PVC conduit from the inside the splitter cabinet to 300mm below grade to prevent cable shield or neutral contacting the box enclosure.

3.1.4 URBAN RESIDENTIAL SERVICES ≤ 200 A IN UNDERGROUND SERVED SUBDIVISIONS

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base. The base shall not have a shorting device.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Ensure the meter base location is within 3 meters of the closest corner of the residence (including attached garage) closest to the stub-off to allow a straight run of service cable from the stub-off to the meter (without crossing any other utilities such as sewer or water).
- Contact the company prior to building construction to:
    1. Confirm location of the existing service cable stub-off on the property
    2. Discuss recommended service entrance location with respect to minimizing the costs for installation of the underground service
- Arrange for the electrical cable locate prior to excavating for water/sewer hookups, and prior to lot landscaping or fencing

The Company must approve in writing any other service entrance locations. It is not permitted for the Company's underground service cable to be routed underneath buildings, houses, garages, deck, porches, sheds, trailers, or mobile homes. Clearances from fuel tanks and lines shall adhere to the CEC regulations.

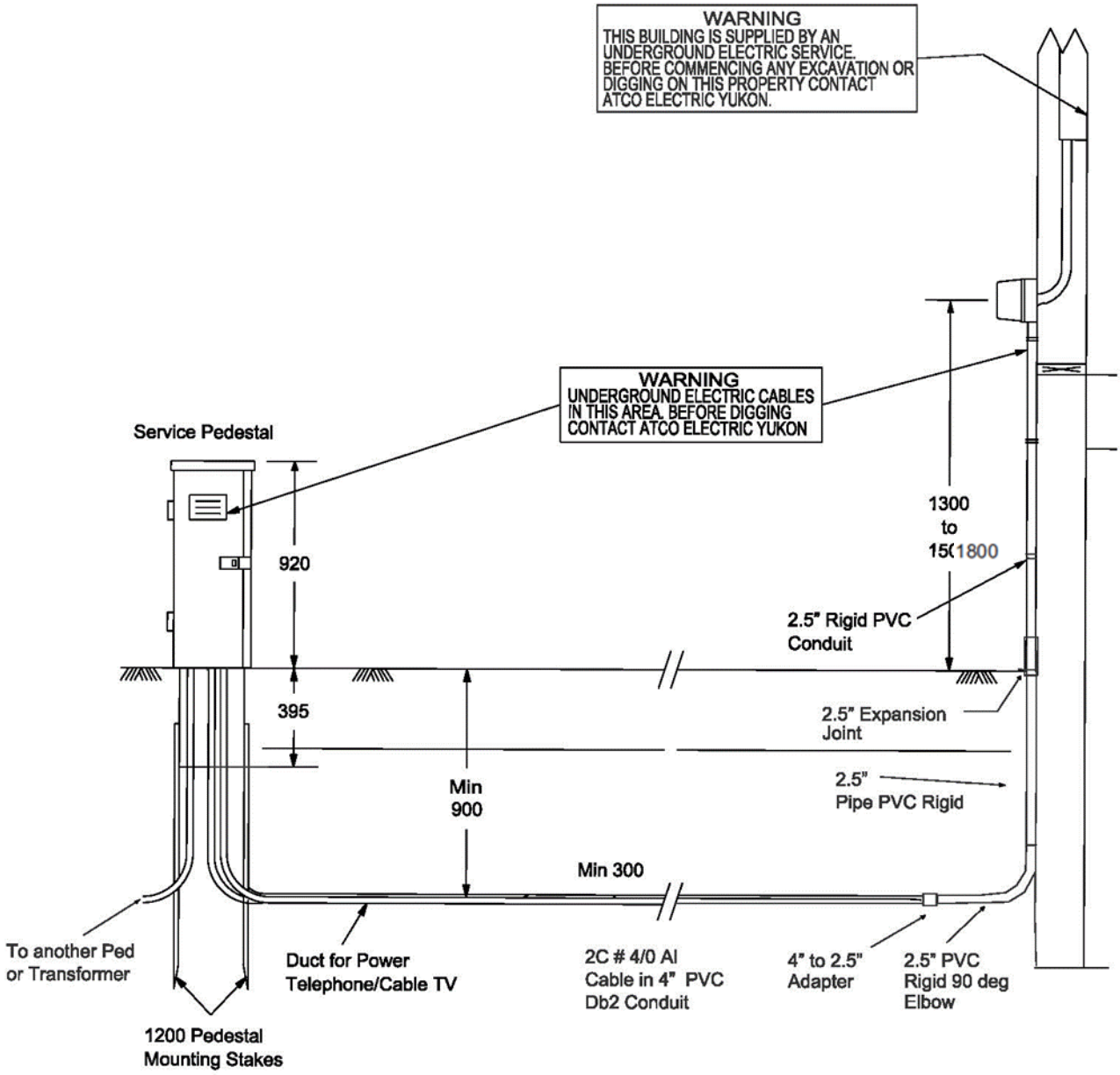
The Company shall:

- Supply and install all facilities required for electrical service up to the line side of the meter base including conductors and connectors from the service pedestal or transformer within 3 m of the nearest corner of the house or attached garage.
- Allow for joint use of the trench with other utilities such as communications when feasible
- Supply and install the meter.
- Supply and install the conduit to the meter socket on the line side. For details, refer to Drawing 3-3 Underground Residential Pedestal, Service and Cable Stubbing Arrangement .

The Company reserves the right to terminate underground service construction at its discretion to ensure installation quality and reliability is not compromised. Based on historical experience this termination date will effectively be October 16th. The actual termination date may be earlier and is based on local weather and soil conditions. See section 2.21.

Drawing 3-3 Underground Residential Pedestal, Service and Cable Stubbing Arrangement

Dimensions are in mm



3.1.5 UNDERGROUND RURAL SERVICE ≤ 200 A

The customer shall:

Supply and install all wiring, equipment, and facilities on the load side of the meter. For details, refer to Drawing 3-4 Pedestal Metering for Underground Rural Service.

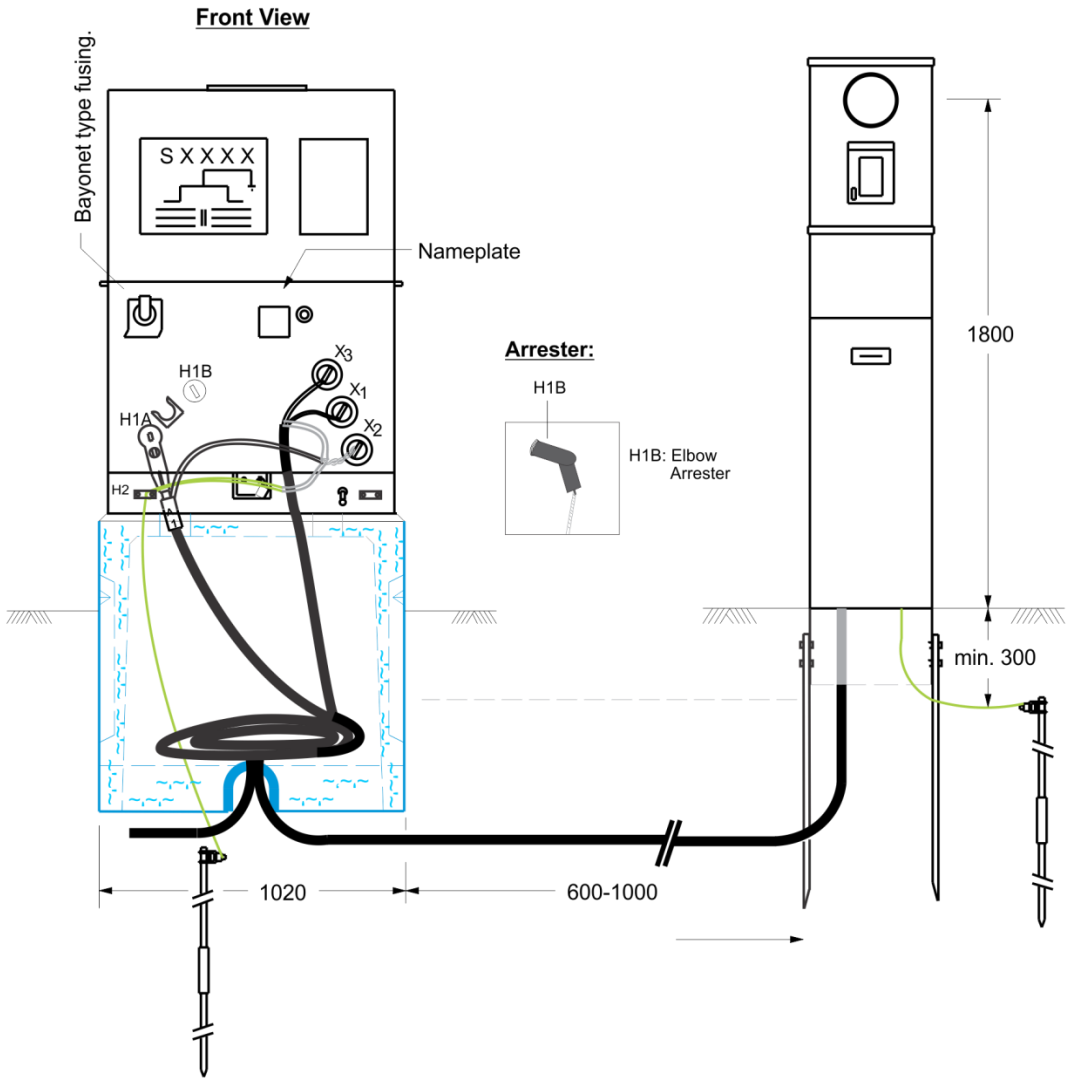
The Company shall:

- Supply and install the primary facilities required for electrical service to the line side of the meter including the transformer, the metering pedestal, the line side underground cable and the breaker.
- Supply and install the meter.

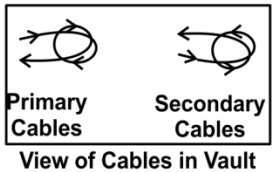
Notes:

- The Company owned breaker cannot be considered as the customer service disconnect in the Yukon Territory.
- The standard supply is single-phase, 3-wire 120/240 volts.
- A 4-jaw meter socket shall be used. For the connection diagram, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V.

Drawing 3-4 Pedestal Metering for Underground Rural Service



Primary cables should have one loop left down in the vault. These loops will be coiled in a clockwise direction. Ensure that the primary cables are not crossed when they are brought out of the vault. Secondary cables should have one loop left down in the vault. These loops will be coiled in a counter-clockwise direction.



View of Cables in Vault

Ref: DCSM SAS-R381-1 (2007-10-30)
Scale: Not To Scale
Dimension: mm

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3.2 MULTIPLE RESIDENTIAL DWELLING

Each individual unit, within a multiple dwelling (apartment or condominium building), shall be served as a separate Point of Service and metered on an individual basis, unless the Company agrees otherwise. Common use areas such as hallways, lobbies and laundry rooms will be billed under the applicable general service price schedule. Urban multi residential dwellings include apartment buildings, duplexes or four-plexes.

General Requirements

- All metering shall be located inside of the building in the same room. For details, refer to
- Drawing 3-5 Multiple Services in a Dwelling.
- For single-phase, 3-wire 120/240 volt services, a 4-jaw meter socket shall be used as shown in Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V.
- For network 3-wire 120/208 volt services, a 5-jaw meter socket shall be used as shown in Drawing 10-2 Socket Connection Diagrams - Network 3-Wire 120/208 V.
- Each individual unit, including common use areas, within a multiple dwelling will be served as a **separate** Point of Service and metered on an individual basis, unless the Company agrees otherwise.
- Lots that have/will have strata or condo association ties to the lot or have a strata or condo association building on the lots will be served by a single service entrance.
- See Drawing 3-1 Service Options for Residential Lots for servicing options
- There shall not be any cover built on the main breaker, splitter, and meters. This entire installation shall be weatherproof and must conform to Canadian Electrical Code.
- If desired by the customer, or if 5 or more meters serve a building, the main breaker, splitter box and electrical meters will be installed in an electrical room inside the building. See Section 2.4 for details on electrical rooms and meter locations.

	Townhouse multi-metering	Metering in electrical room
Location	Outdoors	Indoors
Limitations	- Maximum 4 meters on a building - Sum of all service entrance sizes must be 600A or less	- 5 or more meters
Details	Section 3.2.3	Section 2.4

- Services with expected demand over 75KVA shall be 3 phase. Services over 150kVA must be underground. Services over 225KVA will be serviced with a padmount transformer and a service pedestal.

3.2.1 OVERHEAD RESIDENTIAL MULTIPLE DWELLING

The customer shall:

- Supply and install CSA OR ULC approved, low voltage, socket type meter bases, without a shorting device. For duplexes provide an approved 2 gang meter base. For a 3 Plex or more units provide a main breaker.
- Supply and install all wiring, equipment, and facilities on the load side of the meters.
- Supply and install conduits, weatherhead, rack, and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.
- Supply and install the main breaker, conductors, and splitter box.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead including connectors. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meters.

3.2.2 UNDERGROUND RESIDENTIAL MULTIPLE DWELLING

The customer shall:

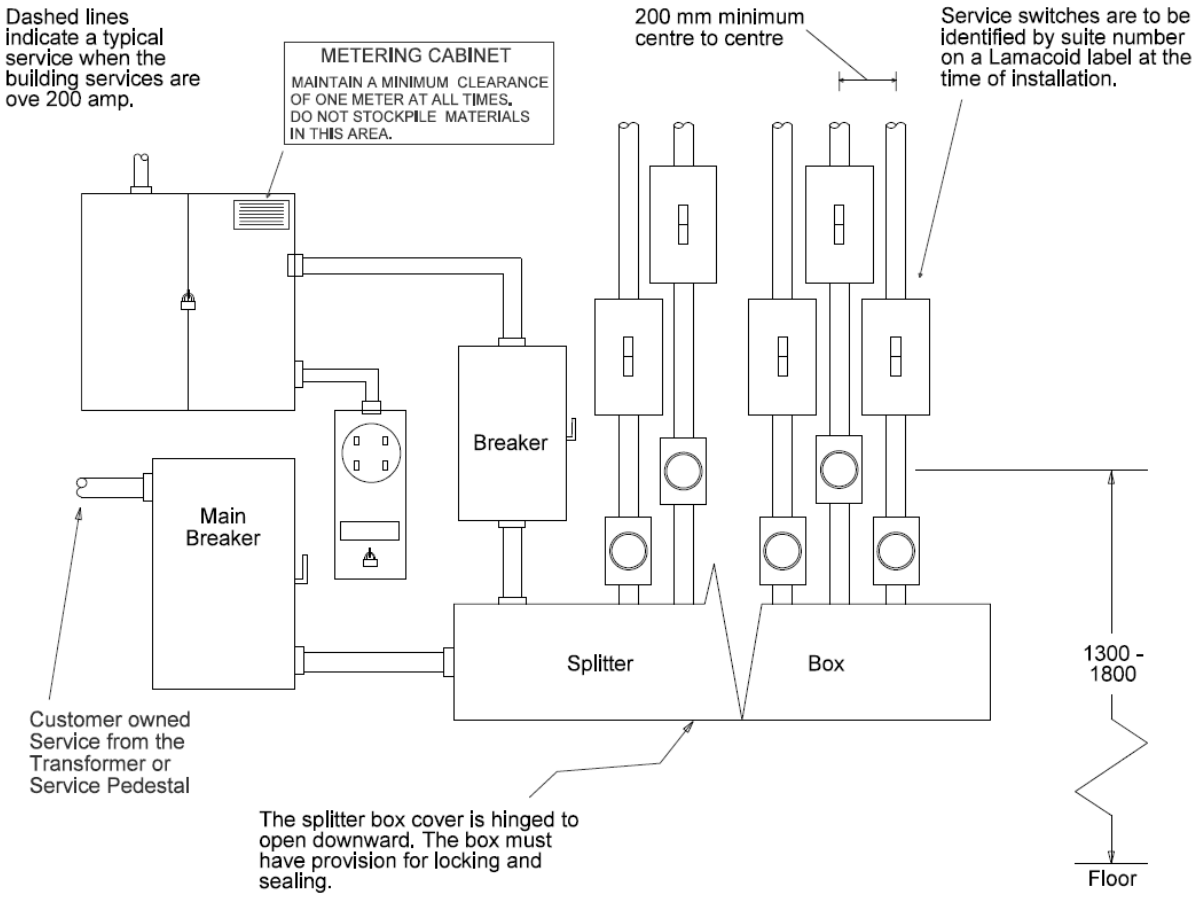
- Supply and install CSA OR ULC approved, low voltage, socket type meter bases, without a shorting device. For duplexes provide an approved 2 gang meter base. For a 3 Plex or more units provide a main breaker.
- Trench, supply, and install the conduit and conductors from the service pedestal or pole mounted transformer with an overhead to underground riser to the customer service.
- Supply and install all wiring, equipment, and facilities on the load side of the meters.
- Supply and install the conduit and conductors from the service pedestal or transformer secondary bushings to the main breaker.
- Supply the connectors which are approved by the Utility Company. The customer is required to contact the Utility Company before purchasing the connectors to ensure the connectors supplied by the customer are of adequate quality.
- Supply and install the main breaker, conductor, and splitter box.

- Make the secondary cable connections in the service pedestal during the supervision of utility employee.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work
  2. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole

The Company shall:

- Supply and install all facilities required for electrical service up to the service pedestal or transformer including the service pedestal or transformer.
- Trench and install the service wires up to the line side of the electrical meter for services for a duplex.
- Supply and install the meters.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

Drawing 3-5 Multiple Services in a Dwelling



OPTIONAL TOWNHOUSE MULTI−METERING

Where multi-residential services, such as a townhouse complex, are fed from one source, optional townhouse multi-metering is preferred.

General Requirements

- The number of meters shall not exceed four per supply service.
- If more than 2 meters are required, a main disconnect switch shall be installed ahead of the junction box. For details, refer to Drawing 3-6 Optional Townhouse Multi-Metering with Disconnect Switch.
- The supply service is underground or overhead.
- Metering shall be located on the outside wall of the building and shall be grouped together.
- A combined total rating shall not exceed 600 amperes and the service shall not exceed 150 volts-to-ground.

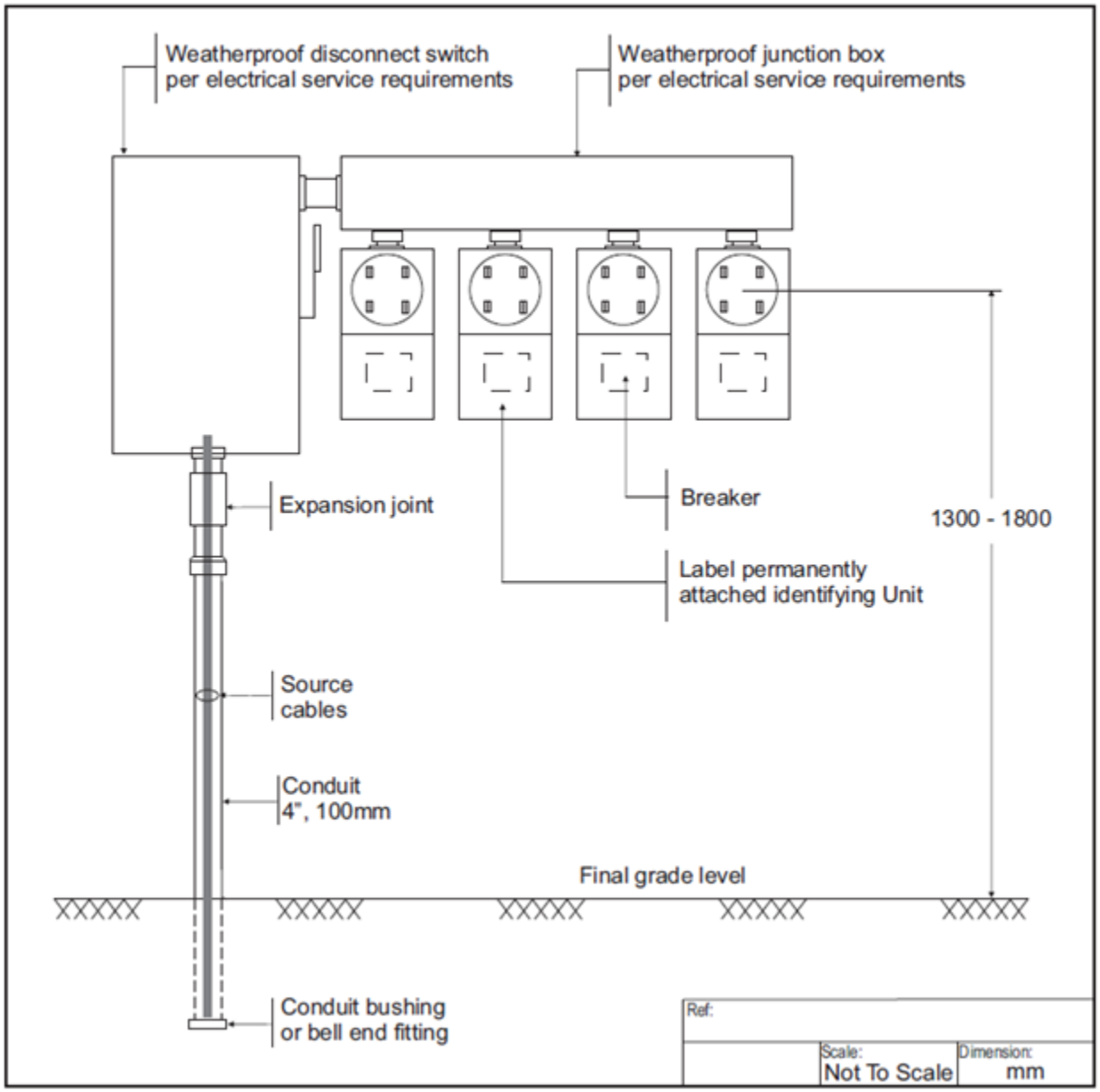
The customer shall supply and install:

- A CSA OR ULC approved, weatherproof disconnect switch, if required,
- A CSA OR ULC approved, weatherproof junction box,
- CSA OR ULC approved, socket type meter bases,
- All conduits with an expansion joint,
- All secondary connections from the termination blocks or disconnect switch to the meter sockets, and
- Overcurrent protection devices (or combination meter socket and circuit breaker).

The Company is responsible for:

- Supply, installation, and connection of the source cable to the junction box or disconnect switch.
- Supply and installation of meters.

