

The background of the entire page is a photograph of a worker in safety gear, including a white hard hat and a high-visibility orange vest, working on a piece of equipment. The image is overlaid with a semi-transparent blue filter. The title "CUSTOMER CONNECTION GUIDE" is centered over the lower half of the image.

CUSTOMER CONNECTION GUIDE

DISCLAIMER

It is the responsibility of the Customer to meet all requirements of the Customer Connection Guide, and all other applicable legislation, regulations, codes, and guidelines prior to receiving a new connection. The Customer shall meet all requirements of the newest version of this document enforced at the time of the project application for service. The Customer Connection Guide may not cover the requirements of every service connection, and EPCOR Distribution & Transmission Inc. (EDTI) may at its sole discretion apply additional requirements, reasonably necessary for a site's connection. In the event a project is cancelled or closed for any reason, including at the discretion of EDTI, the Customer shall be required to meet all requirements of the newest version of this document enforced at the time of reapplication for service.

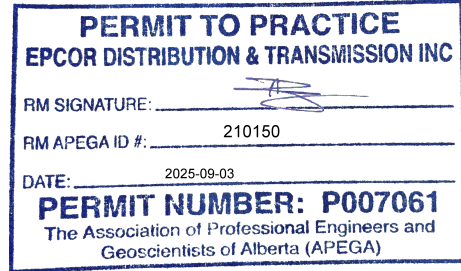
The newest version of the Customer Connection Guide may be obtained at www.epcor.com.

If you require assistance in locating the newest version, please contact EDTI at 780-412-3128.

If a discrepancy exists within the information contained in the Customer Connection Guide, customers shall abide by the most conservative information.

AUTHENTICATIONS & PERMIT TO PRACTICE

Permit to Practice

SCOPE: Entire Document	STAMP:  PERMIT TO PRACTICE EPCOR DISTRIBUTION & TRANSMISSION INC RM SIGNATURE: _____ RM APEGA ID #: 210150 DATE: 2025-09-03 PERMIT NUMBER: P007061 The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

General Guide

SCOPE: All portions of the guide not otherwise specified in the sections, drawings, diagrams, or other aspects detailed in the other authentication scopes listed below.	STAMP:  PROFESSIONAL LICENSEE (ENGINEERING) ALBERTA ERIC BABJI ID#244249 2025-09-03

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Where substantive changes have been made to the requirements or information in the guide from the previously released edition, the section has been marked in the left margin with a delta symbol (Δ). For more information, see [Section 1.4 – Updates from Previous Version](#).

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1.0

Introduction

1.1 INTRODUCTION

The information in this guide is divided into sections by topics and service types, to make it easier for you to find what you need. It is necessary that you read all the information contained within this document before starting your project to avoid mistakes, errors, and omissions that will result in costly rework and delays.

The first 3 sections ([Introduction](#), [Definitions](#), and [Choosing Your Connection and Common Information](#)) are common to all service types. The [Metering](#), [Generation & Batteries](#), and [Additional Information](#) sections may also be applicable to any type of service.

It is important to meet the requirements of this document before applying for service. This document provides the guidance necessary to successfully request the vast majority of services. In some cases this document will request you Contact us for more information. **When Customers call EDTI for information contained in this document, they will be referred back to this document for the information they are seeking.**

EDTI looks forward to helping you achieve your project goals.

1.2 CONTACT INFORMATION

For inquiries about new electrical service connections, or upgrading existing electrical service connections, please email ces@epcor.com or call 780-412-3128.

For general EPCOR inquires please call 310-4300 or 1-800-667-2345, or visit www.epcor.com.

1.3 ERRATA & ADDENDUMS

Errata and addendums will be issued from time-to-time to provide important updates to this document between major version releases. These documents will be attached to the end of the official Customer Connection Guide posted on EPCOR.com. The errata and addendums will indicate their applicability to new and existing projects.

It is the responsibility of the Customer to meet all requirements of errata and addendums, and to ensure they are referencing the newest version of the Customer Connection Guide with the applicable errata and addendums included.

1.4 UPDATES FROM PREVIOUS VERSION

EDTI will amend the Guides, from time to time, to reflect changes to the electric utility industry, changes in EDTI's requirements or the changing needs of EDTI's Customers. Where substantive changes have been made to the requirements or information in the guide from the previous released edition, the section has been marked in the left margin with a delta symbol. Users of this guide should note that change markers are not intended to mark all changes to text, drawings, organization of the document, etc.; for instance, minor grammatical changes and reordering of information are not marked.

1.5 LEGAL REQUIREMENTS

1.5.1 Disclaimer

Refer to the second page of this guide (following the cover page) for the disclaimer regarding the use of this guide.

1.5.2 Engineering Authentication Requirements and Exceptions

EDTI requires authenticated (stamped) engineering work for all applicable submissions where EDTI will rely on the technical information in the document to complete our work. EDTI's requirements are in alignment with the [Engineering and Geoscience Professions Act of Alberta](#) and the requirements of the [Association of Professional Engineers and Geoscientists of Alberta](#).

Authenticated engineering work will be required, except in the following circumstances:

Where the final building will be:

- a. for **residential use** only (not including hotels, motels, or like uses) and consist of no more than 4 attached units.
- b. for **hotel, motel, or similar uses** only and be no more than 3 stories in height, nor exceed 400m² (4305 ft²) of total gross area.
- c. for **assembly or institutional use** only, and be no more than 3 stories in height, nor exceed 300m² (3,229 ft²) of total gross area.
- d. for **warehouse, business and personal services occupancy, for mercantile occupancy or for industrial occupancy use** only, and be no more than 3 stories in height, nor exceed 500m² (5,381 ft²) of total gross area.
- e. for **farm buildings** not for public use.
- f. for **relocatable industrial camp buildings**.

(Note: The occupancy uses above are defined per the Alberta Building Code. Institution use shall be considered the same as assembly use. Warehouse use shall be considered the same as industrial use.)

Documents provided for temporary service connections shall be authenticated to these same requirements. Temporary services to construction buildings (E.g. skidded office trailers, as known as "ATCO trailers") shall be considered 'relocatable industrial camp buildings' for the purposes of authentication.

In the event of a conflict between EDTI's requirements, and the requirements set in the applicable laws, regulations, bylaws, codes, and directives of other authorities having jurisdiction, the more stringent requirement shall apply.

EDTI reserves the right to require authenticated engineering work at its sole option, including in circumstances where exceptions typically would apply. In these cases, EDTI will provide its specific written requirements to the applicant or their representative at the time of identification.

1.5.3 Other Authentication Requirements

Depending on the nature of your project, you may require certain documents to be authenticated by professionals other than engineers. This may include architects, landscape architects, archaeologists, legal land surveyors, biologists, and others. It is your responsibility as the owner to determine what authentication requirements apply to your project. Missing or incomplete authentications will result in delays and extra costs for your project. Be sure to check all relevant legislation, regulation, codes, bylaws, etc. to confirm your unique project needs.

1.5.4 Third-Party Authorizations

EDTI is committed to protecting Customer's information, and will not release information to third-parties without written permission from the Customer.

Consultants, contractors, and any other party acting on behalf or support of the Customer require a [Third-Party Authorization and Consent Form](#) completed by the Customer. The form must clearly indicate the name(s) of the individuals and organizations authorized to receive information. See [Form 1.1 – Third-Party Authorization and Consent Form](#) for a blank copy.

1.6 EXCEPTIONS

The Customer Connection Guide provides the requirements for Customer service connections. Unless **prior** written approval has been obtained from EDTI before construction, Customers and their representatives are expected to follow and meet all requirements within the Customer Connection Guide.

In some unusual cases, it may not be possible to meet the requirements of the guide, or the guide may not address a unique situation. In these extraordinary cases it may be necessary for an exception from the Customer Connection Guide to be granted. To accommodate these situations, EDTI will complete and issue a [Exception Approval Form](#). This form shall accompany all EDTI Customer projects where an exception to the Customer Connection Guide requirements has been approved by EDTI. Failure to meet the requirements without this form will result in your installation failing inspection, delays to your project, and rework at the Customer's expense. See [Form 1.2 – Exception Approval Form \(Sample\)](#) for a sample copy.

Exceptions will not be granted where the exception is being sought to reduce costs, the scope of work, or to expedite the work. The issuing of a [Exception Approval Form](#) shall not provide exception approval for requirements outside of the Customer Connection Guide; including, but not limited to, other EDTI guidelines, standards, agreements, and contracts. If a requirement exists in two or more governing documents, approval from each governing party will be required – note that this may include two or more exception approvals for the same company or entity, but different groups or individuals within that company or entity.

1.7 ASSET OWNERSHIP

Knowing where EDTI's system ends and the Customer's system begins can sometimes be difficult. To provide clarity and a consistent approach EDTI has provided its [Distribution Asset Ownership Guide in Appendix 12.1](#). This document addresses the majority of ownership cases, but there may be rare instances where special agreements, contracts, codes, and laws may apply. [Contact us](#) if you have questions or concerns.

1.7.1 Assets Built to Part 3 Requirements

When an asset is built to Canadian Electrical Code – Part 3 requirements, and is not compliant with Canadian Electrical Code – Part 1, that asset shall be turned over to EDTI prior to energization. This is a requirement of the Alberta Electrical Utilities Code, and Canadian Electrical Code. Such assets shall be contributed assets, and shall not receive reimbursement unless allowed under EDTI's Terms & Conditions.

FORM 1.1

THIRD-PARTY AUTHORIZATION AND CONSENT FORM



Third-Party Authorization and Consent Form

EPCOR Distribution & Transmission Inc.

2022-MARCH-01

Customer Connections

EPCOR Distribution & Transmission Inc. ("EPCOR") is committed to protecting your information.

For this reason, we require your written consent prior to disclosing information about your EPCOR service or project information to any Third-Party, or interacting with any Third-Party acting on your behalf.

To ensure your request is processed efficiently, please provide all the following information and sign the authorization below. *Please print clearly.*

Customer (Property Owner) Information

Primary Contact/Account Holder Name:		Other Account Holder Names*:
Name of Business/Organization: (if applicable)		
Site Address (the "Property"):		
City:	Province:	Postal Code:
Primary Contact's Phone Number:	Primary Contact's E-Mail Address: (optional)	

*** NOTE:** Where there is more than one account holder, EPCOR may be unable to fully provide all information authorized by this consent, unless all persons named on the account have signed this consent form.

I/we, the undersigned, agree to the following:

- 1) I authorize EPCOR to release any information related to my EPCOR service and project ("customer information"), for the Property listed above to the individual(s) and organization(s) named and listed below.
- 2) I authorize the individual(s) and organization(s) named and listed below to provide information to EPCOR on my behalf regarding my EPCOR service and project, for the Property.
- 3) I authorize the individual(s) and organization(s) named and listed below to act on my behalf regarding my account, property, and project, for the Property listed above.
- 4) I understand that I must notify EPCOR immediately, in writing at ces@epcor.com, if I choose to no longer allow the individual(s) and organization(s) named and listed below to request or receive information. I acknowledge that this authorization is valid for a period of two years from the date signed or when my project is energized, whichever occurs first.
- 5) I understand that the individual(s) and organization(s) named and listed below includes their/its employees, consultants, contractors and agents.
- 6) I acknowledge and agree that EPCOR has no control over, and shall bear no responsibility or liability for the actions of a Third-Party with respect to the specific customer information released by EPCOR in accordance with this consent form.

Initial: _____

Authorized Third-Party Information #1

Individual(s) or Organization(s) authorized to act as a Third-Party:		
Name of Business/Organization: (if applicable)		
Address:		
City:	Province:	Postal Code:
Phone Number:	E-Mail Address:	

Authorized Third-Party Information #2

Individual(s) or Organization(s) authorized to act as a Third-Party:		
Name of Business/Organization: (if applicable)		
Address:		
City:	Province:	Postal Code:
Phone Number:	E-Mail Address:	

Authorized Third-Party Information #3

Individual(s) or Organization(s) authorized to act as a Third-Party:		
Name of Business/Organization: (if applicable)		
Address:		
City:	Province:	Postal Code:
Phone Number:	E-Mail Address:	

Account Holder Signature(s)

_____ Primary Contact/Account Holder Signature	_____ Other Account Holder Signature
_____ Primary Contact/Account Holder Printed Name	_____ Other Account Holder Printed Name
_____ Date	_____ Date

Please submit this form with your application. If you have any questions about this form, please contact EPCOR Customer Engineering Services at ces@epcor.com.

FORM 1.2

Δ EXCEPTION APPROVAL FORM



Customer Connection Guide - Exception Approval Form

EPCOR Distribution & Transmission Inc. Customer Connections

2023-MARCH-22

The Customer Connection Guide provides EPCOR Distribution and Transmission Inc. ("EPCOR") requirements for customer service connections. **Unless prior written approval has been obtained from EPCOR, customers and their representatives must follow and meet all requirements within the Customer Connection Guide.**

This form shall accompany all customer projects where EPCOR has approved an exception to the Customer Connection Guide requirements. This form shall not provide exception approval for requirements outside of the Customer Connection Guide, including, but not limited to, other applicable EPCOR guidelines, standards, codes, agreements, and contracts. All other Customer Connection Guide requirements not varied by this approval shall continue to apply. EPCOR's decision on the exception request is based on the completeness and accuracy of the information contained herein. If it is subsequently discovered that this information is not accurate, EPCOR reserves the right to revoke this exception.

Customer Project Information

EPCOR Project Name:	
Site Address:	Permit Number:
WR#:	WO#:
Customer/Account Holder Name:	Primary Contact Name:
EPCOR Designer Name:	EPCOR Project Manager Name:

Exception Details

Attach additional pages as required to provide details.

Specific Requirements from the Customer Connection Guide that an exception is being sought for:

Guide#:	Section#:	Clause/Drawing#:
Clause Verbiage:		

Justification for Exception:

(A clear reason why the requirement cannot be met shall be provided.)

Exception details:

(A clear technical description of the exception requirements shall be provided. The requirements listed here shall replace those requirements referenced above from the Customer Connection Guide.)

Exception Decision

☐ Approved

☐ Rejected

Customer Signature

I certify the information provided on and attached to this application is accurate and complete. All drawings, documents, details, specifications and supporting information contained in this application pertain to the project that is the subject of this application.

Customer Signature:

Customer Name:

Date:

Approval Signatures *(All four signatures must be present for the exception to be valid.)*

Inspector Signature:

Designer Signature:

Engineer/Meter Foreman
Signature:

CES/Metering Manager Signature:

Inspector Name:

Designer Name:

Engineer/Meter Foreman Name:

CES/Metering Manager Name:

Date:

Date:

Date:

Date:

2.0

Definitions

Aerial Area – Parts of a region where electricity is delivered with primarily overhead power lines.

AHJ – Authority Having Jurisdiction

AWG – American Wire Gauge

Blast Wall – A heavy wall used to isolate buildings or areas that contain highly combustible or explosive materials, or to protect a building or area from blast damage when exposed to explosions.

CCG – Customer Connection Guide

CEC – Canadian Electrical Code

Civil Work – The completion, installation, repair, or replacement of ductwork, trenching, ground disturbance, ground grid, transformer and switching cubicle and pedestal bases, guardrails, manholes, vaults, landscaping and intermediate poles for low voltage service wire (1000 volt or less) on the Customer's property.

Demand – The maximum rate at which energy is delivered (expressed in kilowatts or kilovolt-amps) at a given instant, or averaged over any designated period of time.

Distributed Energy Resource (DER) – A source of electric power not directly connected to a bulk power system. DER includes both generators and energy storage technologies capable of exporting active power to EDTI's electric distribution system.

Distribution Tariff – A distribution fee or charge prepared by EDTI and approved by the Alberta Utilities Commission.

EDTI – EDTI Distribution and Transmission Inc., the electrical division of EPCOR Utilities Inc.

Final (Finished) Grade – The final level of the soil (grade) or hard surface (concrete, asphalt, etc.) as prepared for the finished site landscaping and/or surfacing. Does not include sod, decorative rocks, mulch, or other non-soil or non-traffic supporting materials.

Flicker – Fluctuating electrical loads that lead to a noticeable change in the output of various devices.

Generating Customer – A Customer interconnected to EDTI's electric distribution system with the ability to export electrical energy to EDTI's distribution system.

Harmonic Load – A total amount of a portion of the voltage that is a multiple of the fundamental wave frequency.

Horizontal Clearance – The distance measured horizontally.

Instrument Transformer – High-accuracy current or voltage transformers used for revenue metering.

Interrupting Capacity – The highest current at rated voltage that the device can interrupt.

kV – Kilovolt

kVA – Kilovolt-amp

kW – Kilowatt

kWh – Kilowatt-hour

Line Side – The side that is located toward EDTI's system.

Load – The demand and/or energy required to operate equipment.

Load Customer – A Customer interconnected to EDTI's electric distribution system for the purpose of purchasing electricity for their own use.

Load Side – The side that is located toward the Customer's equipment.

Manhole – A covered opening, generally on a street, that provides access for maintenance or repairs to underground electrical systems.

MCM – Thousand circular mils.

Meter Socket – A meter-mounting device for installing a self-contained meter.

Minnesota Mounds – An above-ground mound of dirt used for septic systems.

Padmount Transformer – A ground-level transformer that sits on a concrete base.

Pedestal – A grade-mounted utility box that houses connections and switches for electrical connections.

Point of Service – The electrical connection point at which EDTI's service conductors are connected to the conductors or apparatus of a Customer, which is more particularly defined in EDTI's Asset Ownership Guide.

Pole-Mounted Transformer – A transformer mounted on a utility pole.

Power Factor – The efficiency of an electrical circuit to deliver usable power.

Primary Conductor – A high-voltage utility conductor in excess of 750 volts.

Primary Duct – A conduit in which high-voltage conductors are installed.

Primary Fault – A short circuit in the high-voltage distribution system.

Handhole – An intermediate enclosure in a conduit system to aid in the installation of conductors.

Retailer – A company that sells or provides retail electricity services directly to Customers.

Rough Grade – the establishment of surface grades and elevations preceding the final grade.

Secondary Conductor – A low-voltage wire or combination of wires that carries an electrical current at 750V or less.

Secondary Duct – A conduit in which low-voltage conductors are installed.

Secondary Fault – A short circuit in the secondary system.

Self-Contained Meter – A meter rated for carrying the total current and voltage of the circuit.

Service Connection – The facilities required to physically connect the Customer's facilities to EDTI's electric distribution system to permit the Customer to obtain Distribution Access Service.

Service Entry Point (SEP) – The civil infrastructure connection point at which EDTI's civil infrastructure ends and is connected to the Customer's property or civil infrastructure, which is more particularly defined in EDTI's Asset Ownership Guide.

Setback Distance – The minimum allowable distance to the point where new equipment or other devices can be installed.

Switchgear – The combination of electrical disconnect switches, fuses, or circuit breakers used to control, protect, and isolate electrical equipment.

Switching Cubicle – A utility box that typically sits on the ground and holds a number of electrical switches and devices.

Transformer – A utility device used to change the voltage in an alternating current electrical circuit.

Trenching – A narrow, long ditch embanked with its own soil.

Vault – An underground room or contained area that houses electrical equipment.

Vertical Clearance – The distance measured vertically.

Weatherhead – The aerial entry point where open conductors enter a conduit system.

3.0

Choosing Your Connection and Common Information

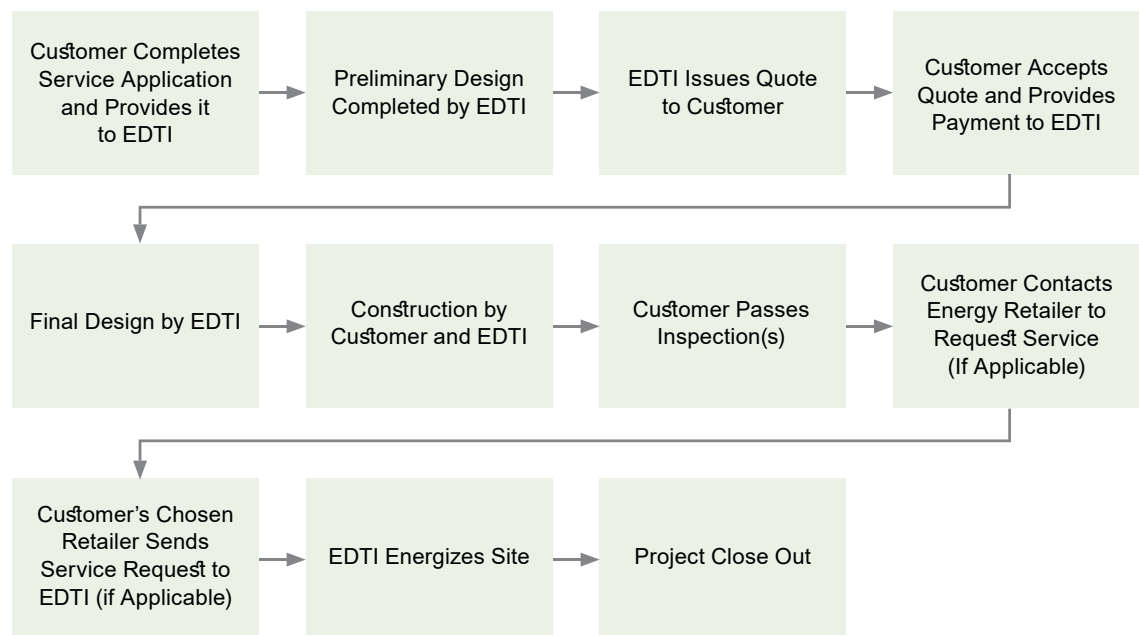
3.1 IMPORTANT INFORMATION APPLICABLE TO ALL SERVICE TYPES

- a. This section contains important information that applies in various ways to **all** the service types that EDTI provides. It is critical that you read and understand the following information in addition to the service specific information provided in subsequent sections of this guide.

3.2 CONNECTION PROCESS AND TIME FRAMES

- a. EDTI has an easy-to-follow process available on epcor.com that describes the power connection process and the length of time it typically takes to get connected.
- b. If you are looking for a Primary Metered Service, please see [Section 7.1 – General Information](#) for more information on timing. Depending on the type of connection you need, the entire process can take months or even years to complete. It's important to plan this time frame into your schedule.

Typical Project Process Flow



3.3. APPLYING FOR SERVICE

- a. Before applying for service, it is important that you gather all the information EDTI requires to start your project. To assist you, EDTI has provided [Checklist 3.1 – Application Checklist](#).
- b. The Application Checklist provides a list of requirements for each service type, except Network Services. For Network Services, anticipate the requirements will be similar to Primary Metered Service requirements. [Contact us](#) for specific requirements for your network connection.
- c. A copy of the checked off checklist shall accompany your drawing package as part of your application.

- d. **You are required to provide ALL the information noted on the checklist (unless it is noted as optional) as part of your application. Missing information will result in your application being rejected.**
- e. Technical drawings must be submitted as PDFs **and** either AutoCad (2019 version or earlier) or Microstation files.
- f. To apply for service from EDTI, please go to the [Apply for Connection](#) of our website and select Apply for Power.

3.4 PROJECT OVERVIEW

- a. [Table 3.1 – Project Overview](#) provides a summary of the types of service connections EDTI provides, and outlines the Customer's and EDTI's responsibilities when completing a new connection.

3.4.1 Transmission Direct Connection & Novel Services

- a. With unique Customer needs and new technologies it is possible that EDTI's service connection options provided in [Table 3.1 – Project Overview](#) will not meet the Customer's situation. EDTI can provide transmission direct connections and novel service connections where it is not possible or practical to service the Customer with a standard service option. These services will be provided at EDTI's sole option, and in accordance with all relevant laws, regulations, codes, etc.
- b. Such connections are unique to the particular project, and the requirements for a particular service will be defined once the need for such a service has been identified. To explore transmission direct connection and novel service options, please [contact us](#).

3.5 Δ SELECTING THE SERVICE TYPE

- a. Different Customers have different needs, and EDTI has a variety of service options to serve those needs. [Table 3.2 – Service Types](#) provides a list of the typical services EDTI provides, and the maximum limits available for those service offerings.
- b. The maximum service limits specified in [Table 3.2 – Service Types](#) applies only to dedicated transformers. If multiple Customers share a transformer, limits may be reduced or alternate servicing arrangements may be required. EDTI Customer Engineering Services must confirm all services prior to construction approval. [Contact us](#) to discuss your particular servicing details.
- c. Maximum service limits apply to services within our 15kV and 25kV service areas. For any new or increased services in the 5kV distribution area, contact us for limits. Refer to [Drawings 3.1](#), [3.2](#), and [3.3](#) for the primary voltage in your area, and [contact us](#) for confirmation.
- d. New or increased 240V, 3-phase, 3-wire services will only be supplied if approved by EDTI Customer Engineering Services.
 - i. Existing 240V, 3-phase, 3-wire services will continue to be maintained.
 - ii. Single phase equipment cannot be connected to 240V, 3-phase, 3-wire services.
- e. Mutual heating can affect the number of secondary conductors required which in turn may limit your choice of service type. See the Canadian Electrical Code – Part 1 for more information on mutual heating and the relevant cable installation section of this guide for your service type, for information on the maximum number of conductors allowed.

- d. When a Customer performs a lot split, provisions for all lots to be serviced at the same time shall be made. This may, in EDTI's sole option, require infrastructure (poles, lines, pedestals, transformers, cables, etc.) to be added for the other lots which are planned to be developed at a later date. No lot shall be serviced alone.
- e. EDTI may in its sole option require a Customer to have a standby service. Typically, such requirements apply to critical infrastructure sites, and buildings that require additional redundancy in an emergency event. EDTI will identify this requirement to the Customer when applicable. If you believe your site may require such a service, please [contact us](#).

3.5.1 **Δ Alternatives to a Service Upgrade**

- a. A common reason single family residential Customers request service upgrades is to accommodate the addition of a Level 2 (208/240V) electric vehicle charger to their home.
- b. This is typically the result of the Canadian Electrical Code (CEC) – Part I, Rule 8-200 load calculations exceeding the existing service capacity.
- c. An alternative to a service upgrade in some cases is the use of an Electric Vehicle Energy Management System (EVEMS) as allowed for under Canadian Electrical Code – Part I, Rule 8-106(10)(11) and Rule 8-500.
- d. Some known models of EVEMS certified for Canadian use include:
 - i. AC Dandy, Loadmister (D-LM)
 - ii. Black Box Innovations, EVEMS
 - iii. DCC Electric, DCC-10
 - iv. SimpleSwitch, 240 and 240M

Consider discussing these options and other similar offerings by other manufacturers, with your electrician or consulting engineer.

3.6 **Δ GENERAL SERVICE REQUIREMENTS**

- a. Connections and disconnections must be done by EDTI or its authorized agents.
- b. Only EDTI's employees or their authorized agents can operate or maintain any electrical facilities owned by EDTI.
- c. EDTI reserves the right of final approval for the location of facilities before EDTI will grant construction approval.
- d. EDTI will not permit the installation of service lines crossing public property between private properties.
- e. The installation of primary service cable under structures is not permitted, even when in duct.
- f. EDTI will not connect any permanent or temporary service to the City of Edmonton's streetlight system.
- g. EDTI installs distribution equipment on public property.

- h. The Customer is responsible for the installation and maintenance of all civil work on private property, including maintaining the level of equipment. Civil work typically includes trenching, ducting, transformer or cubicle pads, ground grids, guardrails, handholes, and intermediate service poles. Please see [Table 3.1 – Project Overview](#) for additional details.
- i. Voltage drop calculations are the Customer's responsibility and must be submitted upon request.
- j. The Customer must ensure loading is balanced across all phases of the service.
- k. Customers shall not take single phase 120V service off of a 3-phase 240V service.
- l. Δ Residential services under 200A are not designed for electric heating as the primary heat source. If it is to be used as the primary heat source, contact us Customer Engineering Services prior to construction. The Customer may be assessed additional costs based on the type of upgrades required.
 - i. For residential single family construction, temporary electrical construction heat is permitted at 240V, with a maximum of 30A of heating per 100A of service capacity.
- m. The Customer will comply with the standards set out by the Institute of Electrical and Electronics Engineers (IEEE) 519-1992 (Table 10.3, 10.4, 10.5) when loads producing harmonic distortion are involved. The Customer will also comply with the short- and long-term flicker limits as specified in Tables 2 and 6 of CAN/CSA-C61000-3-7 Electromagnetic Compatibility (EMC) – Part 3 -7.
- n. The Customer must provide space and utility Rights-of-Way for utility equipment to maintain the flexibility of the power system, as required by EDTI. See [Section 3.8 – Easements and Utility Right-of-Way](#) for more information.
- o. EDTI has specific servicing details for the Quarters Downtown Development area. If your development is in this area, which extends from 92 to 97 Street and from 101 to 103A Avenue, please [contact us](#) for these details.

3.7 SERVICE ENTRY POINT

- a. The Service Entry Point is the point at which EDTI's civil infrastructure ends and is connected to the Customer's property or civil infrastructure. In most cases, this is where the underground secondary service conductor enters the Customer's property from the public right-of-way.
- b. Customers shall inform EDTI at the time of making the service application where their preferred Service Entry Point is. EDTI will review the preferred location, and determine if it can be reasonably accommodated. EDTI reserves the right to determine in its sole option where the final Service Entry Point location shall be; the Customer shall update their plans accordingly.
- c. It is critical that the Customer confirm with EDTI their site-specific Service Entry Point **before beginning construction**. The Customer will be responsible for correcting any errors they make in their work, resulting in coming to the wrong point. Such errors will result in substantial delays and additional costs to the Customer's project.

3.8 EASEMENTS AND UTILITY RIGHTS-OF-WAY

- a. Pursuant to EDTI's Terms and Conditions, Customers shall grant, or cause to be granted, to EDTI, without cost to EDTI, such easements or rights-of-way over, upon or under the property owned or controlled by the Customer as EDTI reasonably requires for the construction, installation, maintenance, repair, and operation of the facilities required for a service connection.
- b. EDTI shall determine in its sole option the best instrument to register its interest in a property.
- c. Where an easement or rights-of-way is reasonably required by EDTI on another parties property for the construction, installation, maintenance, repair, and operation of the facilities required for a Customer's service connection, the Customer shall cause to be granted, to EDTI, without cost to EDTI, such easements or rights-of-way.
- d. Easements or rights-of-way shall be provided for all EDTI equipment and facilities located on private property when servicing adjacent lot owners.
- e. Multifamily residential services shall require a blanket easement or utility right-of-way for the entire property.
- f. For typical easement/utility right-of-way requirements for transformers and cubicles, refer to the following drawings:
 - i. [Drawing 3.4 – Right-of-Way Requirement for Single Phase Switching Cubicle, Single Phase Transformer, or 3 Phase Transformer](#)
 - ii. [Drawing 3.5 – Right-of-Way Requirement for Single Phase Switching Cubicle, Single Phase Transformer, or 3 Phase Transformer with 2.0m Gas Right-of-Way](#)
 - iii. [Drawing 3.6 – Right-of-Way Requirement for 3 Phase Switching Cubicle](#)
 - iv. [Drawing 3.7 – Right-of-Way Requirement for 3 Phase Switching Cubicle with 2.0m Gas Right-of-Way](#)

(Note: The right-of-way areas in Drawings 3.4 and 3.6 are typical of the footprint area required for the respective equipment. When this equipment is to be placed on public property, the same area requirements apply.)

3.9 MULTI-UNIT RESIDENTIAL BUILDINGS (MURBs)

3.9.1 All Units on One Lot

- a. Overhead residential services require a single service connection. Refer to [Section 4.5 - Attachment Method and Location](#) for attachment details.
- b. Underground residential services may have individual service connections to each unit, or a single service connection to a multi-meter socket.
- c. If a homeowner's agreement is in place, one service may be installed to a common location on the building to service all the units. A final copy of which shall be provided to EDTI prior to inspection and energization.
- d. Please [contact us](#) to talk about your specific situation, or visit our website (<https://www.epcor.com/ca/en/ab/edmonton/operations/service-connections/guides-checklists-forms/multi-unit-dwellings.html>) for more details on servicing multi-unit dwellings.

3.9.2 Each Unit on Individual Lot

- a. Each individual unit in a new multi-unit residential dwelling must be served as a separate service, unless EDTI Customer Engineering Services agrees otherwise.
- b. EDTI may require additional work at the Customer's expense to ensure no trespass is created.
- c. Please [contact us](#) to talk about your specific situation.