Drawing 3-6 Optional Townhouse Multi-Metering with Disconnect Switch (3-4 services)



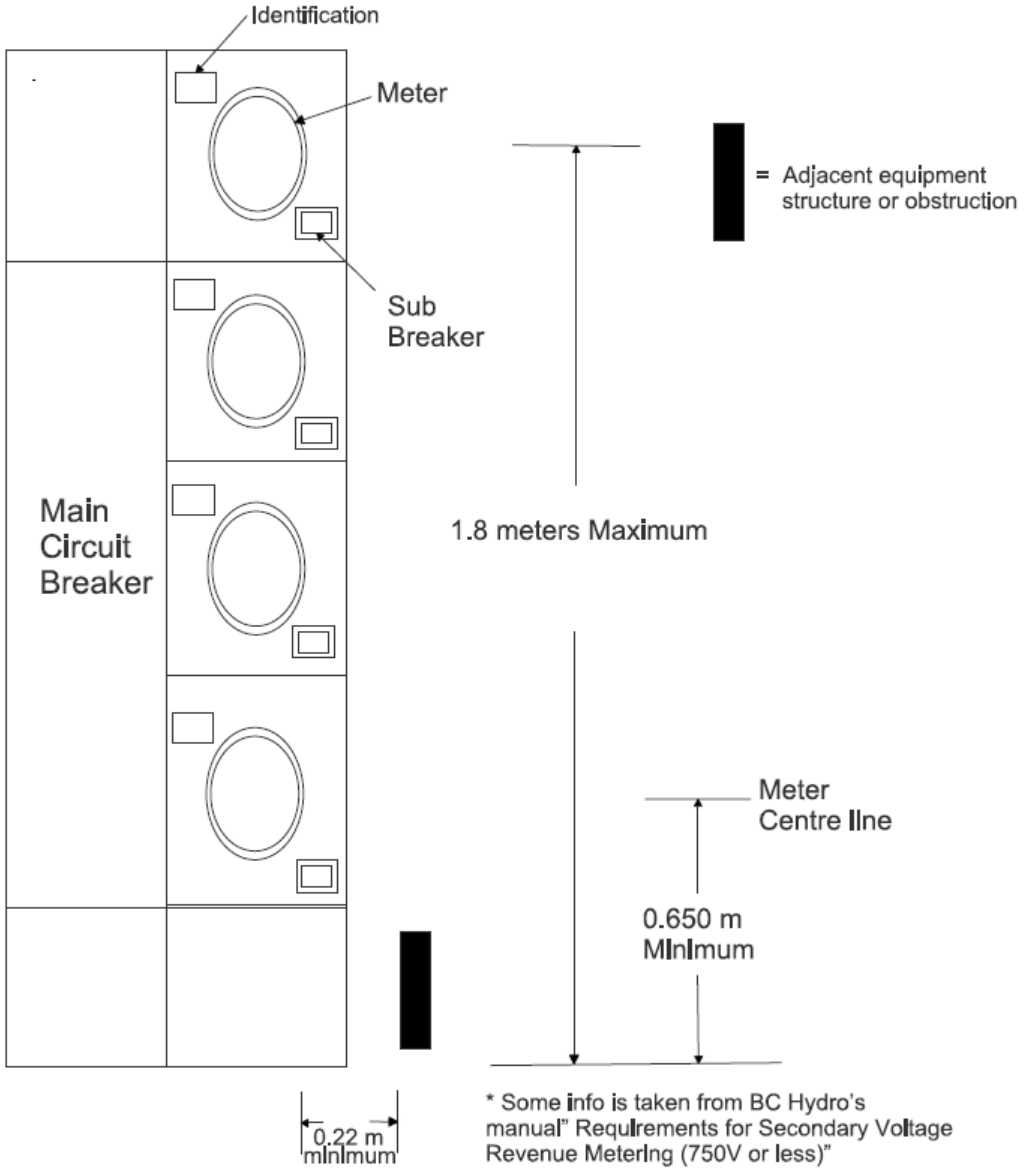
Notes:

1. Maximum 4 services per building
2. Combined total rating shall not exceed 600 amperes and the service shall not exceed 150 volts-to-ground for each set.
3. A locking mechanism for a padlock is required on the junction box. The Company will supply the padlock.
4. Consult the local electrical permit inspections group for their approval

Drawing 3-7 Metering Centre

Metering Centre *

When serving a number of units in a building a meter center can be installed as shown below:



Notes:

1. The meter centre shall be CSA OR ULC approved.
2. The meter centre shall be installed on the load side of the associated sub-breaker.
3. The main circuit breaker and the sub circuit breakers will have provision to be padlocked by the company and sealed by the Company. The Company will supply the padlock.
4. Each customer suite number shall be permanently marked with a lamacoid sign on each meter base.

3.3 SINGLE-PHASE RESIDENTIAL SERVICES > 200 A – INSTRUMENT TRANSFORMER METERING

Instrument transformer metering is used for services where the main breaker rating exceeds 200 amperes. Metering shall be located on the load side of the customer's main breaker.

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

General Requirements

- Metered and unmetered cables shall not be installed in the same auxiliary gutter or splitter box.
- There shall be no elbows with covers (LBs) or pull boxes between the instrument transformer cabinet and the meter socket.
- Instrument transformer cabinets shall not be used as junction boxes to connect secondary load conductors.
- The meter shall be located on the inside of a building in the same room as the instrument transformer enclosure, separated by a **maximum of 6.5 m**. For the arrangement of instrument transformer metering, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.
- If the meter cannot be accommodated inside the building, it may be located outside using a Microlectric FA4B-6T, 6-jaw meter socket and test switch enclosure that houses two 2-wire current transformers.
- For all single-phase instrument transformer metering services, a 6-jaw meter socket and test switch enclosure shall be used. For details, refer to section 8.3.1 Single-Phase Meter Socket And Test Switch Enclosure.
- Details of instrument transformer metering are specified in section 8 Instrument Transformer Metering.

3.3.1 OVERHEAD RESIDENTIAL SERVICE > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead including connectors. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.
- Supply the current transformers. Upon request, ship them to the electrical contractor or manufacturer.

3.3.2 UNDERGROUND RESIDENTIAL SERVICE > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install underground secondary service conductors from the service pedestal or transformer to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirement, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or pedestal.
- Supply and install the meter.
- Supply the current transformers. Upon request, ship them to the electrical contractor or manufacturer.

4 GENERAL SERVICES

General services are typically businesses that provide sales, transportation, packaging, distribution, storage and accounting of goods and services.

General Requirements

- Where recessed metering is installed in a wall, a clear space of not less than 0.2 m on either side of the centre line of the meter base and 1.0 m in front of the meter is required, to provide the Company access to the meters.
- The centre line of the meter socket shall be 1.3 to 1.8 m with the preferred height of 1.5 m above the finished grade or permanent platform, and in a properly lit area.
- Refer to section 2.21 for winter construction limitations
- For multiple metering applications please contact Engineering. General service multiple metering shall follow section 3.2 Multiple Residential Metering with any changes specified by Engineering.
- Services with expected demand over 75KVA shall be 3 phase. Services over 150kVA must be underground. Services over 225KVA will be serviced with a pad mount transformer and a service pedestal.

4.1 SINGLE-PHASE GENERAL SERVICES − SELF-CONTAINED METERING

Single-phase, self-contained metering is used for services where the main breaker rating does not exceed 200 amperes.

General Requirements

- The standard supply is single-phase, 3-wire 120/240 volts. Some areas may be supplied with 3 wire 120/208 volts.
- Metering shall be located on the line side of the customer's main breaker.
- A 4-jaw meter socket shall be used. For connection details, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V. Customer to confirm supply voltage with the Company.
- For network 3-wire 120/208 volt services, a 5-jaw meter socket shall be used as shown in Drawing 10-2 Socket Connection Diagrams - Network 3-Wire 120/208 V. Customer to confirm supply voltage with the Company.
- Meters can be up to 216 mm (8½") in depth; therefore, sufficient clearance must be taken into consideration when installing the meter on a wall, in a cabinet or in an enclosure.
- When there is no building available and there will never be a building on site, the underground conductor to the electrical meter for those 1ph U/G services are installed in such a way so that the minimum and maximum heights of the electrical meter is from 1.3 meters to 1.8 meters respectively. 1.5m is the preferred height above finished ground for meters. The customer to ensure they have approval from the YTG's inspections branch.

4.1.1 SINGLE-PHASE OVERHEAD GENERAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base on a building.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead including connectors. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.

4.1.2 SINGLE-PHASE UNDERGROUND GENERAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base on a building.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the conduit for the conductors to the meter socket on the line side.
- Supply and install underground secondary conductors from the service pedestal or transformer to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install all facilities required for electrical service up to and including the padmount transformer or service pedestal.
- Supply and install the meter.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

4.1.3 SINGLE-PHASE NON-CRITICAL CUSTOMER GENERAL SERVICE ON COMPANY POLE ≤ 200 A

Non-Critical Services in Overhead or Underground Areas: Heat Tape / Parking Plugs / Highway Signs / Weight Scales / Traffic Counters

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the conduit for the conductors to the meter socket on the line side.
- Supply and install secondary conductors from the transformer to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- Refer to Drawing 4-4 Secondary Overhead to Underground Customer Riser on a Pole or Drawing 4-5 Customer Service On Stand-off Structure Non-Critical Services In Underground Areas

The Company shall:

- Supply and install all facilities required for electrical service up to and including the padmount transformer or service pedestal.
- Supply and install the meter.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

4.1.4 OVERHEAD RURAL GENERAL SERVICES ≤ 200A BREAKER CABINET WITH SPLITTER FOR CUSTOMER UNDERGROUND

Also referred to as "Farm Services"

The customer shall:

- Supply and install all wiring, equipment, and facilities on the load side of the meter. For more details refer to Drawing 4-1 Overhead Rural Breaker Cabinet with Splitter
- Install 2-inch rigid PVC conduit into the bottom of the metering cabinet for customer cable

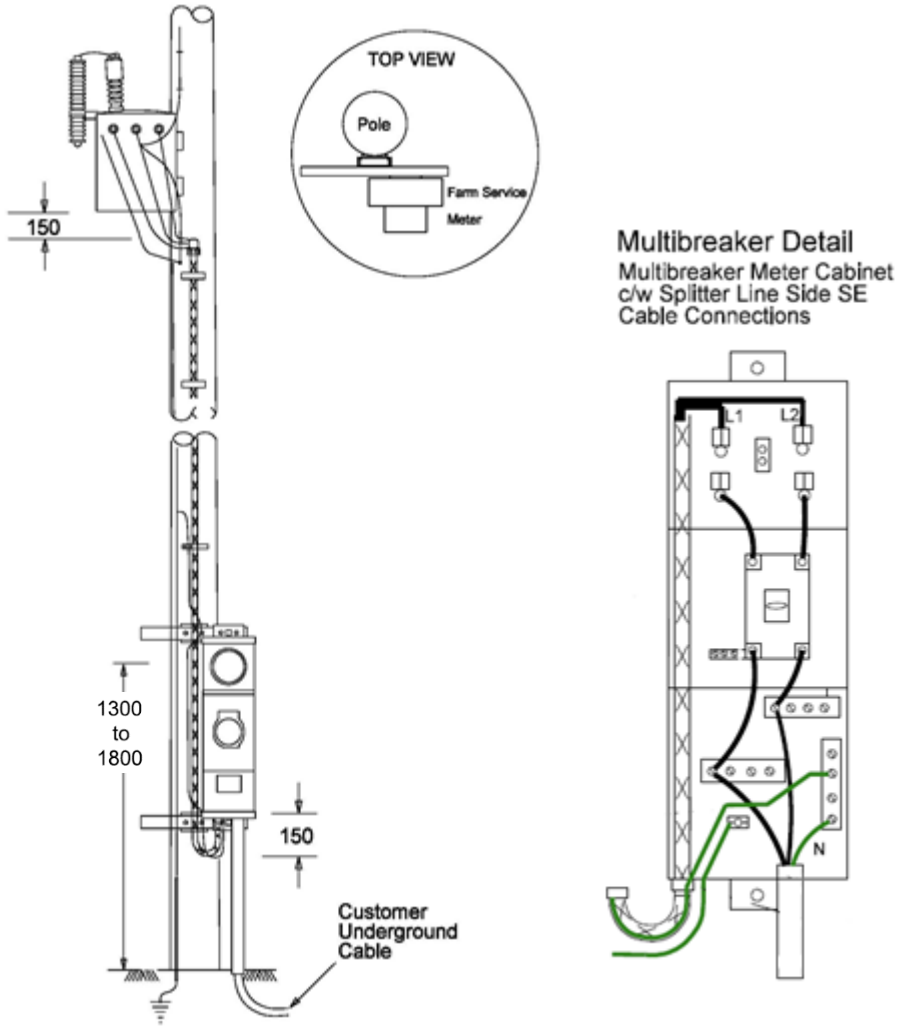
The Company shall:

- Supply and install all primary facilities required for **pole metering** including the multi-breaker meter cabinet, the SE cable, and the pole.
- Supply and install the meter.
- Supply and install the breaker.

Notes:

- The Company owned breaker cannot be considered as the customer service disconnect in the Yukon Territory.
- The standard supply is single-phase, 3-wire 120/240 volts.
- A 4-jaw meter socket shall be used. For the connection diagram, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V.

Drawing 4-1 Overhead Rural Breaker Cabinet with Splitter



Notes:

1. Meter height can be raised to prevent cattle rubbing.
2. If possible, ensure that placement of equipment is such that it does not obstruct the view of pole details, showing height and class, etc.
3. Point of Service is at the breaker.
4. The breaker is provided and owned by the Company.
5. Customer must install rigid PVC conduit from the inside the splitter cabinet to 300mm below grade to prevent cable shield or neutral contacting the box enclosure.

4.1.5 UNDERGROUND RURAL SERVICE ≤ 200 A

The customer shall:

Supply and install all wiring, equipment, and facilities on the load side of the meter. For details, refer to Drawing 4-2 Pedestal .

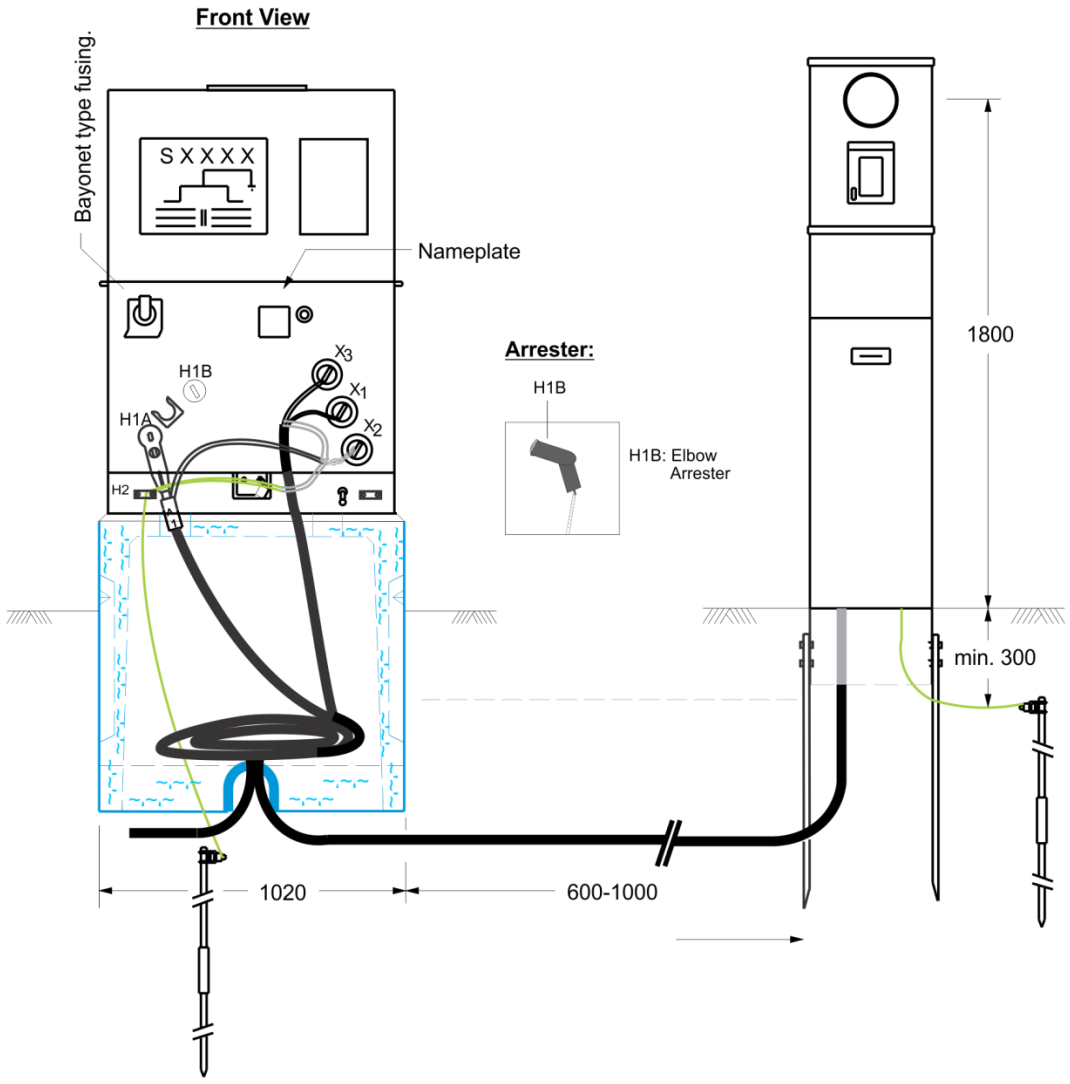
The Company shall:

- Supply and install the primary facilities required for electrical service to the line side of the meter including the transformer, the metering pedestal, the line side underground cable and the breaker.
- Supply and install the meter.

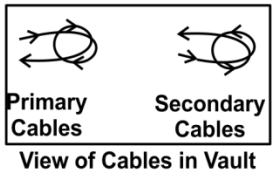
Notes:

- The Company owned breaker cannot be considered as the customer service disconnect in the Yukon Territory.
- The standard supply is single-phase, 3-wire 120/240 volts.
- A 4-jaw meter socket shall be used. For the connection diagram, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V.

Drawing 4-2 Pedestal Metering for Underground Rural Service



Primary cables should have one loop left down in the vault. These loops will be coiled in a clockwise direction. Ensure that the primary cables are not crossed when they are brought out of the vault. Secondary cables should have one loop left down in the vault. These loops will be coiled in a counter-clockwise direction.



View of Cables in Vault

Ref: DCSM SAS-R381-1 (2007-10-30)

Scale: Not To Scale | Dimension: mm

Revised May 2023

4.2 SINGLE-PHASE GENERAL SERVICES – INSTRUMENT TRANSFORMER METERING

Instrument transformer metering is used for services where the main breaker rating exceeds 200 amperes. Metering shall be located on the load side of the customer's main breaker.

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

General Requirements

- Metered and unmetered cables shall not be installed in the same auxiliary gutter or splitter box.
- There shall be no elbows with covers (LBs) or pull boxes between the instrument transformer cabinet and the meter socket.
- Instrument transformer cabinets shall not be used as junction boxes to connect secondary load conductors.
- The meter shall be located on the inside of a building in the same room as the instrument transformer enclosure, separated by a **maximum of 6.5 m**. For the arrangement of instrument transformer metering, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.
- If the meter cannot be accommodated inside the building, it may be located outside using a Microlectric FA4B−6T, 6-jaw meter socket and test switch enclosure that houses two 2-wire current transformers.
- For all single-phase instrument transformer metering services, a 6-jaw meter socket and test switch enclosure shall be used. For details, refer to section 8.3.1 Single-Phase Meter Socket And Test Switch Enclosure.
- Details of instrument transformer metering are specified in section 8 Instrument Transformer Metering.

4.2.1 SINGLE-PHASE OVERHEAD GENERAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.

The Company shall:

- Supply and install the secondary conductors required for electrical service up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.
- Supply the current transformers. Upon request, ship them to the electrical contractor or manufacturer.

4.2.2 SINGLE-PHASE UNDERGROUND GENERAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the secondary service conductors from the transformer or the service pedestal to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Supply and install secondary service conductors up to the padmount transformer or service pedestal. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the service pedestal under supervision of the utility
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

4.3 THREE-PHASE GENERAL SERVICES – SELF-CONTAINED METERING

Three-phase, self-contained metering is used for commercial services where the main breaker rating does not exceed 200 amperes and 600 volts. For services less than 300 volts line to line, metering shall be located on the line side of the customer's main breaker. For services over 300 volts line to line, metering shall be located on the load side of the customer's main breaker.

General Requirements

- For three-phase services, a 7-jaw meter socket shall be used.
- For 120/208 volt services, refer to Drawing 10-3 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 120/208 V.
- For services over 300 volts line to line, the 7-jaw meter socket ***must*** have an isolated neutral block as per the CEC. For 277/480 or 347/600 volt services, refer to Drawing 10-4 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 277/480 or 347/600 V.
- The preferred location for 347/600 volt metering is inside the building.

4.3.1 THREE-PHASE OVERHEAD GENERAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops.
- Supply and install a means of attachment for the Company conductors.

Note: The Company will not supply connectors for conductors larger than 500 MCM.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.

4.3.2 THREE-PHASE UNDERGROUND GENERAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install secondary service conductors up to the padmount transformer or service pedestal. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the service pedestal under supervision of the utility
- For underground customer riser on a pole to connect to overhead secondary:
  1. Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
  2. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

4.3.3 THREE-PHASE NON-CRITICAL CUSTOMER GENERAL SERVICE ON COMPANY POLE ≤ 200 A

Non Critical Services in Overhead or Underground Areas: Heat Tape / Parking Plugs / Highway Signs / Weight Scales / Traffic Counters

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the conduit for the conductors to the meter socket on the line side.
- Supply and install secondary conductors from the transformer to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- Refer to Drawing 4-4 Secondary Overhead to Underground Customer Riser on a Pole or Drawing 4-5 Customer Service On Stand-off Structure Non Critical Services In Underground Areas

The Company shall:

- Supply and install all facilities required for electrical service up to and including the padmount transformer or service pedestal.
- Supply and install the meter.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

4.4 THREE-PHASE GENERAL SERVICES – INSTRUMENT TRANSFORMER METERING

Three-phase instrument transformer metering is used for commercial services where the main breaker rating exceeds 200 amperes and/or 600 volts. Metering shall be on the load side of the Customer's breaker.

To ensure the customer does not experience any delays on a service entrance over 200 amperes and/or 600 volts, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

General Requirements

- Metered and unmetered cables shall not be installed in the same auxiliary gutter or splitter box.
- There shall be no elbows with covers (LBs) or pull boxes between the instrument transformer cabinet and the meter socket.
- Instrument transformer cabinets shall not be used as junction boxes to connect secondary load conductors.
- The meter shall be located on the inside of a building or in an outdoor weatherproof cabinet. The instrument transformer enclosure and the meter shall be in the same room, separated by a **maximum of 6.5 m**. For the arrangement of instrument transformer metering, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.
- For all three-phase instrument services, a 13-jaw meter socket and test switch enclosure shall be used. For details, refer to section 8.3.2 Three-Phase Meter Socket And Test Switch Enclosure.
- Details of instrument transformer metering are specified in section 8 Instrument Transformer Metering.

4.4.1 THREE-PHASE OVERHEAD GENERAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 13-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops.
- Supply and install a means of attachment for the Company conductors.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs) and the installation of the voltage transformers.

  For 120/208 or 277/480 volt services, refer to Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering 200-1200 A Service.

  For 347/600 volt services, refer to Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering, 200-1200 A Service.
- Extend the neutral conductor into the instrument transformer enclosure.

Note: The Company will not supply connectors for conductors larger than 500 MCM.

The Company shall:

- Supply and install conductors up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.
- Supply current and voltage instrument transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.

4.4.2 THREE-PHASE UNDERGROUND GENERAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 13-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install secondary service conductors up to the padmount transformer or service pedestal. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the service pedestal under supervision of the utility
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs) and the installation of the voltage transformers.

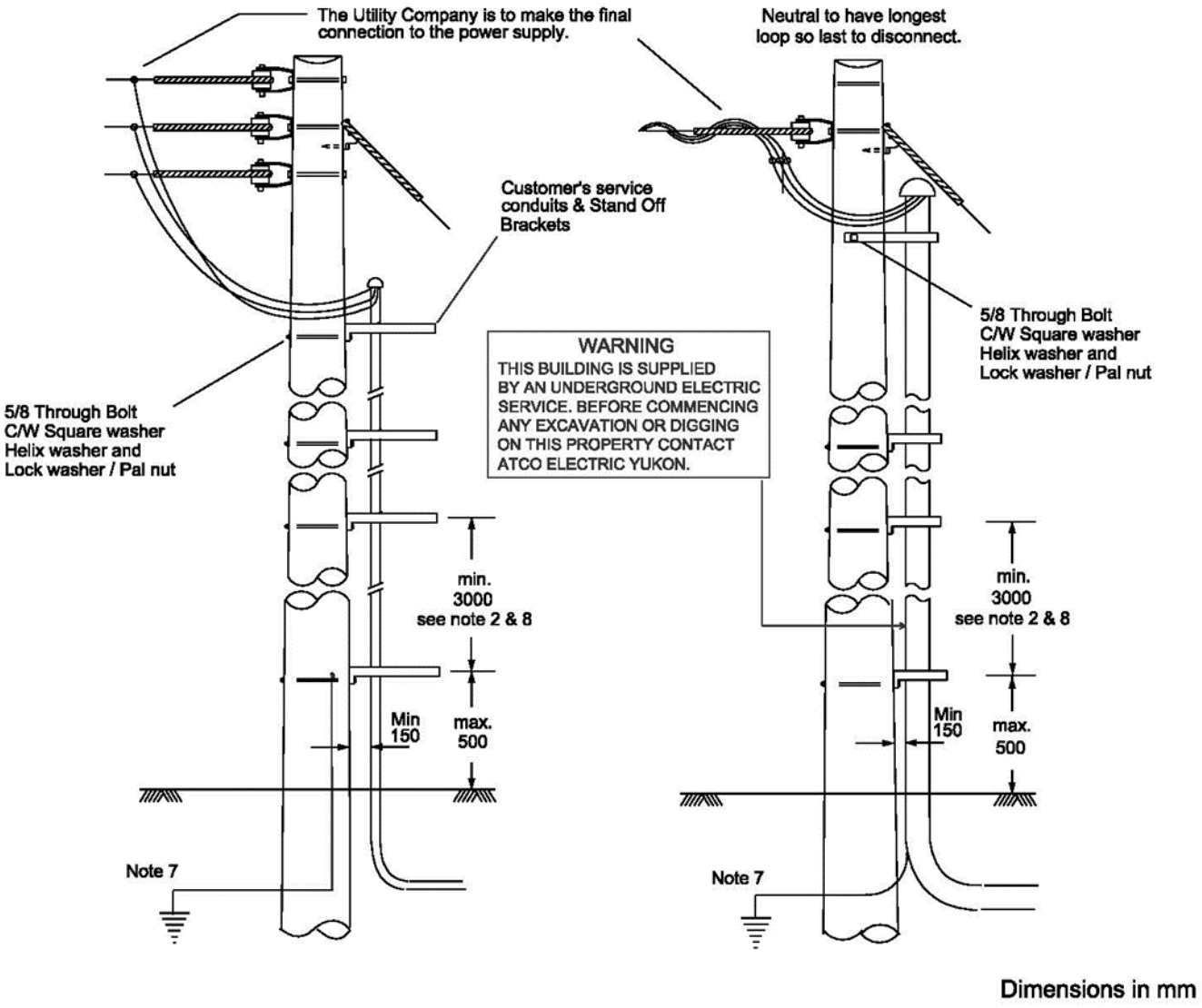
  For 120/208 or 277/480 volt services, refer to Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering 200-1200 A Service.

  For 347/600 volt services, refer to Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering, 200-1200 A Service.
- Extend the neutral conductor into the instrument transformer enclosure.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install all facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply current and voltage instrument transformers. Upon request, ship the equipment to the electrical contractor or manufacturer. Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole



Dimensions in mm

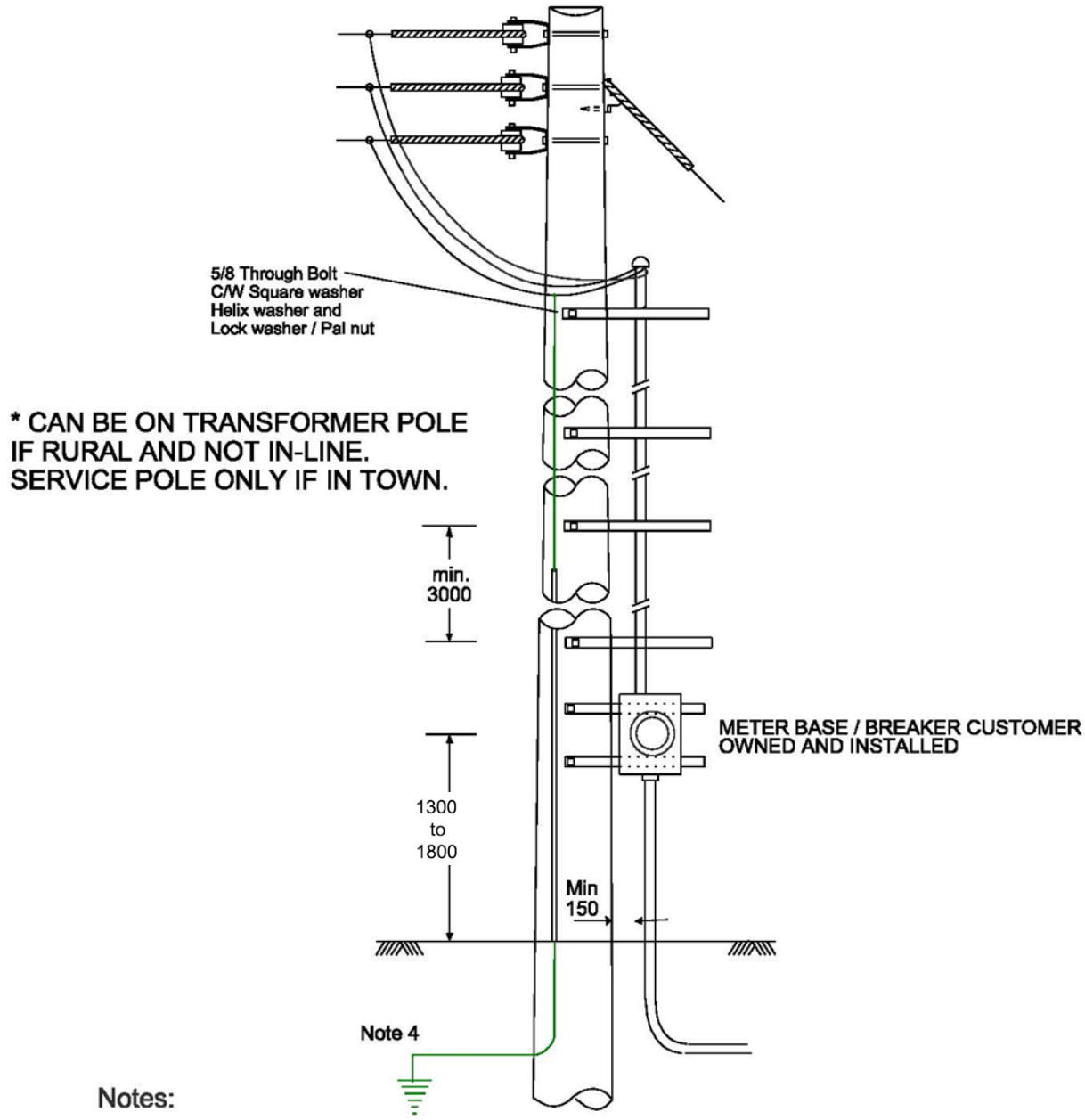
See the Notes for this drawing on the next page.

Notes:

1. Prior to starting work on the riser installation and connection to the Utility System, the electrical contractors are to arrange onsite meeting with Utility Company's service department to discuss the work plan.
2. Customer is to supply connectors for conductors over 500 KCMIL in size or if multiple conductors per phase are used.
3. Customer to supply service conductors, all conduits, Unistrut brackets, clamps and weatherhead
4. Cover all connections with all-weather tape.
5. Conduits of size 2.5"(or Larger) rigid PVC will be acceptable.
6. Customer's electrical contractor to install maximum amount of conduits, while ensuring equipment and people maintain 1 meter clearance from the power facilities.
7. Conduits to be installed on the non-climbing side of the pole as determined by the Utility Company The non-climbing side will be seen as (in order of priority): (a) Not the side nearest the road or lane (b) Under a guy wire as shown above (c) Under the transformers (if applicable)
8. Ensure that the conduit & other installation do not obstruct the view of pole details, showing height and class
9. The Company recommends customer install a ground at pole so no neutral current from the company's circuit will flow to customer's ground at main breaker.
10. Unistrut comes in two sizes with a 457 or 381 mm stand-off arm and the Company recommends using the shortest that is adequate.
11. The spacing between (bottom bracket and the one above) shall be 3000 mm as per AEUC. All other spacing shall follow the CEC.
12. Teck Cable is to be installed in rigid conduit. To avoid risers slipping through the conduit, the risers should be planted firmly on the ground or clamped to an approved cable tray.
13. The company will make the final connection to the power supply.
14. The neutral conductor is to have the longest loop, as it is the last to disconnect.
15. Communication conduit and customer service conduit are to be furthest away from the pole.
16. Bond the neutral to the ground wire enclosed in the riserway.
17. This drawing is intended for customer-owned risers.

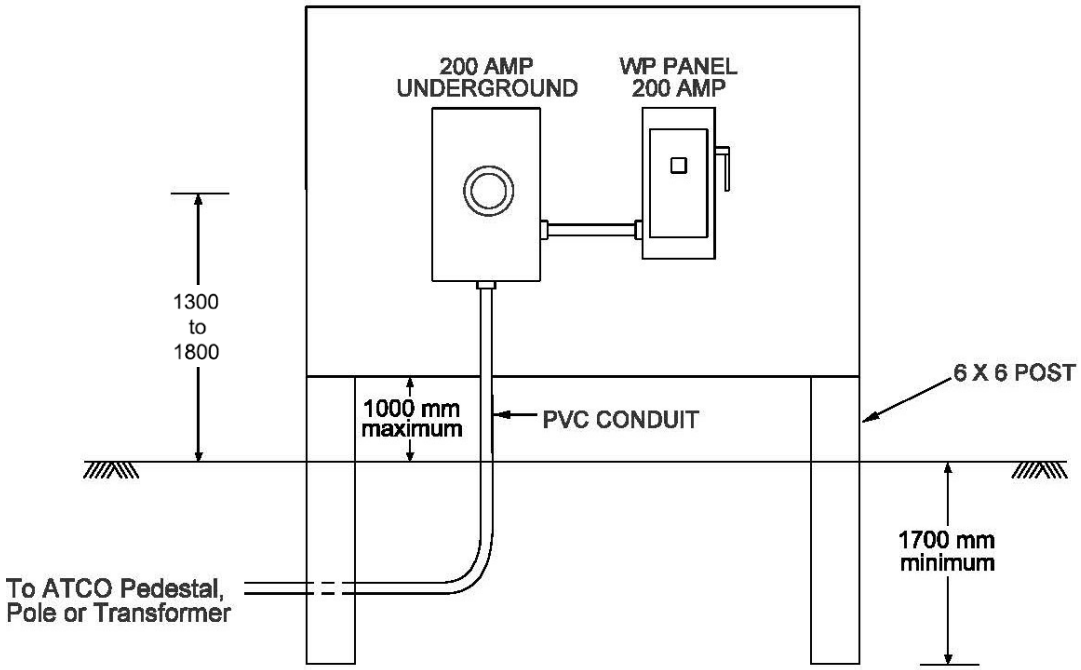
Drawing 4-4 Secondary Overhead to Underground Customer Riser on a Pole Non Critical Services

See the Notes for this drawing on the previous page.



Drawing 4-5 Customer Service On Stand-off Structure Non Critical Services In Underground Areas (120/240V)

Revised May 2023



Notes:

1. 6 x 6 pressure treated posts
2. 4 ft x 4ft 3/4" pressure treated plywood with 2 x 4 pressure treated framing for additional support
3. Yukon Electrical Inspections may have additional requirements for these services and must be contacted in advance of construction.

5 INDUSTRIAL SERVICES

Industrial services are generally large facilities where the primary function is in oilfield operations, manufacturing and/or producing of a product.

General Requirements

- Where recessed metering is installed in a wall, a clear space of no less than 0.2 m on either side of the centre line of the meter base and 1.0 m in front of the meter is required, to provide the Company access to the meters.
- The centre line of the meter socket shall be 1.3 to 1.8 m with the preferred height of 1.5 m above the finished grade or permanent platform, and in a properly lit area.
- Refer to section 2.21 for winter construction limitations

5.1 SINGLE-PHASE INDUSTRIAL SERVICES – SELF-CONTAINED METERING

Self-contained metering is used for services where the main breaker rating does not exceed 200 amperes.

General Requirements

- The standard supply is single-phase, 3-wire 120/240 volts. Some areas may be supplied with 3 wire 120/208 volts.
- Metering shall be located on the line side of the customer's main breaker.
- A 4-jaw meter socket shall be used. For connection details, refer to Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V. Customer to confirm supply voltage with the Company.
- For network 3-wire 120/208 volt services, a 5-jaw meter socket shall be used as shown in Drawing 10-2 Socket Connection Diagrams - Network 3-Wire 120/208 V. Customer to confirm supply voltage with the Company.
- Meters can be up to 216 mm (8½") in depth; therefore, sufficient clearance must be taken into consideration when installing the meter on a wall, in a cabinet or in an enclosure.

5.1.1 SINGLE-PHASE OVERHEAD INDUSTRIAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.

The Company shall:

- Supply and install the secondary conductors required for electrical service to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the customer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.

5.1.2 SINGLE-PHASE UNDERGROUND INDUSTRIAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the conduit for the conductors to the meter socket on the line side.
- Supply and install underground secondary conductors from the service pedestal or transformer to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:

3. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
4. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

5.2 SINGLE-PHASE INDUSTRIAL SERVICES – INSTRUMENT TRANSFORMER METERING

Instrument transformer metering is used for services where the main breaker rating exceeds 200 amperes. Metering shall be located on the load side of the customer's main breaker.

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

General Requirements

- Metered and unmetered cables shall not be installed in the same auxiliary gutter or splitter box.
- There shall be no elbows with covers (LBs) or pull boxes between the instrument transformer cabinet and the meter socket.
- Instrument transformer cabinets shall not be used as junction boxes to connect secondary load conductors.
- The meter shall be located on the inside of a building or in an outdoor weatherproof cabinet. The instrument transformer enclosure and the meter shall be in the same room, separated by a **maximum of 6.5 m**. For the arrangement of instrument transformer metering, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.
- If the meter cannot be accommodated inside the building, it may be located outside using a Microlectric FA4B−6T, 6-jaw meter socket and test switch enclosure that houses two 2-wire current transformers.
- For all single-phase instrument transformer metering services, a 6-jaw meter socket and test switch enclosure shall be used. For details, refer to section 8.3.1 Single-Phase Meter Socket And Test Switch Enclosure.
- Details of instrument transformer metering are specified in section 8 Instrument Transformer Metering.

5.2.1 SINGLE-PHASE OVERHEAD INDUSTRIAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops. Note that the Company will not supply connectors for conductors larger than 500 MCM.
- Supply and install a means of attachment for the Company conductors.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.

The Company shall:

- Supply and install the secondary conductors required for electrical service up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the consumer conductors protruding a minimum of 0.75 m out of the weatherhead.
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.

5.2.2 SINGLE-PHASE UNDERGROUND INDUSTRIAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 6-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the secondary service conductors from the transformer or the service pedestal to the line side of the meter. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Supply and install a Company approved instrument transformer enclosure. For enclosure requirements, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs). For details, refer to Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

5.3 THREE-PHASE INDUSTRIAL SERVICES – SELF-CONTAINED METERING

Three-phase, self-contained metering is used for industrial services where the main breaker rating does not exceed 200 amperes and 600 volts. For services less than 300 volts line to line, metering shall be located on the line side of the customer's main breaker. For services over 300 volts line to line, metering shall be located on the load side of the customer's main breaker.

General Requirements

- The metering may be on a pole, a panel or inside an MCC electrical building, depending on the type of customer application.
- For three-phase services, a 7-jaw meter socket shall be used.
- For 120/208 volt services, refer to Drawing 10-3 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 120/208 V.
- For services over 300 volts line to line, the 7-jaw meter socket **must** have an isolated neutral block as per the CEC. For 277/480 or 347/600 volt services, refer to Drawing 10-4 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 277/480 or 347/600 V.
- The preferred location for 347/600 volt metering is inside of a building.

5.3.1 THREE-PHASE OVERHEAD INDUSTRIAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops
- For services **up to 150 kVA**, supply and install a means of attachment for the Company conductors.
- For services **greater than 150 kVA**, supply and install secondary service conductors from weatherhead up to the transformer.

Note: The Company will not supply connectors for conductors larger than 500 MCM.

The Company shall:

- For services **up to 150 kVA**, supply and install conductors up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the consumer conductors protruding a minimum of 0.75 m out of the weatherhead.
- For services **greater than 150 kVA**, supply and install the primary facilities required for electrical service up to and including the transformer.
- Supply and install the meter.

5.3.2 THREE-PHASE UNDERGROUND INDUSTRIAL SERVICES ≤ 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install secondary service conductors up to the padmount transformer or the service pedestal. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

5.4 THREE-PHASE INDUSTRIAL SERVICES – INSTRUMENT TRANSFORMER METERING

Three-phase instrument transformer metering is used for industrial services where the main breaker rating exceeds 200 amperes and/or 600 volts. Metering shall be on the load side of the customer's breaker.

To ensure the customer does not experience any delays on a service entrance over 200 amperes, one set of drawings of the service entrance, service location, and service and metering layout shall be submitted to a company representative. The drawings shall be stamped final and initialed by the issuing consultant or electrical contractor. All installations shall comply with the applicable requirements of the Canadian Electrical Code and Alberta Electrical Utility Code.

General Requirements

- Metered and unmetered cables shall not be installed in the same auxiliary gutter or splitter box.
- There shall be no elbows with covers (LBs) or pull boxes between the instrument transformer cabinet and the meter socket.
- Instrument transformer cabinets shall not be used as junction boxes to connect secondary load conductors.
- The meter shall be located on the inside of a building or in an outdoor weatherproof cabinet. The instrument transformer enclosure and the meter shall be in the same room, separated by a **maximum of 6.5 m**. For the arrangement of instrument transformer metering, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.
- For all three-phase instrument services, a 13-jaw meter socket and test switch enclosure shall be used. For details, refer to section 8.3.2 Three-Phase Meter Socket And Test Switch Enclosure.
- Details of instrument transformer metering are specified in section 8 Instrument Transformer Metering.

5.4.1 OVERHEAD INDUSTRIAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 13-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install conduit, weatherhead, rack and conductors in the mast on the line side of the meter. The conductors shall protrude a minimum of 0.75 m out of the weatherhead, and the conductors shall be provided with drip loops.
- For services **up to 150 kVA**, supply and install a means of attachment for the Company conductors.
- For services **greater than 150 kVA**, supply and install secondary conductors from weatherhead up to the transformer.
- Supply and install a Company approved instrument transformer enclosure. For details, refer to section 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers (lugs) and the installation of the voltage transformers.

  For 120/208 or 277/480 volt services, refer to Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering 200-1200 A Service.

  For 347/600 volt services, refer to Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering, 200-1200 A Service.
- Extend the neutral conductor into the instrument transformer enclosure.

Note: The Company will not supply connectors for conductors larger than 500 MCM.

The Company shall:

- For services **up to 150 kVA**, supply and install conductors up to the customer's conductors at the weatherhead. The supply conductors shall be terminated leaving the consumer conductors protruding a minimum of 0.75 m out of the weatherhead.
- For services **greater than 150 kVA**, supply and install the primary facilities required for electrical service up to and including the transformer.
- Supply and install the meter.
- Supply current and voltage instrument transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.

5.4.2 UNDERGROUND INDUSTRIAL SERVICES > 200 A

The customer shall:

- Supply and install a CSA OR ULC approved, low voltage, 13-jaw meter socket and test switch enclosure.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install secondary service conductors up to the transformer or service pedestal. Connectors shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or service pedestal.
- Supply and install a Company approved instrument transformer enclosure. For details, refer to 8.2 Instrument Transformer Cabinets.
- Be responsible for the installation of, and primary connection to, the current transformers and the installation of the voltage transformers.

  For 120/208 or 277/480 volt services, refer to Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering 200-1200 A Service.

  For 347/600 volt services, refer to Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering, 200-1200 A Service.
- Extend the neutral conductor into the instrument transformer enclosure.
- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- For underground customer riser on a pole to connect to overhead secondary:
  1. Refer to Drawing 4-3 Secondary Overhead to Underground Customer Riser on a Pole
  2. Trench, supply and install all conduits, Unistrut brackets, clamps, weatherhead, and service conductors.