3.9.3 Bare-Land Development

- a. EDTI requires a blanket easement or utility right-of-way to be registered on the owner's title in EDTI's name. See [Section 3.8 – Easements and Utility Rights-of-Way](#) for more information.

3.10 Δ CLEARANCES

- a. Maintaining adequate clearances of people, buildings, trees, vehicles, other utilities, and other objects, is critical for safety. It is the Customer's responsibility to ensure adequate clearance for their project is maintained at all times, including before, during, and after construction.
- b. Failure to maintain clearance distances will result in stop work orders, costly and timely delays and rework, and potentially demolitions or alterations. In some instances whole buildings have needed to be moved or demolished due to clearance issues that the Customer or their contractor/consultant failed to account for. EDTI strongly recommends Customers engage professionals (architects, engineers, electricians) knowledgeable in the clearance requirements for their project.
- c. Distances in this section are the clear distance between objects, unless noted otherwise.

3.10.1 Limits of Approach – Clearance to Overhead and Underground Power Lines

- a. It is important to be aware of any power lines in the area when planning your construction. The required clearance for overhead power lines may be as much as 7.0m.
 - i. EDTI offers free consultations on construction plans where there are concerns about proximity to overhead electrical facilities. [Contact us](#) for details and assistance.
- b. You must consider the proximity of planned buildings/structures and work areas during construction to power lines. Employers and contractors have responsibilities under the Alberta Occupational Health and Safety (Alberta OHS) Act, Code, and Regulations to maintain safe distances for people or equipment must maintain from energized power lines or equipment.
 - i. **Anyone working within 7.0m of an overhead power line shall contact an EDTI Safety Codes Officer prior to commencing any work – contact details are below.**
- c. You may also contact EDTI's Safety Codes Officers at safetycodes@epcor.com for assistance and additional information.
- d. **All costs associated with meeting the required code clearances are the owner's responsibility. If the site is deemed unsafe, a stop-work order will be issued.**
- e. You can get more information on building near overhead lines and learn more at the [Working near overhead power lines](#) section.

3.10.2 Horizontal Clearance to Other Utilities

- a. The following horizontal clearances apply to the specified infrastructure on private property. Where other utility or municipality requirements are more stringent, those requirements shall apply.

3.10.2.1 Poles and Anchors

- a. 1.0m to all gas lines.
- b. 1.8m to all water lines and cc valves.
- c. 2.0m to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. The secondary cable cannot cross through septic fields and Minnesota Mounds.

3.10.2.2 Padmount Transformers, Switching Cubicles, Guardrails/Bollards, and Ground Grids

- a. 1.0m to all gas lines.
- b. 1.8m to all water lines and cc valves.
- c. 2.0m to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. The secondary cable cannot cross through septic fields and Minnesota Mounds.

3.10.2.3 Δ Primary and Secondary Conductors

- a. 1.0m to all gas lines.
- b. 1.8m to all water lines and cc valves.
- c. Δ 2.0m to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. The primary or secondary cable cannot cross through septic fields and Minnesota Mounds.

3.10.2.3.1 Δ Single-Family and Multi-Family Unit Four-Party Trench Exception

- a. Δ On residential properties where a four-party joint-use trench is used, there must be a minimum 0.3m separation to the gas line in the four-party trench, and a marker tape must be installed 0.5m above the service cable. [Please see Drawing 5.2 – Typical Shared Power Trench](#) for details.

3.10.3 Δ EDTI Clearance Requirements for Landscaping & Structures

- a. It is the Customer's responsibility to ensure that any trees, shrubs, buildings/structures, driveways, sidewalks, fences, or other landscaping on their property does not pose a risk to or interfere with the utility lines and equipment.
- b. Where Customers have installed any of the above items, EDTI may remove them at the owner's expense, pursuant to EDTI's Terms and Conditions, and all applicable laws and regulations.
 - i. While EDTI prohibits the installation of any hard surface materials (e.g. concrete) within the clearance distance of its assets, EDTI strongly recommends that a cold joint be installed along the clearance boundary to allow for the easy removal of any material installed in the clearance area. EDTI will not be held responsible for damages to the material adjacent to the clearance area when removals are required. Cold joints will ease the material removal within the clearance area, reducing potential costs borne by the Customer, and reduce the risk of the adjacent material from being damaged.

- c. The clearance requirements in this section are EDTI's general minimum clearance requirements. Other codes, regulations, bylaws, or laws may have more stringent requirements. It is the Customer's responsibility to determine what requirements apply, and to adhere to the most stringent of those requirements.
- d. Before planting new trees, look overhead and all around the intended site. Note how far the tree planting site is from overhead utility lines and the easement/utility right-of-way; select trees that won't interfere with utility lines. Consider the expected final growth size (height and breadth) of the species being planted.
- e. Ensure any landscaping and buildings/structures near power equipment meets proper clearances. EDTI requires the following clearances (the most stringent shall apply):
 - i. Power Poles and Anchors: 1.0m on all sides
 - ii. Aerial Lines: 3.0m
 - iii. Δ Transformers: 3.0m in front of doors, 2.0m on other sides (including driveways)
 - iv. Switching Cubicles: 3.0m on all sides
 - v. Pedestals: 1.0m on all sides
 - vi. Ground Grids: 1.0m
 - vii. Guardrails and Bollards (including concrete): 1.0m
- f. Customer shall provide an appropriate stable landscaping surface within the clearance area of EDTI equipment. Examples of appropriate landscaping are sod, wood chips (4 in. or smaller) or decorative crushed rock. Any decorative crushed rock shall be 20mm (¾ in.) or smaller, with a minimum of three fractured faces. Smooth, rounded rocks are not permitted. Concrete is not permitted within the guardrail area to allow for access to grounding for maintenance and repair.
- g. Where the transformer is to be installed in an alcove, the size of the alcove required depends on the size of the transformer and the setback distance of the transformer. The transformer shall comply to all the clearance requirements above, and shall comply with [Drawing 3.8 – Typical Transformer Alcove Layout](#). Please talk to EDTI Customer Engineering Services for exact requirements for your project.
- h. Prior to starting work on your project, any obstructions of EDTI's equipment will need to be rectified at the Customer's expense.
- i. For more information on the clearance requirements for landscaping and how to safely trim trees that are too close to power lines, visit <https://www.epcor.com/ca/en/ab/edmonton/safety/work/overhead-power-lines/building-structures-and-power-equipment-clearances.html>.

3.10.4 Δ Vertical Clearances to Other Utilities

- a. Δ The following horizontal clearances apply to the specified infrastructure on private property. Where other utility or municipality requirements are more stringent those shall apply.
- b. Δ A minimum of 0.3m vertical separation is required to all EPCOR underground power cables and duct lines when crossing these areas. Crossings are to be made as close to 90 degrees as possible. Expose existing facilities are required.

3.11 RESIDENTIAL GROUND ELECTRODES

- a. This section's requirements apply to all new residential dwellings (single family detached, semi-detached, and row housing).
- b. Ground electrodes shall be:

- i. **Option #1 – Lot Adjacent to Meter Developed**

- Where the development of the adjacent lot on the meter side of the house has been completed, the ground plate may be buried outside at a minimum depth of 600mm, at a minimum 1,000mm to either side of the meter location. The ground plate shall remain exposed for inspection.

- ii. **Option #2 – Lot Adjacent to Meter Not Developed**

- Where the development of the adjacent lot on the meter side of the house has not been completed, another suitable location such as the rear of the foundation shall be used, with the ground plate buried at a minimum depth of 600mm. The ground plate shall remain exposed for inspection.

- iii. **Option #3 – Ground Plate in Basement**

- Where the installation of the ground plate is installed inside the basement, it shall be at a minimum depth of 600mm below the surface of the basement slab, at a minimum 1,000mm to either side of the panel location. The ground plate shall be $\frac{3}{4}$ backfilled, leaving the termination end and $\frac{1}{4}$ of the plate exposed for inspection.

- (NOTE: The backfilling of the plate electrodes above shall be with native soil, free of large lumps, sand and rock.)

- iv. **Option #4 – Ground Conductor in Footing**

- Install not less than 6m of copper, sized according to Table 43 of the Canadian Electrical Code – Part I, encased within the bottom 50mm of a concrete foundation footing in direct contact with the earth, at not less than 600mm below finished grade. This will require an inspection at the time of installation with an additional inspection fee attached.

- v. **Option #5 – Customer Certified Ground Plate**

- Install the ground plate (AC Dandy Model# D-GP-HOOK-1) as per the manufacturer's instructions directly below the footing. Leave the upper portion of the ground rod and approval label visible for inspection.

3.12 **Δ** TRENCHING AND BACKFILLING

- a. **Under no circumstances shall energized primary cables be moved or handled in any way.**
- b. **All proposed cable routing and duct work is subject to written approval by EDTI Customer Engineering Services before construction approval.**
- c. The trench must take the most direct route to the meter base location.

- d. As a Customer, you cannot do any excavation work on City of Edmonton property, but you must complete all trenching on your property.
- e. Underground service lines must be kept a minimum of 1.0m from the edge of the property line.
- f. The Customer's contractor must not trench within 1.0m of any EDTI power pole, anchor, transformer, switching cubicle ground grid (extends underground 2.0m from the edge of the concrete base, and 300mm of the guard rail, whichever is further from the concrete base), power pedestal, or energized cable without prior consultation with EDTI.
- g. Some work may be required above energized primary or secondary cables. This may involve crossing or over trenching the cables. Mechanical excavation is allowed up to 1.0m from the energized facilities. The facilities must first be located using hydro excavation (hydrovac) or hand digging before determining where the mechanical excavation limits end.
- h. EDTI Customer Engineering Services will allow a contractor to over trench up to 5.0m of energized facilities by hand or hydro excavation (hydrovac). Follow Utility Safety Partners (formerly Alberta One-Call) procedures and contact us before starting work.
- i. EDTI facilities must be located using hydro excavating or hand digging before determining where the mechanical excavation limits end.
- j. Exposed energized cables cannot be left unattended. If the excavation is narrow or small, the primary cable must be covered with soil bags or some other suitable temporary method. [Contact us](#) for more details.
- k. Ensure that the top of the duct is a minimum of 1.0m to a maximum of 1.3m below final grade and that the service duct is set on undisturbed soil that is free from rocks, debris, and sudden grade changes.
- l. Δ Where excavation is completed, sand must be provided. A 150mm layer of sand must be placed below the duct.
- m. Δ For all service installations, a 300mm layer of sand must be placed above the duct.
- n. Δ When a trench has been backhoed, duct must be shaded with 300mm of sand. Backhoed material cannot be placed over cable.
- o. A marker tape must be installed 500mm above all underground electrical conductors.
- p. The Customer must backfill all trenches with material that is free of stones and items with sharp edges.
- q. Backfill must be placed in uniform lifts not exceeding 300mm and compacted to the City of Edmonton Design and Construction Standards, Volume 2 – Roadways.
- r. All compaction testing shall meet a minimum of 98% of Standard Proctor Density (SPD).
- s. Δ Backfill material over duct can be the material trenched with a mechanical trencher, if the inspector deems it suitable. Soil with high thermal resistivity that contains large amounts of organics, peat, black loam, sod, hardened clay, stones, straw, snow, or frozen material will not be acceptable. All backfill material is subject to the inspector's approval. Sand or clean backfill material must be substituted for unsuitable backfill.

3.12.1 Hydro Excavating (Hydrovac) Procedure Over Primary and Secondary Cables on Private Property

- a. Always follow updated EDTI hydro excavating standards (i.e. water temperature, water pressure limits, and neoprene oscillating head). The hydro excavating operator must be familiar with this specific standard before starting work to avoid damage to the cable or exposure to an electrical hazard. A copy of the updated standard must be on-site and made available to EDTI upon request. [Contact us](#) for updated standards.

3.13 MAIN SWITCH OR BREAKER MINIMUM INTERRUPTING CAPACITY

- a. Due to higher fault levels, services supplied from the network system require larger interrupting capacities. Please see [Section 8 – Network Service](#) for more information.
- b. The interrupting capacity of main switches and breakers must be sized according to [Table 3.3 – Main Switch or Breaker Minimum Interrupting Capacity](#).
- c. The minimum interrupting capacity applies to all service entrance equipment.
- d. The interrupting capacities indicated are for one service from one matching transformer. When a larger transformer is installed to service several temporary or permanent main panels, the interrupting capacity must match the total capacity of all main services connected to the transformer. [Contact us](#) to confirm the requirements.
- e. For temporary services supplied from a permanent transformer, interrupting ratings must match the available fault currents at the transformer. Confirm the rating with an EDTI Customer Engineering Services representative.

3.13.1 Making Changes to Customer Main Breaker or Fusing

- a. Customers shall not alter their main disconnect fusing or breaker protection settings without prior written consent from EDTI.

3.14 Δ ELECTRICAL ROOM

- a. If service capacity exceeds 200A, or the sum total of multiple services exceed 200A, service equipment must be located in a separate electrical room of adequate size, when in a building. The electrical room can only contain electrical and/or communication equipment and must not contain mechanical devices, including gas or water equipment. If an electrical room is provided for services 200A or less, the same requirements apply.
 - i. Electrical rooms are not required for individual residential dwelling units.
 - ii. Δ All metering equipment for residential sites above 200A shall be on the exterior of the home, exterior/interior of the garage, or in a dedicated electrical room. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior). Metering equipment can be enclosed in a non-metallic enclosure for aesthetic purposes.

- b. A detail of the electrical room layout must be submitted for EDTI approval.
 - i. The electrical room of adequate size, and in a location that is acceptable to EDTI and the inspection authority.
 - ii. There shall be no less than 900mm clearance for egress, with all man and equipment doors open.
 - iii. Door swings and egress clearances shall be provided to EDTI as part of the electrical room drawings.
- c. All electrical rooms must have four walls and a ceiling.
- d. The key(s) required to access the electrical room must be provided to the EDTI Meter Operations department.
- e. Electrical rooms must be located on ground floors, unless a written exception from EDTI has been provided. See [Section 1.6 – Exceptions](#) for details. If an exception is provided, the following requirements apply.
 - i. If an electrical room is located on a floor other than the ground floor, it must be accessible by a proper stairway as defined in the Alberta Building Code. Please refer to the building code for “private” or “public” stair types. For example, the maximum rise is 200mm, the minimum run is 210mm, the tread depth is a minimum of 235mm, and the width is 900mm. Access by a ladder is not acceptable.
 - ii. Δ If the main electrical room and all revenue meter sockets are to be located below grade, the location must be accessible to EPCOR for future use. The location and approval shall be noted in the inspection report. See [Drawing 10.4 – Instrument Transformer Metering Layout](#) for additional details.
- f. EDTI has specific servicing details for the Quarters Downtown Development area. If your development is in this area, which extends from 92 to 97 Street and from 101 to 103A Avenue, please [contact us](#) for these details.

3.15 MAXIMUM HORSEPOWER OF MOTORS

- a. The maximum permitted horsepower of motors is identified in [Table 3.4 – Maximum Horsepower of Motors Permitted](#). Variable frequency drives and motors employing motor soft starters may be exempt from these limits – please contact us to discuss your specific requirements.
- b. Special permission is required before EDTI will grant construction approval for motors larger than those specified in [Table 3.4](#). Please [contact us](#) for more information.

3.16 EQUIPMENT ACCESS

- a. EDTI Customer Engineering Services reserves the right of final approval for the location of facilities prior to construction.
- b. EDTI requires truck access to on-property transformers, switching cubicles, poles, and handholes.
- c. Access to equipment must be provided on private property. Without special permission from EDTI Customer Engineering Services, public roadways or laneways are not acceptable for access to equipment on private property.

- d. Equipment must be placed beside a 4.6m wide access roadway that is centred in an unimpeded 6.5m wide area. The area must be capable of supporting an 18,000kg truck, plus equipment weighing up to 6,900kg. Equipment must be unloaded from the side of the vehicle, with outriggers on the truck extending to a width of 7.0m.
- e. Any overhang or other obstruction over the access roadway must have a minimum of 5.0m of vertical clearance.
- f. If access is through a locked enclosure, the Customer shall provide double lock capability on the gate to accommodate an EDTI lock.
- g. Padmounted equipment must be placed in a location not to exceed maximum setbacks from driving surfaces as outlined in [Table 3.5 – Maximum Setback Distances for Padmount Equipment](#).
- h. Equipment must be placed in a location where it will not create a line-of-sight concern for traffic or pedestrians.
- i. See [Section 3.10.3 – EDTI Clearance Requirements for Landscaping & Structures](#) for details on transformer alcoves.

3.17 SITE HOUSEKEEPING

- a. Areas that our crews must access and work in must be clear of construction materials, equipment, debris, trash, and other materials that may impede work, pose a safety risk to personnel, or damage equipment.
- b. The site must be level and consist of hard-packed material or asphalt.
- c. If a site has substandard housekeeping or is deemed unsafe by EDTI personnel, EDTI personnel will leave the site until the issues are rectified.

3.18 SERVICE INTERRUPTIONS

- a. While EDTI takes all reasonable efforts to guard against interruptions, we do not guarantee uninterrupted service.
- b. Without liability of any kind to EDTI, EDTI has the right to disconnect or otherwise curtail, interrupt, or reduce Distribution Tariff Service to Customers whenever EDTI reasonably determines, or is told by the Alberta Electric System Operator, that such a disconnection, curtailment, interruption, or reduction is necessary:
 - i. To facilitate construction, installation, maintenance, repair, replacement, or inspection of any of EDTI's facilities.
 - ii. To maintain the safety and reliability of EDTI's distribution system.
 - iii. For any other reason, including dangerous or hazardous circumstances such as emergencies, forced outages, potential overloading of EDTI's distribution system, or force majeure.

3.19 SERVICE CONNECTION AGREEMENTS

3.19.1 Offer Letter & Capital Contribution

- a. EDTI requires the Customer to sign the Customer Acceptance portion of the estimate letter as confirmation of intent to proceed with construction. This is required before EDTI finalizes the design and issues work orders.
- b. The Customer may be required to make a capital contribution toward the cost of materials and equipment installed on City of Edmonton property or the Customer's property. This shall be paid in full prior to EDTI finalizing the design and issuing any work orders.

3.19.2 Electric Service Agreement (Schedule B and Schedule C)

- a. Customers may be required to sign an Electric Service Agreement as defined and required by EDTI's Terms and Conditions for Distribution Connection Services. These agreements are sometimes referred to as a 'Schedule B' or 'Schedule C'. EDTI will not be able to complete the service until these documents are signed by the Customer, if required.

3.19.3 Design and Planning Service Agreement

- a. EDTI may at its sole option require the Customer to sign an Engineering Service Agreement, and pay a deposit, or provide a security or letter of credit, for the estimated value of engineering services to complete the preliminary design and estimate for the services the Customer is requesting.
- b. Additional increases to the deposit, security, or letter of credit may be required, if the costs of completing the engineering work exceed the initial deposit amount. EDTI may in its sole option cease work until these requirements are met in full.

3.19.4 Construction Commitment Agreement

- a. EDTI may at its sole option require the Customer to sign a Construction Commitment Agreement, and pay a deposit, security, or letter of credit, for the estimated value of construction to complete the service the Customer is requesting.
- b. Additional increases to the deposit, or security or letter of credit may be required, if the costs of completing the construction work exceed the initial deposit amount. EDTI may in its sole option cease work until these requirements are met in full.

3.19.5 Distribution Interconnection Agreement

- a. EDTI may at its sole option require the Customer to sign a Distribution Interconnection Agreement that outlines the specific requirements for the service connection the Customer has requested, above the requirements outlined in EDTI's Terms and Conditions. These agreements are common where large generators are being installed, make-before-break transfer schemes are being employed, or where Customer equipment or operating practices are of concern to EDTI.

3.20 PERMITS AND INSPECTIONS

- a. As a Customer, you or your contractors are responsible for:
 - i. Obtaining all permits, certificates, licenses, inspections, reports, and other authorizations necessary for installing and operating the service connection. EDTI is not required to start or continue operation of a service connection unless the Customer has complied with the licensing requirements of EDTI and all other authorities.
 - ii. Submitting an electronic copy of the electrical wiring permit, civil electrical inspection, and final electrical inspection report to EDTI Customer Engineering Services.
 - iii. Ensuring that an Electrical Safety Codes Officer inspects all internal wiring before it's concealed. All transformer and switching cubicles, ground grids, underground wiring, and ducts must be inspected before the trench is backfilled. Contact the City of Edmonton to arrange for inspections. A service connection will not be energized unless you have inspection approval.
 - iv. Completing utility searches on private property and notifying Utility Safety Partners (formerly Alberta One-Call) before any work is done.

3.21 METERING AND CHOOSING YOUR RETAILER

- a. Please see [Section 10 – Metering](#) to determine the metering requirements, and to determine the type of metering required for your installation.
- b. You are free to choose any retailer. Regulated wires services do not depend on the retailer you choose. For a listing of licensed Alberta retailers, visit ucahelps.alberta.ca or call 310-4822 (toll-free in Alberta).

TABLE 3.1

Δ PROJECT OVERVIEW

Point of Service is more particularly described in [EDTI's Distribution Asset Ownership Guide](#).

CONNECTION	CUSTOMER'S RESPONSIBILITIES	EDTI'S RESPONSIBILITIES	SERVICE ENTRY POINT (CIVIL INFRASTRUCTURE CONNECTIONPOINT)	POINT OF SERVICE (ELECTRICAL CONNECTION POINT)
AERIAL SECONDARY SERVICE This is an overhead service run from a power pole. Typical installations include homes and small commercial applications.	Complete all work on the building, including installation of the weatherhead and service attachment. Install and maintain all intermediate poles and associated hardware, including racks, anchors, and downhaults with only secondary conductors attached. Install Current Transformers and Potential Transformers.	Complete all work on public property. Supply and install overhead secondary conductors and make the final connection at the transformer and weatherhead. Supply, install, and maintain all high-voltage utility equipment, including conductors, transformers, and switches. Install and maintain all intermediate poles, anchors, and downhaults with high-voltage (primary) conductors attached on the line side of the point of service. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Weatherhead on the building.	Weatherhead on the building.
AUNDERGROUND SECONDARY SERVICE This is a secondary underground service fed from an existing transformer, new transformer, or pedestal installed on City of Edmonton property. Typical installations include homes and small to medium commercial applications.	Complete civil work on private property. This typically includes all trenching, ducting, handholes, and grounding. Supply secondary service cable, except for non-MFU residential sites. Install secondary cable/duct. Install Current Transformers and Potential Transformers.	Complete all work on public property. Terminate all secondary conductors at the transformer or pedestal. For non-MFU residential sites, supply secondary service cable from transformer/pedestal to service entry point, plus 30.0m (coiled for Customer to install). Additional cable at Customer's cost. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Property line.	Splice at property line if present, otherwise line side meter socket lugs.

TABLE 3.1 – CONTINUED

Δ PROJECT OVERVIEW

CONNECTION	CUSTOMER'S RESPONSIBILITIES	EDTI'S RESPONSIBILITIES	SERVICE ENTRY POINT (CIVIL INFRASTRUCTURE CONNECTION POINT)	POINT OF SERVICE (ELECTRICAL CONNECTION POINT)
PADMOUNT TRANSFORMER SERVICE This is a ground-mounted transformer located on private property. Typical installations include medium to large commercial applications, large houses, and multifamily sites.	Complete civil work on private property. This typically includes all trenching, ducting, handholes, concrete bases for any padmount equipment, grounding, and guardrails. Supply the primary cable on multi-family sites. Supply and install secondary cable. Install Current Transformers and Potential Transformers.	Complete all work on public property. Supply primary cable, except for multi family sites where the Customer supplies the primary cable. Supply, install, and terminate all padmount equipment. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Secondary duct 1.0m from the edge of transformer pad.	Transformer secondary bus.
PRIMARY METERED SERVICE(AERIAL) This is an overhead service above 750V phase-to-phase. Typical installations include very large commercial applications where the demand load will exceed 2,500kVA to one building, an industrial lot with a single Customer, or a commercial lot with a single Customer.	Install all poles, anchors, and wire on the load side of the service entry point, and for the service entry point, if required.	Install poles, anchors, and wire on the line side of the service entry point. Supply and install Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	First post or physical point of connection on Customer's property.	Line side lugs of the main disconnect.

TABLE 3.1 – CONTINUED

Δ PROJECT OVERVIEW

CONNECTION	CUSTOMER'S RESPONSIBILITIES	EDTI'S RESPONSIBILITIES	SERVICE ENTRY POINT (CIVIL INFRASTRUCTURE CONNECTION POINT)	POINT OF SERVICE (ELECTRICAL CONNECTION POINT)
PRIMARY METERED SERVICE (UNDERGROUND) This is an underground service above 750V phase-to-phase. Typical installations include very large commercial applications where the demand load will exceed 2,500kVA to one building, an industrial lot with a single Customer, or a commercial lot with a single Customer.	Complete civil work on private property. This typically includes all trenching, ducting, handholes, concrete bases for any padmount equipment, grounding, and guardrails. Install Current Transformers and Potential Transformers.	Complete all work on public property. Supply and install primary cable to the line side of the main switchgear. Terminate EDTI primary cable at the Customer's switchgear. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Property line.	Line side lugs of the (switchgear) main disconnect.
Δ NETWORK SERVICE This is a 120/208V service located in the network area with the transformer connected to EDTI's network system. The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. Typical installations include medium to large commercial applications.	Complete civil work on private property. This typically includes all trenching and ducts. Install Current Transformers and Potential Transformers. The Customer maintains all secondary ducts on private property.	Complete all work on public property. Supply and install secondary conductors and make the final connection at the transformer or ring bus and the Customer's switchgear. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Property line.	Switchgear.

TABLE 3.1 – CONTINUED

Δ PROJECT OVERVIEW

CONNECTION	CUSTOMER'S RESPONSIBILITIES	EDTI'S RESPONSIBILITIES	SERVICE ENTRY POINT (CIVIL INFRASTRUCTURE CONNECTION POINT)	POINT OF SERVICE (ELECTRICAL CONNECTION POINT)
UNMETERED SERVICE This is an unmetered service only available to the City of Edmonton, telecommunication and utility companies; where in EDTI's sole option, it is not practical to provide a metered service. Typical installations include streetlights and traffic signals.	Complete trenching, ducting, and grounding. Supply and install secondary cable up to the EDTI agreed-upon demarcation point. For installations installed by EPCOR or one of its designated agents, please reference the Transportation Electrical Systems Asset Definition Agreement.	Supply and install required transformers, poles, and other equipment on public property.	EDTI agreed-upon demarcation point.	EDTI agreed-upon demarcation point.

TABLE 3.2

Δ SERVICE TYPES

	COMMERCIAL SERVICE LIMITS	RESIDENTIAL SERVICE LIMITS
AERIAL SECONDARY SERVICE An overhead service run from a power pole. Typical installations include homes and small commercial applications.	• 120/240V, 1-Ph, 3-W – 400A • 120/208V, 3-Ph, 4-W – 400A • 277/480V, 3-Ph, 4-W – 150A (Temporary Services Only) • 347/600V, 3-Ph, 4-W – 150A	• 120/240V, 1-Ph, 3-W – 400A ◦ Typical services sizes include: 100A, 125A, 150A, 200A
Δ UNDERGROUND SECONDARY A secondary underground service fed from an existing transformer, new transformer, or pedestal installed on City of Edmonton property. Typical installations include homes and small to medium commercial applications.	<u>Pad-Mounted Transformer</u> • 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 2,800A • 277/480V, 3-Ph, 4-W – 2,200A (Temporary Service and Level 3 EV Charging Services Only) • 347/600V, 3-Ph, 4-W – 2,400A <u>Pole-Mounted Transformer</u> • 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 400A • 277/480V, 3-Ph, 4-W – 150A (Temporary Services Only) • 347/600V, 3-Ph, 4-W – 150A	• 120/240V, 1-Ph, 3-W – 600A ◦ Typical services sizes include: 100A, 125A, 150A, 200A
Δ PADMOUNT TRANSFORMER A ground-mounted transformer located on private property. Typical installations include medium to large commercial applications, large houses, and multi-family sites.	• 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 2,800A • 277/480V, 3-Ph, 4-W – 2,200A (Temporary Services and Level 3 EV Charging Services Only) • 347/600V, 3-Ph, 4-W – 2,400A	• 120/240V, 1-Ph, 3-W – 600A ◦ Typical services sizes include: 100A, 125A, 150A, 200A • 120/208V, 3-PH, 4-W - 2,800A • 347/600V, 3-PH, 4-W - 2,400A
Δ NETWORK A 120/208V service connected to EDTI's network system The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. Typical installations include medium to large commercial applications.	• 120/208V, 3-Ph 4-W • 120/208V, 2-Ph, 3-W <i>Note: Please contact us for confirmation of the network voltage and amperage available in your area.</i>	• 120/208V, 2-Ph, 3-W <i>Note: Please contact us for confirmation of the network voltage and amperage available in your area.</i>

TABLE 3.2 - CONTINUED

Δ SERVICE TYPES

	COMMERCIAL SERVICE LIMITS	RESIDENTIAL SERVICE LIMITS
PRIMARY METERED A service above 600V phase-to-phase. Typical installations include very large commercial applications where the demand load will exceed 2,500kVA to one building, an industrial lot with one Customer, or a commercial lot with one Customer.	The service size allowed is governed by many factors. Please contact us for availability.	
UNMETERED This is an unmetered service only available to the City of Edmonton, telecommunication and utility companies; where in EDTI's sole option, it is not practical to provide a metered service. Typical installations include streetlights and traffic signals.	• 120/240V, 1-Ph, 3-W • 120/208V, 3-Ph, 4-W • 120/208V, 2-Ph, 3-W ***NOTE: The actual demand load for ALL unmetered services must be less than 60A.	Not Available.

TABLE 3.3

MAIN SWITCH OR BREAKER MINIMUM INTERRUPTING CAPACITY

PRIMARY SERVICES

Interrupting capacities for primary breakers and power fuses are:

- 4.16kV System: Capacity provided on request.
- 13.8kV System: Up to 31,000A (750MVA)
- 25kV System: 12,000A (500MVA)

SECONDARY SERVICES

For services connected to EDTI's Downtown Secondary Network, please see [Table 8.1 – Main Switch or Breaker Minimum Interrupting Capacity – Downtown Secondary Network Services](#).

MAIN SWITCH OR BREAKER SIZE	INTERRUPTING CAPACITY			
	120/240V SINGLE-PHASE, 3-WIRE	120/208V 3-PHASE, 4-WIRE	277/480V 3-PHASE, 4-WIRE	347/600V 3-PHASE, 4-WIRE
Up to 200A	10,000A	25,000A	22,000A	14,000A
201 - 600A	25,000A	42,000A	30,000A	22,000A
601 - 800A	-	42,000A	30,000A	22,000A
801 - 1,200A	-	65,000A	50,000A	25,000A
1,201 - 2,000A	-	65,000A	50,000A	42,000A
2,001 - 3,000A	-	85,000A	60,000A	48,000A

All the current ratings specified in this table are root-mean-square (RMS) symmetrical values. The minimum interrupting capacity must apply to all components and to the assembly.

TABLE 3.4

MAXIMUM HORSEPOWER OF MOTORS PERMITTED

RATING OF MAIN SERVICE CONDUCTORS	208Y VOLTS	240 VOLTS 3-PHASE	480Y VOLTS	600Y VOLTS
100A	10	10	25	30
200A	20	20	50	50
300A	30	30	75	100
400A	40	40	100	125
600A	60	*	150	200
800A	75	*	200	200
1,200A	100	*	200	200
1,600A	125	*	200	200
2,000A	150	*	200	200

* Special permission is required before EDTI will grant construction approval for motors larger than those indicated in the table. Please [contact EDTI Customer Engineering Services](#) for more information.

TABLE 3.5

MAXIMUM SETBACK DISTANCES FOR PADMOUNT EQUIPMENT

TRANSFORMERS

MAXIMUM DISTANCE BETWEEN THE DRIVING SURFACE AND THE NEAREST EDGE OF THE TRANSFORMERBASE	SERVICE SIZE			
	SINGLE PHASE 3-WIRE 120/240 VOLT	3-PHASE 4-WIRE 208Y/120 VOLT	3-PHASE 4-WIRE 480Y/277 VOLT	3-PHASE 4-WIRE 600Y/347 VOLT
9.0m	All	Up to 400A	Up to 200A	Up to 100A
7.0m		Up to 1,000A	Up to 400A	Up to 200A
5.0m		Up to 1,600A	Up to 600A	Up to 600A
3.0m		Up to 2,000A	Up to 1,000A	Up to 1,200A
2.0m		Up to 3,000A	Up to 3,000A	Up to 3,000A

- Multiple services – Contact EDTI Customer Engineering Services for applicable setback distances
- Distances specified are applicable to roadway/parking lot installations only.
- For alcove installations, reference [Drawing 3.8 – Typical Transformer Alcove Layout](#) and contact us Customer Engineering Services for applicable setback/vehicle clearance distances.

CUBICLES

MAXIMUM DISTANCE BETWEEN THE DRIVING SURFACE AND THE NEAREST EDGE OF THE SWITCHING CUBICLE BASE	SWITCHING CUBICLE
9.0m	All except automated cubicles

- Distances specified are applicable to roadway/parking lot installations only.
- Contact EDTI Customer Engineering Services for setback distances for automated cubicles.

DRAWING 3.1

EPCOR PRIMARY VOLTAGE SERVICE AREAS – 15kV, 25kV, AND DOWNTOWN NETWORK



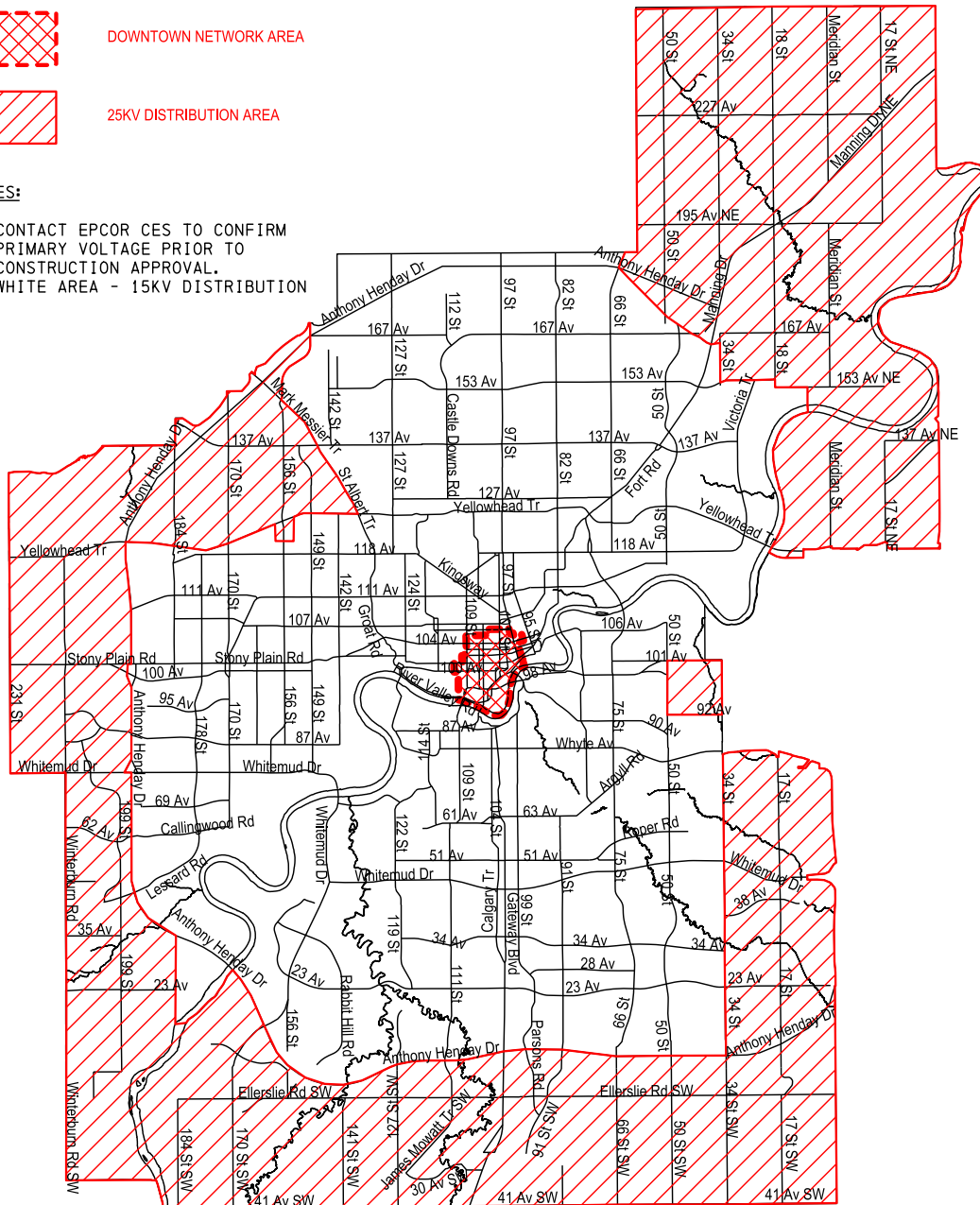
DOWNTOWN NETWORK AREA



25KV DISTRIBUTION AREA

NOTES:

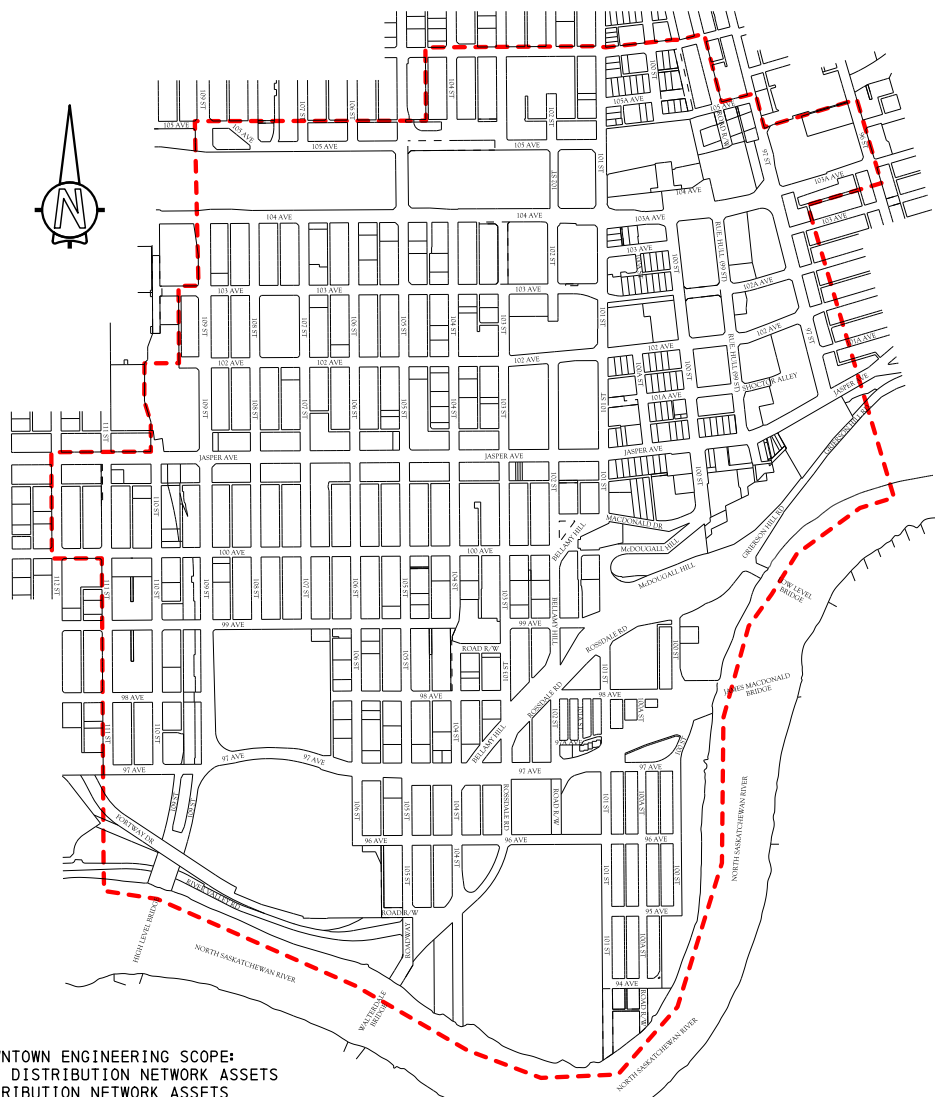
1. CONTACT EPCOR CES TO CONFIRM PRIMARY VOLTAGE PRIOR TO CONSTRUCTION APPROVAL.
2. WHITE AREA - 15KV DISTRIBUTION



DRAWING 3.2

EPCOR PRIMARY VOLTAGE SERVICE AREAS – DOWNTOWN NETWORK (DETAILED)

DOWNTOWN ENGINEERING - BOUNDARY



NOTES:

INCLUDED IN DOWNTOWN ENGINEERING SCOPE:

- ALL 120V/208V DISTRIBUTION NETWORK ASSETS
- ALL 600V DISTRIBUTION NETWORK ASSETS
- ALL UD144 ASSETS
- ALL NETWORK AND NON-NETWORK PRIMARY CABLES AND DUCTBANKS WITHIN THE BOUNDARY
- ALL NETWORK FED SECONDARY AERIAL LINES

EXCLUDED FROM DOWNTOWN ENGINEERING SCOPE:

- ALL NON-NETWORK PRIMARY FED AERIAL LINES
- NON UD144 UNDERGROUND DISTRIBUTION THAT CROSSES OR IS WITHIN THE DOWNTOWN BOUNDARY AREA

NOTES:

1. ALL DISTRIBUTION ENGINEERING GROUPS (CES, FRANCHISE, CAPITAL, ASSET MANAGEMENT) SHALL CONSULT WITH DOWNTOWN ENGINEERING FOR ANY PROJECTS THAT ENCRANCH WITHIN THE DOWNTOWN BOUNDARY
2. ALL NEW CUSTOMER SERVICE AND SERVICE UPGRADE PROJECTS WITHIN THE BOUNDARY ARE INITIATED THROUGH C. E. S.

EPCOR PRIMARY VOLTAGE SERVICE AREAS – 5kV

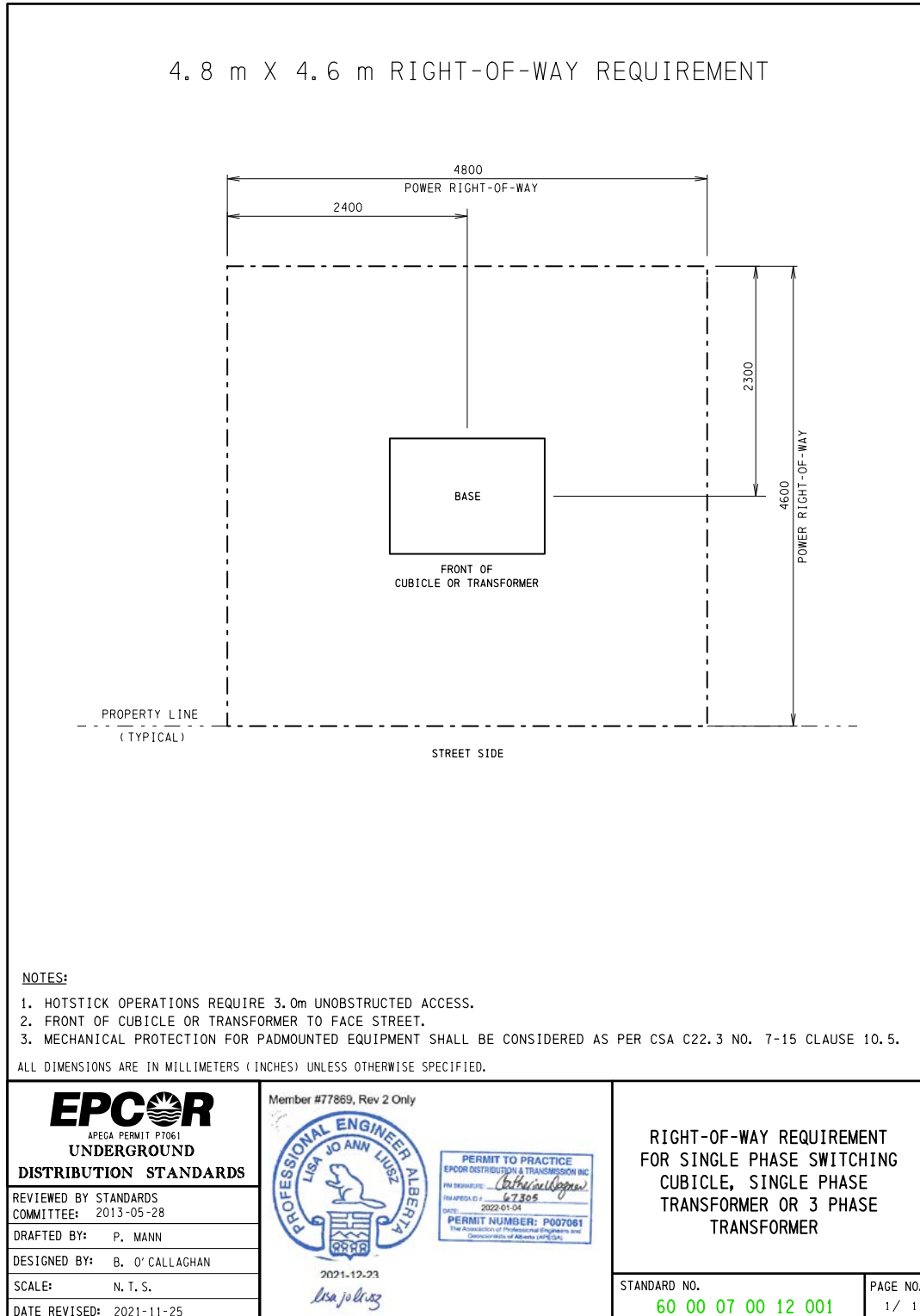


NOTES:

- EDTI CUSTOMER CONNECTION GUIDE
Release Date: August 1, 2025 - Effective Date: August 1, 2025

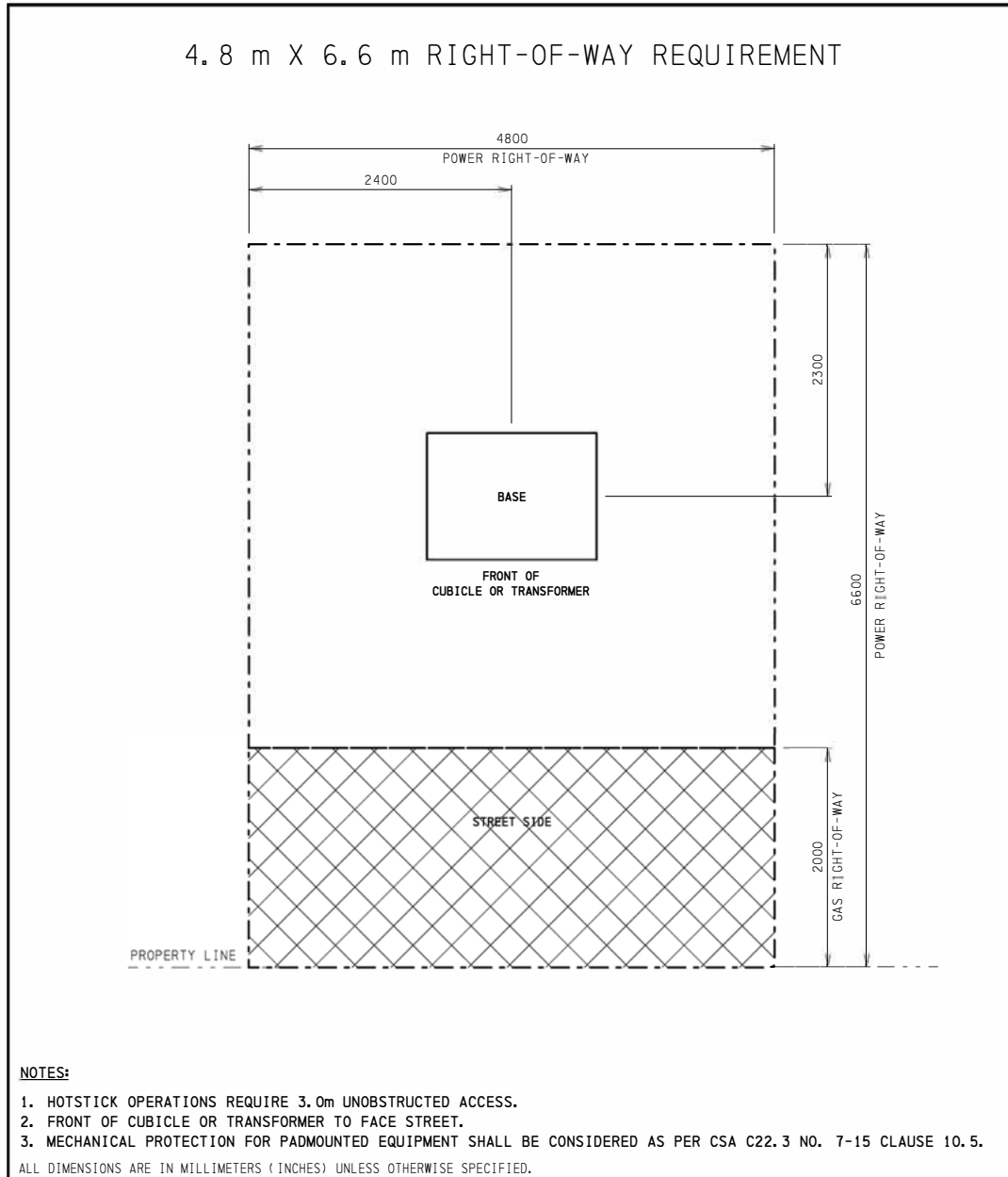
DRAWING 3.4

RIGHT-OF-WAY REQUIREMENT FOR SINGLE PHASE SWITCHING CUBICLE, SINGLE PHASE TRANSFORMER, OR 3 PHASE TRANSFORMER



DRAWING 3.5

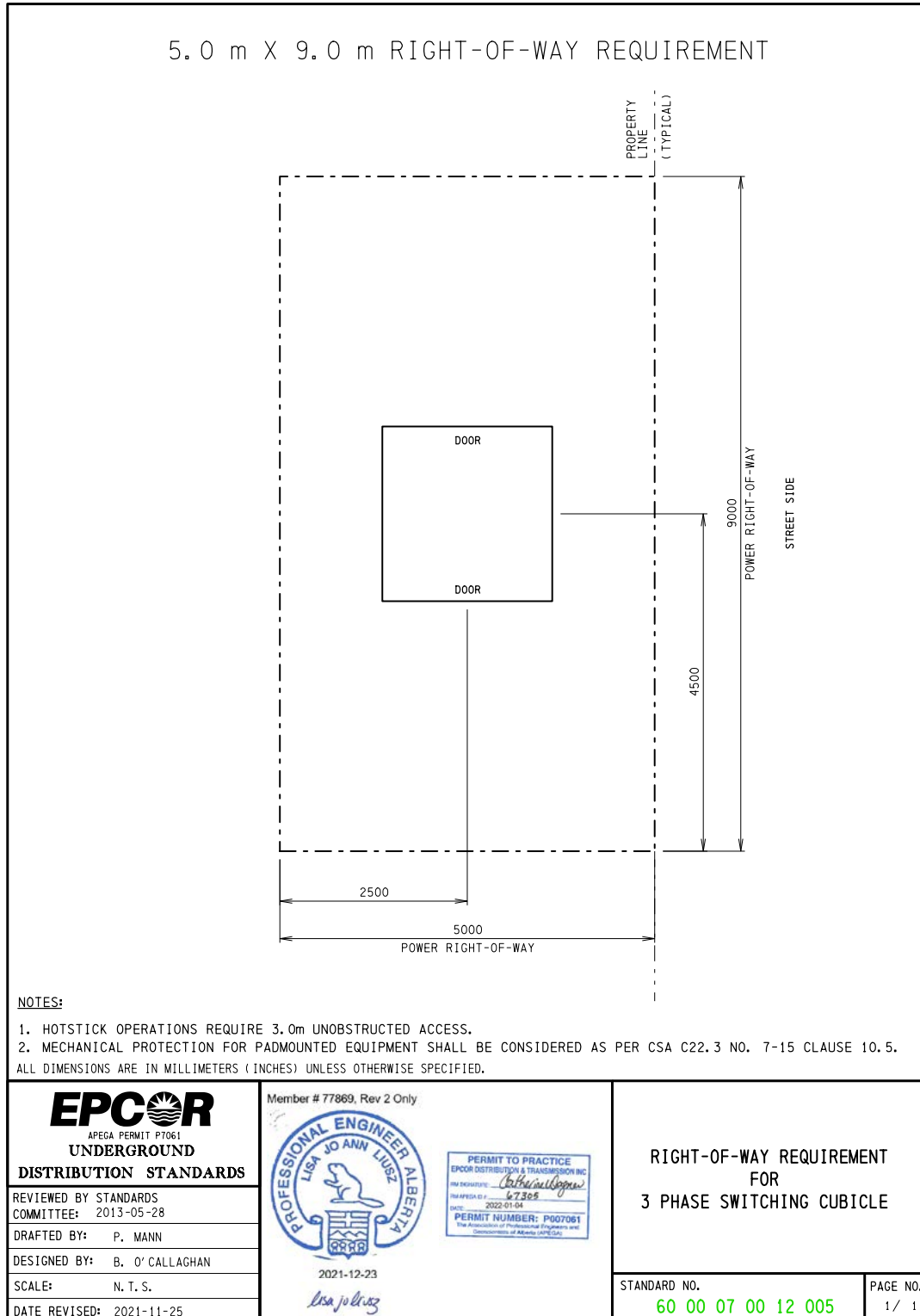
RIGHT-OF-WAY REQUIREMENT FOR SINGLE PHASE SWITCHING CUBICLE, SINGLE PHASE TRANSFORMER, OR 3 PHASE TRANSFORMER WITH 2.0m GAS RIGHT-OF-WAY



EPCOR APEGA PERMIT P7061 UNDERGROUND DISTRIBUTION STANDARDS REVIEWED BY STANDARDS COMMITTEE: 2013-MM-28 DRAFTED BY: P. MANN DESIGNED BY: C. O' CALLAGHAN SCALE: N. T. S. DATE REVISED: 2021-11-25	Member #77869, Rev 2 Only PROFESSIONAL ENGINEER ALBERTA LISA JO ANN LUSZ 2021-12-23 <i>Lisa Jo Ann Luszt</i> PERMIT TO PRACTICE EPCOR DISTRIBUTION & TRANSMISSION INC. BY SIGNATURE: <i>C. O' Callaghan</i> BY APPLICANT: 67305 DATE: 2022-01-04 PERMIT NUMBER: P007061 The Association of Professional Engineers and Geoscientists of Alberta (APEGGA)	RIGHT-OF-WAY REQUIREMENT FOR SINGLE PHASE SWITCHING CUBICLE, SINGLE PHASE TRANSFORMER OR 3 PHASE TRANSFORMER WITH 2.0m GAS RIGHT-OF-WAY <table border="1"> <tr> <td>STANDARD NO. 60 00 07 00 12 002</td> <td>PAGE NO. 1 / 1</td> </tr> </table>	STANDARD NO. 60 00 07 00 12 002	PAGE NO. 1 / 1
STANDARD NO. 60 00 07 00 12 002	PAGE NO. 1 / 1			

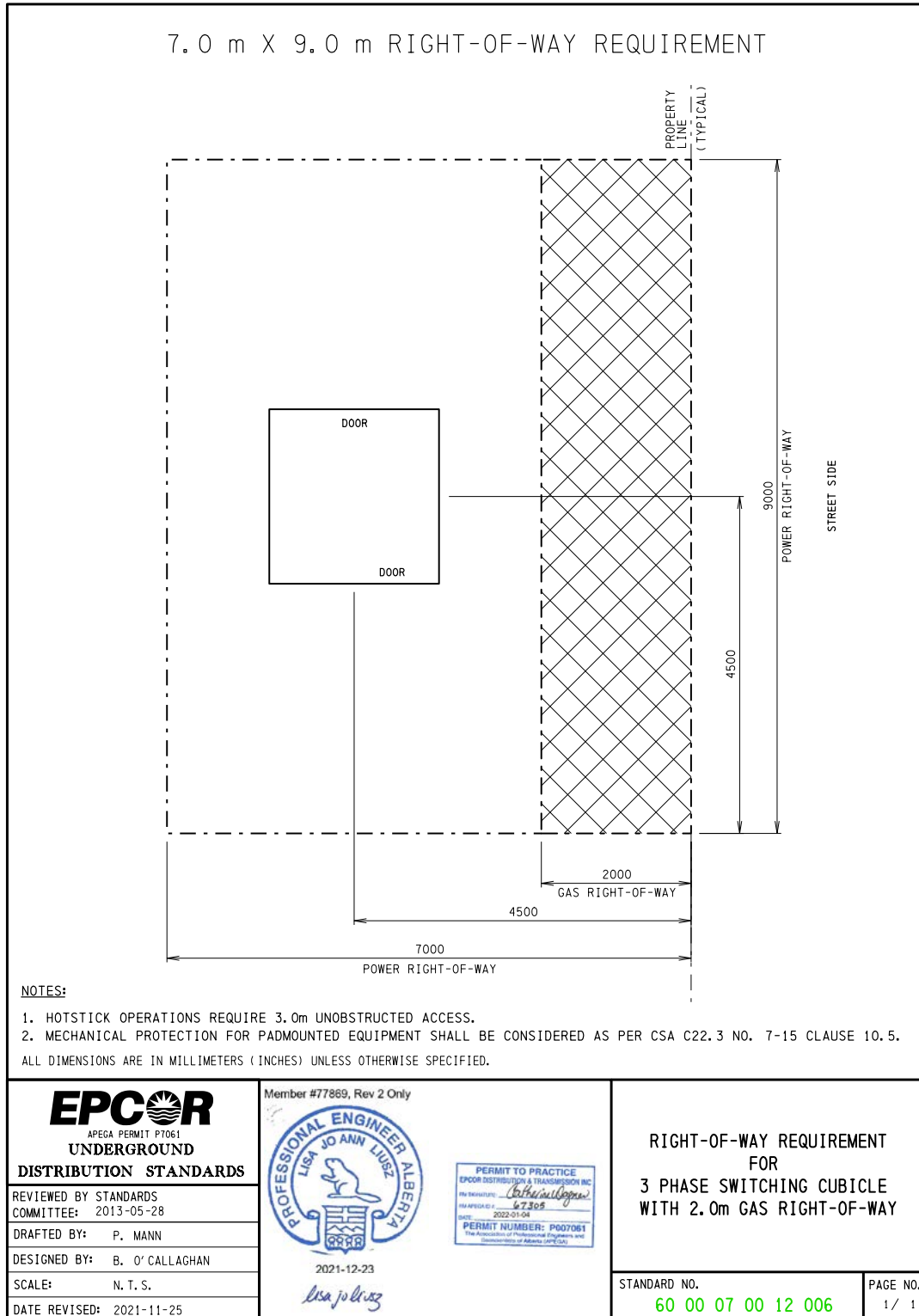
DRAWING 3.6

RIGHT-OF-WAY REQUIREMENT FOR 3 PHASE SWITCHING CUBICLE



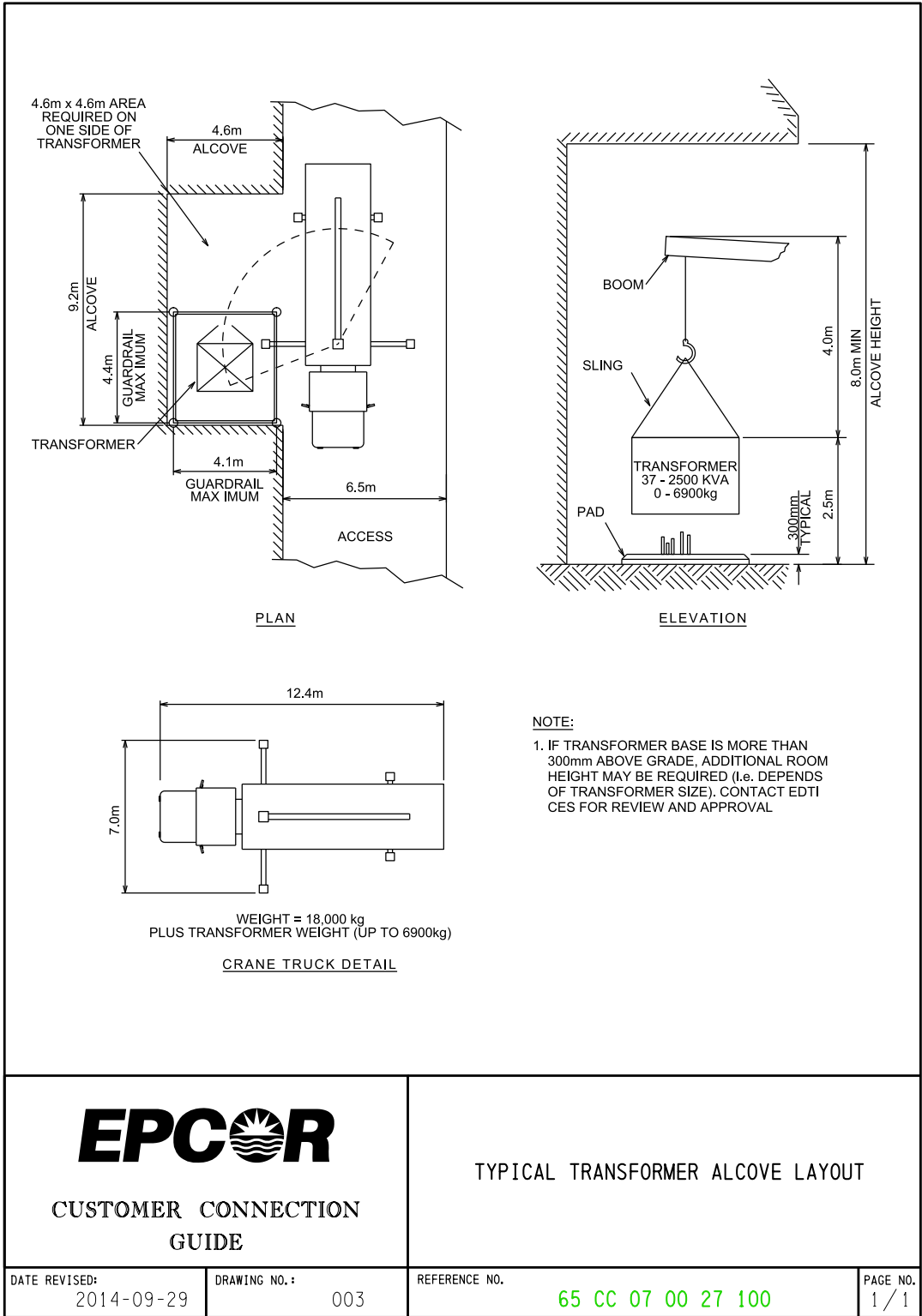
DRAWING 3.7

RIGHT-OF-WAY REQUIREMENT FOR 3 PHASE SWITCHING CUBICLE WITH 2.0m GAS RIGHT-OF-WAY



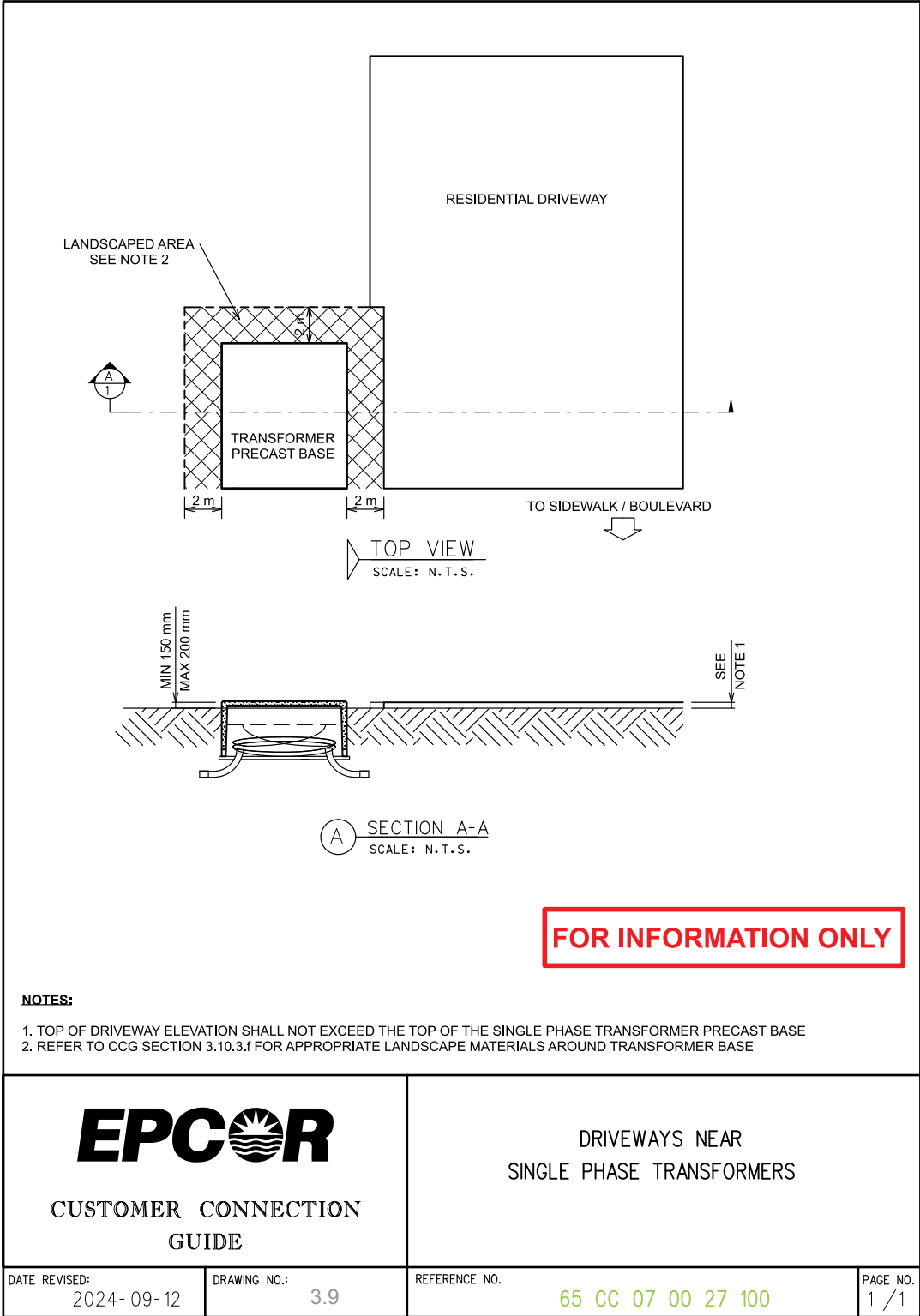
DRAWING 3.8

TYPICAL TRANSFORMER ALCOVE LAYOUT



DRAWING 3.9

Δ DRIVEWAY NEAR SINGLE PHASE TRANSFORMER





CHECKLIST 3.1

APPLICATION CHECKLIST



Customer Connection Guide – Application Checklist

EPCOR Distribution & Transmission Inc.