The Company shall:

- Supply current and voltage instrument transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

6 CUSTOMER GENERATION

For all permanently installed generation designed to operate in parallel with the distribution system (even briefly during the operation of a transfer switch) the customer must inform the Company and sign an agreement on the operation and type of equipment. Examples of generation requiring a notification and agreement are:

- Photovoltaic systems
- Battery systems
- Back-up generation with a transfer switch

6.1 MICROGENERATION

Micro-generation is defined under the Yukon Government program as a generating unit that:

- exclusively uses sources of renewable or alternative energy,
- is intended to meet all or a portion of the customer's total energy consumption at the customer's site,
- has a total nameplate capacity that does not exceed of 50 KW
- supplies electric energy only to a site that is located on property that the customer owns or leases, and is located on the same property
- full details are available from the Yukon Government at http://www.energy.gov.yk.ca/microgeneration.html

General Requirements

- The customer must comply with the "Application for Service & General Requirements" of this guide for the required service type.

The customer shall:

- Apply to the Yukon Government to learn about and start the microgeneration application process.
- Obtain the electrical permit, any municipal approvals and have a billing account with The Company.

The Company shall:

- Provide a dual register meter to each site after Yukon Government process is completed and provide data on exported energy to the Yukon Government.

6.2 INDEPENDENT POWER PRODUCER (IPP)

Renewable generation above 50kW meant to export energy can apply to be an IPP.

The customer shall:

Apply to the Yukon Government to learn about and start the IPP application process and comply with all requirements of the program.

6.3 STANDBY OR BACKUP GENERATION

Standby generation designed to operate in parallel with the distribution system (even briefly during the operation of a transfer switch).

Closed transition transfer switches must be

- CSA or ULC approved, and
- Momentary transition, and
- Complete operation in under 300ms in all cases, and
- Do not energize the utility's line with no voltage present, and
- Do not export power onto AEY's system

Open transition switches are acceptable and preferred.

Generlink – device that attaches to meter base allowing connection of a stand-by generator at the meter. Disconnects from utility power supply automatically when generator is supplying power. Fault level at meter must be less than device rating to connect a Generlink. The Company will check fault level at the customer's location to verify if Generlink installation is acceptable.

The customer shall:

- Comply with the "Application for Service & General Requirements" of this guide for the required service type.
- Sign an agreement with the Company for their generation

The Company shall:

- Supply and install the meter
- Provide details on operating requirements, transfer switches, and safety requirements
- Sign an agreement with the Company for the operation of their generation

7 TEMPORARY SERVICES

Temporary service normally means a service that will be required for two years or less. In some cases, a longer period may be appropriate if acceptable to the Company, the customer, and the electrical inspection branch. For example, road construction camps sometimes require services for three years while they are constructing a project such as a stretch of highway.

To determine whether a service is temporary, contact your local Company office and the electrical inspections branch.

7.1 TEMPORARY RESIDENTIAL SERVICES

7.1.1 TEMPORARY UNDERGROUND RESIDENTIAL SERVICE

Refer to section 2.21 for winter construction limitation. Conduit cleaning may be required.

The customer shall:

- Supply and install an approved temporary service complete with CSA or ULC approved meter socket base and related hardware.
- Install the temporary service within 3m of the conduit stub-off.
- Provide an “Electric Connect Permit/ Connect Authorization” from The Electrical Inspector

The company shall*:*

- Supply and install cable from source to meter
- Supply the meter and energize the service.

7.1.1 TEMPORARY OVERHEAD RESIDENTIAL SERVICE

The maximum length of the service drop for an overhead temporary service is 15 meters. The height of the temporary service pole should be selected to ensure the minimum conductor to ground clearance is met. For minimum requirements of the conductor to ground clearance contact the local Electrical Inspections office and see Section 1.5 for clearance requirements.

The customer shall:

- Supply and install an approved "temporary service pole" complete with meter socket base and related hardware.
- Provide an "Electric Connect Permit/ Connect Authorization" from the Electrical Inspector.

The company shall:

- Supply and install low voltage wire (triplex) from nearest power source to the temporary service pole.
- Supply the meter and energize the service.

Once all the requirements are complete The Company can make arrangements to energize the temporary service.

Note: For the details of the Temporary Service Pole and grounding requirements please check with your local Electrical Inspection Branch.

7.2 TEMPORARY GENERAL SERVICES

7.2.1 TEMPORARY UNDERGROUND GENERAL SERVICE

Refer to section 2.21 for winter construction limitation.

The customer shall:

- Arrange an onsite meeting with Utility Company's service department to discuss the work plan before starting any work.
- Supply and install a CSA OR ULC approved, low voltage, socket type meter base.
- Supply and install all wiring, equipment, and facilities on the load side of the meter.
- Supply and install the conduit for the conductors to the meter socket on the line side.
- Supply and install secondary conductors from the source to the line side of the meter. Connectors for connecting to a transformer shall have NEMA spacing for connection to a spade terminal.
- Make the secondary cable connections to the padmount transformer secondary bushings or the service pedestal.

The company shall*:*

- Provide site specific requirements for the temporary general service
- Supply and install the primary facilities required for electrical service up to and including the padmount transformer or the service pedestal.
- Make connection of customer secondary cables to the secondary bushings of the padmount transformer.
- Provide supervision for the customer to connect to the utility service pedestal
- Supply and install the meter.
- Supply the current transformers. Upon request, ship the equipment to the electrical contractor or manufacturer.
- Make the final connection to the overhead transformer when underground cables will be connected to an overhead transformer.

7.2.2 TEMPORARY OVERHEAD GENERAL SERVICE

The maximum length of the service drop for an overhead temporary service is 15 meters. The height of the temporary service pole should be selected to ensure the minimum conductor to ground clearance is met. For minimum requirements of the conductor to ground clearance contact the local Electrical Inspections office and see Section 1.5 for clearance requirements.

The customer shall:

- Supply and install an approved "temporary service pole" complete with meter socket base and related hardware.
- Provide an "Electric Connect Permit/ Connect Authorization" from the Electrical Inspector.

The company shall:

- Supply and install low voltage wire (triplex) from nearest power source to the temporary service pole.
- Supply the meter and energize the service.

Once all the requirements are complete the company can make arrangements to energize the temporary service.

Note: For the details of the Temporary Service Pole and grounding requirements please check with your local Electrical Inspection Branch.

7.3 STANDBY SERVICES

Standby service normally means a service that has been temporarily disconnected for a period of six to twelve months. The meter will normally have a disconnect sleeve connected or the metering and associated facilities such as the transformer may be temporarily removed. During the standby service period, the customer will be billed on the rate minimum.

For service reconnection contact your local company office. Inspection of the service may be required before reconnection.

The local company office or marketing representative can provide further details on standby services.

8 INSTRUMENT TRANSFORMER METERING

Instrument transformer metering requires instrument transformers, an instrument transformer cabinet and a combination meter socket and test switch enclosure. Instrument transformers are typically installed in the instrument transformer cabinet or a switchgear compartment. For typical installation arrangement, refer to Drawing 8-1 Typical Arrangement for Instrument Transformer.

8.1 INSTRUMENT TRANSFORMER

The Company will supply Measurement Canada approved instrument transformers for revenue metering. Upon request, the Company will ship the instrument transformers to the electrical contractor or manufacturer.

The customer is responsible for the installation of, and primary connection to, the current transformers, and for the installation of the voltage transformers. Refer to the applicable link in the following table for instrument transformer installation arrangement and connections.

Table 8-1 List of Instrument Metering Arrangement

Service Voltage (volt)	Phase, Wire	Reference
120/240 or 240/280	single-phase, 3-wire	Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering
120/208 or 277/480	three-phase, 4-wire	Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering
347/600	three-phase, 4-wire	Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering

8.2 INSTRUMENT TRANSFORMER CABINETS

The customer shall provide and install a Company approved metal instrument transformer cabinet. On three-phase services, the customer is responsible for ensuring that the neutral conductor and all phase conductors are connected inside the cabinet.

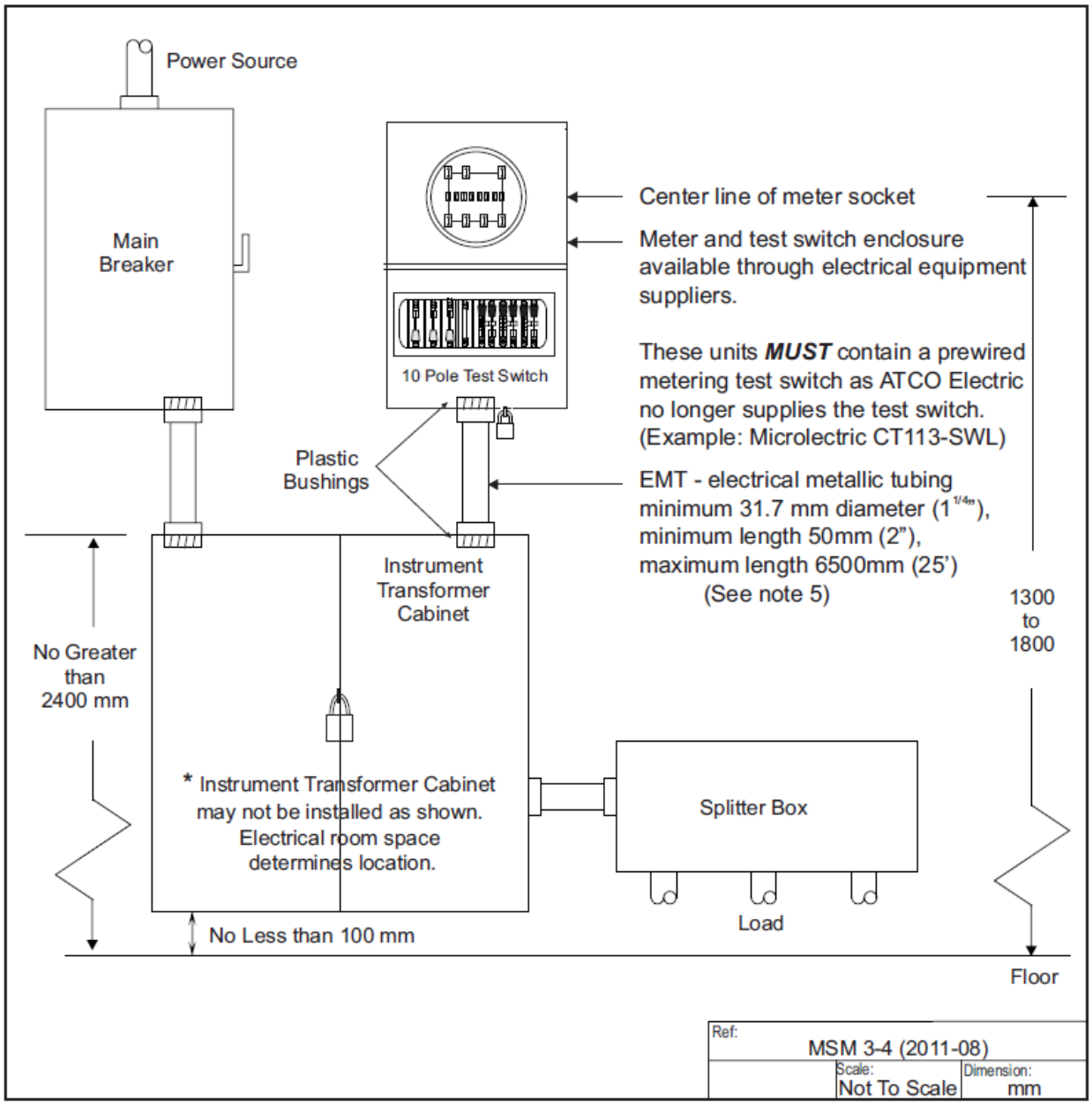
The cabinet shall have a minimum inside dimension of:

- 760 x 760 x 250 mm (length x width x depth) for bar-type current transformers and for 200-1200 ampere service, or
- 1200 x 900 x 300 mm (length x width x depth) for window-type current transformers and for 1201 - 2000 ampere service.

For indoor installation, the cabinet shall have vertically double-hinged doors which swing open at least 110 degrees, or a single-hinged door. If the cabinet is in a high dust area, it **must be** a single weatherproof door type.

For outdoor installation, enclosures shall have a single NEMA R3 weatherproof door.

Drawing 8-1 Typical Arrangement for Instrument Transformer Metering

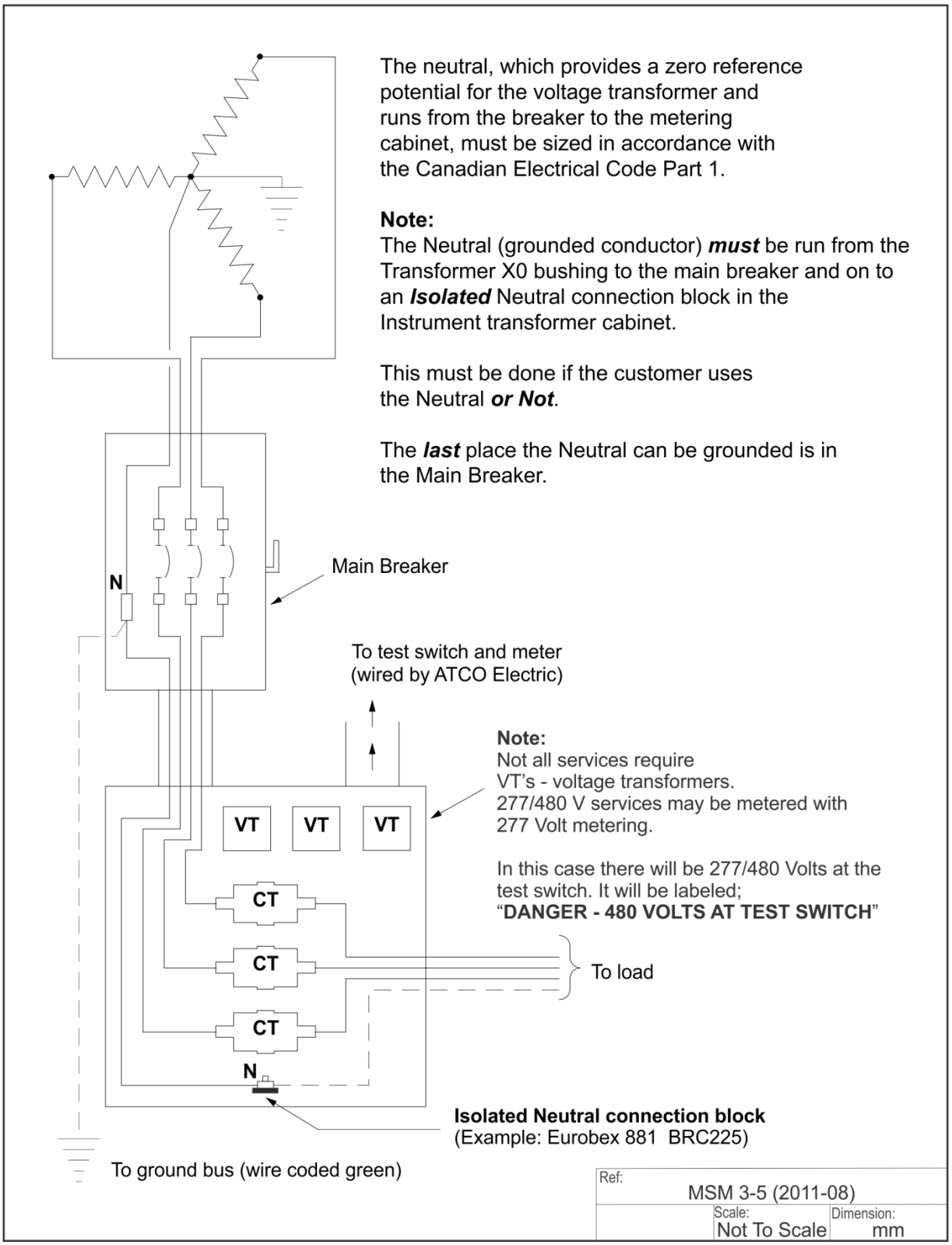


See the Notes for this drawing on the next page.

Notes:

1. The instrument transformer cabinet and the combination meter socket/test switch enclosure shall be in the same room, separated by a **maximum of 6.5 m**.
2. The customer must supply meter base with pre-wired test switch.
3. Indoor instrument transformer cabinets shall have vertically double-hinged doors which swing open at least 110 degrees, or a single-hinged door. Preference is for a double hinged door. If the cabinet is in a high dust area, it must be a single weatherproof door type.
4. Metering shall be located inside a building.
5. The electrical contractor shall not place a LB (elbow with cover) between the meter/test switch enclosure and the instrument transformer cabinet.

Drawing 8-2 Typical Connections for Three-Phase, 4-Wire Wye Services



Revised May 2023

8.3 METER SOCKET AND TEST SWITCH ENCLOSURE

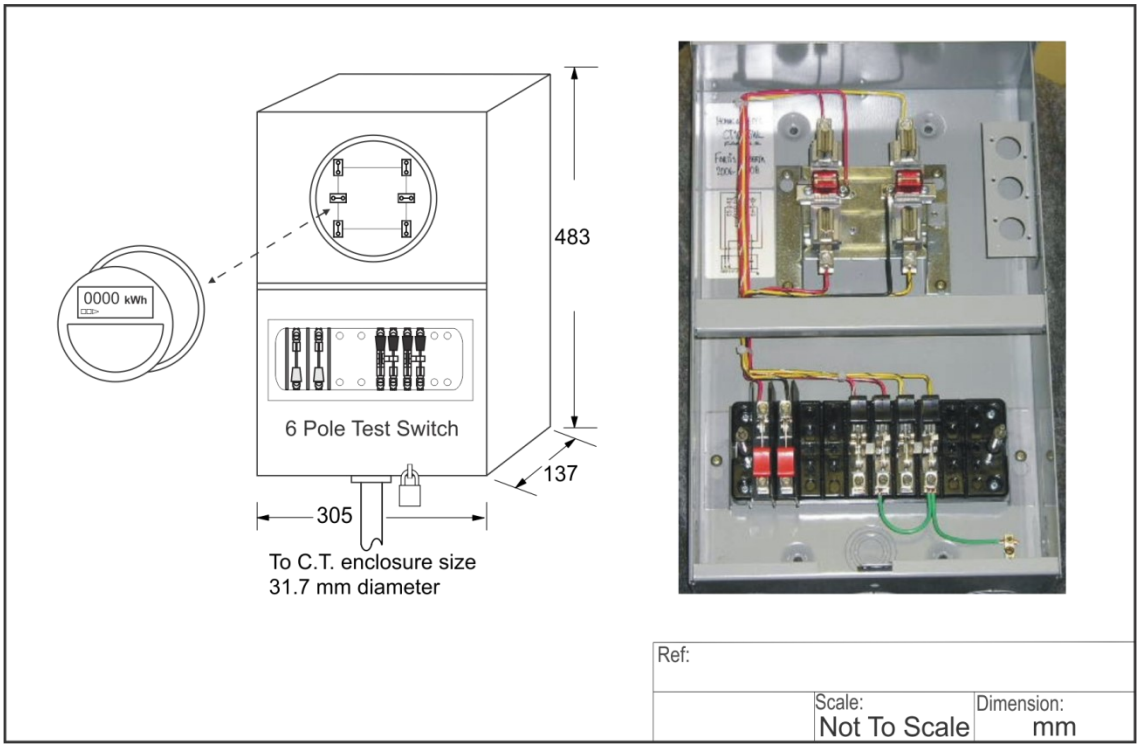
General Requirements

- For outdoor applications, use a NEMA R3 weatherproof enclosure.
- The electrical contractor shall not place a LB (elbow with cover) between the meter socket and test switch enclosure, and the instrument transformer cabinet.
- If the enclosure is on top of the instrument transformer cabinet, the minimum separation shall be 50 mm.
- For single-phase, 3-wire services greater than 200 amperes, the Microlectric FA4B−6T may be used. It is a combination 6-jaw meter socket and test switch enclosure that also houses two 2-wire current transformers. It may be used for outside or inside applications.

8.3.1 SINGLE-PHASE METER SOCKET AND TEST SWITCH ENCLOSURE

The standard instrument meter base for single-phase, 3-wire services greater than 200 amperes, is the 6-jaw meter socket and test switch enclosure. It is an integrated unit consisting of the enclosure, 6-jaw meter socket and 6-point test switch. It is pre-wired from the top of the test switch to the meter socket.