2022-MARCH-01

Customer Connections

We need specific information about your project and property before EDTI can start developing a solution and estimate for your unique requirements. This checklist provides guidance on the information and documents you need to provide, and some important requirements you must meet as part of your application. EDTI may request additional information as it deems necessary to complete the project.

If information is missing, incomplete, or of inadequate quality, your application may be rejected and will be delayed.

All documents shall be submitted as scanned or electronically produced PDFs. Drawings, plans, and diagrams shall also be submitted as Microstation or AutoCad files.

This form shall accompany all applications submitted to EDTI for new services, service changes, and temporary services. Note that in the case of a temporary service being requested in addition to a new service or service change, a separate application and checklist will be required for each.

Requirement List	(Optional)	Service Type					
		Aerial/Underground Secondary (200A or less)	Aerial/Underground Secondary (>200A)	Padmount Transformer	Primary Metered (Aerial/Underground)	Unmetered	
Type of Service being Requested (Select One)		☐	☐	☐	☐	☐	
Application Form (Online)		☐	☐	☐	☐	☐	
Site Owner Information – Name and Contact Info.		☐	☐	☐	☐	☐	
Site Contact Information – Name and Contact Info.		☐	☐	☐	☐	☐	
Consultant & Contractors – Name and Contact Info.	(Y)	☐	☐	☐	☐	☐	
Municipal Address for Service Request		☐	☐	☐	☐	☐	
Lot – Block – Plan for Service Request		☐	☐	☐	☐	☐ ⁽¹⁾	
City of Edmonton Permit Number	(Y)	☐	☐	☐	☐	☐	
Service Details – Permanent or Temporary, Temp. Rating, Phases, Co-Gen, Voltage, Amperage		☐	☐	☐	☐	☐	
Aerial Service Type Requested – Fed through underground lateral, or with aerial secondary line? (Include in additional notes for application.)		☐					
Building Details – Number of Floors, Height, Total Area, Estimated Demand		☐	☐	☐	☐	☐ ⁽²⁾	
Third Party Agreement⁽⁵⁾	(Y)	☐	☐	☐	☐	☐	
Property Titles and Easements, or Real Property Report		☐	☐	☐	☐	☐	
Load Calculations		☐	☐	☐	☐	☐	
Common Project Title		☐	☐	☐	☐		
Calculations are Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾					☐		
Legal Address (Municipal Address and Lot – Block – Plan)		☐	☐	☐	☐		
City of Edmonton - Electrical Permit Number	(Y)	☐	☐	☐	☐		

List of Motors and their HP Rating on Service		☐ ⁽¹⁾	☐	☐	☐	
Readable when printed as 8-1/2x11 (ANSI A). (Multiple numbered pages may be required to maintain readability.)		☐	☐	☐	☐	
Electrical Site Plan⁽⁴⁾			☐	☐	☐	☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐	☐
Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾			☐	☐	☐	☐
Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐	☐ ⁽³⁾
City of Edmonton - Electrical Permit Number	(Y)		☐	☐	☐	☐
Readable and separate lines visible when printed as 11x17 (ANSI B) drawing. (Multiple drawings with a Key Plan may be required to maintain readability.)			☐	☐	☐	☐
Locations of Existing and Planned Buildings on the Property, including overhangs and underground structures.			☐	☐	☐	☐
Location of Existing Buildings on Adjacent Property if within 3m of Proposed Poles/Cubicles/Transformers/Pedestals			☐	☐	☐	☐
All Legal Property Lines, Easements, and Right-of-Ways			☐	☐	☐	☐
Streets/Avenues/Alleys or other public thoroughfares abutting the property			☐	☐	☐	☐
Location of the Service Entrance Point (SEP) with coordinates or dimensioned to the property line.			☐	☐	☐	☐
Location, size, rating, and the number of conductors.			☐	☐	☐	☐
Location of poles and anchors on and adjacent to the property			☐	☐	☐	☐
Location of Cubicles, Transformers, Pedestals, and Handholes – including the direction of the door openings, base size, and depicting bollards/guardrails.			☐	☐	☐	☐
Bonding details for any equipment within 3m of EDTI equipment.						
Equipment and Conductors dimensioned from building and property lines			☐	☐	☐	☐
Engineered Screw Pile designs for all Screw Piles used to support EDTI equipment.			☐	☐	☐	☐
Engineered drawings for any building structures used to support EDTI equipment.			☐	☐	☐	☐
Electrical Building Plan			☐	☐	☐	
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐	
Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾			☐	☐	☐	
Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐	
City of Edmonton - Electrical Permit Number	(Y)		☐	☐	☐	
Readable and separate lines visible when printed as 11x17 (ANSI B) drawing. (Multiple drawings with a Key Plan may be required to maintain readability.)			☐	☐	☐	
Detailed Drawing of Electrical Room Layout, showing all door swings and dimensions, including free working clearances.			☐	☐	☐	
Provisions for Pilot Wire Relaying, where required.					☐	
The Location and Size of the Main Distribution Panel Labelled with the Voltage, Amperage, Phase, Wire Size, Temperature Rating, and Type.			☐	☐	☐	
Main feeder duct routing, including location and angle of bends, corner-to-corner distance between bends, changes in elevation, and manhole/vault detailed plans.					☐	

Electrical room plans showing all dimensions, equipment, panels, and service conductor routing. Door swings for all man and equipment doors shall be shown, with egress clearances when open. (Required for >200A services only.)			☐	☐	☐
Electrical Single Line Diagram			☐	☐	☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐
Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾			☐	☐	☐
Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐
City of Edmonton - Electrical Permit Number	(Y)		☐	☐	☐
Readable and separate lines visible when printed as 11x17 (ANSI B) drawing. (Multiple drawings with a Key Plan may be required to maintain readability.)			☐	☐	☐
Location, size, rating, and the number of conductors.			☐	☐	☐
Equipment brand, model, certification mark, quantity, and location.			☐	☐	☐
Main Breaker/Fuse Trip Rating and Interrupting Rating			☐	☐	☐
Main Distribution Panel Rating			☐	☐	☐
Service Entrance Information (line phase, voltage)			☐	☐	☐
Switchgear Drawings/Shop Drawings/Specifications					☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend					☐
Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾					☐
Legal Address (Municipal Address and Lot – Block – Plan)					☐
City of Edmonton - Electrical Permit Number	(Y)				☐
Readable and separate lines visible when printed as 11x17 (ANSI B) drawing. (Multiple drawings with a Key Plan may be required to maintain readability.)					☐
Plans showing the switchgear layout in the electrical room, duct and cable routing, and details of EDTI Customer Engineering Services' cable termination cell.					☐
Complete switchgear single-line diagrams showing interlock, all instrument and power transformers, fuses, relays, megavolt-amps (MVA) rating of customer switchgear, standby generation, transformer sizes, and types of winding, as well as other appropriate information. The control and protection schematic should show the breaker direct current (DC) control wiring, the transfer scheme between the main feeder, the standby feeders, and the pilot wire contacts, where required.					☐
Shop Drawings of the Proposed Switchgear Critical internal dimensions for the service entrance cell and metering cell shall be provided. Route of service conductor and radius of its bends shall be depicted to the point of termination. Location of entrance terminations and grounding balls. (Note: Switchgear must be approved for service entrance.)					☐
Main Breaker Specifications and Operating Conditions – Including Protection Curves					☐
Operations Procedure for Standby Systems/Automation Schemes, if applicable.					☐
Confirmation of the DC power supply for EDTI's pilot wire relay, if applicable.					☐
Architectural Building Plan			☐	☐	☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐
Authenticated (Stamped) by an Engineer Registered in the Province of Alberta ⁽⁶⁾			☐	☐	☐

Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐
Readable and separate lines visible when printed as 11x17 (ANSI B) drawing. (Multiple drawings with a Key Plan may be required to maintain readability.)			☐	☐	☐
Final Main Floor Layout			☐	☐	☐
All other final floor layouts where the electrical service shall pass enroute to main distribution panel.			☐	☐	☐
Elevation profiles and sections for all buildings in relation to any existing or proposed aerial lines. ⁽⁷⁾			☐	☐	☐
Landscaping Site Plan			☐	☐	☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐
Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐
All Legal Property Lines, Easements, and Right-of-Ways			☐	☐	☐
Streets/Avenues/Alleys or other public thoroughfares abutting the property			☐	☐	☐
Locations of Existing and Planned Buildings on the Property, including overhangs and underground structures.			☐	☐	☐
Location of Cubicles, Transformers, Pedestals, and Handholes – including the direction of the door openings, base size, and depicting bollards/guardrails.			☐	☐	☐
All Electrical Utilities, including any adjacent to the property within 3m of the depicted spread of any trees or shrubs.			☐	☐	☐
Main feeder duct routing, including location and angle of bends, corner-to-corner distance between bends, changes in elevation, and manhole/vault detailed plans.					☐
Final Grades, Slopes, and Elevations			☐	☐	☐
Final Surface Landscaping Materials (Grass, Sidewalks, Driveways, Rock Beds with Rock Size, etc.)			☐	☐	☐
Location of all Planting Beds, Landscaping Features (Decorative Boulders/Rocks, Water Features, etc.), and Trees/Bushes with common name species information. (Trees shall be drawn at 2/3 mature spread, shrubs at a mature spread.)			☐	☐	☐
Existing Utility Site Plan			☐	☐	☐
Title Block, Common Project Title, Border, Scale, North Arrow, and Legend			☐	☐	☐
Legal Address (Municipal Address and Lot – Block – Plan)			☐	☐	☐
All Legal Property Lines, Easements, and Right-of-Ways			☐	☐	☐
Streets/Avenues/Alleys or other public thoroughfares abutting the property			☐	☐	☐
Locations of Existing and Planned Buildings on the Property, including overhangs and underground structures.			☐	☐	☐
Location of Cubicles, Transformers, Pedestals, and Handholes – including the direction of the door openings, base size, and depicting bollards/guardrails.			☐	☐	☐
Equipment and Conductors dimensioned from building, property lines, and utilities.			☐	☐	☐
Water Supply Lines - Existing and Planned			☐	☐	☐
Drainage (Sewer) Lines - Existing and Planned			☐	☐	☐
Natural Gas Lines - Existing and Planned			☐	☐	☐
Communication Lines - Existing and Planned			☐	☐	☐
Other Buried Utilities or Works - Existing and Planned			☐	☐	☐
Main feeder duct routing, including location and angle of bends, corner-to-corner distance between bends, changes in elevation, and manhole/vault detailed plans.					☐

Detailed depths and coordinates for each end and inflection point for on property utilities. Including detailed plans for manholes on property.					☐

- (1) Optional for this Service Type
- (2) Unmetered Service only require the Estimated Demand
- (3) Unmetered Services only require the Municipal Address
- (4) For Unmetered Services, the “property” shall be the area within 7m of the Unmetered Service equipment.
- (5) The Third Party Agreement is optional, but if not included, all correspondence will need to be through the Site Owner. EDTI will not be able to engage consultants and contractors working on behalf of the Site Owner.
- (6) Required unless provided an exclusion under Alberta Legislation. See Customer Connection Guide - [Section 1.5 – Legal Requirements](#).
- (7) If the building is within 7m of the aerial line conductors.

Network Area: *Buildings are typically serviced using a Primary Metered or Padmount Transformer service. Please select whichever service type is applicable to your project needs.*

NOTE: *Delays, errors, and/or omissions in providing the information above will result in delays and additional costs for your project and/or its cancellation. Cancelled projects will need to resubmit with all missing information. Changes made to information after application will also result in delays and additional costs for your project. In some cases, changes may require you to resubmit your application if substantial rework is required in EDTI’s sole opinion.*

4.0

Aerial Secondary Service

4.1 GENERAL INFORMATION

- a. An aerial service is an overhead service run from a power pole.
- b. Typical installations include homes and small commercial applications.
- c. Please see [Table 3.1 – Project Overview](#) for a summary of your responsibilities as the Customer and the responsibilities of EDTI.
- d. If you require an aerial secondary service, please visit the [Apply for Connection page](#) and click Apply for Power. See [Section 3.3 – Applying for Service](#) for details.
- e. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

4.2 SERVICE TYPE GENERAL REQUIREMENTS

- a. Aerial (overhead) services will not be provided in areas served by underground electrical facilities.
- b. See [Table 4.1 – Aerial Services – Acceptable Wire and Spans](#) for details on conductor requirements for aerial services.
- c. Special permission is required from EDTI prior to construction approval when installing primary (high-voltage) overhead wires on private property.
- d. Aerial (overhead) services are not permitted on lots adjacent to “Major Commercial Corridors” as outlined in the [City of Edmonton Bylaw # 12800](#). Streets such as St. Albert Tr., Mark Messier Tr., Fort Rd., Calgary Tr., Gateway Blvd., and Stony Plain Rd. are affected. Please see the [Major Commercial Corridors Overlay](#) in the Bylaw for specific details on areas included in this bylaw.

4.3 SERVICE POLE LOCATION

- a. It is critical that you contact EDTI Customer Engineering Services for your site-specific service pole location before beginning construction. The site-specific point can differ, based on a number of circumstances.
- b. You should provide your preferred pole location on your project drawings as part of your application. EDTI will confirm the final location during the preliminary design development, and convey this information to you before or as part of the quote.

4.4 POLES ON PRIVATE PROPERTY

- a. EDTI reserves the right of final approval for the location of facilities before EDTI will grant construction approval.
- b. EDTI requires truck access to poles where EDTI will be installing the wire. See [Section 3.16 – Equipment Access](#) for more information.
- c. Pole lines on private property must be constructed with required clearances from the property line to avoid interference with existing and future development on the adjacent property. The property line shall be considered a structure for this purpose. See the Alberta Electrical Utility Code for the required clearances.

- d. The Customer must ensure an intermediate pole is in place if the span from the attachment device to the service pole is greater than the maximum span length noted in [Table 4.1 – Aerial Services – Acceptable Wire and Spans](#).
- e. Poles must be set as per [Drawing 4.1 – Customer Owned Pole Installation on Private Property – Straight Line](#) and [Drawing 4.2 – Customer Owned Pole Installation on Private Property – Dead End Pole](#), and placed in a straight line between the service pole and the building attachment; otherwise, anchors may be required.
- f. EDTI will not connect the Customer's service if the intermediate pole(s) are not satisfactory in EDTI's sole option.
 - i. At EDTI's request, the Customer will be required to have the intermediate pole tested to ensure suitability.

4.5 **Δ ATTACHMENT METHOD AND LOCATION**

- a. EDTI reserves the right to require the attachment point be adjusted to minimize or eliminate a service trespass to neighbouring properties, including those properties owned by the Customer if on a separate title.
- b. For overhead residential services, EDTI requires a single service connection for each lot from the overhead utility line. The service connection shall be located on the building closest to the overhead utility line, including structures such as garages or garden suites.
 - i. If the existing service connection is located on the house and a sub-feed to a different building is required (i.e. garage or garden suite), please consult an electrician prior to contacting EDTI.
 - ii. If a service upgrade and/or replacement is requested for the residential lot, all other pre-existing service connections must be reconfigured as required to adhere to the above requirements.
- c. Δ A Customer shall not move their service connection as to cause the conductor to pass over another property. It is the Customer's responsibility to ensure a clear line of sight (free of obstructions) from the proposed service connection point to the nearest EPCOR pole. A Customer shall not move their service connection as to cause the conductor to pass over another property.
- d. The Customer is required to install the appropriate attachment device to the building. See [Table 4.2 – Aerial Services – Attachment Methods](#) and [Drawing 4.3 – Heavy Duty Attachment Devices](#), [Drawing 4.4 – Typical Overhead Aerial Service up to 200A Installation](#), and [Drawing 4.5 – Typical Residential Aerial Service up to 200A Attachment Details](#).
- e. Attachment devices must be secured to the building to withstand the service wire pulling tension requirements.
- f. The attachment point and weatherhead on the building must be on the side facing the pole line and as close as is practical to the service pole (minimum 3m clearance to service pole is required).
- g. The weatherhead shall be of an appropriate size to accommodate the service conductors and service mast as required in [Table 4.1](#) and [Drawings 4.4](#) and [4.5](#). Customer's conductor shall not exceed 250MCM.

- h. The attachment shall be vertical, unless prior permission has been obtained from the City of Edmonton and EDTI to place it horizontally.
 - i. Horizontal attachments may be used to increase clearances, depending on the angle of pull from the pole to the building. If you're not sure if you can use a horizontal attachment, request guidance from the City of Edmonton and EDTI.
- i. The attachment point is to be a maximum of 6.0m from final grade and must be accessible by a ladder.
- j. The weatherhead must be above the attachment point.
- k. The attachment point for the electrical service must be above any communication services.
- l. Ensure the vertical distance between the attachment point and the weatherhead is a minimum of 150mm and a maximum of 300mm.
- m. Ensure the horizontal distance between the attachment point and the weatherhead is a minimum of 300mm and a maximum of 1000mm.
- n. A minimum vertical clearance of 0.6m and a minimum horizontal clearance of 1.0m must be maintained between attachment devices at the building.

4.6 WIRE INSTALLATION

- a. EDTI will make the final connection at the transformer.
- b. Services exceeding the maximum spans noted in [Table 4.1](#) may require an intermediate pole, or the Customer will have to redesign the service as an underground system.
- c. EDTI will supply and install up to 30.0m of service wire, according to spans noted in [Table 4.1](#), and make all terminations at the weatherhead, once inspection approval is received.
- d. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

TABLE 4.1**AERIAL SERVICES – ACCEPTABLE WIRE AND SPANS**

CUSTOMER'S SERVICE CONDUCTOR (AMPS)	WEATHERPROTECTED (WP) SERVICE WIRE	MAXIMUM ALLOWABLE SPAN
100	#4 AWG Multiplex	30m
125	1/0 AWG Multiplex	30m
150	1/0 AWG Multiplex	30m
200 (Residential)	1/0 AWG Multiplex	30m
200 (Commercial)	1/0 AWG Open	30m
300	4/0 AWG	15m
400	336.4 MCM	15m

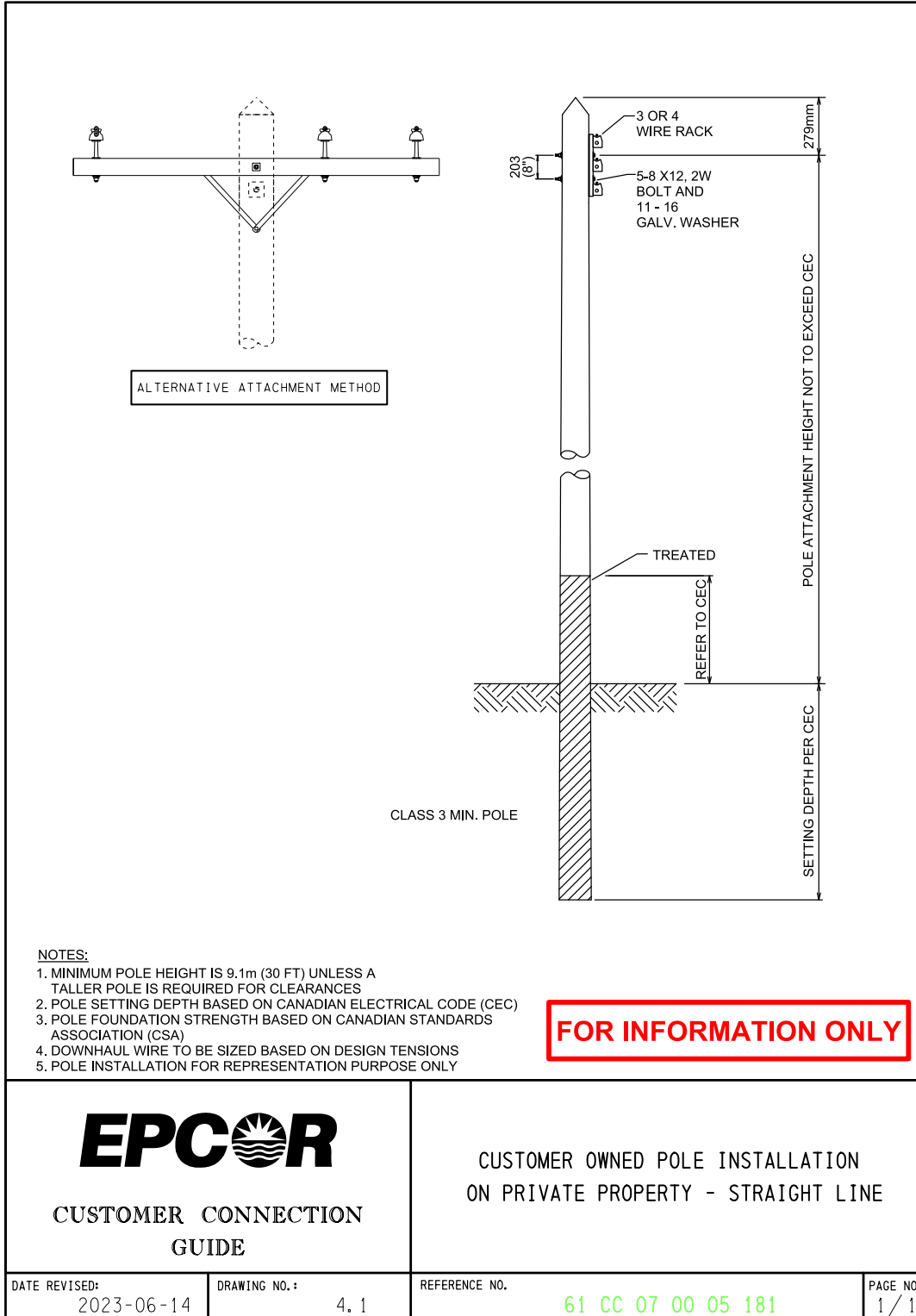
TABLE 4.2**AERIAL SERVICES – ATTACHMENT METHODS**

CUSTOMER SERVICE TYPE/SIZE	ATTACHMENT METHOD
Single phase less than or equal to 150A	Clevis (residential or commercial)
Single phase 200A – residential	Heavy-duty clevis
Single phase 151 - 600A – commercial	Three-spool heavy-duty rack (all)
3-phase less than or equal to 150A	Heavy-duty clevis
3-phase 151 - 400A	Four-spool heavy-duty rack

- Refer to [Drawing 4.3 – Heavy Duty Attachment Devices](#) for examples of allowable installations.