Drawing 8-3 Single-Phase Meter and Test Switch Enclosure



Prewiring

The top of the 6-point test switch is pre-wired to the 6-jaw meter socket. The colour code and wire sizes are as follows:

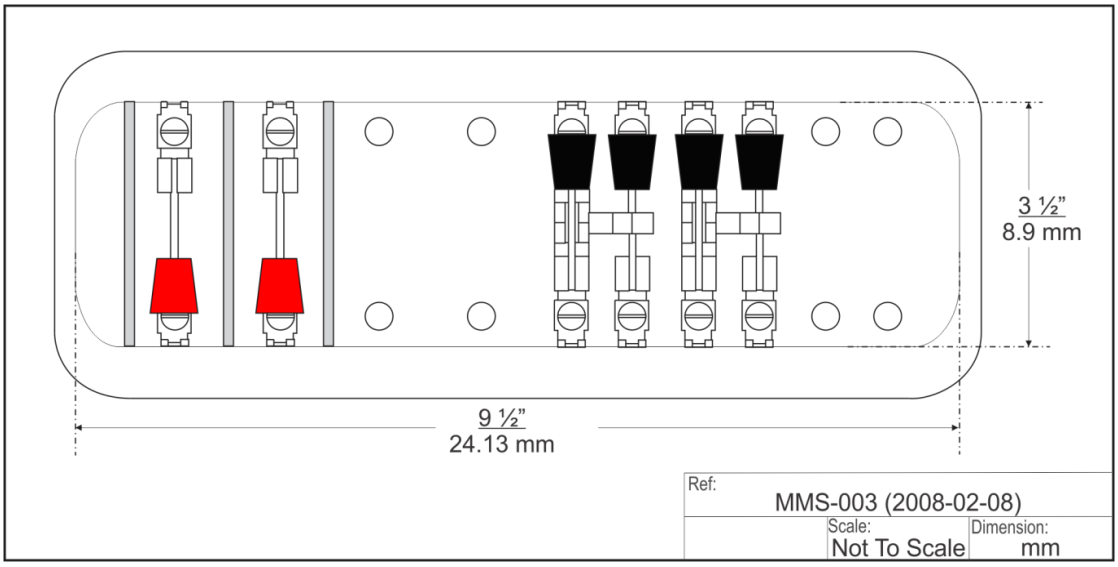
- Line 1 current polarity - Red/white spiral tracer #12 AWG
- Line 1 current return - Red/black spiral tracer #12 AWG
- Line 2 current polarity - Yellow/white spiral tracer #12 AWG
- Line 2 current return - Yellow/black spiral tracer #12 AWG
- Line 1 voltage polarity - Solid red #12 AWG
- Line 2 voltage return - Solid black #12 AWG

Test Switch Configuration

The test switch arrangement shall be made up of the following assemblies, with potential switch handles mounted in reverse so that when the switch is open, the potential blades are not energized:

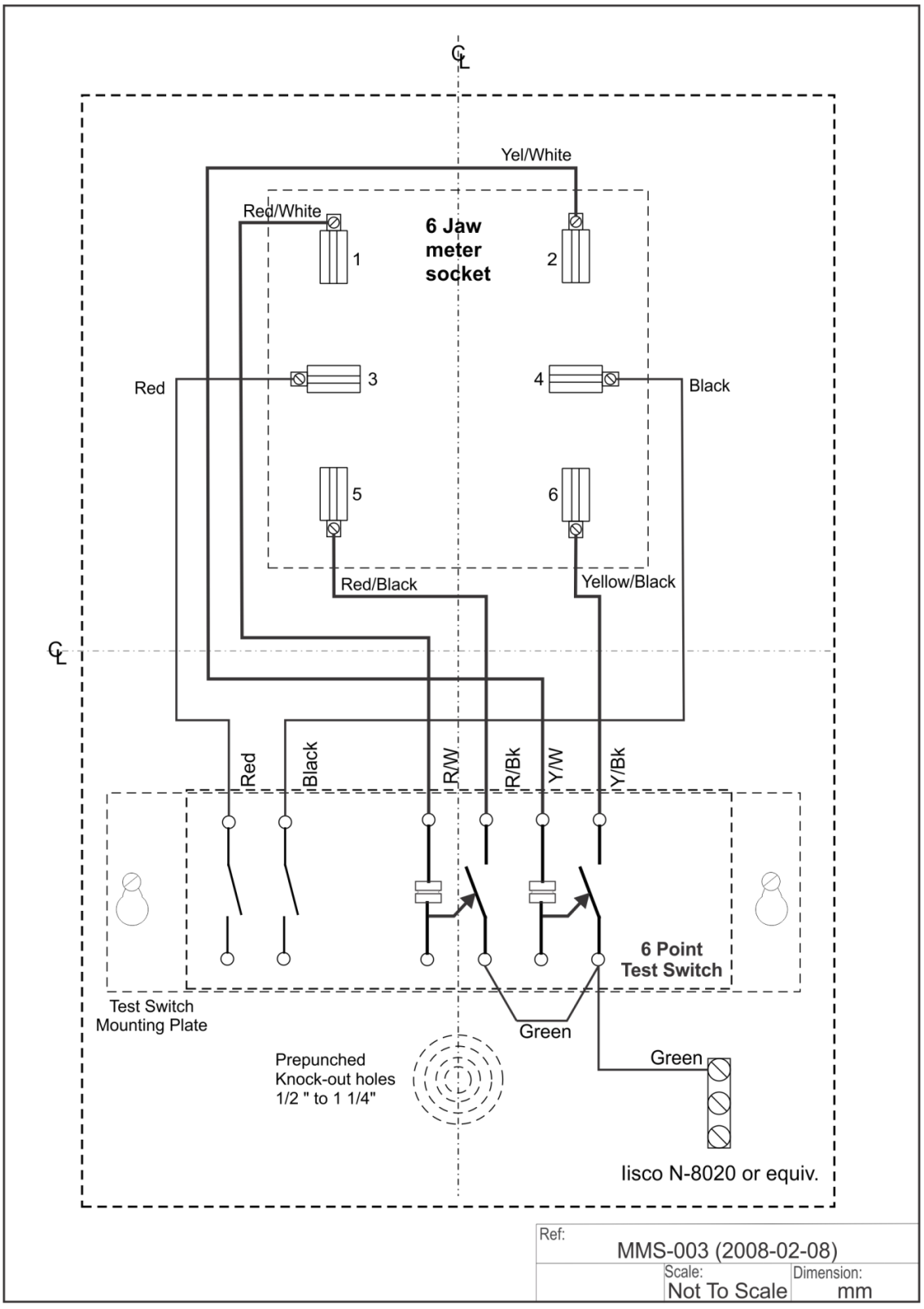
- Barrier
- Reversed single pole potential (red)
- Barrier
- Reversed single pole potential (red)
- Barrier
- Space
- Space
- Left-hand load test-jack double-pole current element (black)
- Left-hand load test-jack double-pole current element (black)
- Space

Drawing 8-4 6-Point Test Switch



Note: Solid green wire, #12 AWG to be pre-wired, test switch terminal 6 & 8, to the ground lug.

Drawing 8-5 Single-Phase Meter and Test Switch Wiring

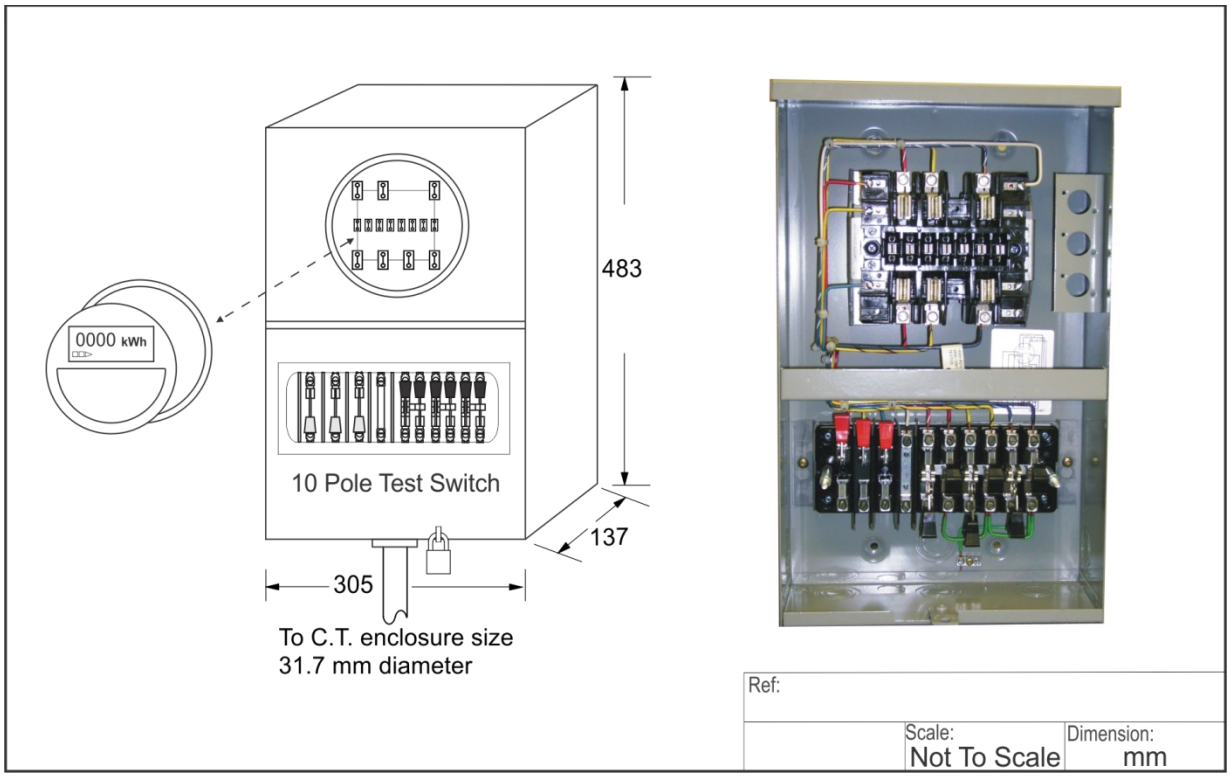


Revised May 2023

8.3.2 THREE-PHASE METER SOCKET AND TEST SWITCH ENCLOSURE

The standard instrument meter base for three-phase, 4-wire wye services is the 13-jaw meter socket and test switch enclosure. It is an integrated unit consisting of the enclosure, 13-jaw meter socket and 10-point test switch and is pre-wired from the top of the test switch to the meter socket.

Drawing 8-6 Three-Phase Meter and Test Switch Enclosure



Wiring:

The top of the 10-point test switch is pre-wired to the 13-jaw meter socket. The colour code and wire sizes are as follows:

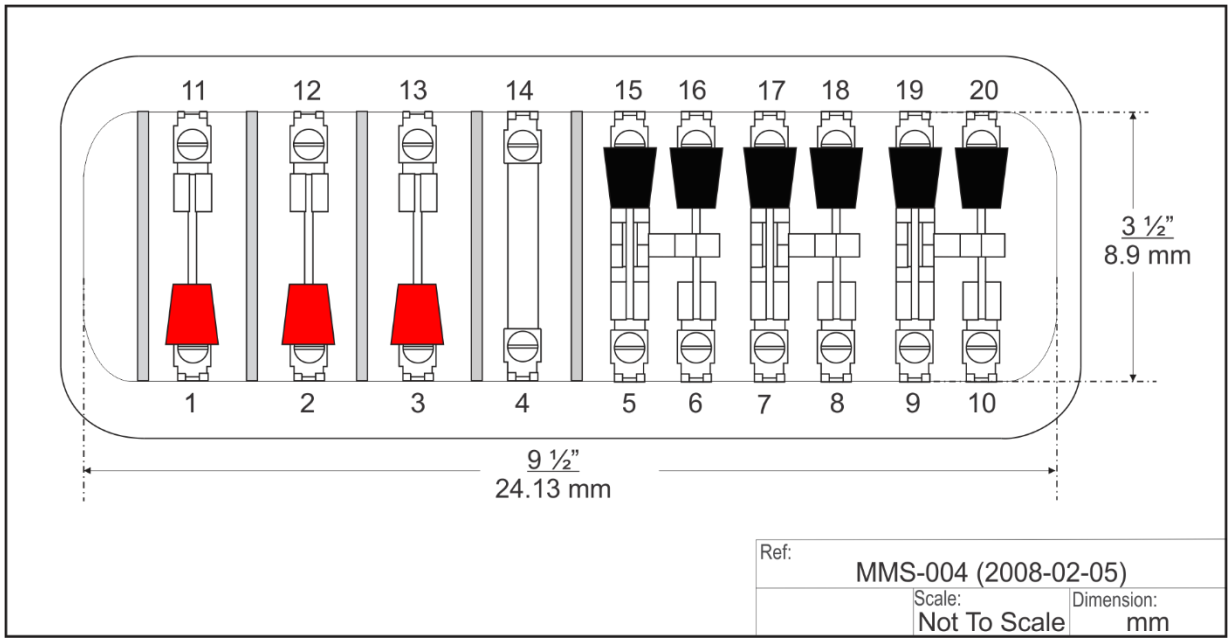
- A phase current polarity	- Red/white spiral tracer	#12 AWG
- A phase current return	- Red/black spiral tracer	#12 AWG
- B phase current polarity	- Yellow/white spiral tracer	#12 AWG
- B phase current return	- Yellow/black spiral tracer	#12 AWG
- C phase current polarity	- Blue/white spiral tracer	#12 AWG
- C phase current return	- Blue/black spiral tracer	#12 AWG
- A phase voltage polarity	- Solid red	#12 AWG
- B phase voltage polarity	- Solid yellow	#12 AWG
- C phase voltage polarity	- Solid blue	#12 AWG
- Neutral	- Solid white	# 12 AWG

Configuration

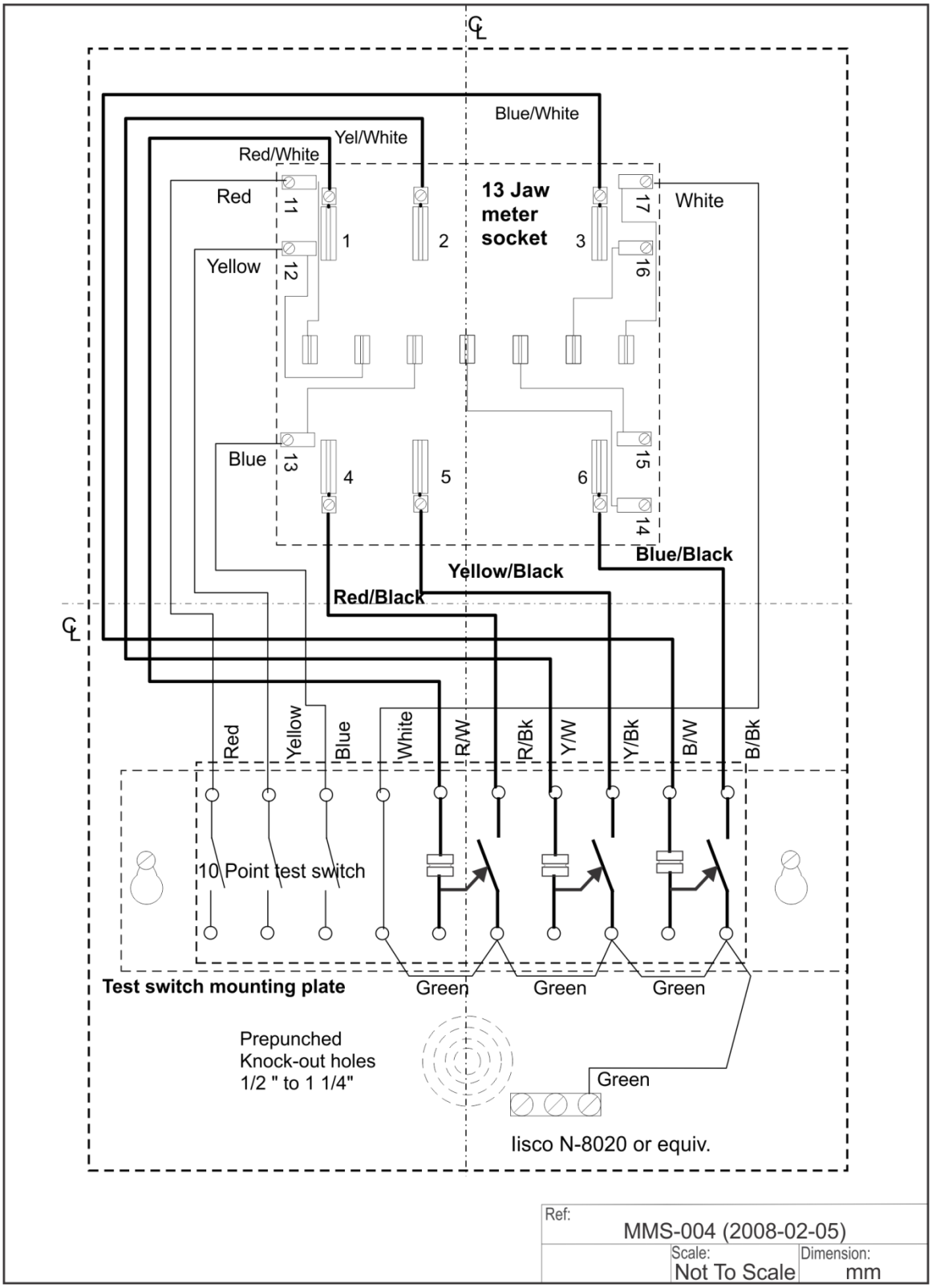
The test switch arrangement shall be made up of the following assemblies, with potential switch handles mounted in reverse so that when the switch is open, the potential blades are not energized:

- Reversed single pole potential (red)
- Barrier
- Reversed single pole potential (red)
- Barrier
- Reversed single pole potential (red)
- Barrier
- Solid through neutral bar
- Barrier
- Left-hand load test-jack double-pole current element (black)
- Left-hand load test-jack double-pole current element (black)
- Left-hand load test-jack double-pole current element (black)

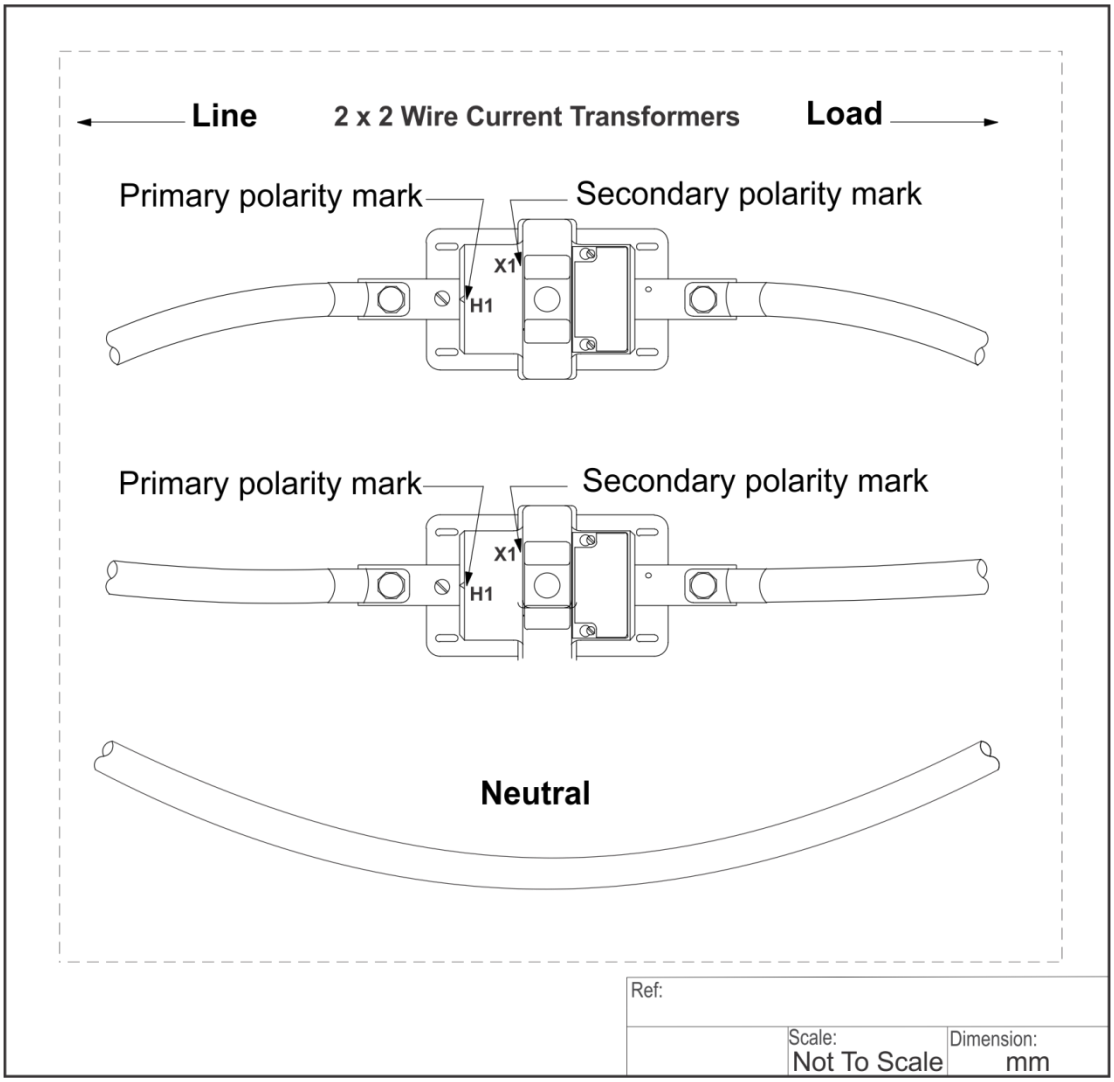
Drawing 8-7 10-Point Test Switch



Drawing 8-8 Three-Phase Meter and Test Switch Wiring



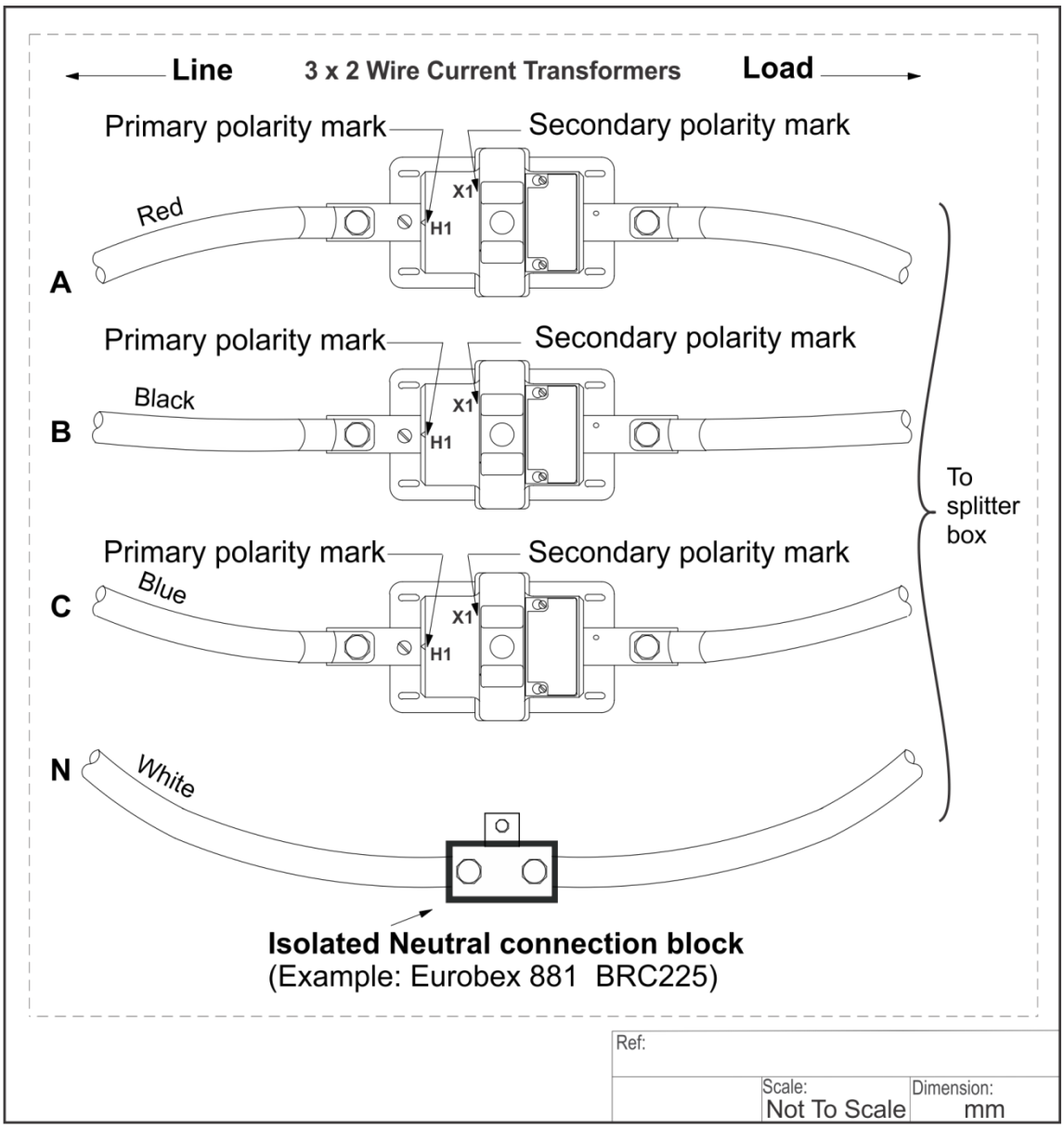
Drawing 8-9 Typical Arrangement of Single-Phase, 3-Wire 120/240 or 240/480 V Instrument Metering



Notes:

1. The current transformer secondary polarity mark must always be on the line side.
2. The instrument transformer cabinet must be at least 760 x 760 x 250 mm (H x W x D).
3. A combination 6-terminal meter socket and test switch enclosure is required as shown in section 8.3.1 Single-Phase Meter Socket And Test Switch Enclosure.
4. The electrical contractor shall not place a LB (elbow with cover) between the meter socket and test switch enclosure, and the instrument transformer enclosure.
5. The electrical contractor shall ensure that the connection to the current transformer is made with the correct bolt size and is tight.
6. Current transformers shall be mounted according to section 8.4 Mounting Or Fastening Instrument Transformers.

Drawing 8-10 Typical Arrangement of Three-Phase, 4-Wire Wye 120/208 or 277/480 V Instrument Metering 200-1200 A Service

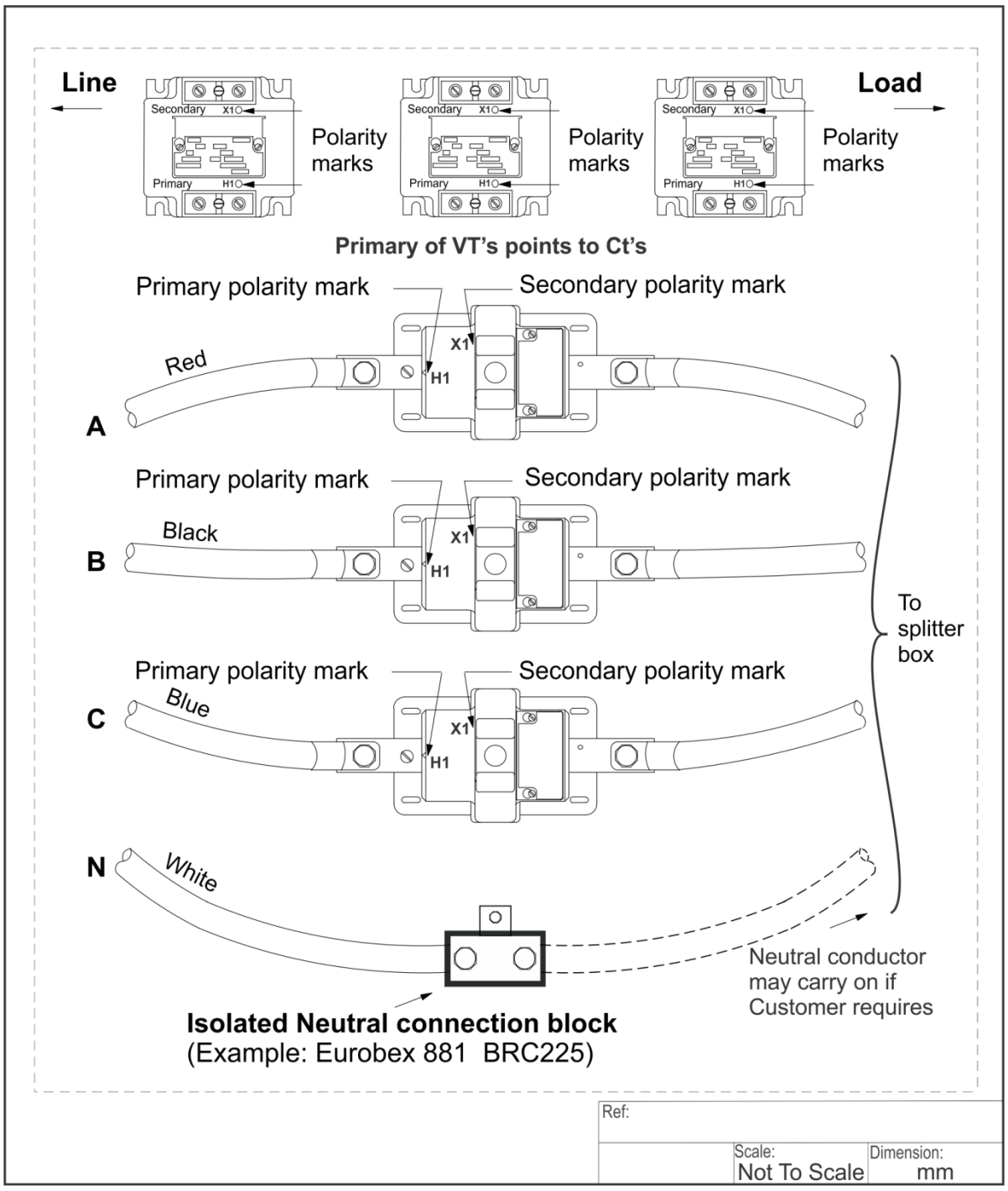


See the circuit notes on the next page.

Notes:

1. The current transformer secondary polarity marks must always be on the line side.
2. The instrument transformer cabinet must be at least 760 x 760 x 250 mm (H x W x D).
3. A combination 13-jaw meter socket and pre-wired test switch enclosure is required as shown in section 8.3.2 Three-Phase Meter Socket And Test Switch Enclosure.
4. The neutral conductor must be brought into the instrument transformer cabinet from the star point of the transformer to an isolated neutral block as per the CEC.
5. The electrical contractor shall not place a LB (elbow with cover) between the meter socket and test switch enclosure and the instrument transformer cabinet.
6. The electrical contractor shall ensure that the connection to the current transformer is made with the correct bolt size and is tight.
7. Current transformers shall be mounted according to section 8.4 Mounting Or Fastening Instrument Transformers.

Drawing 8-11 Typical Arrangement of Three-Phase, 4-Wire Wye 347/600 V Instrument Metering, 200-1200 A Service



See the circuit note on the next page.

Notes:

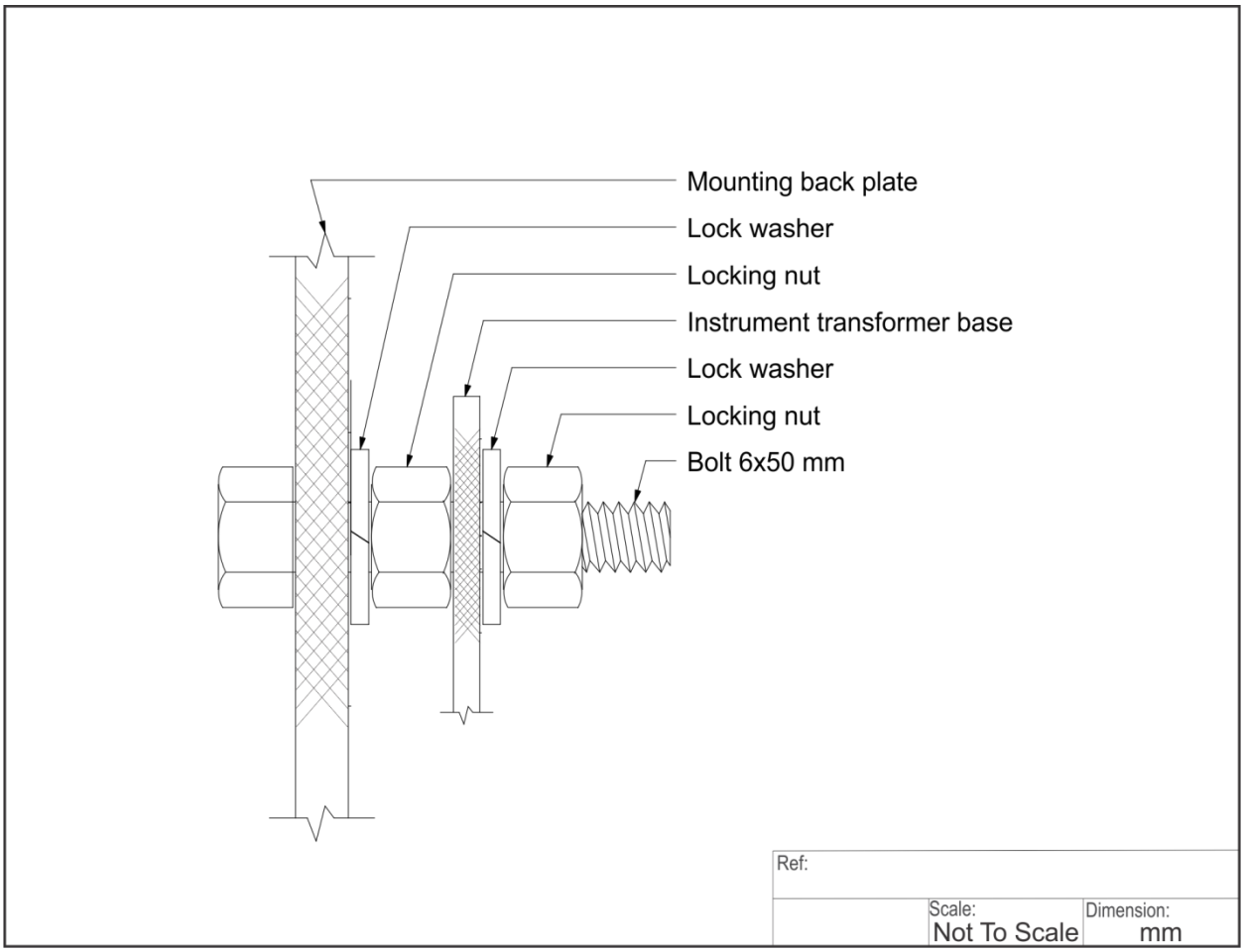
1. The current transformer secondary polarity marks must always be on the line side.
2. The electrical contractor shall ensure that the connection to the current transformer is made with the correct bolt size and is tight.
3. The voltage transformer primary should point towards the CTs.
4. The instrument transformer enclosure shall be at least 760 x 760 x 250 mm (H x W x D).
5. A combination 13-jaw meter socket and pre-wired test switch enclosure is required as shown in section 8.3.2 Three-Phase Meter Socket And Test Switch Enclosure.
6. The neutral conductor must be brought into the instrument transformer cabinet from the star point of the transformer to an isolated neutral block as per the CEC.
7. Instrument transformers shall be mounted according to section 8.4 Mounting Or Fastening Instrument Transformers.

8.4 MOUNTING OR FASTENING INSTRUMENT TRANSFORMERS

The most common method is to attach the instrument transformers to the back plate with **self-tapping metal screws.**

If the instrument transformers are bolted to the back plate, the following method must be used.

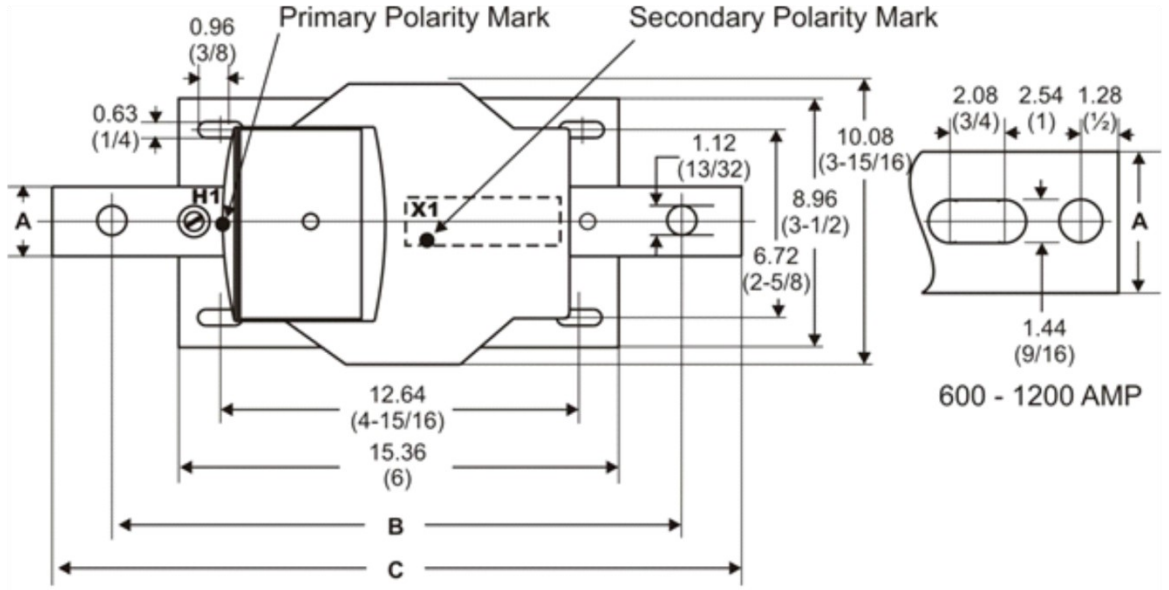
Drawing 8-12 Mounting or Fastening Instrument Transformers

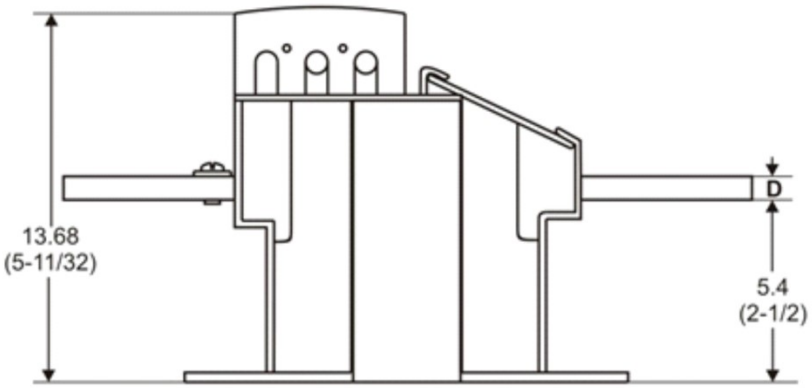


Notes:

1. The instrument transformers must be mounted using all the mounting holes supplied by the manufacturer.
2. The Company must be able to remove the instrument transformers without removing the back plate.

Drawing 8-13 Typical Outline of Bar-Type Current Transformer 700 V Class, 50-1200 A





PRIMARY BAR DIMENSIONS

AMPS	A	B	C	D
5 - 400	2.54 (1)	19.69 (7-3/4)	23.81 (9-3/8)	0.79 (5/16)
600-1200	5.08 (2)	20.67 (10-1/2)	20.67 (10-1/2)	0.95 (3/8)

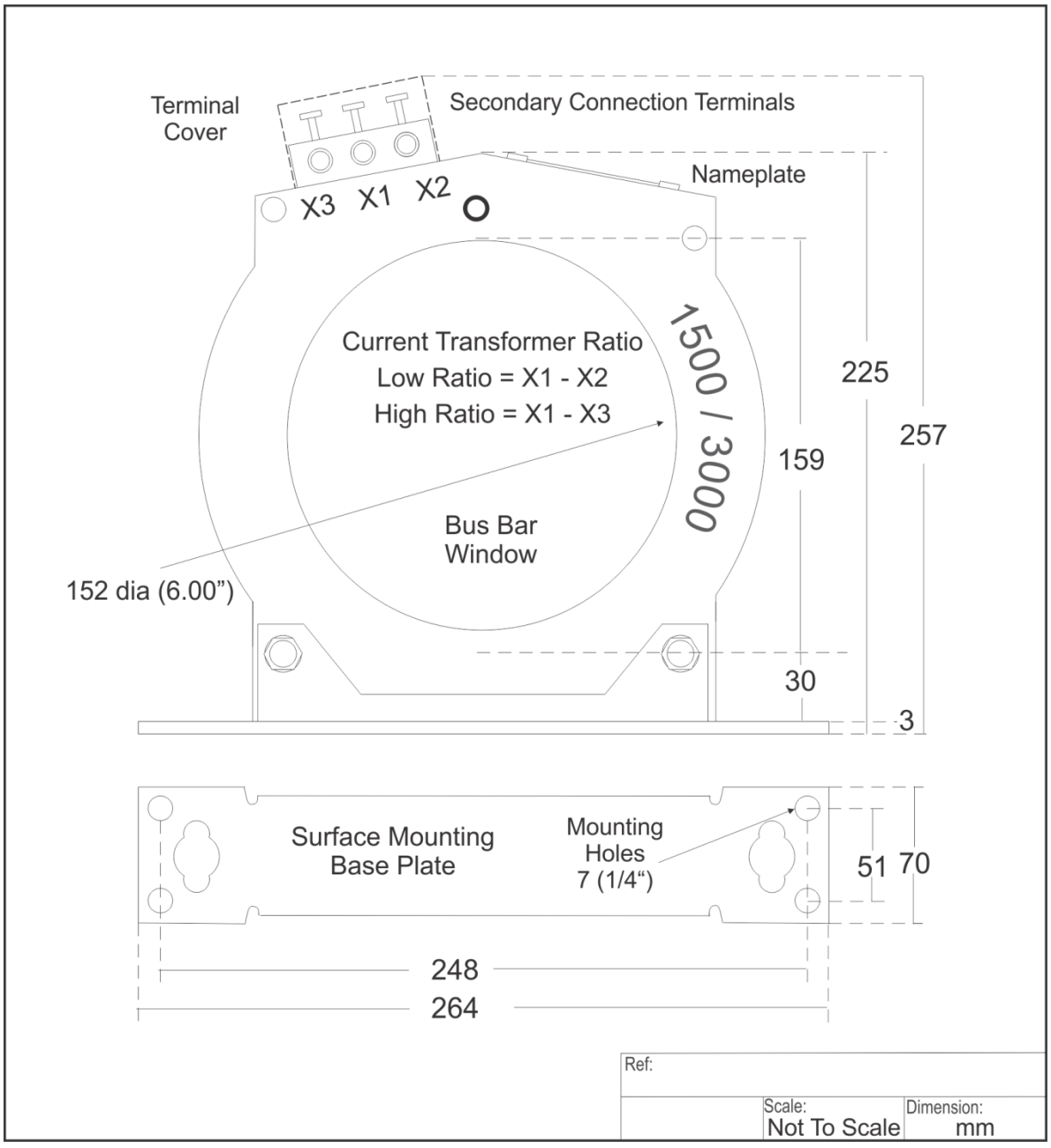
Ref:

Scale: Not To Scale

Dimension: mm

Revised May 2023

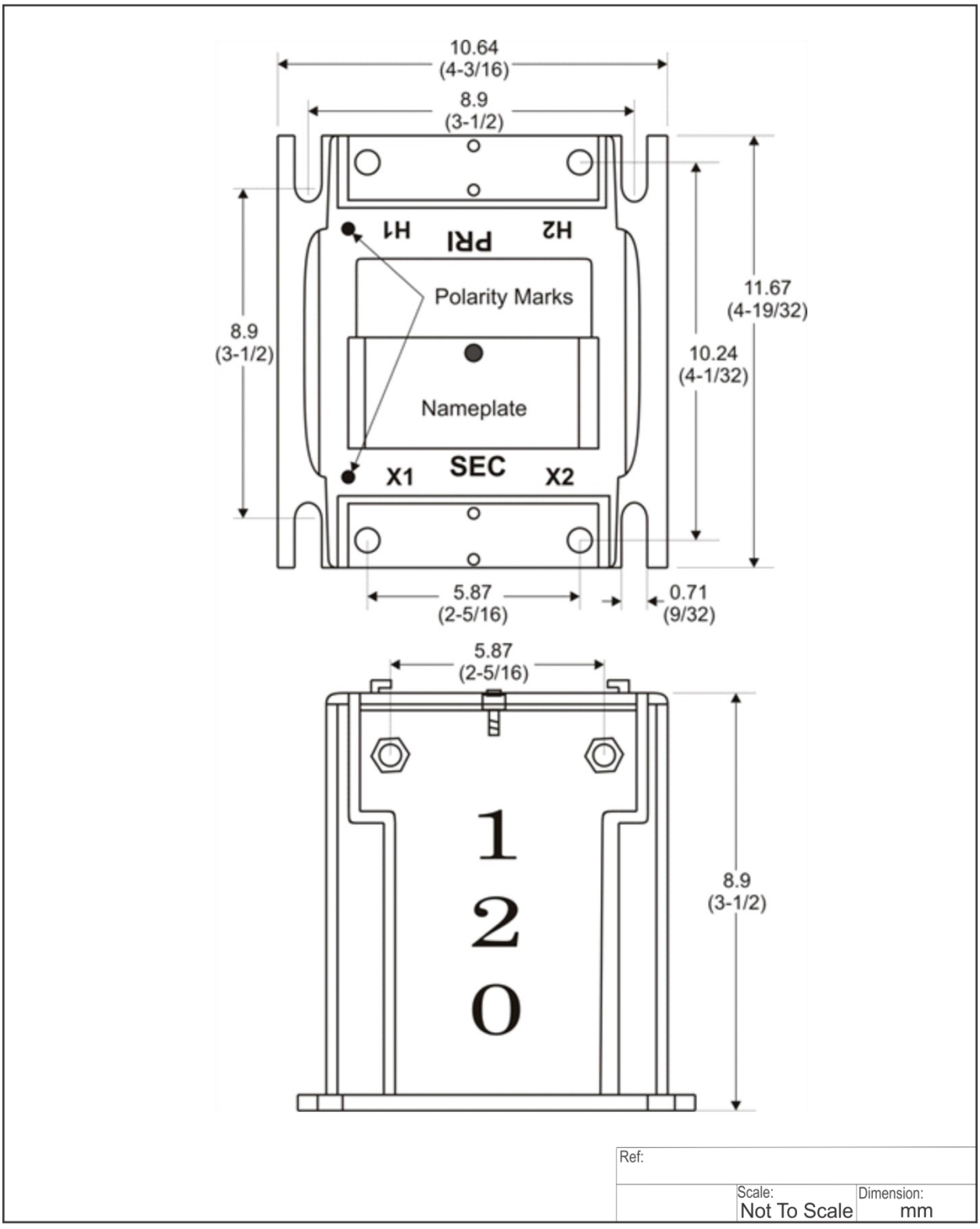
Drawing 8-14 Typical Outline of a Window-Type Current Transformer, 700 V Class, 1200-2000 A



Note:

Window-type current transformers require an instrument transformer enclosure of at least 1200 x 900 x 300 mm (H x W x D).