DRAWING 4.1

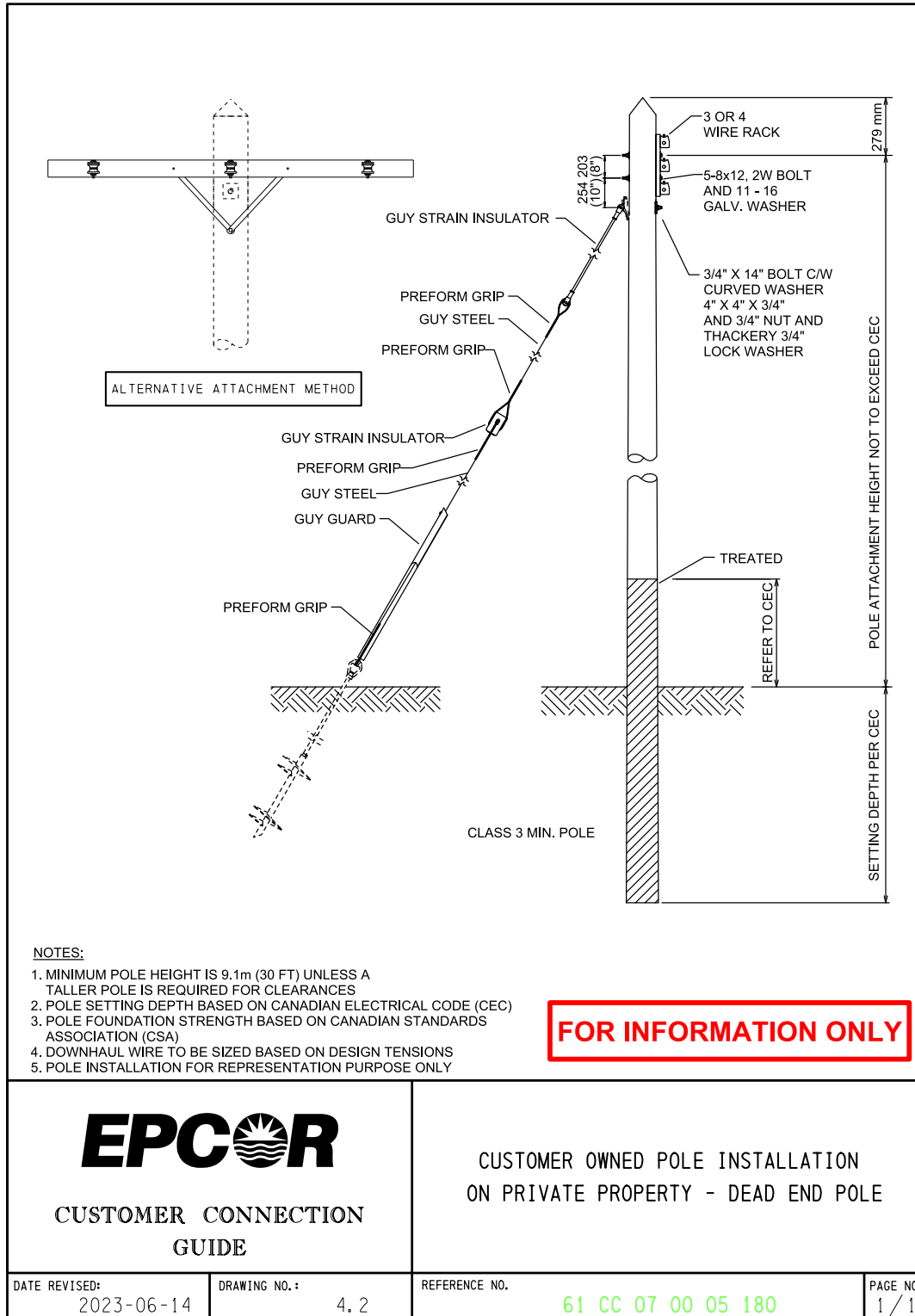
CUSTOMER OWNED POLE INSTALLATION ON PRIVATE PROPERTY – STRAIGHT LINE



20230614 09:43 oper lynn

DRAWING 4.2

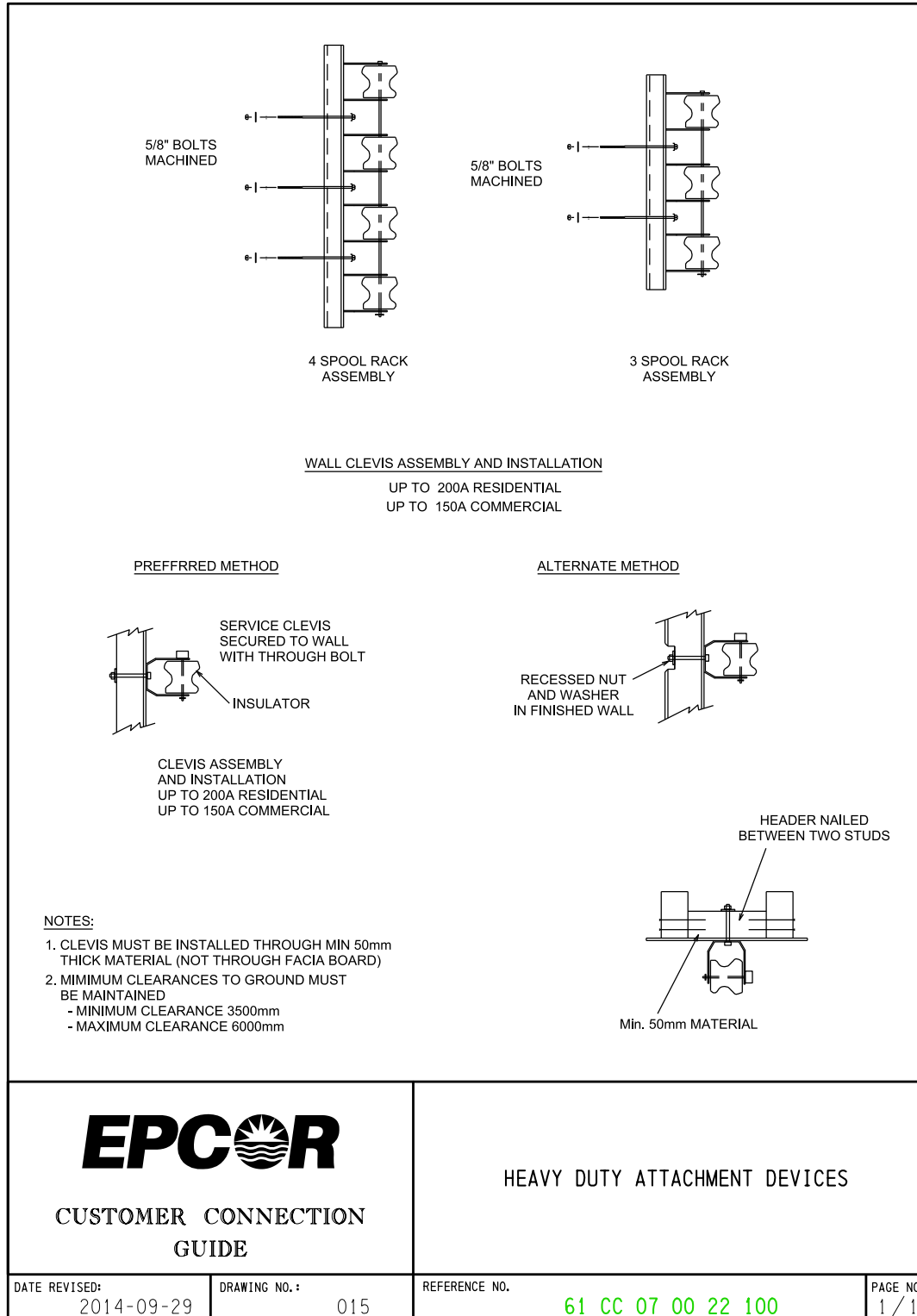
CUSTOMER OWNED POLE INSTALLATION ON PRIVATE PROPERTY – DEAD END POLE



20230614 09:05 oper/lynn

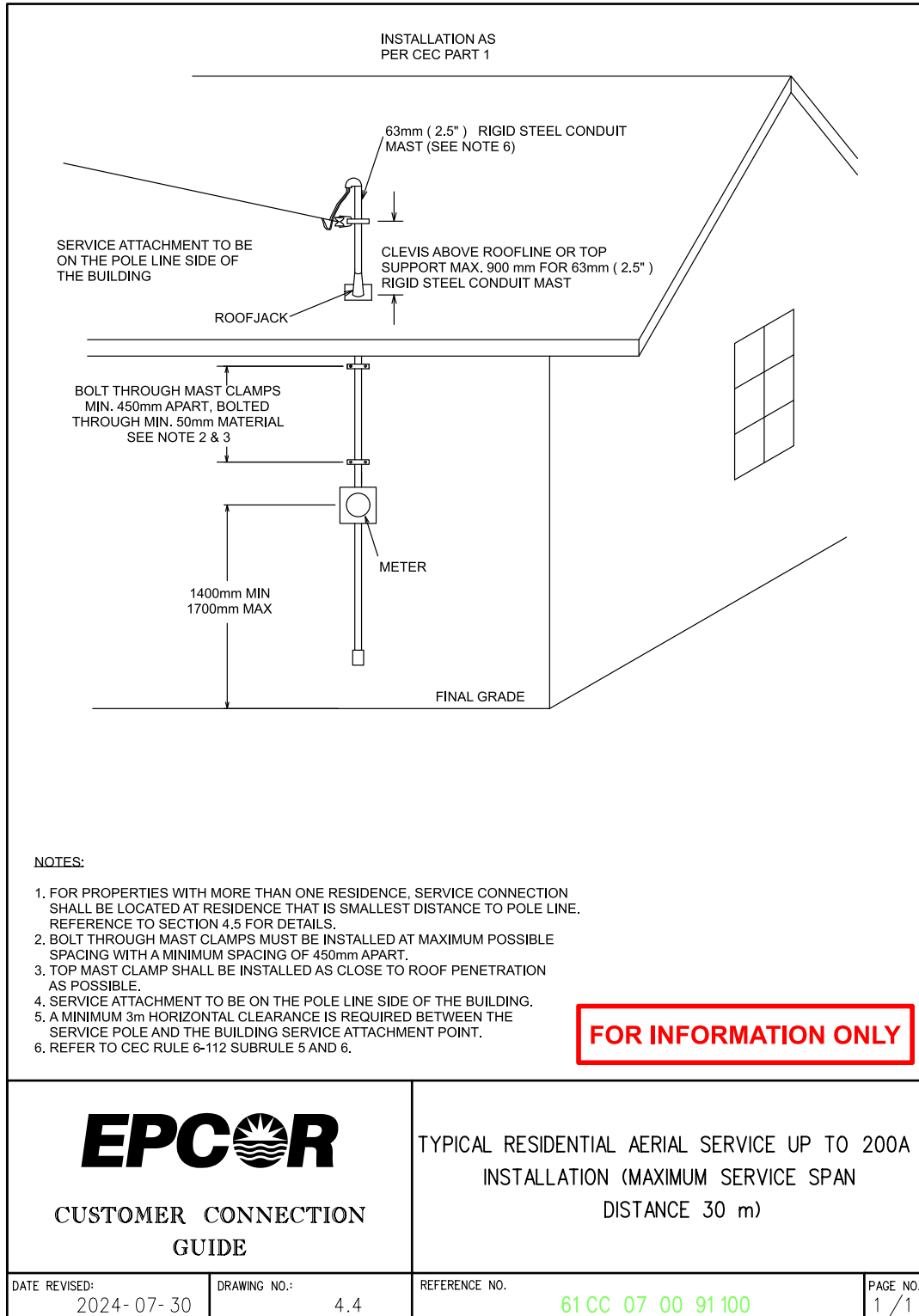
DRAWING 4.3

HEAVY DUTY ATTACHMENT DEVICES



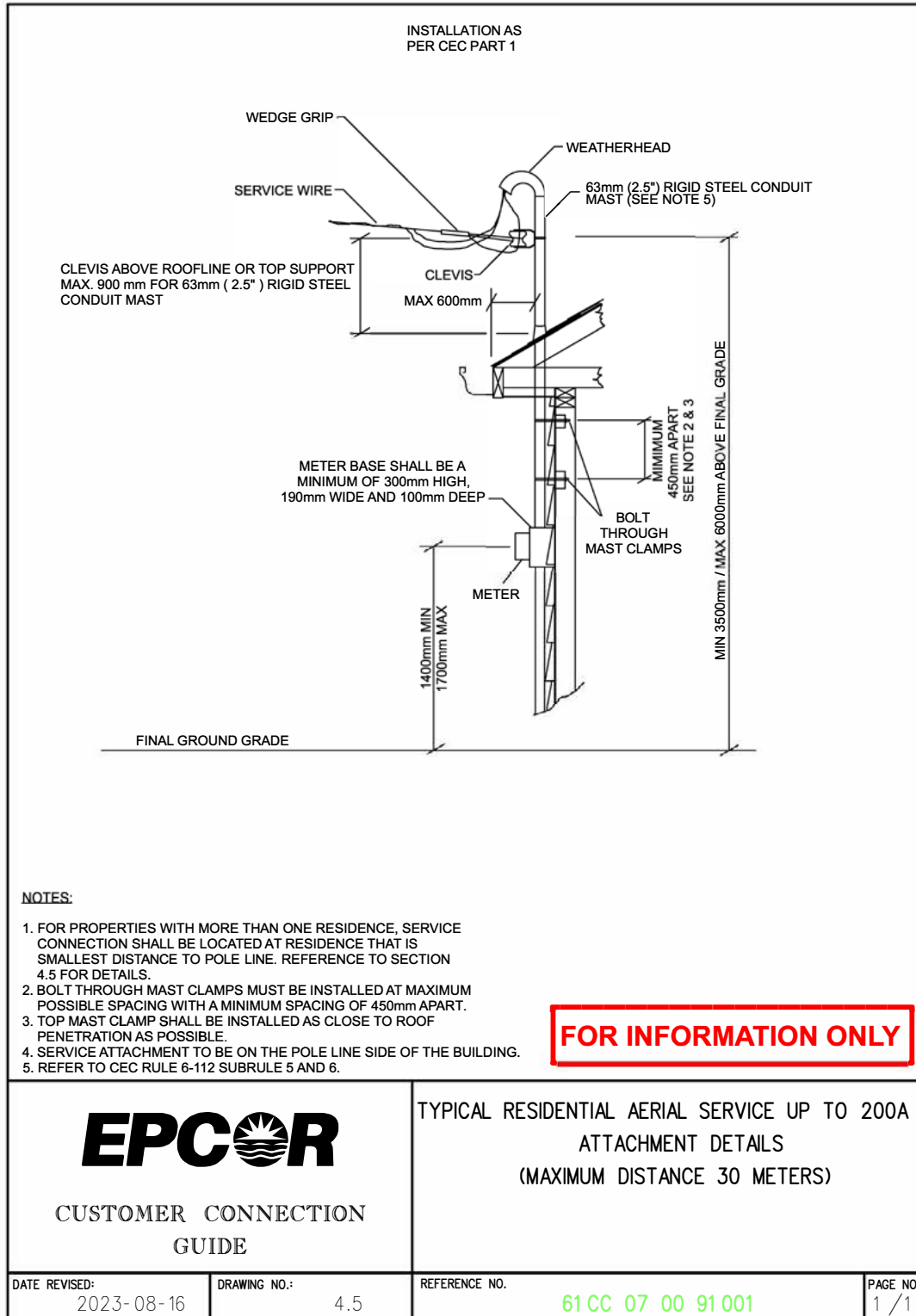
DRAWING 4.4

Δ TYPICAL OVERHEAD AERIAL SERVICE UP TO 200A INSTALLATION



DRAWING 4.5

Δ TYPICAL RESIDENTIAL AERIAL SERVICE UP TO 200A ATTACHMENT DETAILS



5.0

Underground Secondary Service

5.1 GENERAL INFORMATION

- a. An underground secondary service is a service that's fed from an existing transformer, new transformer, or pedestal installed on City of Edmonton property.
- b. Typical installations include homes and small to medium commercial applications.
- c. Please see [Table 3.1](#) for a summary of your responsibilities as the Customer and the responsibilities of EPCOR Distribution and Transmission Inc. (EDTI).
- d. If you decide that you require an underground secondary service, please visit the [Apply for Connection page](#) and click Apply for Power.
- e. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

5.2 SERVICE TYPE GENERAL REQUIREMENTS

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5.3 | Δ SINGLE PHASE MULTI-FAMILY DEVELOPMENTS AND MOBILE HOME PARKS

This section applies to multiple-metered residential service connections (multi-unit residential, row-house type buildings) where single phase padmount transformers and service pedestals are installed on the Customer's property. While other information on secondary services found elsewhere in this guide also applies, the following information is specific to multi-family developments and mobile home parks.

- a. [Drawing 5.1 – Sample Submission for Multi-Family Developments](#) provides guidance on the format requirements for multi-family development drawings.
- b. All conductors must conform to [Table 5.1 – Minimum Acceptable Single Phase Secondary Conductors for Underground Services](#).
- c. A service pedestal may be installed between the transformer and the Customer service entrance. The service pedestal shall meet CSA C22.2 requirements, and shall comply with all Canadian Electrical Code bending radius, spacing, and termination requirements. The maximum pedestal rating is 400A based on the allowable secondary conductors of parallel 4/0 AL from [Table 5.1](#).
- d. The Customer must identify service conductors at the padmount transformer by pedestal number, and at the pedestal by meter address, which is the address of the building the meter serves. Meter sockets must be identified by service address and pedestal number. Use a long-life ink on a tie-wrap attached to the conductors for this identification. This is mandatory if a Customer-owned distribution facility, such as a pedestal, is used.
- e. For emergency purposes, each pedestal must be identified with the name and phone number of an on-site representative who is available 24 hours a day and done on red lamacoid as per Drawing 7.2.

- f. Before energization, the Customer must make all terminations on all incoming feeds from the transformer at the service pedestals, and at the neutrals in the pedestals, for the individual services to the units. Customers must not terminate the hot conductors of the service wire in the pedestal. EDTI will extend a Customer-supplied conductor to the switching cubicle or pole on City of Edmonton property.

5.3 II 3 PHASE MULTI-FAMILY DEVELOPMENTS

This section applies to multiple-metered residential service connections where three phase padmount transformers and service pedestals are installed on the Customer's property. While other information on secondary services found elsewhere in this guide also applies, the following information is specific to multi-family developments and mobile home parks.

- a. Drawing 5.1 – Sample Submissions for Multi-Family Developments provide guidance on the format requirements for multi-family development drawings
- b. The customer must ensure loading is balanced across all phases of the service. A loading calculation table/schedule shall be shown on the multi-family development drawing submission.
- c. All service conductors shall come to a 3 phase main disconnect that is readily accessible by customer. This main disconnect switch shall be shown on the single line diagram and site plan.
- d. The 3 phase main disconnect may be a main metered pedestal. Every other meter downstream of this main-metered is owned and maintained by customer (checkmetering similar to apartments).
- e. All service conductors from transformer pad to main disconnect shall be in duct and follow Section 5.5 and 5.6.
- f. The maximum size of secondary conductor allowed is 500 MCM Copper or 750 MCM Aluminum. (750 MCM Copper is not permitted).
- g. The customer must identify service conductors at the padmount transformer. The identifier must be by building, main disconnect identifiers and/or by pedestal number and at the pedestal by meter address, which is the address of the building the meter serves.
- h. Meter sockets must be identified by service addresses and pedestal number. Use a long-life ink on a tie-wrap attached to the conductors for this identification. This is mandatory if customer-owned distribution facilities, such as a pedestal, are used.
- i. For emergency purposes, each pedestal/main disconnect must be identified with the name and phone number of an on-site representative who is available 24 hours a day and done on red lamacoid as per Drawing 7.2.

5.4 FOUR PARTY JOINT-USE TRENCH FOR SINGLE-FAMILY RESIDENTIAL INSTALLATIONS

- a. With prior approval from EDTI, a four party joint-use trench may be used for residential installations only.

- b. Telephone and television cables as well as gas service lines can be placed in a four party joint-use trench with the power cable.
- c. When gas service lines are installed along with power cables, the four party trench installation method must be followed.
- d. A minimum of 0.3m must separate the gas and power lines and a marker tape must be installed 0.5m above the service cable. Please see [Drawing 5.2 – Typical Shared Power Trench](#) for details.

5.5 Δ SERVICE DUCTS

- a. Δ All permanent services must be in duct.
- b. High Density Polyethylene (HDPE) ducts shall not be permitted for utility owned ducts, even when certified for the intended use.
- c. Δ For residential installations see [Drawing 5.3 – Typical Underground Residential Service Installation on Property](#) for a typical underground service installation.
- d. Service conduits installed by contractors working on behalf of other utilities or the City of Edmonton must follow the construction standards of EDTI Customer Engineering Services. Contractors must not work within 1.0m of any electrical equipment.
- e. If EDTI conduits have been stubbed to the property line, Customers must first confirm that the conduit exposed is the correct one, and then connect their supply conduit to EDTI's conduit. [Contact us](#) to arrange for conduit verification.
- f. The Customer shall be responsible for installing and maintaining conduit sealing, and a suitable means of drainage, for ducts entering a building, per the Canadian Electrical Code.

5.6 DUCT BENDS

- a. All bends exiting transformers and cubicles must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- b. An additional 3,000mm (10 ft.) horizontal section of rigid, thick-walled PVC must be attached to the bend.
- c. Ensure all secondary ducts are aligned directly under the secondary bushings of the transformer and centred within the base opening.
- d. All bends that EDTI will supply conductors for must be equipped with bell collars to avoid damaging cable.
- e. All spare bends are to be covered (taped or covered by some other suitable method) to prevent material falling into them.
- f. Precast concrete pad must be removed before inserting additional ducts into existing pad.

5.7 Δ CONDUCTORS

- a. Secondary cables on all residential and multi-family developments must be concentric-neutral direct-buried type (USEB), when supplied from EDTI transformers and pedestals. See [Table 5.1](#) for details.
- b. For 3-phase padmount transformers, the maximum size of conductor allowed is 500MCM copper or 750MCM aluminum. **(750MCM copper conductor is not permitted.)**
- c. The maximum size of secondary conductor allowed for commercial underground secondary services in an aerial area (secondary lateral) is 500MCM copper. (750MCM aluminum conductor is not permitted.)
- d. Δ For unmetered secondary services within road allowance, see [Section 9.7 – Conductors](#) (Underground) for allowable cable types.
- e. Where secondary conductors are installed shorter than required, they shall be replaced by Customer to attain the required length. Splicing is prohibited.
- f. See [Table 5.1](#) for allowable secondary service cables.
- g. Δ The preferred method of phase identification is with colour jacketed cables (Red, Black, Blue, White). Black jacketed cable will be acceptable with phasing identified on the phase cables with white, blue & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP. In the case of single phase commercial services phasing shall be identified on the 2 phase cables with white & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP.
- h. Armoured or metal-sheathed (TECK) cable cannot be used for permanent services.
- i. Δ With EDTI review, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See [Section 12.5 – Temporary Connections](#) for details.

5.8 CABLE INSTALLATION

- a. Telephone and television cables can be installed in the same trench as power conductors. When this is considered, design drawings must be forwarded to the appropriate organizations for their approval.
- b. Cable cannot be installed on building footings or weeping tile.
- c. Secondary cable ends must have heat shrink caps.
- d. EDTI will make the final connection in the cubicle, transformer, or pedestal.
- e. The Customer will supply and install secondary conductors from the Customer's switchgear to the transformer location, leaving 5.0m (no more or less) of conductors above the top of the precast transformer base. Then the conductors must be coiled in a clockwise direction and left in an organized manner around the inside perimeter of the base to allow for easy removal and shaping.
- f. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.
- g. The Customer must identify service conductors by the meter address, by using longlife ink on a tie-wrap attached to the conductors. This identification is mandatory when there are multiple service connections or when a Customer-owned distribution facility, such as a pedestal, is used.

5.9 Δ UNDERGROUND RESIDENTIAL DISTRIBUTION AREAS

This section applies to areas with a mix of residential and commercial lots that will contain underground power facilities and are designed and built by a developer. While other information on underground secondary services found elsewhere in this guide also applies, the following information is specific to underground residential distribution areas.

- a. Δ In underground residential distribution areas, the standard service size is 100A. The area's developer may have installed a larger cable to compensate for voltage drop.
- b. If power coils are left at the property line but are too short to reach the meter base, the Customer or the Customer's contractor must [contact EDTI Meter Services](#) to complete the splice. If the contractor has taken the most direct route but the cable is short, EDTI will complete the splice at no charge. In all other circumstances, there will be a charge for the splice. [Contact EDTI Meter Services](#) for splicing costs and payment details.
- c. As the Customer, you or your contractor must ensure a splice pit is dug at the service entry location. See [Section 12 – Additional Information](#) for more information.
- d. If there is no service conductor coiled at the property line, the Customer or the Customer's contractor must trench and supply and install conductors from the meter base to the property line, with enough conductors at the property line to allow for termination. [Contact us](#) for length.
- e. In newer subdivisions, 30m of service cable is coiled on the property side of the gas easement/utility right-of-way.
- f. For residential services over 200A a dedicated transformer is required. If padmounted transformer is to supply the service, the transformer must be installed on Customer's property within a registered utility Right-of-Way (easement). See [Section 3.8 – Easements and Utility Rights-of-Way](#) for details.

5.10 UNDERGROUND SECONDARY SERVICE IN AN AERIAL AREA (SECONDARY LATERAL)

5.10.1 Residential Installations

- a. For residential installations, EDTI highly recommends, and may require, installing any cable that will ultimately end up under a building/structure or hard surface in duct. See [Drawing 5.3 – Typical Underground Residential Service Installation on Property](#) for a typical underground service installation.
- b. EDTI will complete all work on City property, including:
 - i. Supplying and installing conduit from the property line up the pole
 - ii. Supplying and installing the required conductor from the property line to the pole. EDTI will leave a 30m coil at the property line, secured in a service box and backfilled.
- c. A possible alternative to taking an underground service from an EDTI pole is to take an overhead service to the garage and sub-feed the house with an underground service.

5.10.2 Commercial Installations

- a. The Customer must supply and install the service conduit from the Customer's panel to the property line.
- b. The maximum size of service conduit is 100mm (4 in.) in diameter.
- c. The Customer must connect the conduit to EDTI's conduit (if existing) at the property line.
- d. The Customer must supply and install sufficient length of conductor to terminate at the pole-mounted transformer. EDTI will determine the length of conductor.
- e. EDTI will complete all work on City property, including:
 - i. Supplying and installing conduit from the property line up the pole.
 - ii. Coordinating with the electrical contractor to ensure the Customer-supplied conductors are pulled from the property line up the pole.

TABLE 5.1

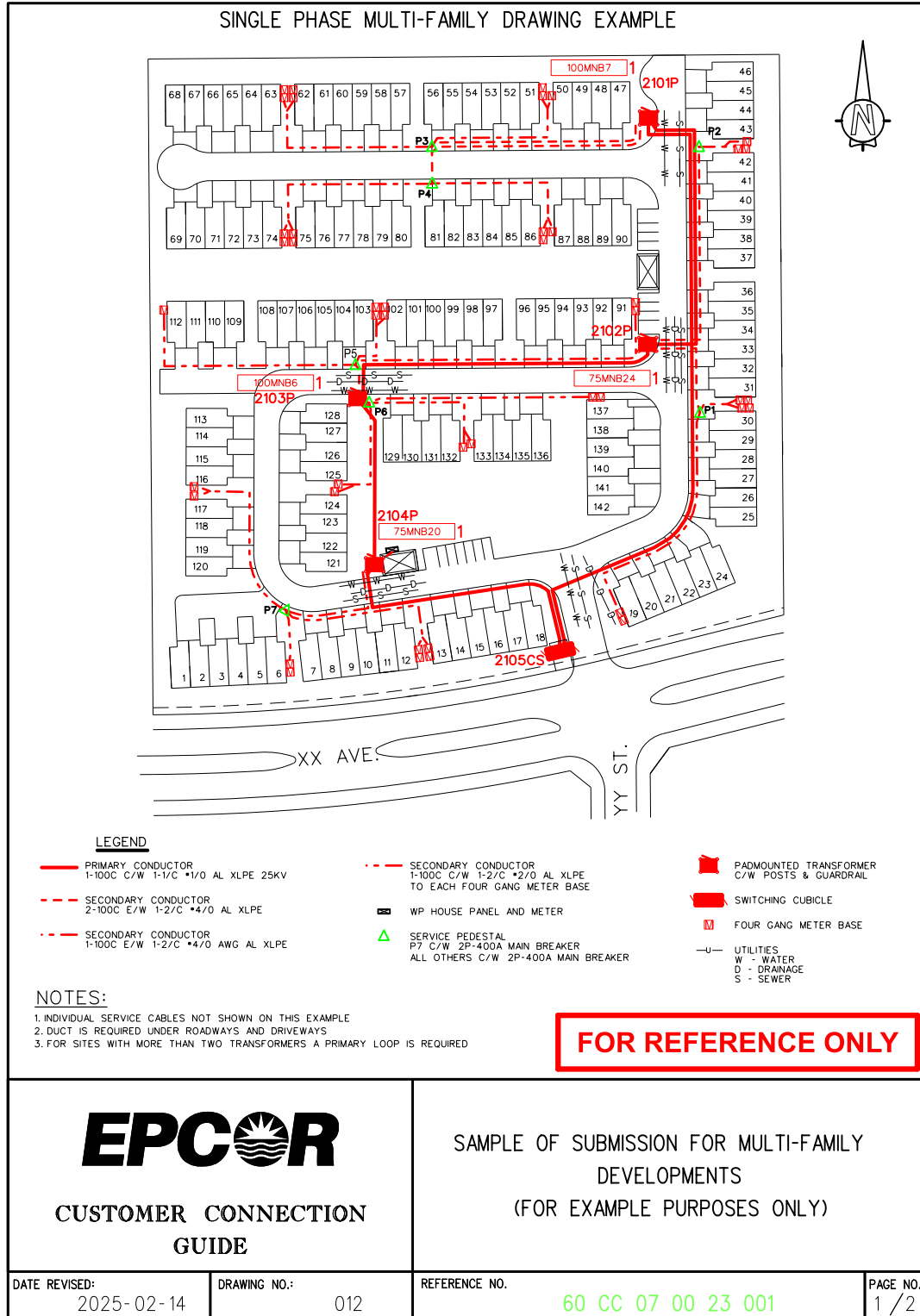
Δ MINIMUM ACCEPTABLE SINGLE PHASE SECONDARY CONDUCTORS FOR UNDERGROUND SERVICES

SERVICE SIZE	NUMBER/TYPE OF CABLES
100A	<u>Existing:</u> 1 – 2/C 1/0 AL XLPE 600V (typical 100A residential service cable since 2011) <u>New & Replacements:</u> 1 – 2/C 4/0 AL XLPE 600V
125A	<u>Existing:</u> 1 – 2/C 1/0 AL XLPE 600V – Cable Length Restricted (see note below) <u>New & Replacements:</u> 1 – 2/C 4/0 AL XLPE 600V
150A	<u>Existing:</u> 1 – 2/C 2/0 AL XLPE 600V <u>New & Replacements:</u> 1 – 2/C 4/0 AL XLPE 600V
200A	1 – 2/C 4/0 AL XLPE 600V
300A	2 – 2/C 2/0 AL XLPE 600V (parallel)
400A	2 – 2/C 4/0 AL XLPE 600V (parallel)
600A	3 – 2/C 250MCM AL XLPE 600V (parallel)

- Δ Home Builder is to confirm secondary cable size on site or through the Developer. Reference Table 5.1 for EPCOR's approved secondary service cable sizing and the corresponding approved service size. Load Side shall follow CEC ruling.
- Cables on all residential and multi-family developments must be concentric neutral direct-buried type (USEB).
- Voltage drop calculations are required to verify cable size suitability for the given length.
- The installation of 125A services using 1 – 2/C 1/0 AL XLPE 600V is restricted to a cable length from the meter base to the pedestal of 30m, or to the transformer of 50m.
- Historically, in underground residential distribution areas, the standard service size is 100A. The area developer may have installed larger cable (i.e. 2/C 2/0 or 2/C 4/0 AL XLPE 600V) to compensate for voltage drop. Cable size does not necessarily indicate the size of service that is available. [Contact us](#) for confirmation on all services larger than 100A.
- Customer to confirm load calculations do not exceed service components (e.g. cable, breaker, etc.) load capacity, per Canadian Electrical Code – Part I requirements.
- Service conductors shall be sized to Canadian Electrical Code – Part I requirements. Allowed conductor sizes are 1/0, 2/0, 4/0, and 250MCM.
- Multi-Family unit service cables require 4/0 conductors to be compatible with pedestal termination when applicable.
- 2/C #2 XLPE USEB 600V cable was the standard 100A service cable in EDTI's system until 2011. This cable is only allowed for use in those locations where it was installed at the time of area development.
- For services in which more than 30.0m of cable is required on private property (from property line to the meter socket), [contact us](#) to confirm voltage drop requirements.