Drawing 8-15 Typical Outline of a Voltage Transformer 700 V Class



9 MANUFACTURED SWITCHGEAR FOR SERVICES & METERING

For 600 volt switchgear, the instrument transformer compartment shall have a minimum height x width x depth of:

- 760 x 760 x 250 mm for 200−1200 amp size,
- 1200 x 900 x 300 mm for 1201−2000 amp size, and
- 1200 x 900 x 450 mm for 2001−4000 amp size.

On CSA OR ULC approved metal-clad (not cubicle) switchgear, some deviation from the above sizes is permitted with prior approval from the Company.

9.1 INDOOR/OUTDOOR SWITCHGEAR

For service greater than 200 amperes and 600 volts with customer owned switchgear, indoor metering is preferred. For 5−25 kV services, the Company requires outdoor pole mounted or pad mounted primary metering.

9.2 TRANSDUCER/SENSING CONNECTIONS IN SWITCHGEAR

On indoor customer owned switchgear, the only customer load connections permitted ahead of the Company metering are load characteristic sensing transducers (i.e.: current or voltage and/or phase sequence or ground fault sensing devices) and transfer switch sensing devices required for main breaker control tripping and safety. All other transducers (i.e.: panel display lighting, panel meters, motor trip/close actuators and auxiliary sensing and power supply services) are to be connected on the load side of the Company's metering.

9.3 MANUFACTURER/CONSULTANT'S DRAWINGS FOR SWITCHGEAR

Prior to the manufacturing of the switchgear, the customer shall submit three copies of the manufacturers or consultant’s drawings including dimensions of the main breaker cubicle, the control and sensing compartment and the metering compartment. Drawings shall include single line diagrams of all customer control and sensing devices connected on the line side of the Company's metering.

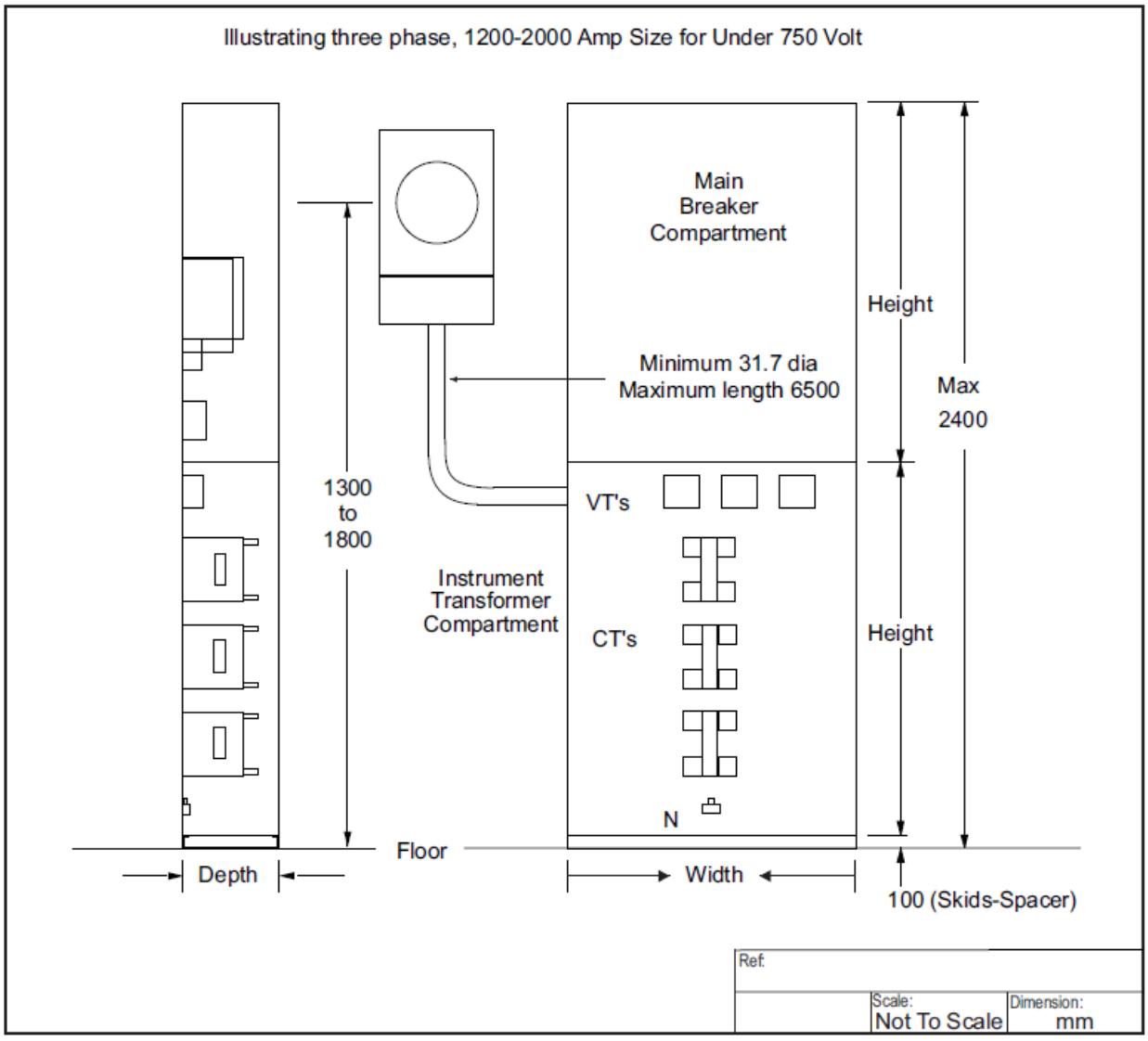
9.4 CT CABINET AND SWITCHGEAR ENCLOSURE

The CT cabinet of the switchgear shall be at least 100 mm above the floor and the switchgear enclosure height shall be no more than 2400 mm above the floor. The enclosure door(s) shall swing open a minimum of 110 degrees. Two vertically hinged doors are preferred; however, a single-hinged door is acceptable. Provisions for padlocking the door(s) of the CT cabinet must be provided. The Company will provide the padlock.

9.5 WARNING SIGNS FOR MANUFACTURED SWITCHGEAR

The customer shall place a sign warning of live (fused) components, even if the breaker is open in a conspicuous location near the main breaker.

Drawing 9-1 Instrument Transformer Metering Inside the Switchgear



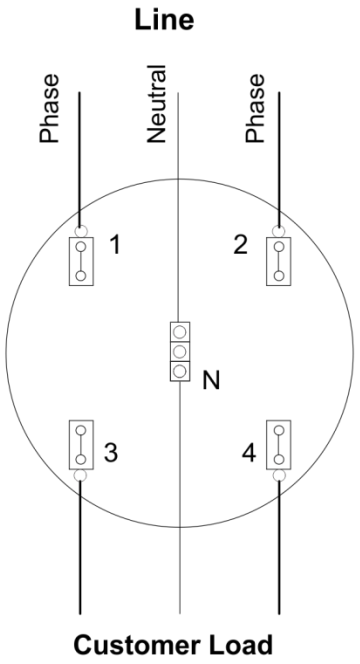
Notes:

1. The electrical contractor shall not place a LB (elbow with cover) between the meter/test switch enclosure and the instrument transformer cabinet.
2. For more details on the meter/test switch enclosure refer to section 8.3 Meter Socket And Test Switch Enclosure.
3. Secondary metering wires shall be extended from the CT cabinet through 1¼" (1.25") conduit to the switch/meter enclosure.

10 APPENDIX

10.1 SOCKET CONNECTIONS – SINGLE-PHASE, 3-WIRE 120/240 or 240/480 V

Drawing 10-1 Socket Connection Diagrams – Single-Phase, 3-Wire 120/240 or 240/480 V



Voltage at Socket						
Terminal No.	1-2	2-3	1-N	1-4	2-N	3-N
120/240 V	240	-	120	-	120	-
240/480 V	480	-	240	-	240	-

Note:

1. Single-phase, 3-wire circuit 120/240 volt utilizes a 100 ampere meter socket or 200 ampere heavy duty meter socket.

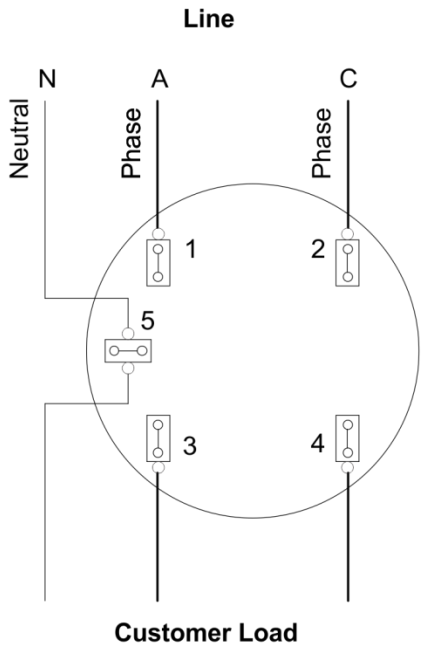
   For 240/480 volt, use a 200 ampere heavy duty.

2. For 240/480 volt, services, the meter socket shall be located after the main breaker and the neutral shall be isolated from the meter socket case.

Ref: MSM MS-13-480 (2011-07)
Scale: Not To Scale
Dimension: NA

10.2 SOCKET CONNECTIONS – NETWORK 3-WIRE 120/208 V

Drawing 10-2 Socket Connection Diagrams - Network 3-Wire 120/208 V



Voltage at Socket						
Terminal No.	1-2	2-3	1-3	2-4	1-5	2-5
120/208 V	208	-	-	-	120	120

Note:

Network, three wire circuit, 120/208 volt utilizing 100 amp meter socket or 200 amp heavy duty meter socket.

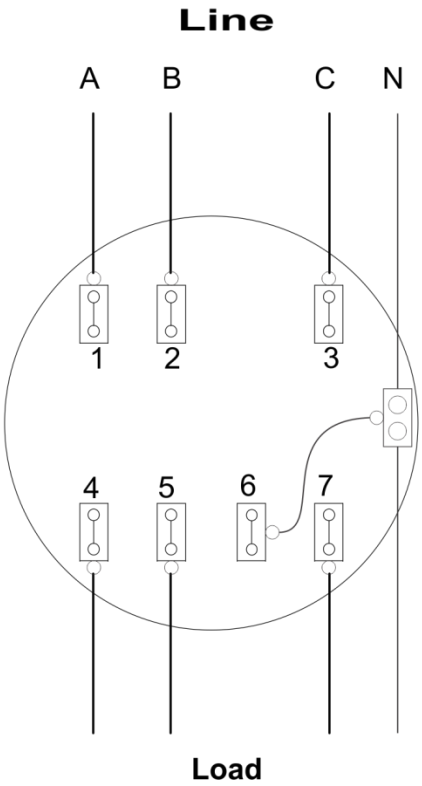
The 5th jaw, terminal number 5 is the neutral connection. (Grounded conductor)

Diagram shows tapping off of 'A' and 'C' phases, but load can be supplied from any two of the three phases.load can be supplied from any two of the three phases.

Ref: MSM MS-13-208 (2011-07)		
	Scale: Not To Scale	Dimension: NA

10.3 DIAGRAMS OF SOCKET CONNECTIONS – THREE-PHASE, 4-WIRE 120/208 V

Drawing 10-3 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 120/208 V



Voltage at Socket						
Terminal No.	1-2	2-3	1-3	1-6	2-6	3-6
120/208 V	208	208	208	120	120	120

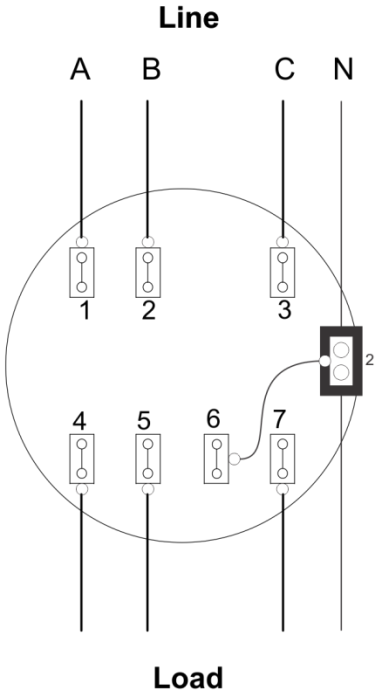
Note:

1. Three-phase, 4-wire circuit, 120/208Y volt utilizing 100 amp meter socket or 200 amp heavy duty meter socket.
2. Must be installed on the Line side of the main breaker.
3. **Must** have a neutral connection lug in the meter socket base.
4. The 6th jaw, terminal number 6 is the neutral connection for the meter.
5. On a 120/208V service the neutral conductor may be bonded to the meter base as long as the meter base is ahead of the main disconnect switch..

Ref: MSM MS-34-208 (2011-07)
Scale: Not To Scale
Dimension: NA

10.4 DIAGRAMS OF SOCKET CONNECTIONS – THREE-PHASE, 4-WIRE 277/480 OR 347/600 V

Drawing 10-4 Diagrams of Socket Connections – Three-Phase, 4-Wire Wye 277/480 or 347/600 V



Voltage at Socket						
Terminal No.	1-2	2-3	1-3	1-6	2-6	3-6
277/480 V	480	480	480	277	277	277
347/600 V	600	600	600	347	347	347

Notes:
On services over 300 volts Line to Line the metering:

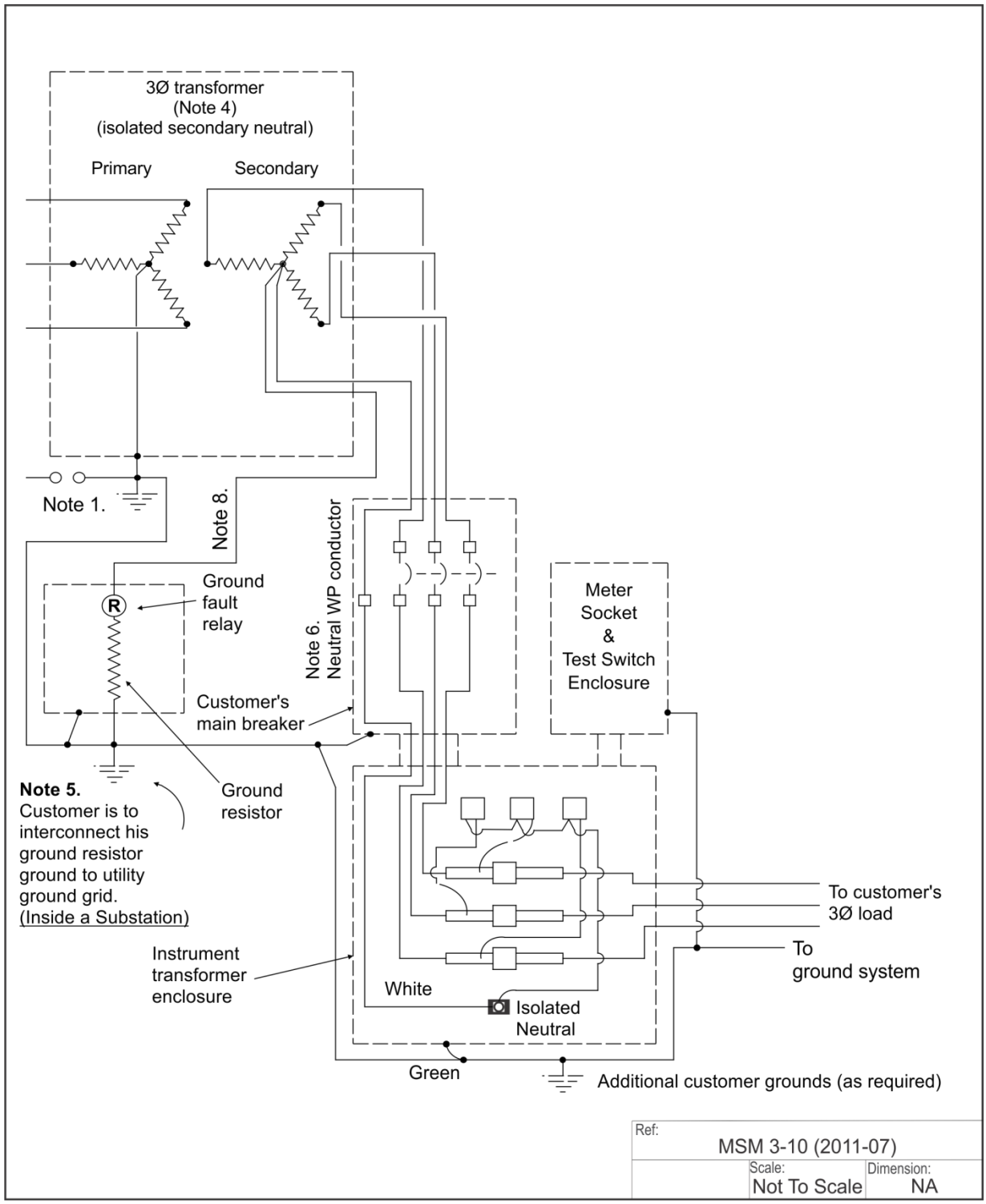
1. Three-phase, 4-wire circuit, 277/480Y, or 347/600Y volt utilizing 100 amp meter socket or 200 amp heavy duty meter socket.
2. M**ust** be installed on the load side of the main breaker.
3. **Must** have an **isolated** neutral connection lug in the meter socket base.
4. The 6th jaw, terminal number 6 is the neutral connection for the meter.

The ***last*** place the Neutral (Grounded conductor) can be grounded is in the main breaker.

Ref: MSM MS-34-600 (2011-07)		
	Scale: Not To Scale	Dimension: NA

10.5 WIRING DIAGRAM FOR GROUNDING RESISTORS

Drawing 10-5 Wiring Diagram for Grounding Resistors



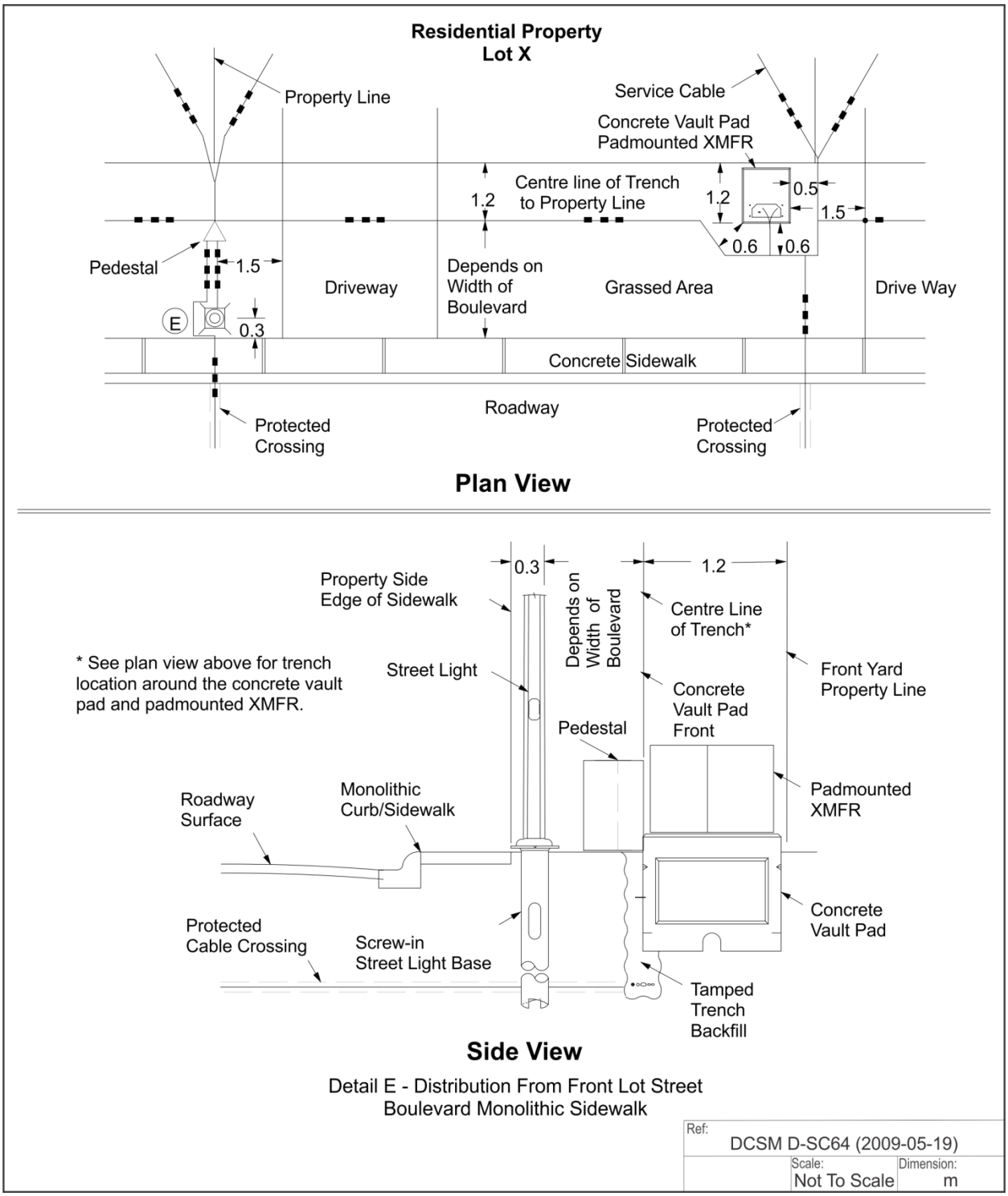
See the ground resistor notes on the next page.

Notes:

1. Transformer primary — Ground the primary star point, transformer case and interconnect with the ground from lightning arrestors, if installed. The secondary neutral is grounded through the ground resistor.
2. At the transformer, customer's main breaker and instrument transformer enclosure, install a sign reading, "Caution grounding resistor installed." Do not tie secondary neutral to case ground." Obtain the sign from the Company meter shop.
3. The design of the ground resistor should be coordinated with Company engineering.
4. On star - star transformers, the internally connected primary and secondary grounds must be separated.
5. Where the ground resistor is installed inside a substation, the resistor case ground and the transformer case should be interconnected to the ground.
6. The customer is to install an insulated bushing for the neutral weatherproof conductor, which is allowed to pass through the main breaker. The neutral is only for the star point for the metering.
7. An installation of 5 kV or 25 kV metering on a secondary service is similar to the above and should include a means for disconnecting the service on the supply side of the metering set.
8. The conductor from the X0 transformer, bushing to the ground resistor to the customer's building, should be mechanically protected from damage with conduit, unless protected by elevation above ground.
9. Refer to the CEC − Part 1, 10−1100 to 10−1108 for conductor sizing and installation of neutral grounding devices.