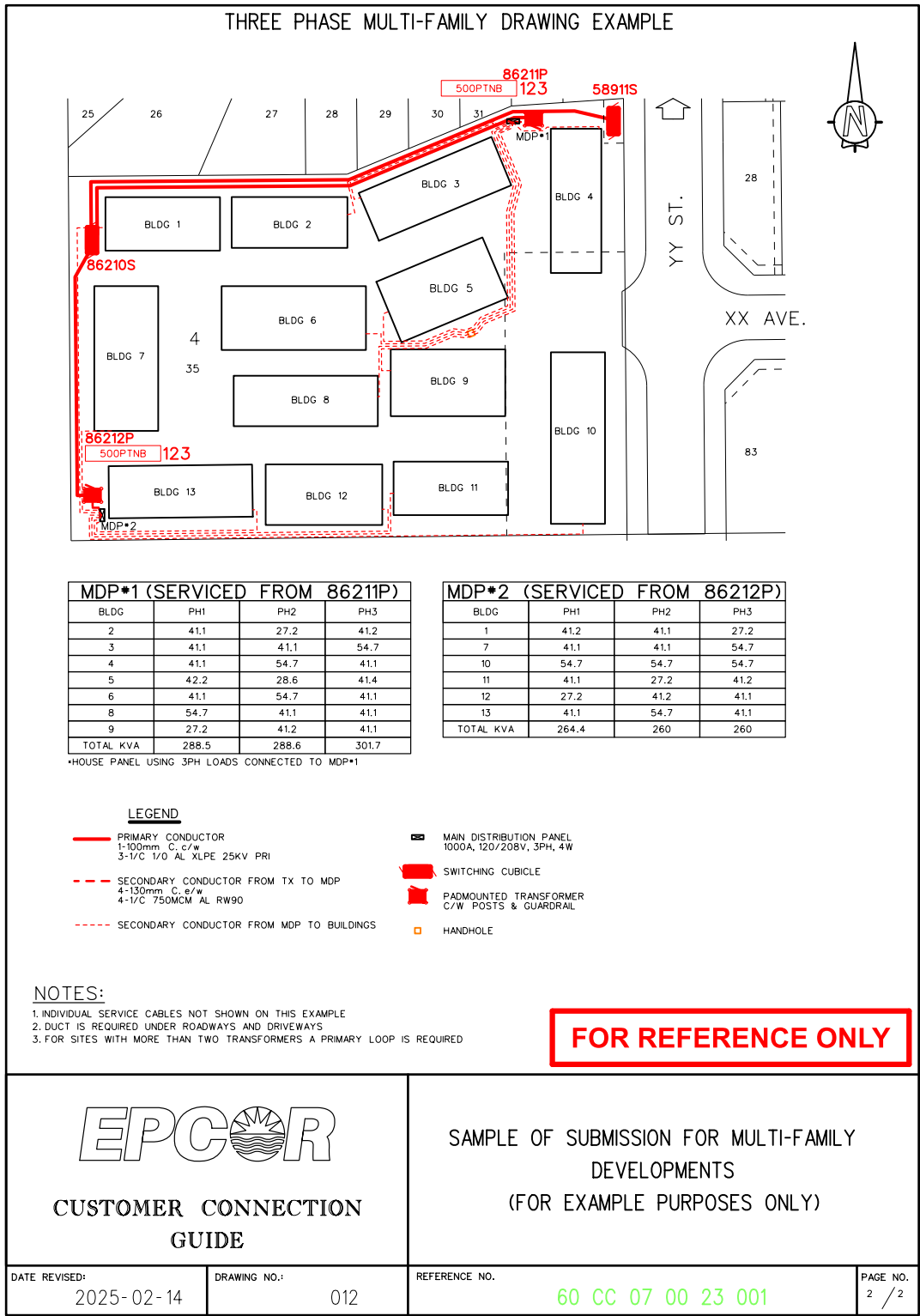
DRAWING 5.1

Δ SAMPLE OF SUBMISSION FOR MULTI-FAMILY DEVELOPMENTS PAGE 1/2



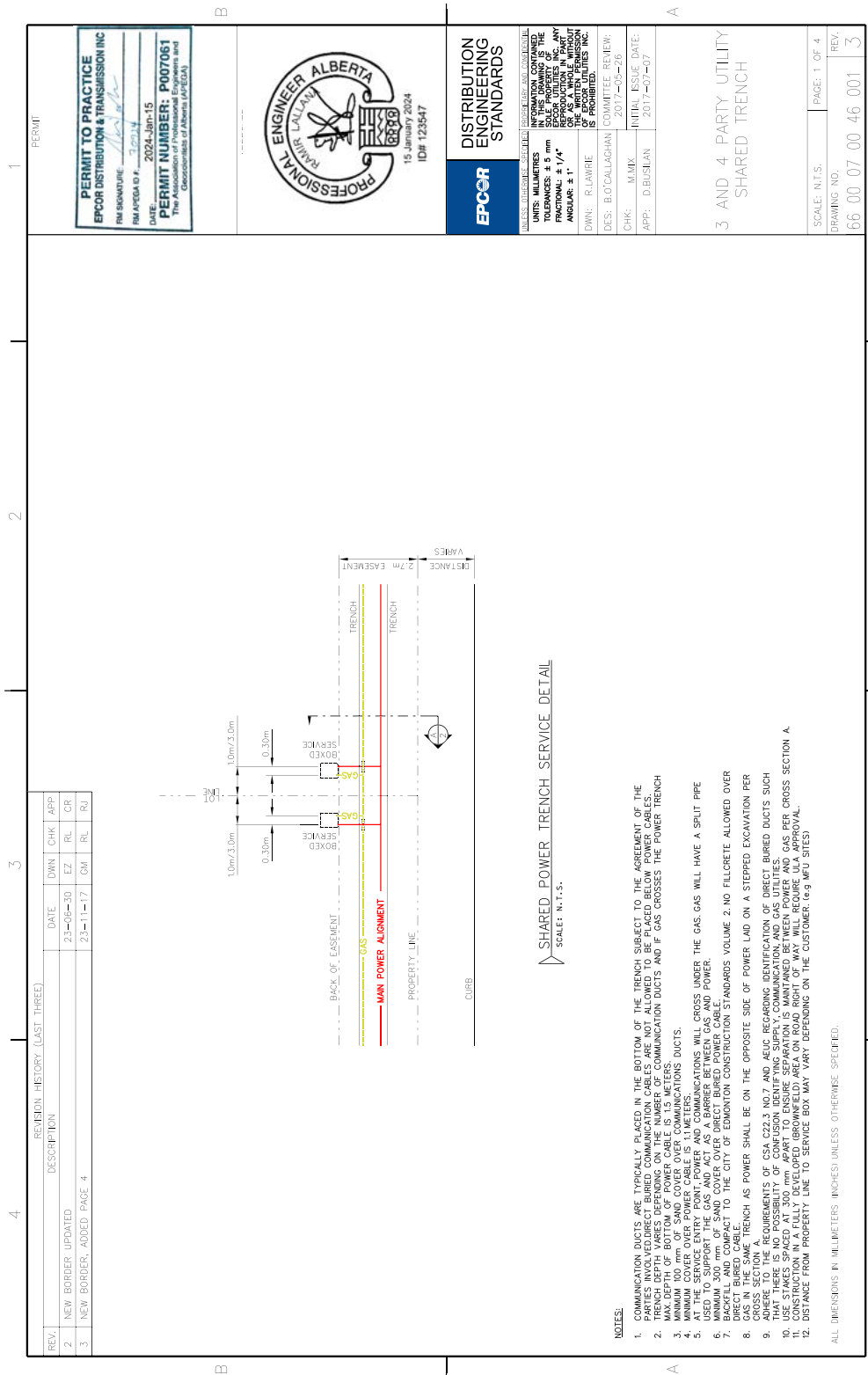
DRAWING 5.1

Δ SAMPLE OF SUBMISSION FOR MULTI-FAMILY DEVELOPMENTS PAGE 2/2



DRAWING 5.2

Δ TYPICAL SHARED POWER TRENCH
PAGE 1/4

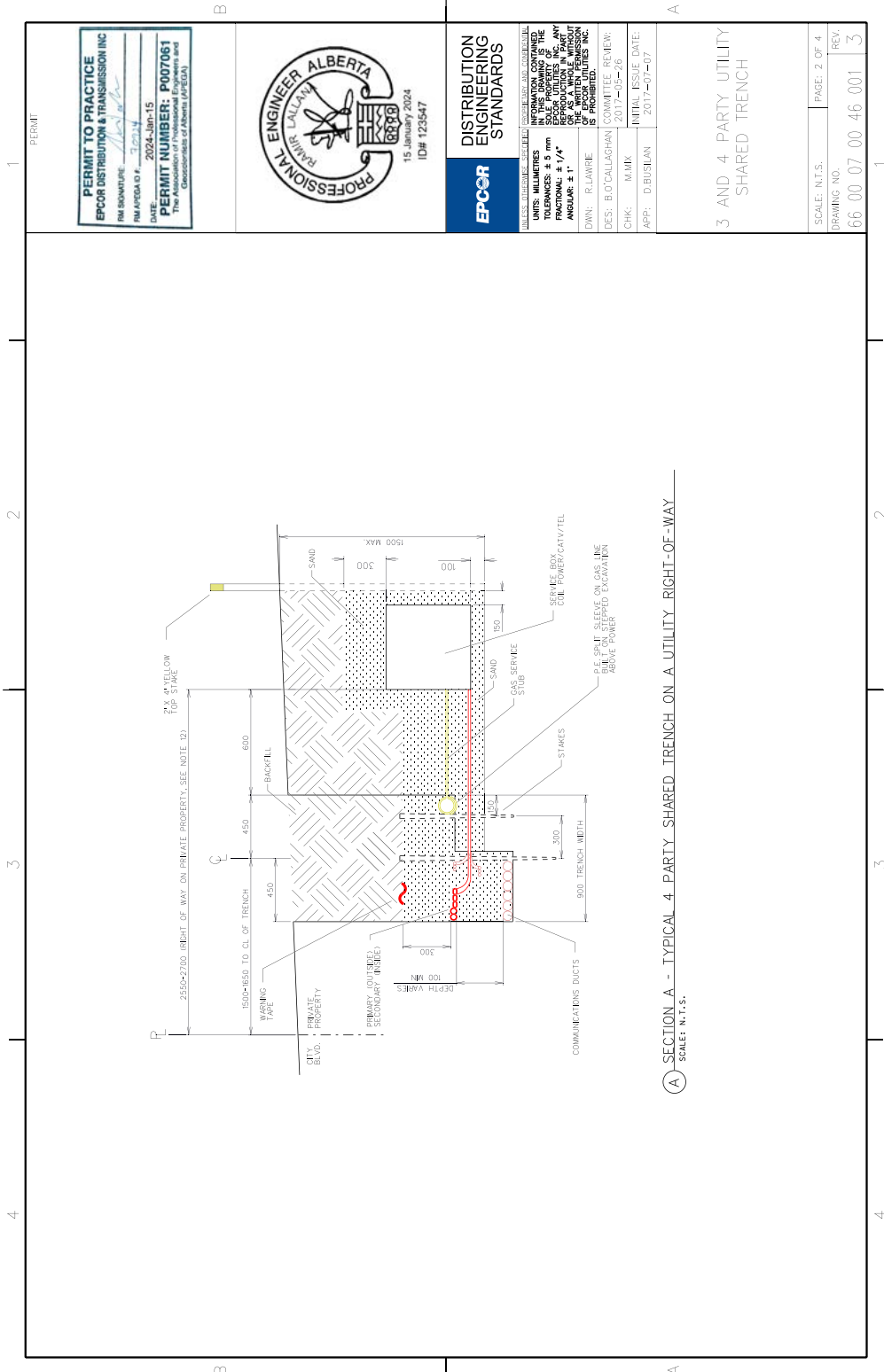


Δ TYPICAL SHARED POWER TRENCH
PAGE 2/4



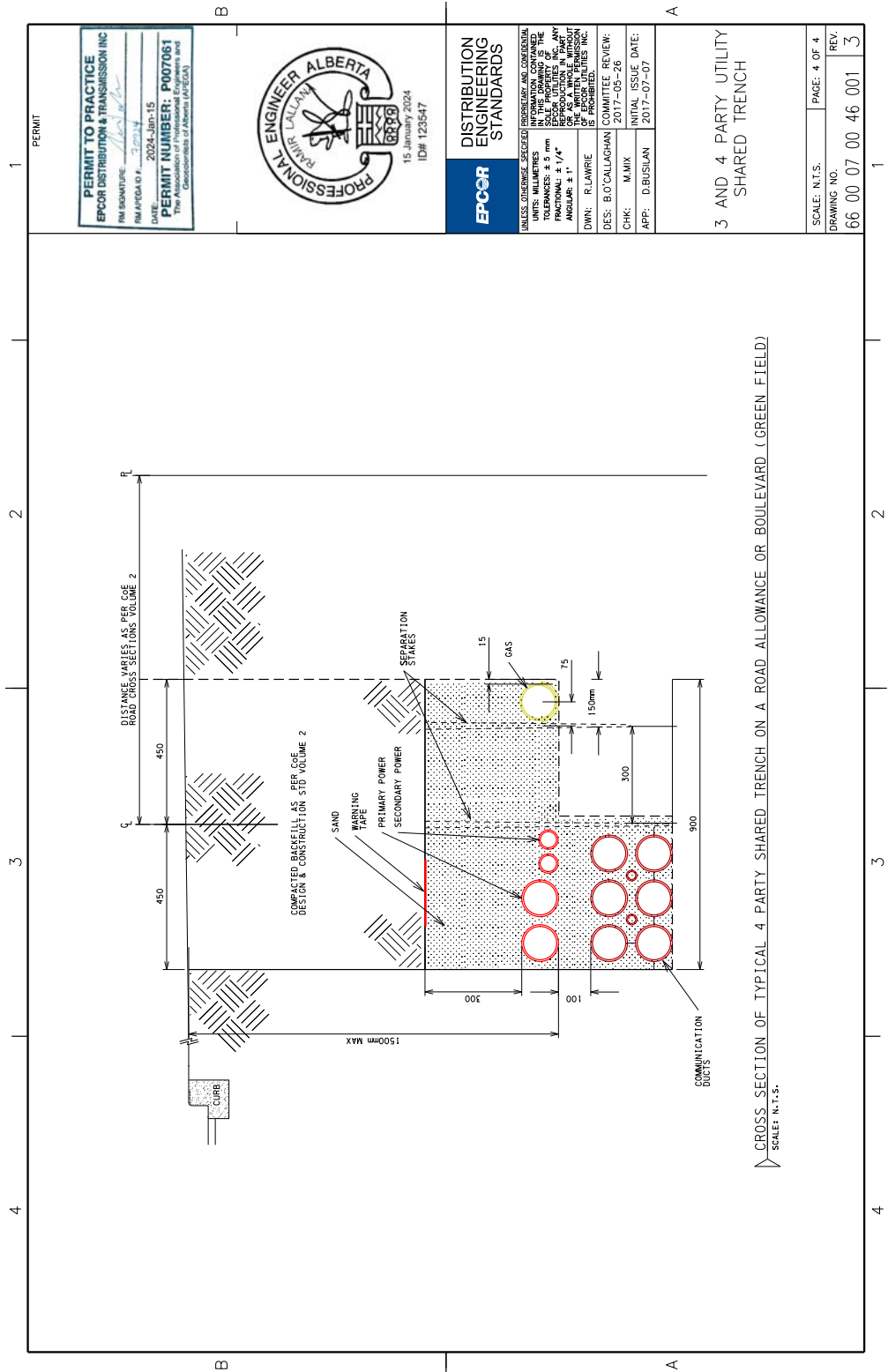
DRAWING 5.2

Δ TYPICAL SHARED POWER TRENCH PAGE 3/4

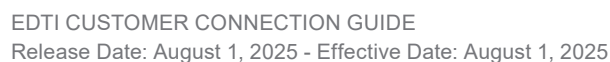


DRAWING 5.2

Δ TYPICAL SHARED POWER TRENCH
PAGE 4/4



Δ TYPICAL UNDERGROUND RESIDENTIAL SERVICE INSTALLATION ON PROPERTY



6.0

Padmount Transformer Service

6.1 GENERAL INFORMATION

- a. A padmount transformer service refers to a ground-mounted transformer located on private property.
- b. Typical installations include medium to large commercial applications, large houses, and multi-family sites.
- c. Please see [Table 3.1 – Project Overview](#) for a summary of your responsibilities as the Customer as well as EDTI's responsibilities.
- d. If you require a padmount transformer service, please visit the [Apply for Connection page](#) and click Apply for Power. See [Section 3.3 – Applying for Service](#) for details.
- e. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

6.2 SERVICE TYPE GENERAL REQUIREMENTS

- a. See [Table 5.1 – Minimum Acceptable Single Phase Secondary Conductors for Underground Services](#) for details on conductor requirements for underground services.
- b. EDTI must be notified prior to construction approval when neutral grounding devices are incorporated into service equipment.

6.3 MULTI-FAMILY DEVELOPMENTS AND MOBILE HOME PARKS

This section applies to multiple-metered residential service connections where single phase padmount transformers and service pedestals are installed on the Customer's property. While other information on secondary services found elsewhere in this guide also applies, the following information is specific to multi-family developments and mobile home parks.

- a. [Drawing 5.1 – Sample Submission for Multi-Family Developments](#) provides guidance on the format requirements for multi-family development drawings.
- b. The Customer in multi-family developments must supply the primary cable.
- c. All conductors must conform to [Table 6.1 – Primary Cable, Duct, and Handhole Requirements](#). [Stranded](#) conductor shall be used, solid conductor shall not be permitted.
- d. Refer to [Drawings 3.1](#), [3.2](#), and [3.3](#) for the primary voltage in your area, and [contact us](#) for confirmation.
- e. All primary cables must be installed in duct on private property.
- f. For multi-family sites where the primary duct is proposed between the last transformer and the cubicle, a coil of primary cable should be direct-buried at the property line for EDTI to extend into the switching cubicle. Once EDTI extends the cable into the cubicle, the contractor must install split pipe for conduit coupling.
- g. For sites with more than two transformers, a primary loop feed is required. Please [contact us](#) to confirm loop feed requirements.

- h. The Customer must supply the manufacturer's cable production test results, as per EDTI specifications for primary cables, prior to cable installation. The test results must be provided to EDTI.
- i. The Customer must provide concrete bases for single phase transformers, as per [Drawing 6.3 – Installation of Precast Concrete Base for Single Phase Transformers](#).
- j. A service pedestal may be installed between the transformer and the Customer service entrance. The service pedestal shall meet CSA C22.2 requirements, and shall comply with all Canadian Electrical Code bending radius, spacing, and termination requirements. The maximum pedestal rating is 400A based on the allowable secondary conductors of parallel 4/0 AL from [Table 5.1](#).
- k. The Customer must identify service conductors at the padmount transformer by pedestal number, and at the pedestal by meter address, which is the address of the building the meter serves. Meter sockets must be identified by service address and pedestal number. Use a long-life ink on a tie-wrap attached to the conductors for this identification. This is mandatory when a Customer-owned distribution facility such as a pedestal is used.
- l. For emergency purposes, each pedestal must be identified with the name and phone number of an on-site representative who is available 24 hours a day.
- m. Before energization, the Customer must make all terminations on all incoming feeds from the transformer at the service pedestals, and at the neutrals in the pedestals, for the individual services to the units. Customers must not terminate the hot conductors of the service wire in the pedestal. EDTI will extend a Customer-supplied conductor to the switching cubicle or pole on City of Edmonton property.

6.4 PADMOUNT TRANSFORMERS AND SWITCHING CUBICLES

- a. EDTI reserves the right of final approval for the location of facilities.
- b. EDTI requires truck access to on-property transformers, switching cubicles, poles, and handholes where EDTI will be installing the cable. See [Section 3.16 – Equipment Access](#) for more information.
- c. EDTI will supply, install, and maintain required transformers and switching cubicles, and perform all required primary and secondary conductor terminations at the transformer and switching cubicle.
- d. When a transformer or switching cubicle is required on the Customer's property, the Customer must provide the precast concrete bases with an appropriate ground grid and guardrails. Please see [Section 6.5 – Ground Grids and Guardrails for Padmounted Equipment](#).
- e. When a transformer or switching cubicle is required for servicing it must be placed on the Customer's site within a registered utility Right-of-Way (easement). See [Section 3.8 – Easements and Utility Rights-of-Way](#) for details.
- f. The Customer must provide concrete bases for transformers, as per [Drawing 6.3 – Installation of Precast Concrete Base for Single Phase Transformers](#) and [Drawing 6.4 – Installation of Precast Concrete Base for Three Phase Transformers](#).

- g. Required clearances between transformers and buildings can be as high as 6.0m, depending on the type of transformer used.
 - i. This is particularly true in our 5kV service area, where 347/600V transformers are required. See [Drawing 3.1](#) for the primary voltage in your area, and [contact us](#) to confirm the required clearance for your specific installation.
- h. Switching cubicles must be connected to EDTI's main line in such a manner as to provide a loop feed. No radial-fed cubicle installations will be allowed on private property.
- i. When the Customer is required to install a switching cubicle base, it shall be constructed in accordance with:
 - [Drawing 6.5 – Installation of Precast Concrete Base for 4-Way Single Phase 15kV 200A Dead Front Switching Cubicle](#)
 - [Drawing 6.6 – Installation of Precast Concrete Base for 4-Way Single Phase 25kV 200A Dead Front Switching Cubicle](#)
 - [Drawing 6.7 – Installation of Precast Concrete Base for 4-Way 3 Phase 15kV Switching Cubicle \(All Variants\)](#)
 - [Drawing 6.8 – Installation of Precast Concrete Base for 4-Way 3 Phase 25kV Switching Cubicle \(All Variants\)](#)
- j. The fault indicator lights adjacent to the “B” compartment of switching cubicles must face the main road.
- k. Excavation for transformer and switching cubicle bases shall be stepped so that the native backfill is not disturbed under the ground grid area. This will help prevent the ground rods from bending and deforming during backfilling and compaction. The area where the ground grid and rods are installed shall not be excavated deeper than required to install the ground grid.
- l. The bottom of the excavation where the base will be installed requires 300mm of compacted 20mm road crush.
- m. Proper sub-base compaction is crucial to ensure transformer and switching cubicle bases are installed correctly. Ensure that 20mm crushed gravel is compacted in lifts of 150mm or less, at optimal moisture. See [Drawings 6.3](#), [6.4](#), [6.5](#), [6.6](#), [6.7](#), and [6.8](#).
- n. Pressure-treated lumber is required under all switching cubicle bases and Single phase transformer bases, per [Drawings 6.3](#), [6.5](#), [6.6](#), [6.7](#), and [6.8](#).
- o. If the location of the precast base is within 4.0m of a building foundation or if soil conditions do not support precast bases, engineered screw piles or concrete piles must be installed.
 - i. When piles are used, wood planks shall not be used. The concrete pad shall sit directly on pile cap/plate. If shims are required, steel shims affixed with welds or appropriate construction adhesive may be used. Drawings authenticated by a Professional Engineer registered in the Province of Alberta with APEGA shall be supplied to EDTI before EDTI will grant approval for piles.
 - ii. When piles are used, the duct bends shall not be less than 36 in. Radius bends.
 - iii. See [Drawing 6.13 – Installation of Screw Piles](#) for screw pile installation requirements.

- p. The Customer shall submit compaction test reports for all pad installations on site. If adequate compaction cannot be achieved, piles are required. See [Section 3.12 – Trenching and Backfilling](#) for compaction and backfill requirements.
- q. The use of 24 in. bends may be permitted where the edge of the base is within 9.14m (30 ft.) of the property line. This option shall not be used in conjunction with screw piles. Special care to achieve proper compaction is necessary to avoid pull out.
- r. No obstructions that could interfere with high-voltage switching—such as large rocks, decorative boulders, trees, and fences—shall be allowed within 3.0m on the door sides of transformers and switching cubicles.
- s. Within 3.0m of padmounted equipment, landscaping must slope away from the base for proper drainage and safe operational switching per [Drawings 6.3, 6.4, 6.5, 6.6, 6.7, and 6.8](#).
- t. Equipment must not be subject to flooding under runoff conditions.
- u. Rough grade must be established at 100mm to 150mm below final grade and marked on the base prior to inspection.
- v. The height of the top of the concrete base for 3 phase transformers must be between 250mm and 300mm above final grade, and 150mm to 200mm above final grade for single phase transformers.
- w. Curbs within 3.0m of the door sides of transformers and switching cubicles require approval from EDTI prior to construction.
- x. When a switching cubicle base is installed, the Customer must install a pull string in each duct between the cubicle and transformer.
- y. When padmounted equipment is to be located on top of a structure, other than a precast base, authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA must be submitted to EDTI.

6.5 GROUND GRIDS AND GUARDRAILS FOR PADMOUNTED EQUIPMENT

- a. Transformers and switching cubicles must be protected from mechanical damage. Customers are required to provide guardrails for all installations of transformers and switching cubicles on private property.
- b. Guardrails must have removable sections in front of the doors of equipment, as per [Drawings 6.3 and 6.4](#) for transformers, and [Drawing 6.9 – Typical Guardrail for Bollard & Guard Post Installation](#) for switching cubicles. Please note that switching cubicles have two sets of doors, requiring removable sections in front of each.
- c. A single welded stud on the guardrail post in lieu of a double bolt connect shall be permitted, so long as the same size bolt is used, and the weld interface is not a spot or stitch weld (e.g. full weld all around).
- d. Customers are responsible for installing ground grids around all padmounted equipment. They must consist of four copper-clad ground rods interconnected by 4/0 bare copper grounding conductor using U-bolt style connectors and an additional two 4/0 bare copper grounding conductor tails, connected to the ground bus of the equipment.

- e. A sufficient length of #4/0 bare copper grounding conductor must be installed to allow 5.0m (no more or less) to be left above the top of the precast transformer base. The conductor must be left in an organized manner to allow for easy removal and shaping.
- f. Ground rod resistance must measure 6 ohms or less.
- g. All stubbed ducts shall extend a minimum of 1.0m past the ground grid's outer edge.
- h. The minimum distance to the property line for the ground grids of padmount transformers and switching cubicles is 1.0m.
- i. When non-EDTI equipment or buildings/structures are placed within 3.0m of the edge of EDTI equipment, the ground grid of the EDTI equipment must be bonded using two tails to the ground of the non-EDTI equipment or building/structure. The Customer must show details on the power plan of how the bonding is to be achieved. The detail must also show the clearance between the edge of the EDTI equipment and non-EDTI equipment/building/structure. The non-EDTI equipment or building/structure cannot be installed within 1.0m of the EDTI ground grid; and may not be located within the guardrails.
- j. Ground grids for padmount equipment located on the top of a parkade must be bonded to the rebar of the building with two #4/0 conductors terminating to a remote ground grid. These conductors must be physically separated. The equipment base must be encircled by a #4/0 bare copper conductor embedded in the concrete 900mm outside of the base. The gradient control conductor must be bonded to the rebar in the four corners, with two tails from alternate corners entering the base and a length of 5.0m extending above the top of the base. Authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA must be submitted to EDTI.
- k. See [Drawing 6.10 – Ground Grid Requirements for 15kV and 25kV Switching Cubicles and Three Phase Transformers Next to Each Other](#) for ground grid requirements when cubicles and transformers are next to each other.
- l. Fine-grain clay backfill is required around the ground grid.
- m. Special care must be taken to ensure that the subgrade around and under the base is compacted without damaging the ground rods, ground grid or the ground conductors (tails).

6.6 BLAST WALLS

- a. Blast walls (including a roof) may be required in some circumstances. EDTI will inform the Customer if they are required after an application is submitted. The blast walls must consist of one of the following:
 - i. 150mm thick reinforced concrete.
 - ii. 200mm solid concrete blocks.
 - iii. An alternative equivalent non-combustible rated design. Authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA must be submitted to EDTI for this option.

6.7 SERVICE DUCTS

- a. All permanent commercial services must be in duct.
- b. High Density Polyethylene (HDPE) ducts shall not be permitted, even when certified for the intended use.
- c. For residential installations, EDTI highly recommends, and may require, installing any cable that will ultimately end up under a building/structure or hard surface, in duct. See [Drawing 5.3 – Typical Underground Residential Service Installation on Property](#) for a typical underground service installation.
- d. Duct must be installed where primary cable is deemed inaccessible by EDTI.
- e. All ducts must be equipped with bell collars at their ends to avoid damaging the cable.
- f. The installation of primary service cable under buildings/structures is not permitted, even when in duct.
- g. The Customer will provide all conduits, handholes, and manholes required for installing the electrical services on the Customer's property. EDTI approved product shall be used, including rigid PVC, DB2, Carlon Borguard, or Terracon.
- h. The Customer cannot install ducts into an energized manhole or handhole.
- i. Conduit size requirements for primary cables depend on cable size and voltage. See [Drawing 3.1](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.
- j. Service conduits installed by contractors working on behalf of other utilities or the City of Edmonton must follow EDTI's construction standards. Contractors must not work within 1.0m of any electrical equipment.
- k. When EDTI conduits have been stubbed to the property line, Customers must first confirm that the conduit exposed is the correct one, and then connect their supply conduit to EDTI's conduit. The material of the supply conduit must match the type of conduit that is stubbed. [Contact us](#) to arrange for conduit verification and stub-out location.
- l. Where gas easements/utility rights-of-way exist, the service ducts are to be extended past the gas easement/utility right-of-way and capped.
- m. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Section 6.9 – Ground-Mounted Handholes](#) for more information.
- n. The Customer shall be responsible for installing and maintaining conduit sealing, and a suitable means of drainage, for ducts entering a building, per the Canadian Electrical Code.

6.8 DUCT BENDS

- a. All bends exiting transformers and cubicles must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- b. An additional 3,000mm (10 ft.) horizontal section of rigid, thick-walled PVC must be attached to the bend.

- c. The primary duct must be aligned directly underneath the primary transformer bushings and centred within the base opening, per [Drawings 6.3](#) and [6.4](#). The conduit bends must exit the earth at 90 degrees.
- d. The secondary ducts must be aligned directly underneath the secondary transformer bushings and centred within the base opening, per [Drawings 6.3](#) and [6.4](#). The conduit bends must exit the earth at 90 degrees.
- e. All bends must be equipped with bell collars to avoid damaging the cable.
- f. Each bend which is not capped specifically for a Customer's service stub must have an end bell collar permanently installed on the open end located outside of the switching cubicle (i.e. both ends of the bend must have end bell collars).
- g. All spare bends are to be covered (taped or covered by some other suitable method) to prevent material falling into them.
- h. Primary ducts exiting switching cubicles must be identified (i.e. identify the piece of equipment the pipe services).
- i. Precast concrete pad must be removed before inserting additional ducts into existing pads.
- j. See [Drawings 3.1](#), [3.2](#) and [3.3](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.

6.9 ▲ GROUND-MOUNTED HANDHOLES

- a. EDTI reserves the right of final approval of the handhole size and location.
- b. Communication cables cannot share the same handhole with primary or secondary cables.
- c. Customer-owned facilities cannot share the same handhole with EDTI facilities.
- d. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Drawing 6.1](#) for details.
- e. The cumulative total of all bends between pulling points shall not exceed 360 degrees of bends.
- f. The size of the ground-mounted handhole required depends on the type of cable being installed. See [Table 6.1](#) for details.
- g. Conduits must enter and leave the handhole at the same level.
- h. All bends entering/exiting handholes, manholes, or vaults must be made of rigid, thickwalled PVC (Schedule 40). DB2 is acceptable when entering/exiting handholes, manholes, or vaults as a straight section, but bends are not permitted.
- i. All customer manhole and handhole lids shall be traffic rated for H-25/HS-25.
- j. ▲ Conduits shall not enter/exit through the same wall.

6.10 ▲ CONDUCTORS

- a. See [Drawing 3.1](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.
- b. Secondary cables on all residential and multi-family developments must be concentric-neutral direct-buried type (USEB), when supplied from EDTI transformers and pedestals. See [Table 5.1](#) for details.

- c. For 3-phase padmount transformers, the maximum size of conductor allowed is 500MCM copper or 750MCM aluminum. (750MCM copper conductor is not permitted.)
- d. For commercial installations, secondary cable must be individual RW90 conductors, in duct.
- e. Where secondary conductors are installed shorter than required, they shall be replaced by Customer to attain the required length. Splicing is prohibited.
- f. See [Table 5.1](#) for allowable secondary service cables.
- g. Δ The preferred method of phase identification is with colour jacketed cables (Red, Black, Blue, White). Black jacketed cable will be acceptable with phasing identified on the phase cables with white, blue & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP. In the case of single phase commercial services phasing shall be identified on the 2 phase cables with white & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP.
- h. Armoured or metal-sheathed (TECK) cable cannot be used for permanent services.
- i. Δ With EDTI review, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See [Section 12.5 – Temporary Connections](#) for details.
- j. For new connections from padmount transformers, the amount of secondary cable per phase of each run can be estimated by using the following formula: $1.1 \times (\text{total length of conduit used}) + 6\text{m} + (\text{height of customer switchgear terminations})$.

6.11 Δ CABLE INSTALLATION

- a. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Section 6.9 – Ground-Mounted Handholes](#) for more information.
- b. Telephone and television cables can be installed in the same trench as power conductors. Design drawings must be forwarded to the appropriate organizations for their approval.
- c. Cable cannot be installed on building footings or weeping tile.
- d. Secondary cable ends must have heat shrink caps.
- e. Primary cable ends must be wrapped with elastomeric tape (e.g. Greenline) to prevent the migration of moisture in the cable before testing. Elastomeric tape must be wrapped in a spiral shape overlapping half of each previous wrap at a time and then covered with black low-voltage vinyl tape. A minimum of two layers of half-lapped tape is to be applied. Immediately after testing, heat shrink caps must be installed on primary cable ends.
- f. EDTI will make the final connection in the cubicle, transformer, or pedestal. Multi-Family Customer owned pedestals are an exception to this rule.
- g. EDTI will supply and install all primary conductors in the Customer-prepared conduit, but only after the primary ductwork has passed an electrical inspection. Multi-family sites are an exception to this rule.
- h. Cable coiling in Base
 - i. The Customer will supply and install secondary conductors from the Customer's switchgear to the transformer location, leaving 5.0m of conductors above the top of the precast transformer base.

- ii. After inspection, the conductors shall be coiled in a clockwise direction and left in a reasonably clean and organized manner around the inside perimeter of the base (contacting approximately 3 of the 4 walls) to allow for easy removal and shaping.
- iii. After installation, ensure the ground wire is not buried under the other cables.
- iv. The primary conduits and any other vacant ducts shall not have their access impeded by the coiled cables.
- v. Place 1-2 tie wraps at the tail ends only of each phase, and lie the tails down in the base and secure.
- vi. The follow images provide an example of the cable coiling requirements:
 - [Image 6.1 – Example of Coiled Cables – Inside Base](#)
 - [Image 6.2 – Example of Coiled Cables – Looking into Base](#)
- vii. If the cables are not shaped as required, a re-inspection of the installation will be required, and a re-inspection fee will apply.
- i. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in a rigid metal conduit, in which case the maximum length is 7.5m.
- j. A maximum of twelve runs of secondary conductors (max conductor size 2/0) are permitted for all single phase transformers. A maximum of ten runs of secondary conductors (max conductor size 4/0) are permitted for all single phase transformers.
- k. The Customer will identify service conductors by the meter address by using long-life ink on a tie-wrap attached to the conductors. This identification is mandatory when there are multiple service connections or when a Customer-owned distribution facility, such as a pedestal, is used.

IMAGE 6.1

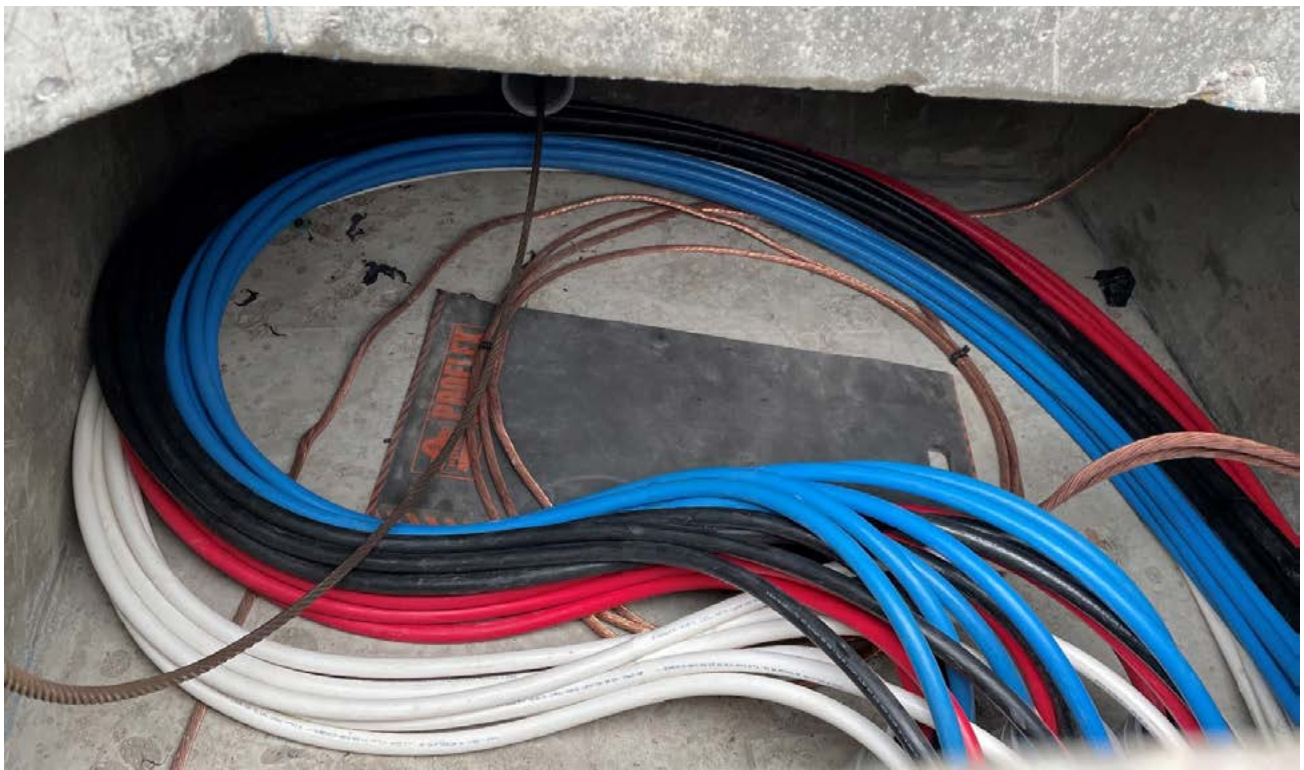
EXAMPLE OF COILED CABLES – INSIDE BASE (360 DEGREE VIEW)



All cables installed within the base shall be layered from top to bottom in the following order: blue, black, red, white.

IMAGE 6.2

EXAMPLE OF COILED CABLES – LOOKING INTO BASE



All cables installed within the base shall be layered from top to bottom in the following order: blue, black, red, white.

TABLE 6.1

Δ PRIMARY CABLE, DUCT AND HANDHOLE

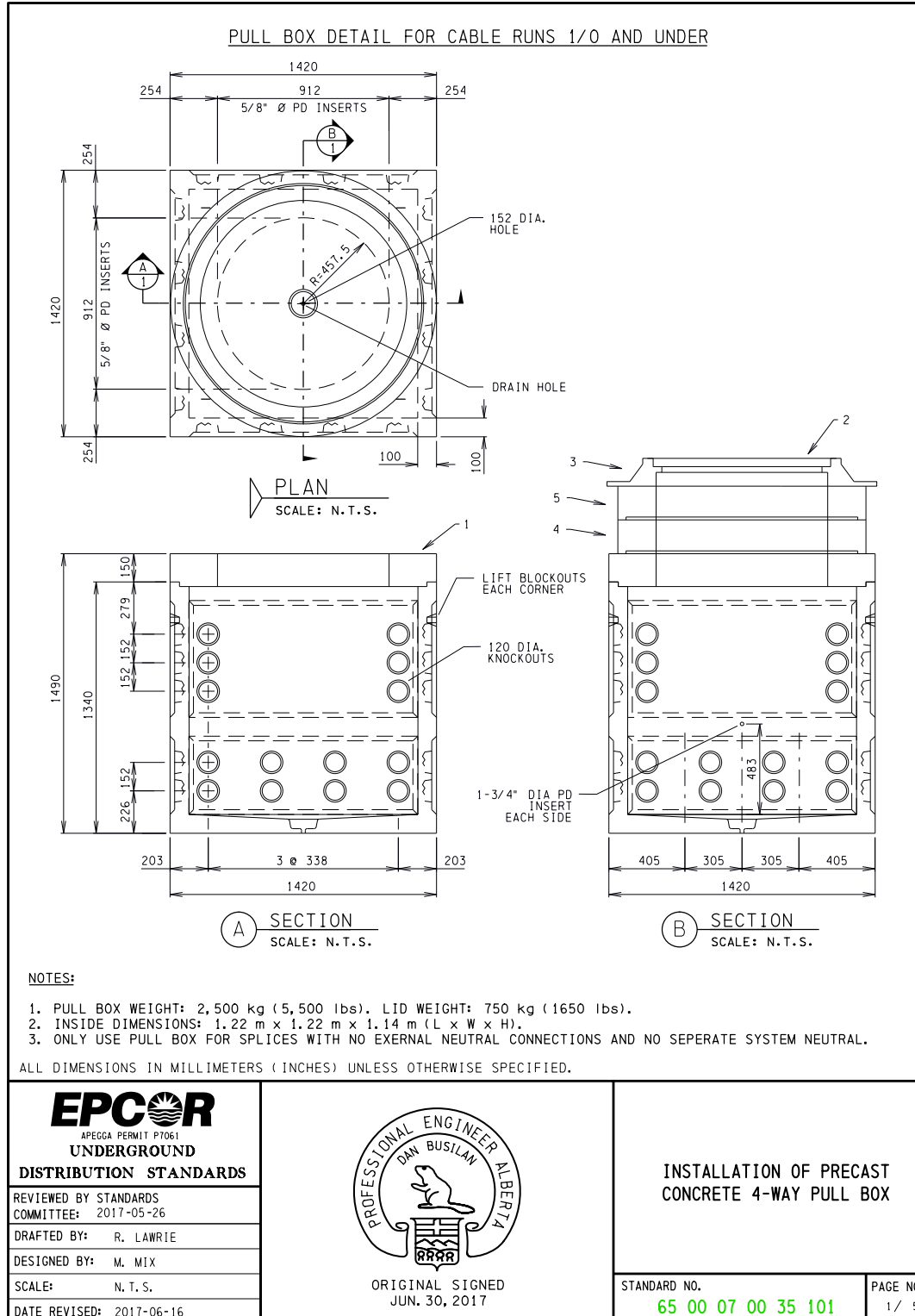
CABLE TYPE	VOLTAGE	MINIMUM BENDING RADIUS FOR CABLE		CONDUIT SIZE	MINIMUM RADIUS OF DUCT BENDS	HANDHOLE SIZE (SEE DRAWING 6.1)
		DRESSING	PULLING			
1-1/C 1/0 AL XLPE CN-J	15kV	329mm	493mm	100mm (4 in.)	610mm (24 in.)	Small
3-1/C 1/0 AL XLPE CN-J	15kV	329mm	493mm	100mm (4 in.)	915mm (36 in.)	Small
3-1/C 500 MCM CU XLPE CN-J Triplexed	15kV	578mm	823mm	150mm (6 in.)	915mm (36 in.)	Manhole (Type T) by Exception Only
3-1/C 750 MCM CU XLPE CN-J Triplexed	15kV	684mm	908mm	150mm (6 in.)	915mm (36 in.)	Manhole (Type T) by Exception Only
3-1/C 750 MCM CU EPR LC Shield – J Triplexed	15kV	631mm	899mm	150mm (6 in.)	915mm (36 in.)	Manhole (Type T) by Exception Only
1-1/C #1/0 XLPE AL	25kV	380mm	571mm	100mm (4 in.)	915mm (36 in.)	Small
3-1/C #1/0 XLPE AL	25kV	380mm	571mm	100mm (4 in.)	915mm (36 in.)	Small
3-1/C 500 MCM AI XLPE CN-J	25kV	523mm	785mm	150mm (6 in.)	915mm (36 in.)	Manhole (Type T) by Exception Only
3 -1/C 750 MCM CU XLPE CN-J Triplexed	25kV	762mm	1,087mm	150mm (6 in.)	1,219mm (48 in.)	Manhole (Type T) by Exception Only

REQUIREMENTS

- If pulling lengths exceed the maximum pulling tension of the cable, or the cumulative total of all bends between pulling points exceeds 360 degrees, handholes shall be required.
- Conduits must enter and exit the handhole at the same level.
- Δ Conduits shall not enter/exit through the same wall.
- Communication cables cannot share the same handhole with primary cables.
- Please see [Drawing 6.2 – Primary Cable, Duct, and Handhole Examples for Examples A and B](#), showing maximum pulling distances for two standard installations.
- Manhole (Type T) – EDTI Standard No. 72 00 07 00 35 022.
- All customer manhole and handhole lids shall be traffic rated for H-25/HS-25.

DRAWING 6.1

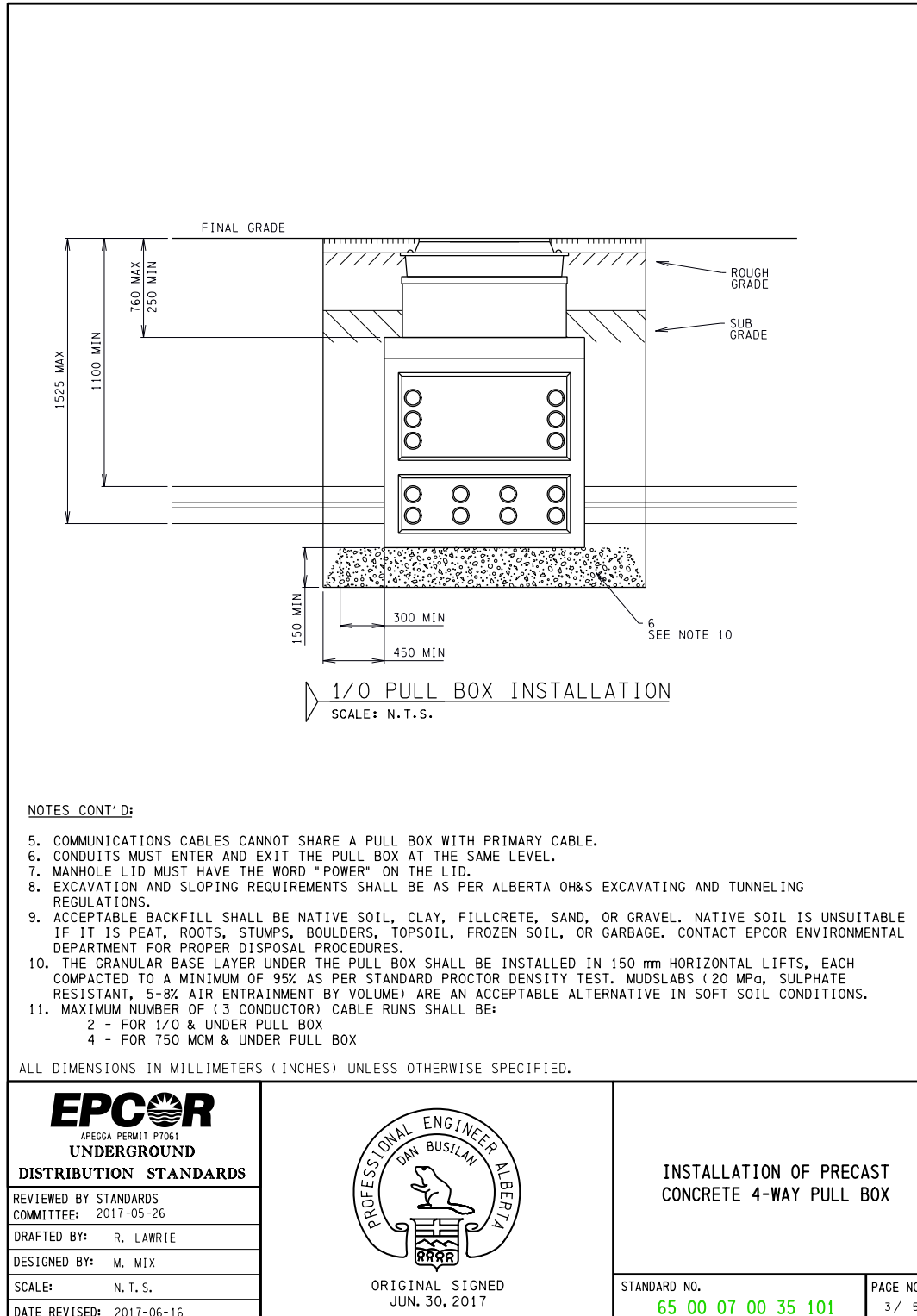
INSTALLATION OF PRECAST CONCRETE 4-WAY HANDHOLE PAGE 1/5* (SIZE SMALL AS INDICATED IN TABLE 6.1)



* Pages 2 and 4 have been excluded from standards as they do not apply to Customer installations.

DRAWING 6.1

INSTALLATION OF PRECAST CONCRETE 4-WAY HANDHOLE PAGE 3/5* (SIZE SMALL AS INDICATED IN TABLE 6.1)



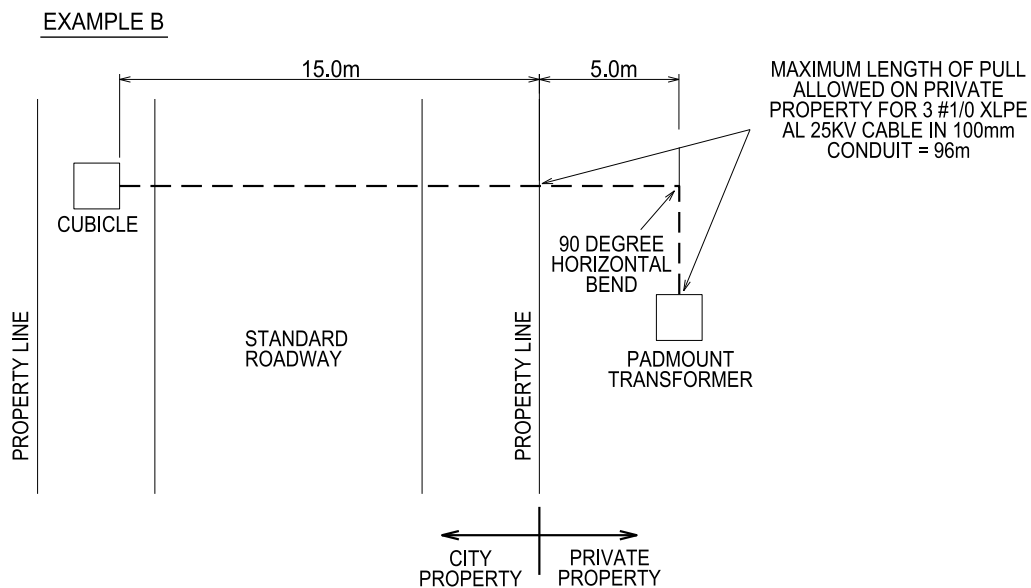
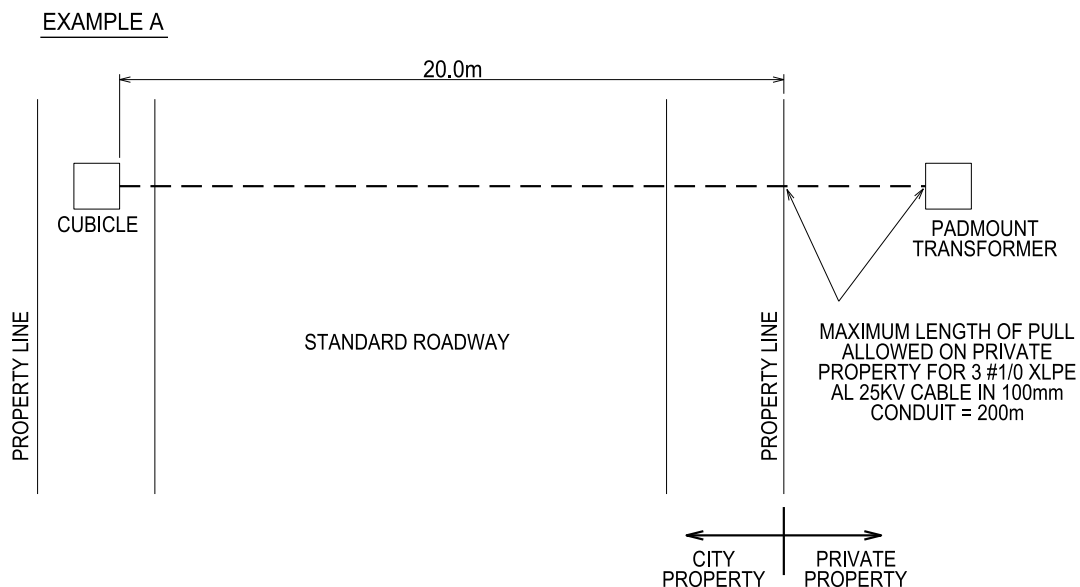
* Pages 2 and 4 have been excluded from standards as they do not apply to Customer installations.

INSTALLATION OF PRECAST CONCRETE 4-WAY HANDHOLE PAGE 5/5* (SIZE SMALL AS INDICATED IN TABLE 6.1)

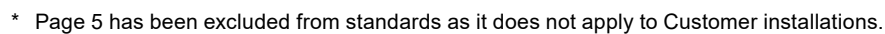
* Pages 2 and 4 have been excluded from standards as they do not apply to Customer installations.

DRAWING 6.2

PRIMARY CABLE, DUCT, AND HANDHOLE EXAMPLES FOR EXAMPLES A AND B

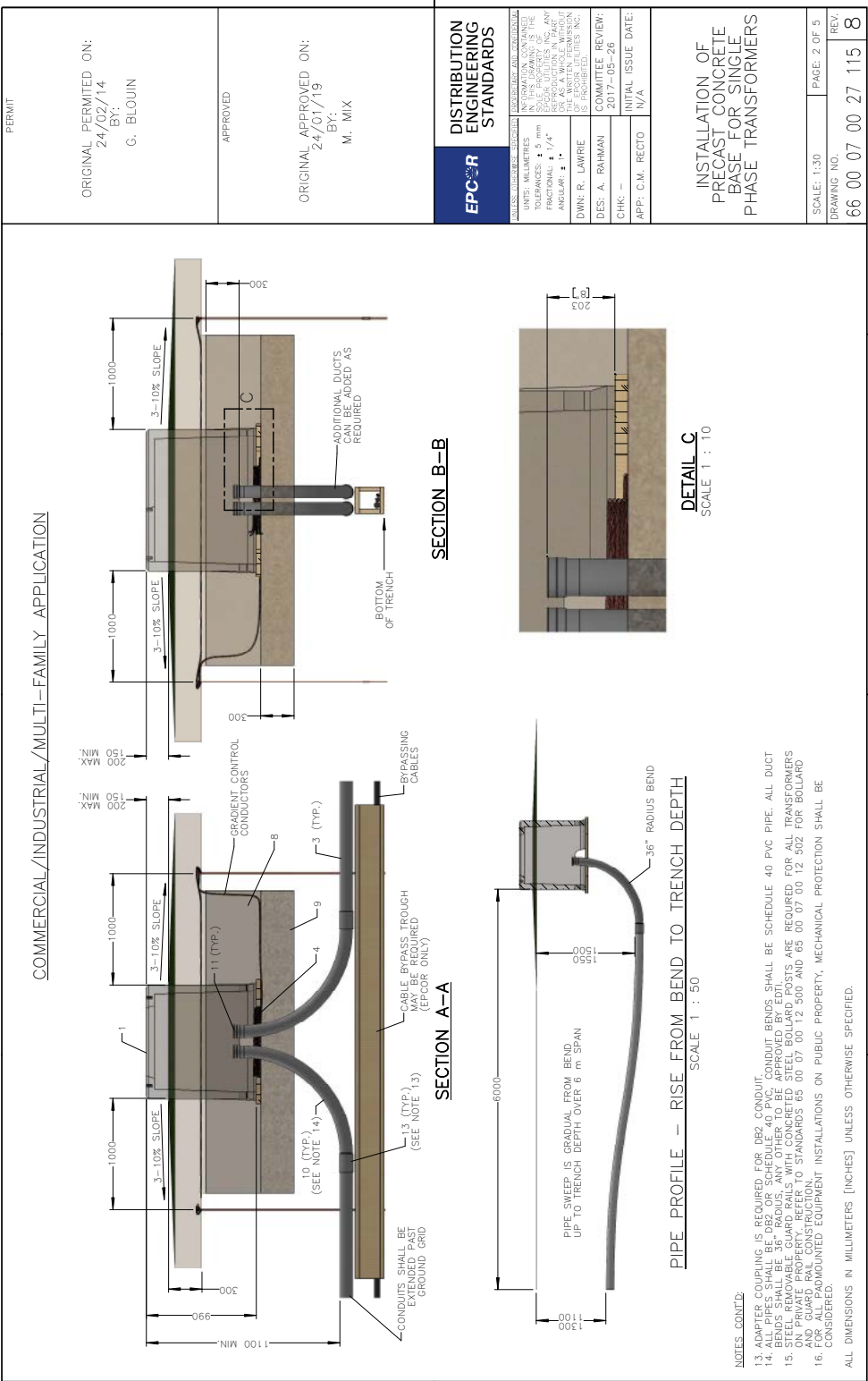


Δ INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS PAGE 1/5*



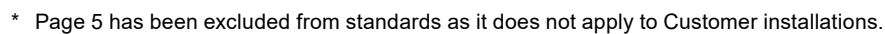
DRAWING 6.3

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS
PAGE 2/5*



* Page 5 has been excluded from standards as it does not apply to Customer installations.

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS PAGE 3/5*



DRAWING 6.3

Δ INSTALLATION OF PRECAST CONCRETE BASE
FOR SINGLE PHASE TRANSFORMERS
PAGE 4/5*

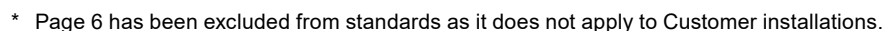
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INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS		SCALE: 1:50	
DRAWING NO. 66 00 07 00 27 115		PAGE: 4 OF 5	
REV. 8		1	

ITEM	DESCRIPTION	STOCK NO.	QTY.
1	BASE PRECAST TRANSFORMER SINGLE PHASE PADMOUNT 1270 X 1020	62891	1
2	ROD GROUNDING 5/8" X 5'	17288	8
3	PIPE DUCT	AS REQ'D	A/R
	DB2 - 4" - 20' LENGTH	53283	
	RIGID PVC - 4" - 20' LENGTH	10083	
4	WIRE #4/0 STRANDED COPPER BARE	45655	A/R
5	WIRE BRASS PRESSURE-TREATED - 2" X 10" X 8' PWF (RE-TREAT ALL CUT ENDS)	13235	2
6	Connector Ground Rod 5/8" - 250 1/C	31914	2
7	CONNECTOR GROUND ROD 5/8" 250 DOUBLE WIRE	31914	2
8	SAND	N/A	A/R
9	ROAD CRUSH - 20 mm	N/A	A/R
10	BEND RIGID PVC - 4" - 90 DEGREE 36" RADIUS PLAIN END	22660	A/R
11	END BELL COLLAR - 4" PVC	20574	A/R
12	COUPLER - GROUND ROD - 5/8"	17289	4
13	ADAPTER COUPLING - 4" DB2 TO 4" PVC/PRE	38916	A/R

4123

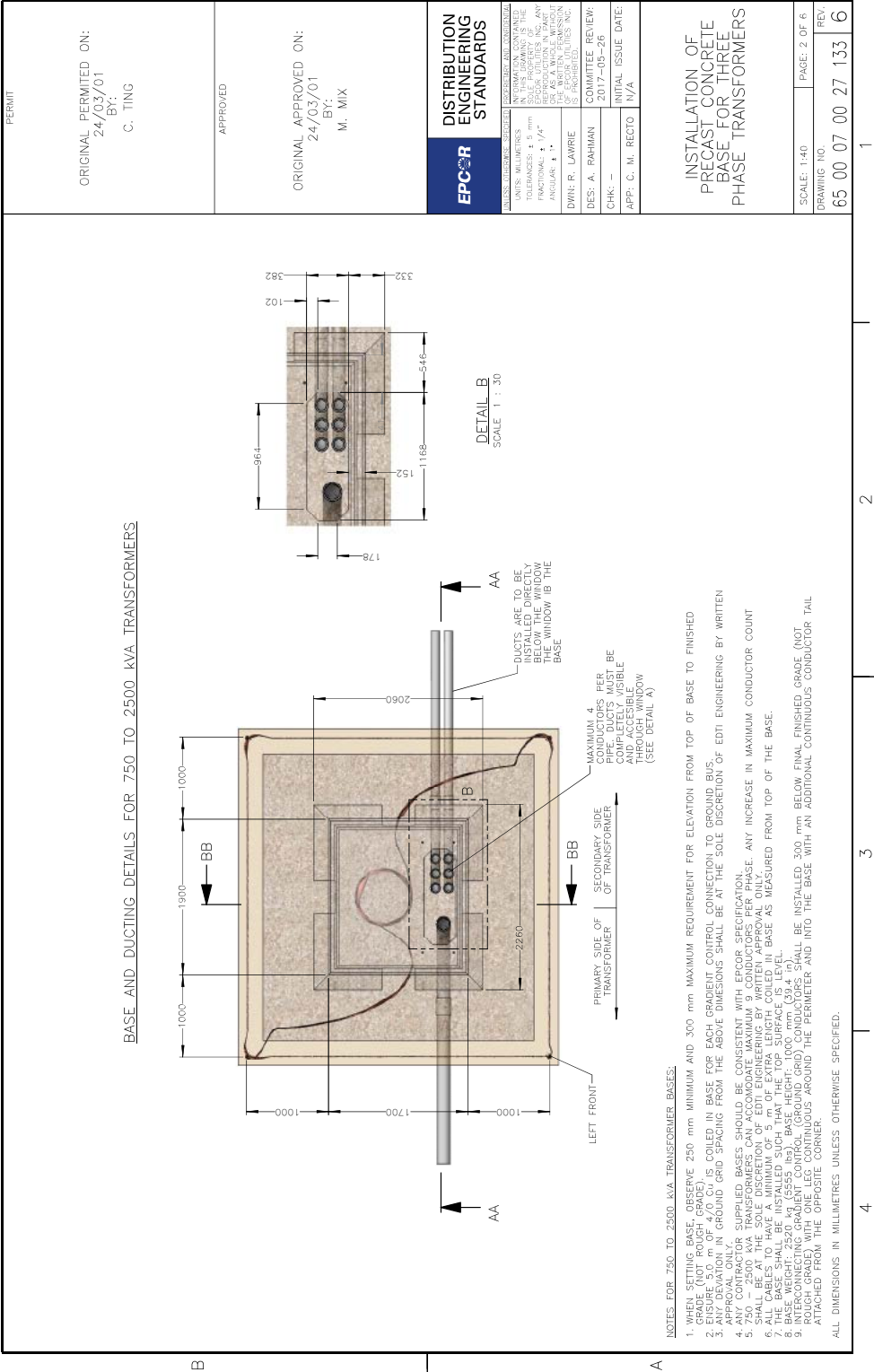
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS PAGE 1/6*



DRAWING 6.4

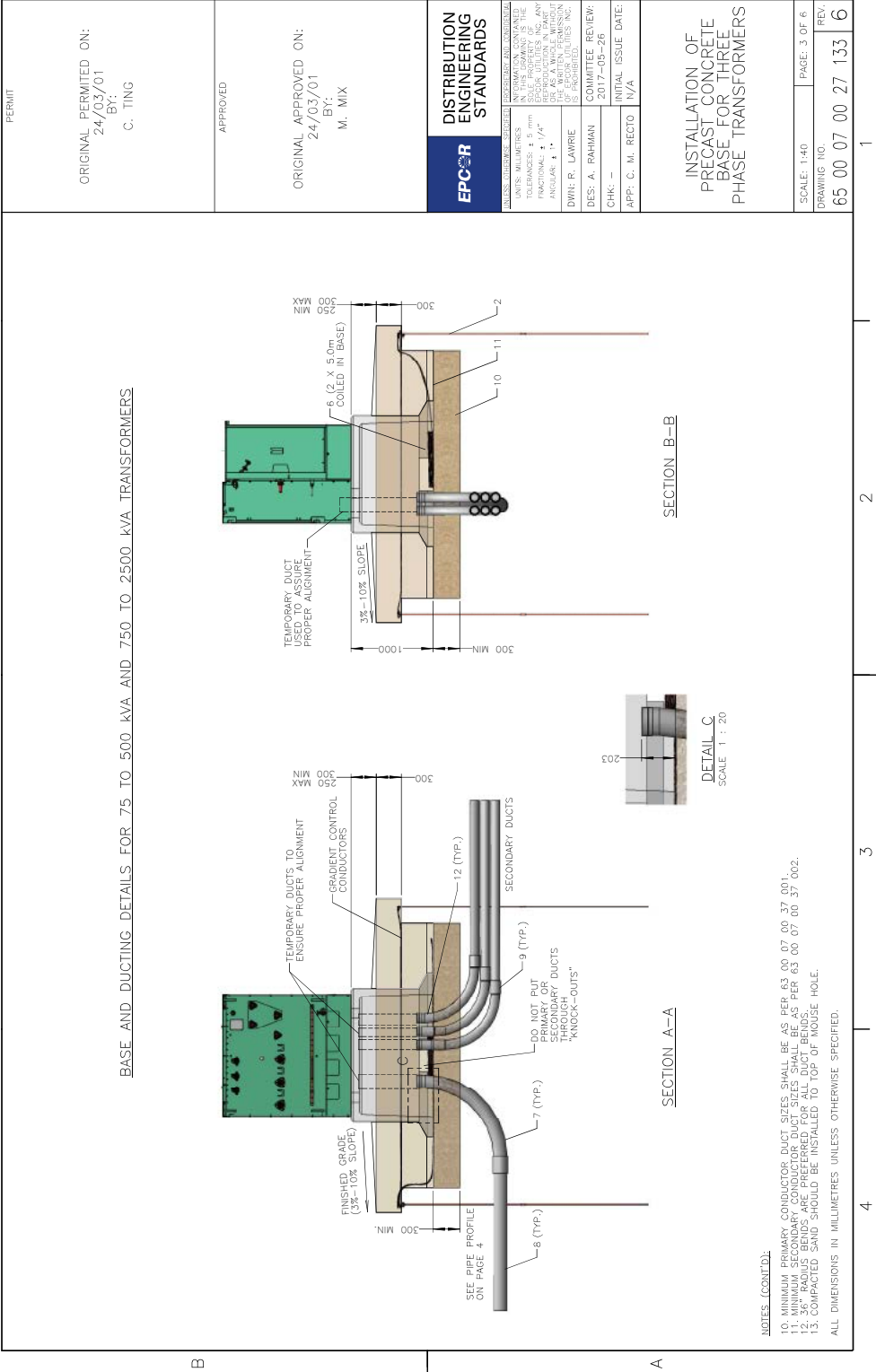
Δ INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS
PAGE 2/6*



* Page 6 has been excluded from standards as it does not apply to Customer installations.

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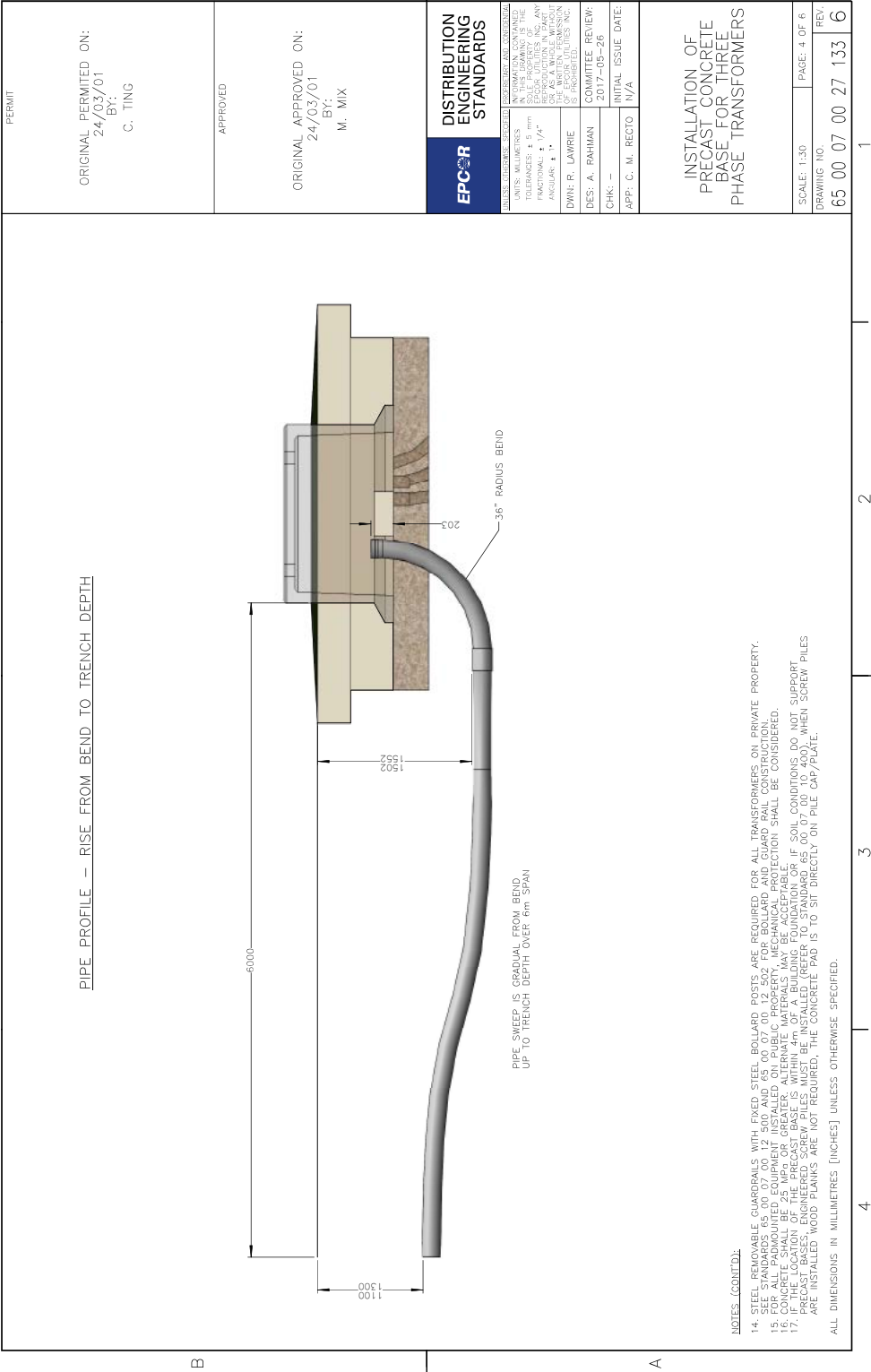
Δ INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS
PAGE 3/6*



* Page 6 has been excluded from standards as it does not apply to Customer installations.