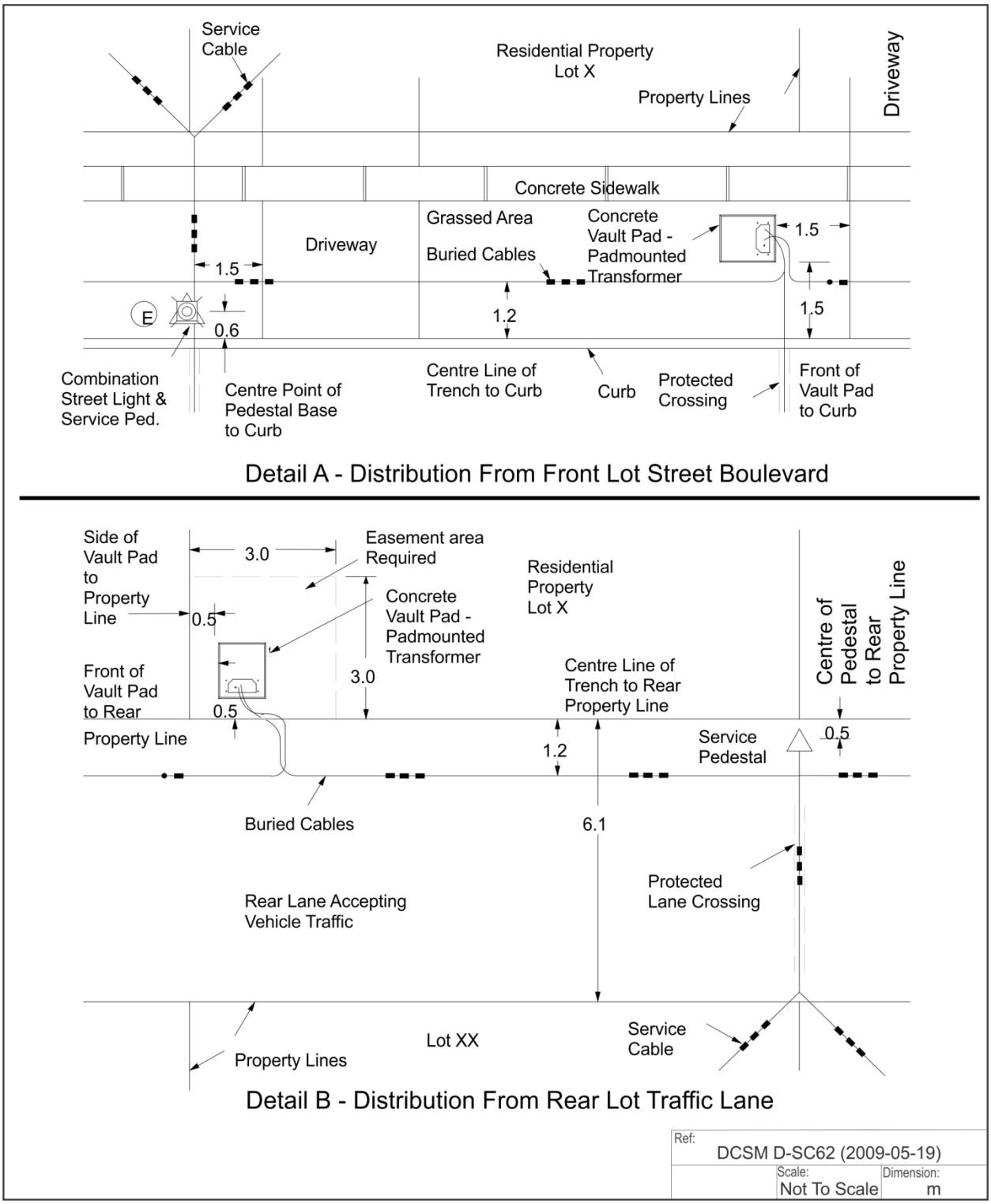
10.6 ALIGNMENT ON FRONT STREET MONOLITHIC CURB/SIDEWALK

Drawing 10-6 Alignment on Front Street Monolithic Curb/Sidewalk



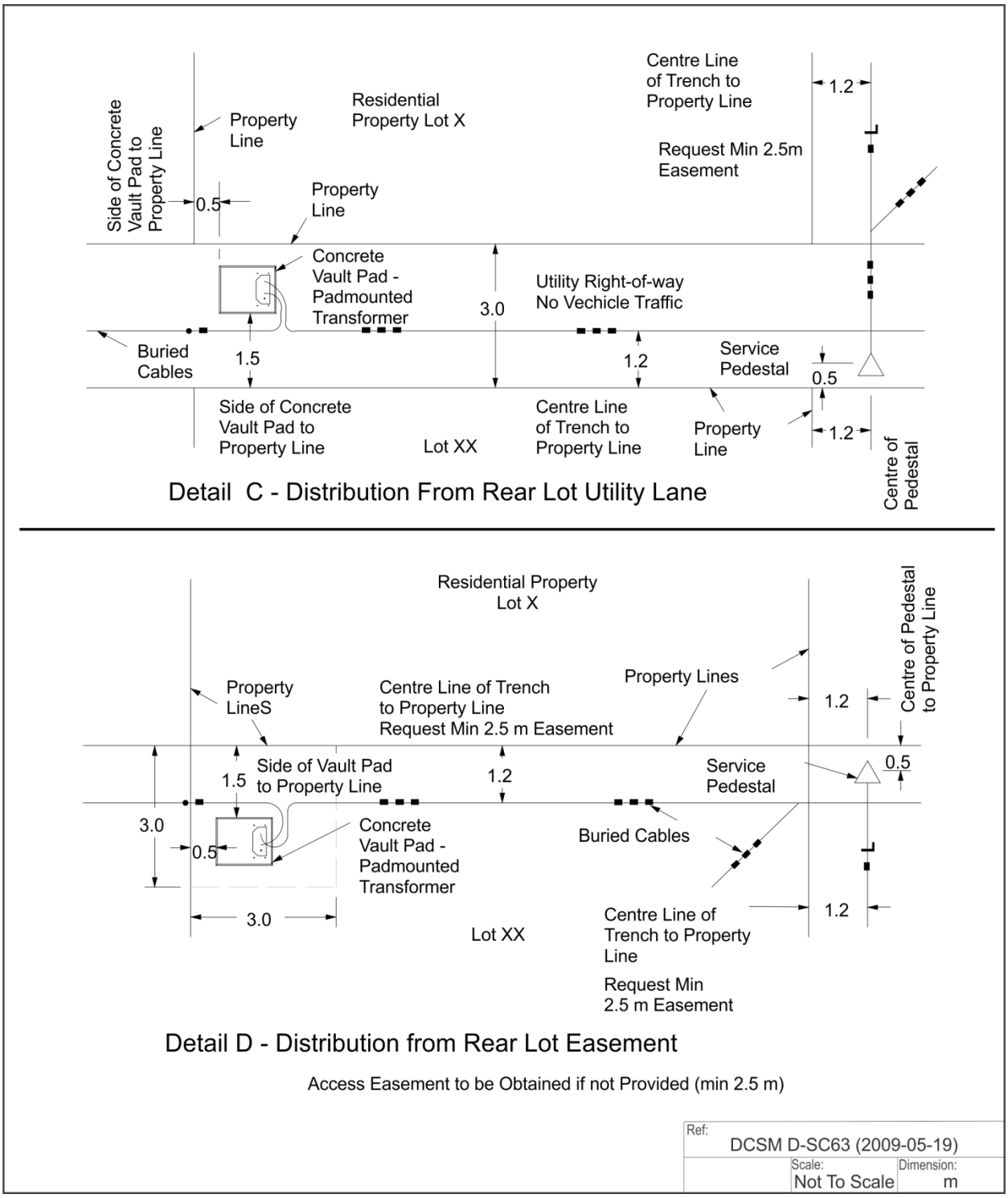
10.7 ALIGNMENT ON FRONT STREET BOULEVARD / REAR TRAFFIC LANE

Drawing 10-7 Alignment on Front Street Boulevard / Rear Traffic



10.8 ALIGNMENT ON REAR LOT UTILITY LANE / REAR EASEMENT ACCESS

Drawing 10-8 Alignment on Rear Lot Utility Lane/Rear Easement Access



10.9 LANDSCAPING ADJACENT TO UNDERGROUND ELECTRICAL EQUIPMENT

Drawing 10-9 Landscaping Adjacent to Underground Electrical Equipment

THE FOLLOWING IS A GUIDELINE FOR LANDSCAPING WITH BUSHES, SHRUBS, AND TREES ADJACENT TO EQUIPMENT INSTALLED TO PROVIDE UNDERGROUND ELECTRICAL SERVICE:

1. THE SHRUBS PLANTED AROUND THE EQUIPMENT SHOULD BE OF A TYPE THAT CAN EASILY BE TRIMMED. THEY SHOULD HAVE A SHALLOW ROOT SYSTEM.

2. SOME SUITABLE PLANTS ARE: CEDAR, JUNIPER, LILAC, GOLDEN ELDER, AND MUGHO PINE.

3. KEEP THE TREES, SHRUBS, AND GRASS TRIMMED IN ORDER TO REDUCE THE FIRE HAZARD DURING DRY SPELLS.

4. IN ADDITION TO THE CLEARANCE BETWEEN EQUIPMENT AND SHRUBS, THERE SHOULD ALSO BE A PATH TO THE EQUIPMENT. THE LANDSCAPING SHOULD USE LAWN OR LOW GROWING PLANTS IN FRONT OF THE EQUIPMENT DOOR. CLEARANCES ARE SHOWN ON D-H25-2 AND D-H25-3.

5. TO MINIMIZE OBSTRUCTION OF ROADWAY LIGHTING, TREES PLANTED IN BOULEVARDS SHOULD BE KEPT PRUNED IN THE MANNER ILLUSTRATED ON D-H25-3 WHERE:

"h" IS THE TREE PRUNING HEIGHT,

"MH" IS THE LIGHT MOUNTING HEIGHT,

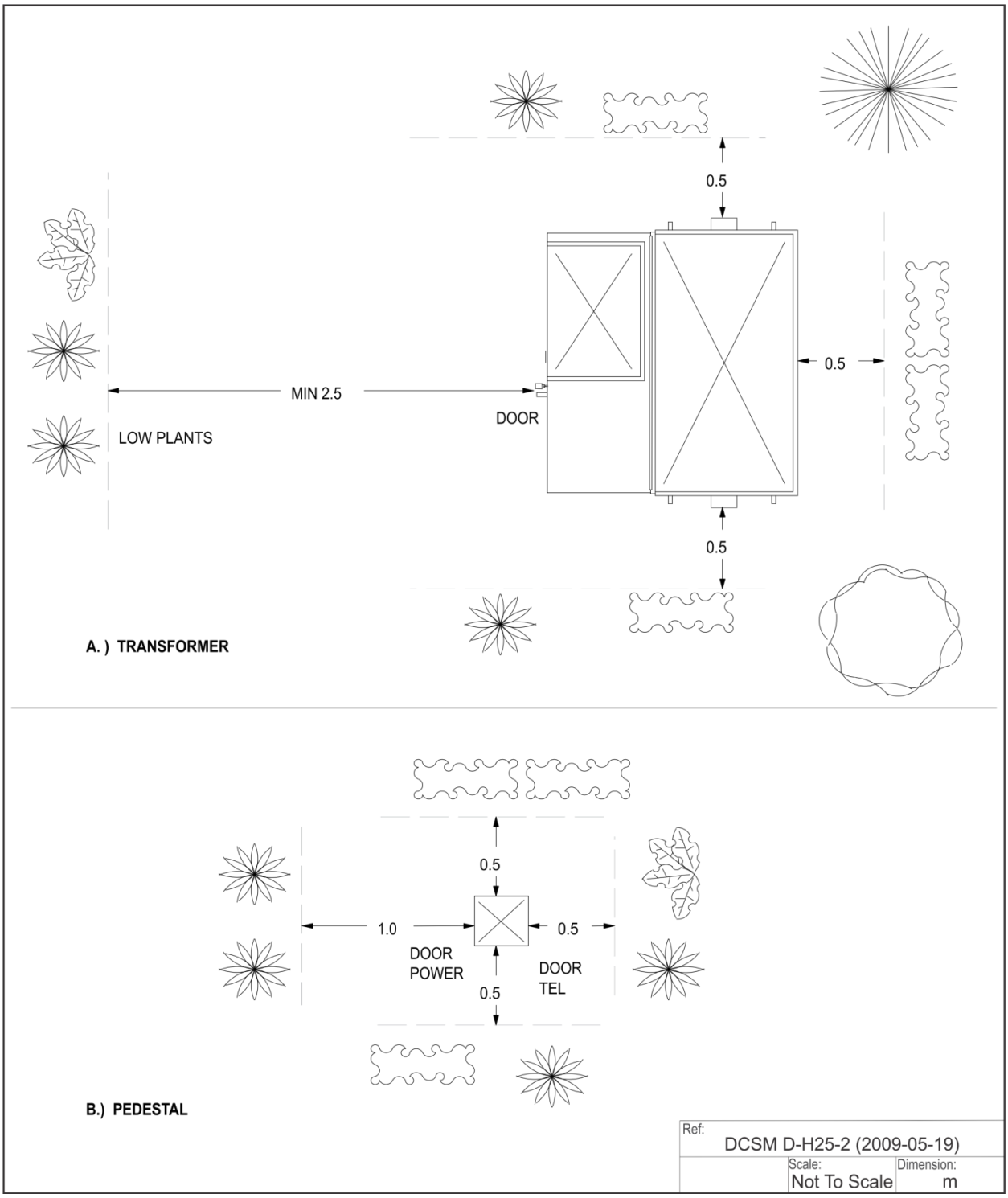
"D" IS THE DISTANCE BETWEEN THE TREE AND THE LIGHT, AND

"A" IS THE LIGHT DISTRIBUTION ANGLE FOR MAXIMUM CANDLE POWER ON THE ROAD. ON TYPE II LIGHTS THIS ANGLE IS BETWEEN 73^{o} TO 80^{o} AND ON TYPE III LIGHTS IT IS BETWEEN 70^{o} TO 77^{o}.

Ref: DCSM D-H25-1 (2009-05-19)		
	Scale: Not To Scale	Dimension:

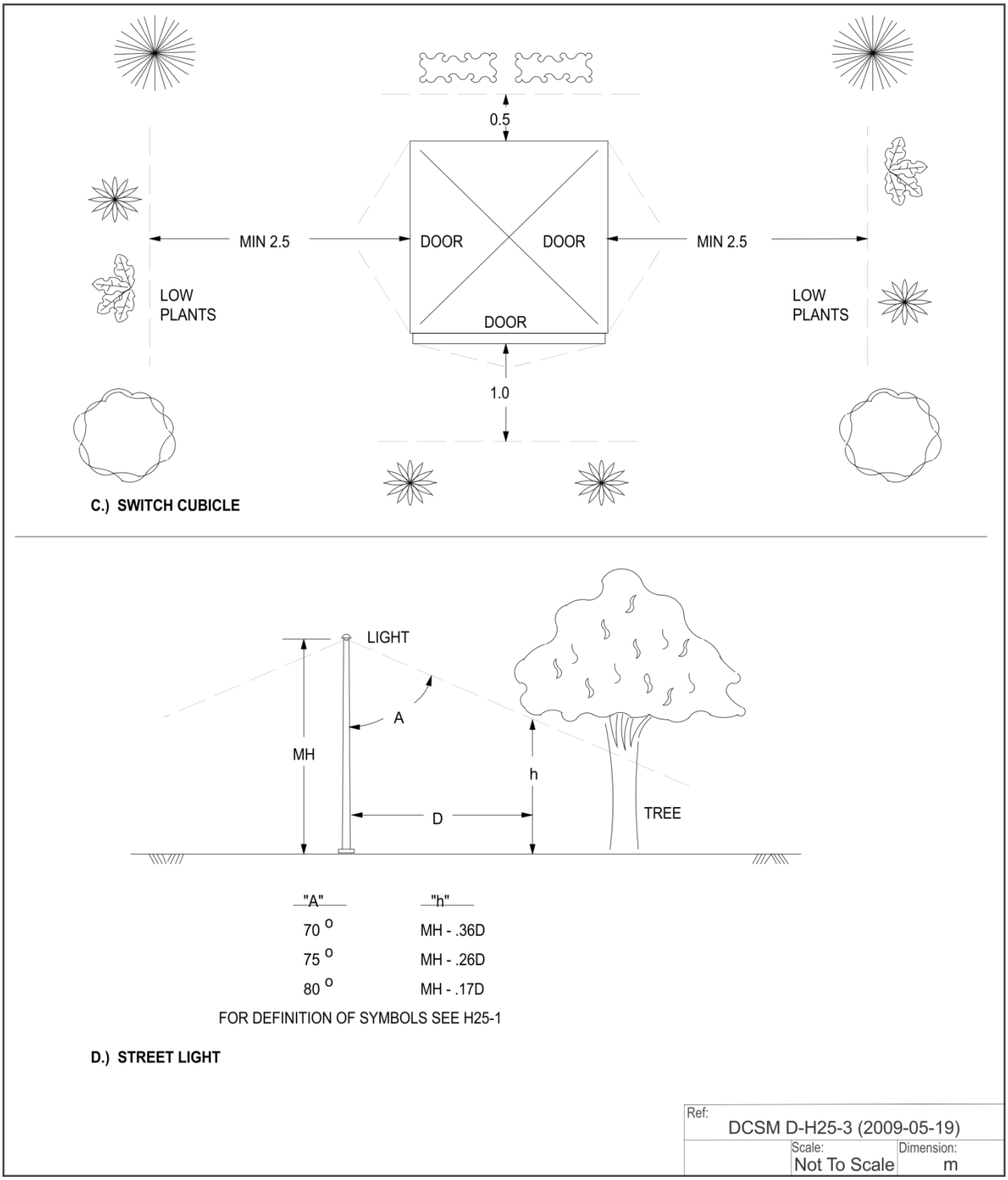
10.10LANDSCAPING ADJACENT TO PADMOUNT TRANSFORMER AND PEDESTAL

Drawing 10-10 Landscaping Adjacent to Padmount Transformer and Pedestal



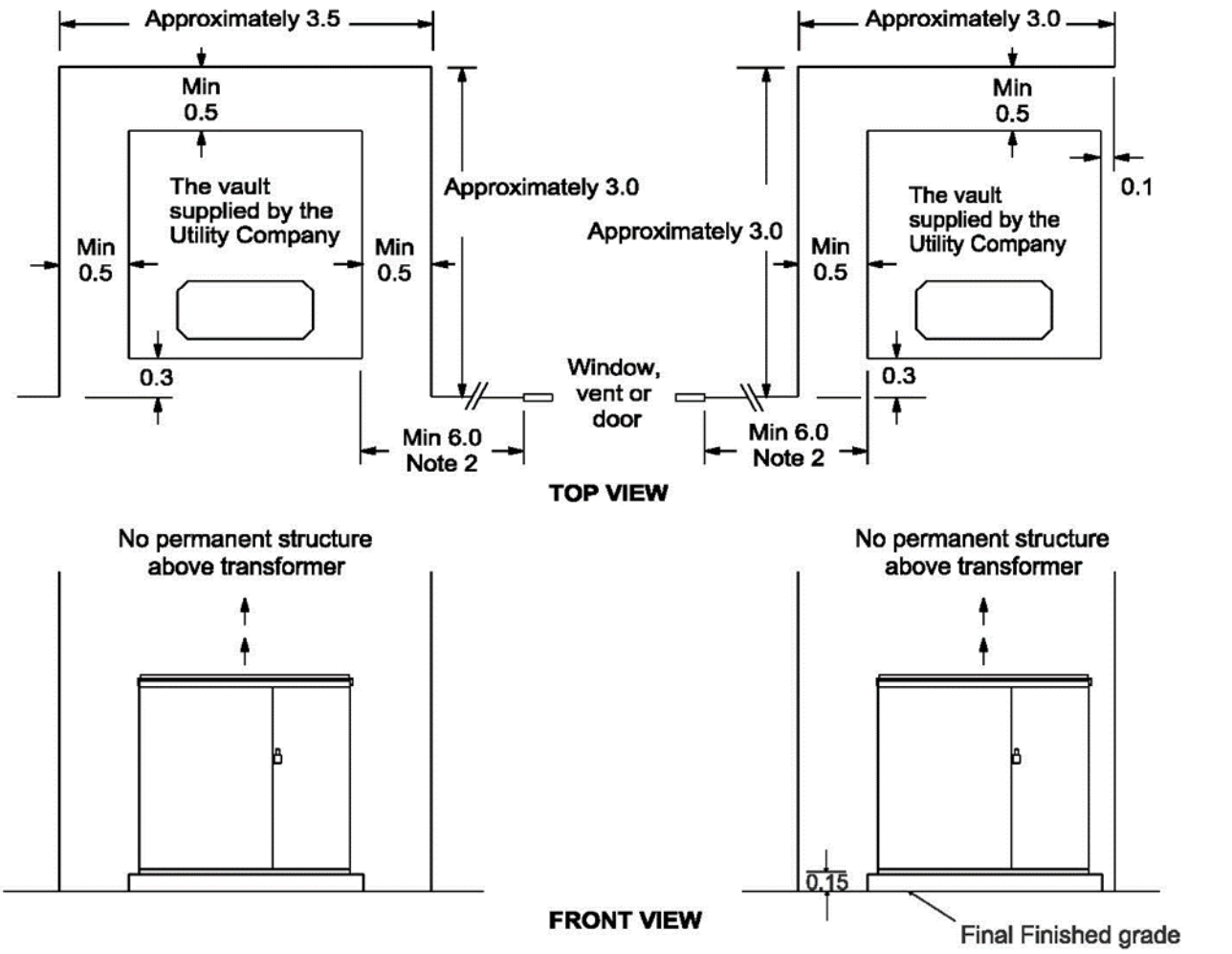
10.11 LANDSCAPING ADJACENT TO PADMOUNT SWITCH CUBICLE AND STREET LIGHT

Drawing 10-11 Landscaping Adjacent to Padmount Switch Cubicle and Street Light



10.12NON-CONDUCTIVE WALLS OR BUILDINGS ADJACENT TO PADMOUNT TRANSFORMER

Drawing 10-12 Walls or Buildings Adjacent to Padmount Transformer



Dimensions in meters

Note:

1. Minimum clearance from pad to building in alcove does not apply to footings for vault pads which may extend right up to the building foundation.
2. If the suitable fire resistance wall or barrier is constructed, this distance may be reduced to line of sight distance.
3. The accessible work area in front of the padmounted transformer must be of adequate strength.
4. To access, install, raise and remove a transformer a minimum of 10 meters un-obstructed distance is required in front of the alcove.
5. Before building an alcove in a building, the customer must contact the Utility Company's engineering department for the details of the alcove, grounding etc.

Revised May 2023