DRAWING 6.4

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS
PAGE 4/6*



* Page 6 has been excluded from standards as it does not apply to Customer installations.

DRAWING 6.4

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS
PAGE 5/6*

ITEM NO.		DESCRIPTION	STOCK NUMBER	QTY.
1		BASE PRECAST TRANSFORMER	AS REQ'D	1
		75' – 500 KVA CONCRETE	11794	
		750' – 2500 KVA CONCRETE	11636	
2		ROD GROUNDING 5/8" X 5"	17268	8
3		CONNECTOR GROUND ROD 5/8" 250 DOUBLE WIRE	31914	2
4		CONNECTOR GROUND ROD 5/8" – 250 1/C	31914	6
5		COUPLER – GROUND ROD – 5/8"	17269	4
6		WIRE #4/0 STRANDED COPPER BARE	45655	A/R
7		BEND PVC RIGID	AS REQ'D	A/R
		4" 90 DEGREE 24" RADIUS PLAIN ENDS	44327	
		4" 90 DEGREE 36" RADIUS PLAIN ENDS	22960	
		6" 90 DEGREE 36" RADIUS PLAIN ENDS	17787	
8		PIPE DUCT	AS REQ'D	A/R
		DB2 – 4"	53283	
		DB2 – 6"	42236	
		RIGID PVC – 4"	10083	
		RIGID PVC – 6"	10692	
9		COUPLINGS	AS REQ'D	A/R
		4" DB2 – 4" PVC/FRE	38916	
		4" PVC	26695	
		6" DB2 – 6" PVC/FRE	10284	
		6" PVC	34751	
10		ROAD CRUSH – 3/4"	N/A	A/R
11		SAND	N/A	A/R
12		BELL END COLLAR	AS REQ'D	A/R
		RIGID PVC – 4"	20574	
		RIGID PVC – 5"	20731	

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2017-05-26
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INSTALLATION OF
PRECAST CONCRETE
BASE FOR THREE
PHASE TRANSFORMERS

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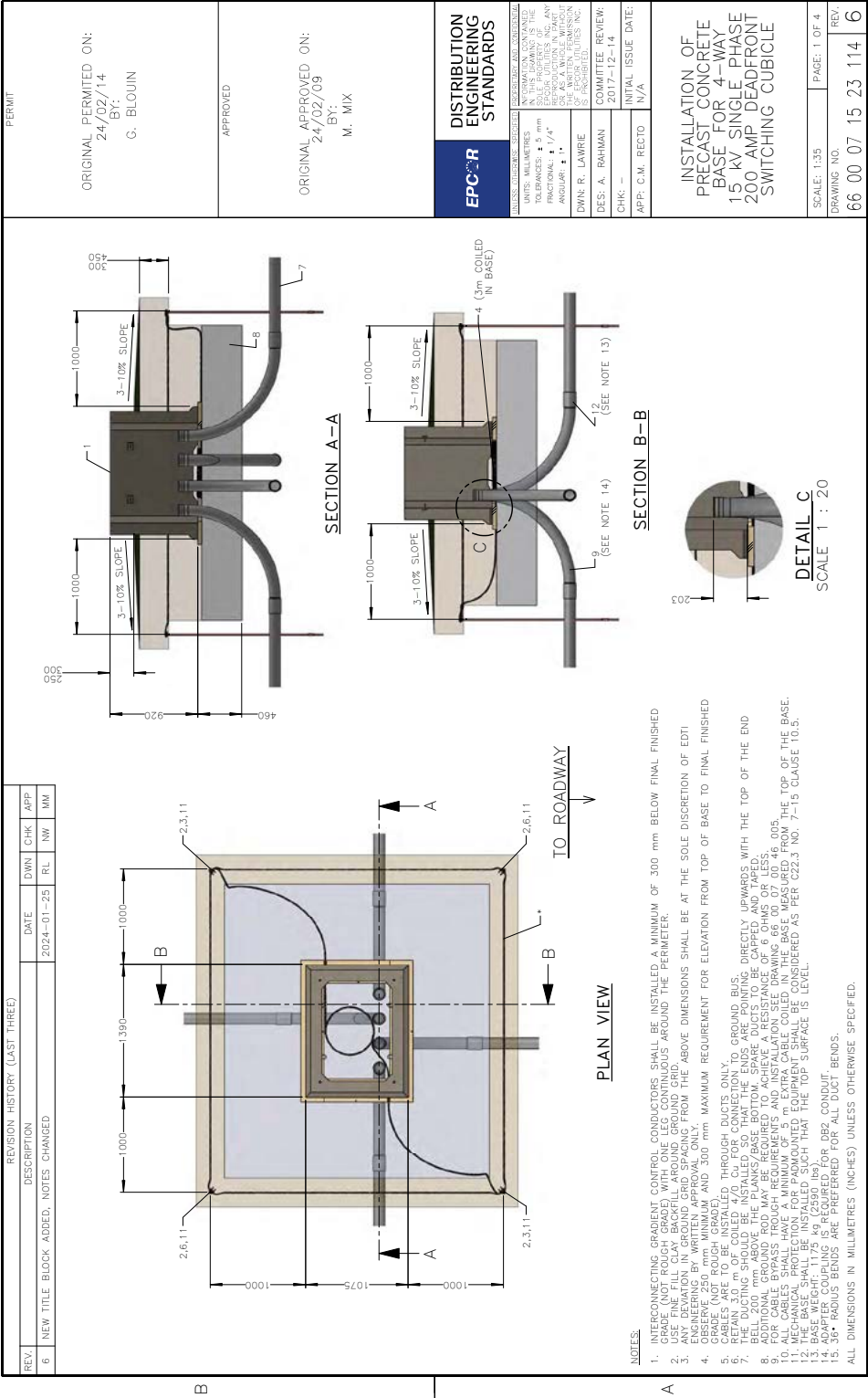
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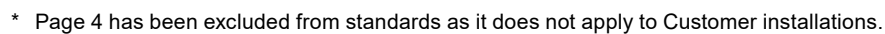
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 15kV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE PAGE 1/4*



* Page 4 has been excluded from standards as it does not apply to Customer installations.

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 15KV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE PAGE 2/4*



DRAWING 6.5

Δ INSTALLATION OF PRECAST CONCRETE BASE
FOR 4-WAY 15KV SINGLE PHASE 200A DEAD FRONT
SWITCHING CUBICLE PAGE 3/4*

ITEM NO.		DESCRIPTION		STOCK NUMBER	QTY:
1		BASE PRECAST 200 AMP 15 KV 4-WAY 1 PHASE DEADFRONT SWITCHING CUBICLE		61415	1
2		ROD GROUNDING 5/8" X 5'		17288	8
3		CONNECTOR GROUND ROD 3/4" - 250 DOUBLE WIRE		31914	2
4		WIRE #4/0 STRANDED COPPER BARE		45655	1
5		LUMBER SPRUCE PRESSURE-TREATED - 2" X 10" X 8" PMF (RE-TREAT ALL CUT ENDS)		13235	4
6		CONNECTOR GROUND ROD 5/8" - 250 1/C		31914	2
7		PIPE DUCT 4"		AS REQ'D	A/R
		DB2 - 4"		53283	
		RIGID PVC - 4"		10083	
8		ROAD CRUSH - 3/4"		N/A	1
9		BEND RIGID PVC		AS REQ'D	A/R
		4" 90 DEGREES 24" RADIUS PLAIN ENDS		44327	
		4" 90 DEGREES 36" RADIUS PLAIN ENDS		22960	
10		END BELL COLLAR - 4" PVC		20574	4
11		COUPLER - GROUND ROD - 5/8"		17289	4
12		ADAPTER COUPLING 4" DB2 - 4" PVC/FRE		38916	A/R

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INSTALLATION OF
PRECAST CONCRETE
BASE FOR 4-WAY
15 KV SINGLE PHASE
200 AMP DEADFRONT
SWITCHING CUBICLE

SCALE: 1:1

PAGE: 3 OF 4

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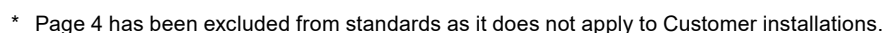
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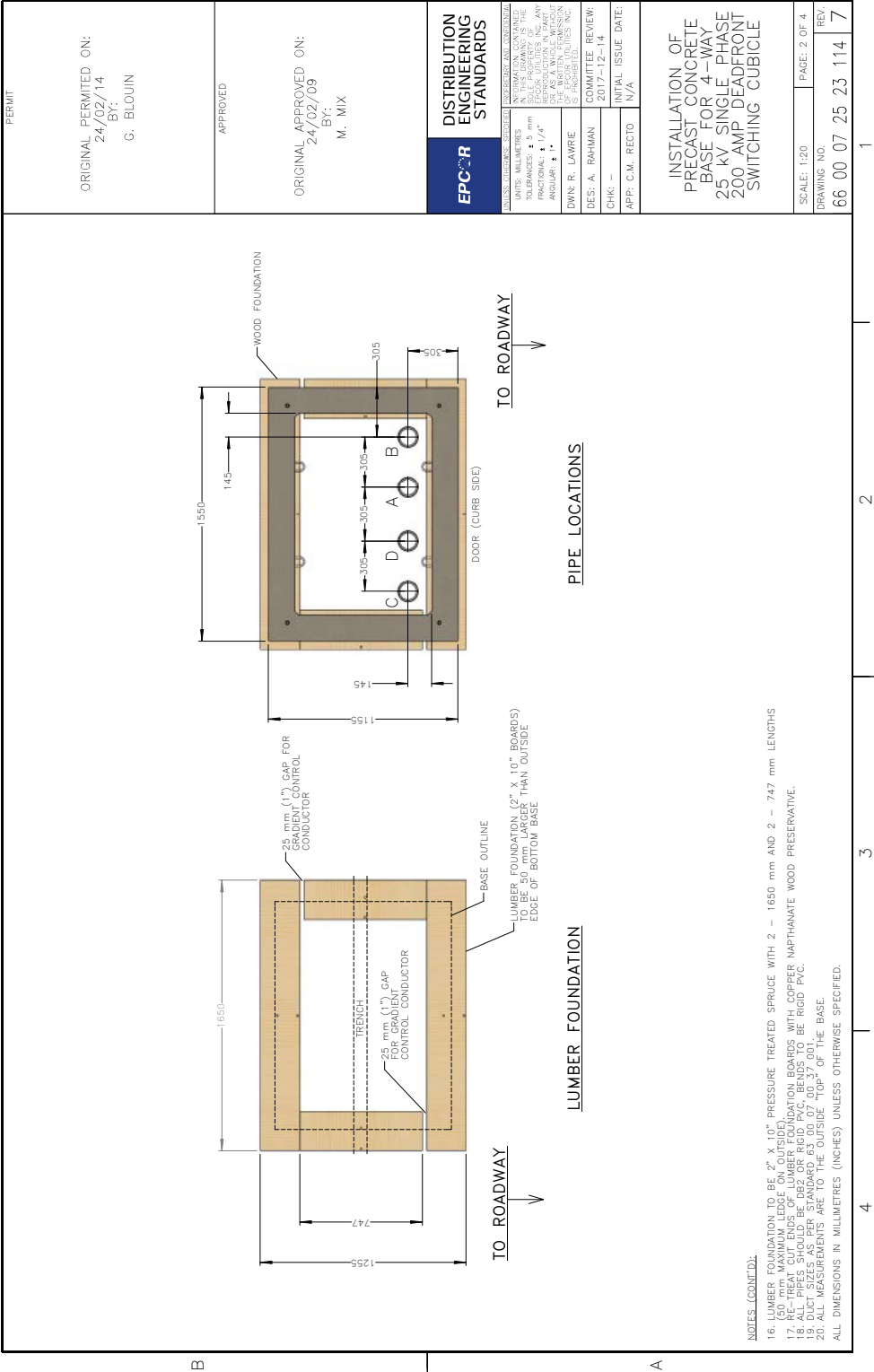
108

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25KV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE PAGE 1/4*



DRAWING 6.6

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25kV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE PAGE 2/4*



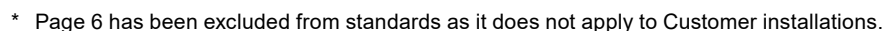
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25KV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE PAGE 3/4*

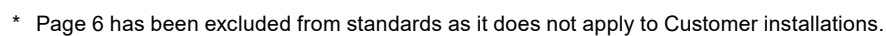
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 1/6*

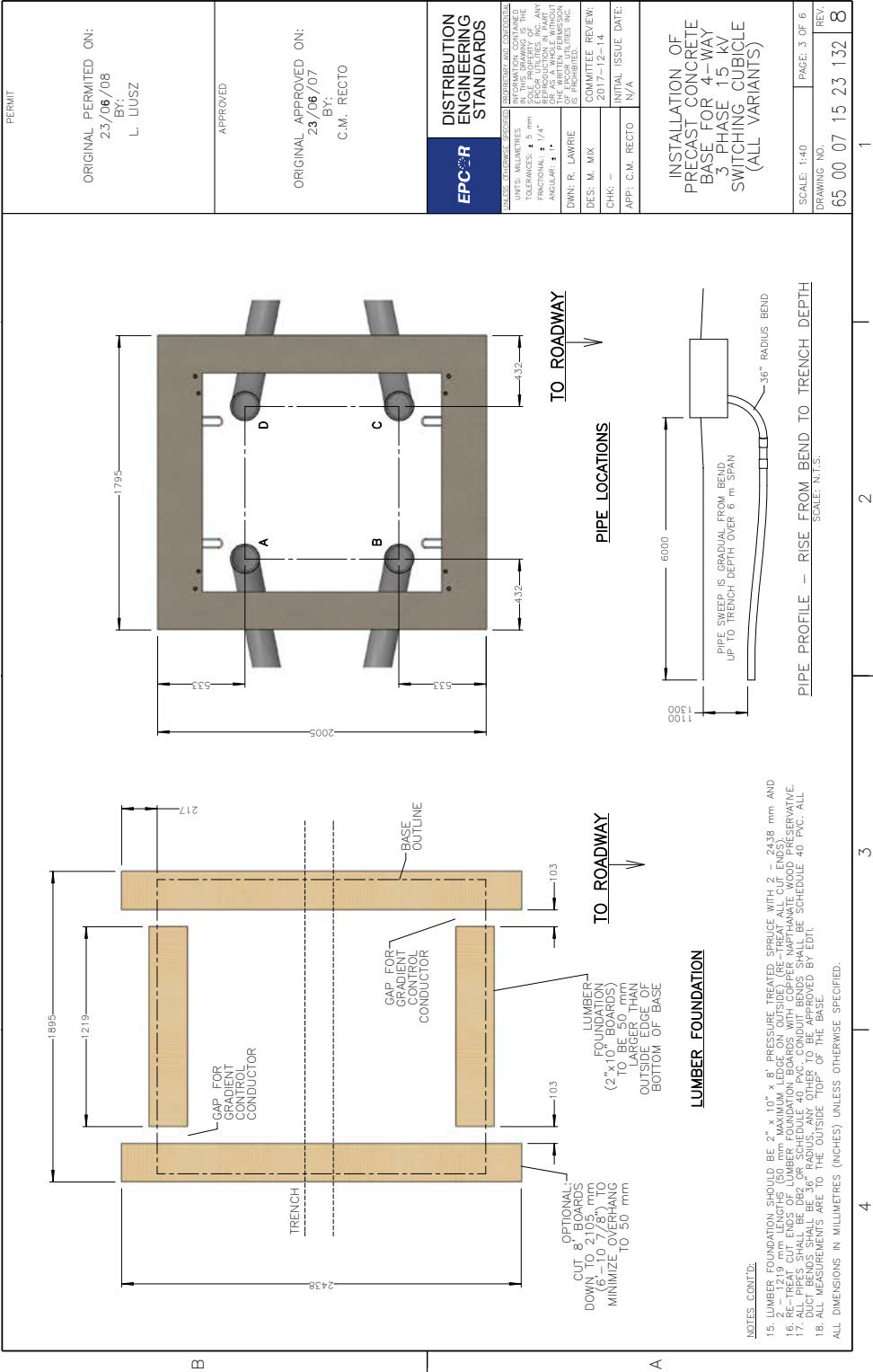


Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 2/6*



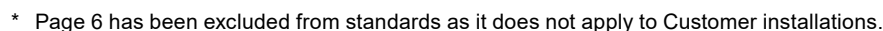
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 3/6*



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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 4/6*



DRAWING 6.7

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 5/6*

ITEM NO.		DESCRIPTION	STOCK NUMBER	QTY.
1		BASE PRECAST 600 AMP 15 KV 4-WAY 3 PHASE DEADFRONT SWITCHING CUBICLE	17282	1
2		ROD GROUNDING 5/8" X 5'	17288	8
3		CONNECTOR GROUND ROD 5/8" - 250 DOUBLE WIRE	09136	2
4		WIRE #14/0 STRANDED COPPER BARE	45955	36m
5		LUMBER SPRUCE PRESSURE-TREATED - 2" X 10" X 8' PWF (RE-TREAT ALL CUT ENDS)	13235	3
6		CONNECTOR GROUND ROD 5/8" - 250 1/C	31914	2
7		PIPE DUCT 20 FT.	AS REQ'D	A/R
		DB2 - 4"	53283	
		DB2 - 6"	42236	
		RIGID PVC - 4"	10083	
		RIGID PVC - 6"	10692	
8		ROAD CRUSH - 3/4"	N/A	A/R
9		BEND RIGID PVC	AS REQ'D	A/R
		4" - 90° 36" RADIUS PLAIN ENDS	22960	
		6" - 90° 36" RADIUS PLAIN ENDS	17787	
10		SAND	N/A	A/R
11		END BELL COLLAR	AS REQ'D	A/R
		RIGID PVC - 4"	20574	
		RIGID PVC - 6"	20889	
12		COUPLER - GROUND ROD - 5/8"	17289	4
13		COUPLING ADAPTER	AS REQ'D	A/R
		4" DB2 TO 4" DB2	55583	
		4" DB2 TO 4" PVC	38916	
		4" PVC TO 4" PVC	26695	
		6" DB2 TO 6" DB2	10299	
		6" DB2 TO 6" PVC	10284	
		6" PVC TO 6" PVC	34751	

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INSTALLATION OF
PRECAST CONCRETE
BASE FOR 4-WAY
3 PHASE 15 kV
SWITCHING CUBICLE
(ALL VARIANTS)

SCALE: 1:1

PAGE: 5 OF 6

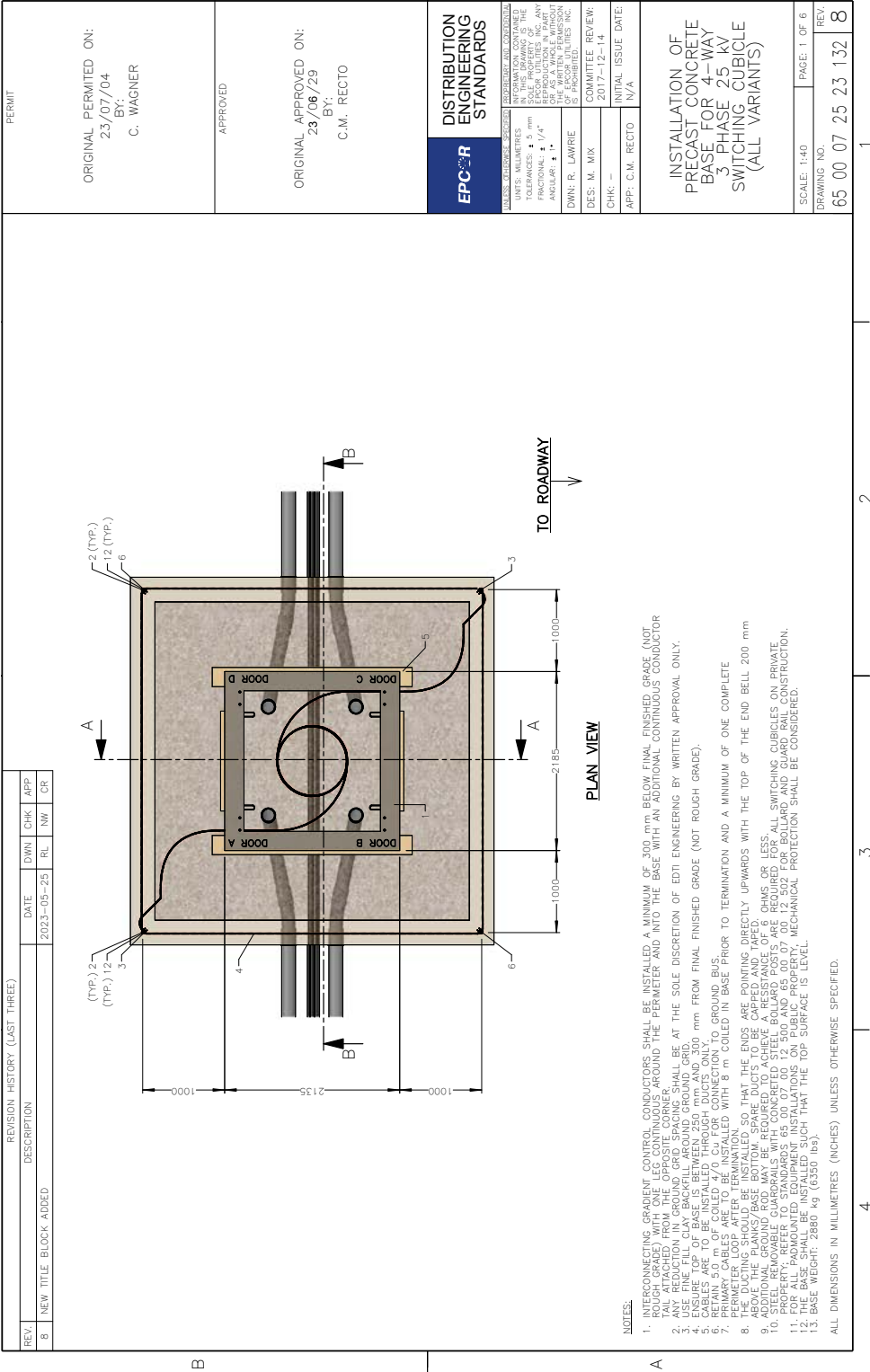
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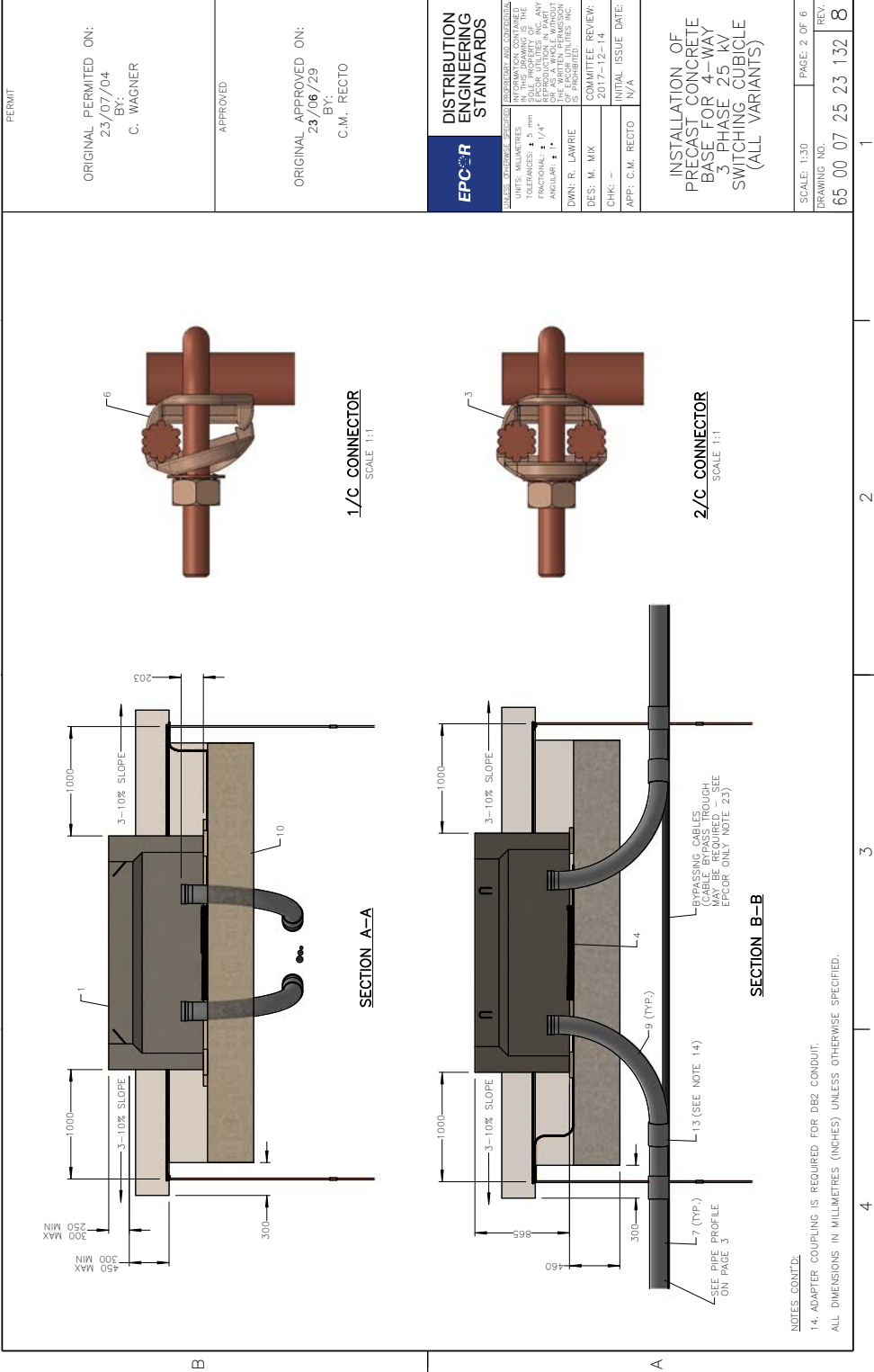
DRAWING 6.8

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 1/6*



DRAWING 6.8

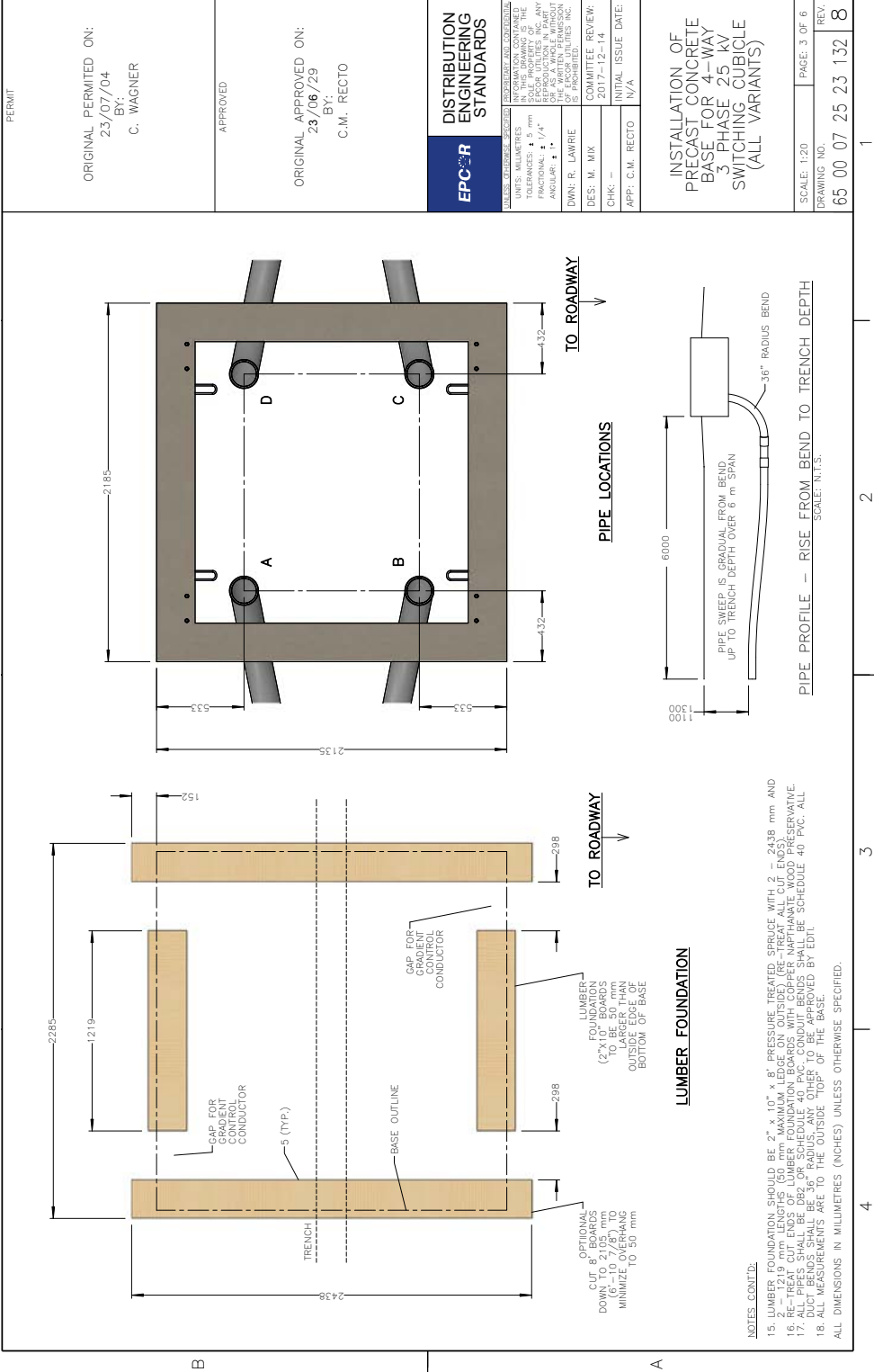
Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 2/6*



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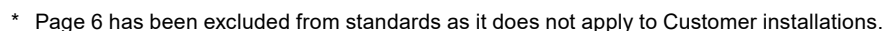
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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 3/6*



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Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25KV SWITCHING CUBICLE (ALL VARIANTS) PAGE 4/6*



DRAWING 6.8

Δ INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25kV SWITCHING CUBICLE (ALL VARIANTS) PAGE 5/6*

ITEM NO.	DESCRIPTION	STOCK NUMBER	QTY.
1	BASE PRECAST 600 AMP 25 KV 4-WAY 3 PHASE DEADFRONT SWITCHING CUBICLE	17253	1
2	ROD GROUNDING 5/8" X 5"	17288	8
3	CONNECTOR GROUND ROD 5/8" - 250 DOUBLE WIRE	09136	2
4	WIRE #4/0 STRANDED COPPER BARE	45655	36m
5	LUMBER SPRUCE PRESSURE-TREATED - 2" X 10" X 8" PWF (RE-TREAT ALL CUT ENDS)	13235	2
6	CONNECTOR GROUND ROD 5/8" - 250 1/C	31914	2
7	PIPE DUCT 20 FT.	AS REQ'D	A/R
	DB2 - 4"	53283	
	DB2 - 6"	42236	
	RIGID PVC - 4"	10083	
	RIGID PVC - 6"	10692	
8	ROAD CRUSH - 3/4"	N/A	A/R
9	BEND RIGID PVC	AS REQ'D	A/R
	4" - 90° 36" RADIUS PLAIN END	22960	
	6" - 90° 36" RADIUS PLAIN END	17787	
10	SAND	N/A	A/R
11	END BELL COLLAR - 6" PVC	AS REQ'D	A/R
	RIGID PVC - 4"	20574	
	RIGID PVC - 6"	20889	
12	COUPLER - GROUND ROD - 5/8"	17289	4
13	COUPLING ADAPTER	AS REQ'D	A/R
	4" DB2 TO 4" DB2	55583	
	4" DB2 TO 4" PVC	38916	
	4" PVC TO 4" PVC	26695	
	6" DB2 TO 6" DB2	10299	
	6" DB2 TO 6" PVC	10284	
	6" PVC TO 6" PVC	34751	

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COMMITTEE REVIEW:
2017-12-14
INITIAL ISSUE DATE:
N/A

INSTALLATION OF
PRECAST CONCRETE
BASE FOR 4-WAY
3 PHASE 25 kV
SWITCHING CUBICLE
(ALL VARIANTS)

SCALE: N.T.S.

PAGE: 5 OF 6

DRAWING NO.
65 00 07 25 23 132

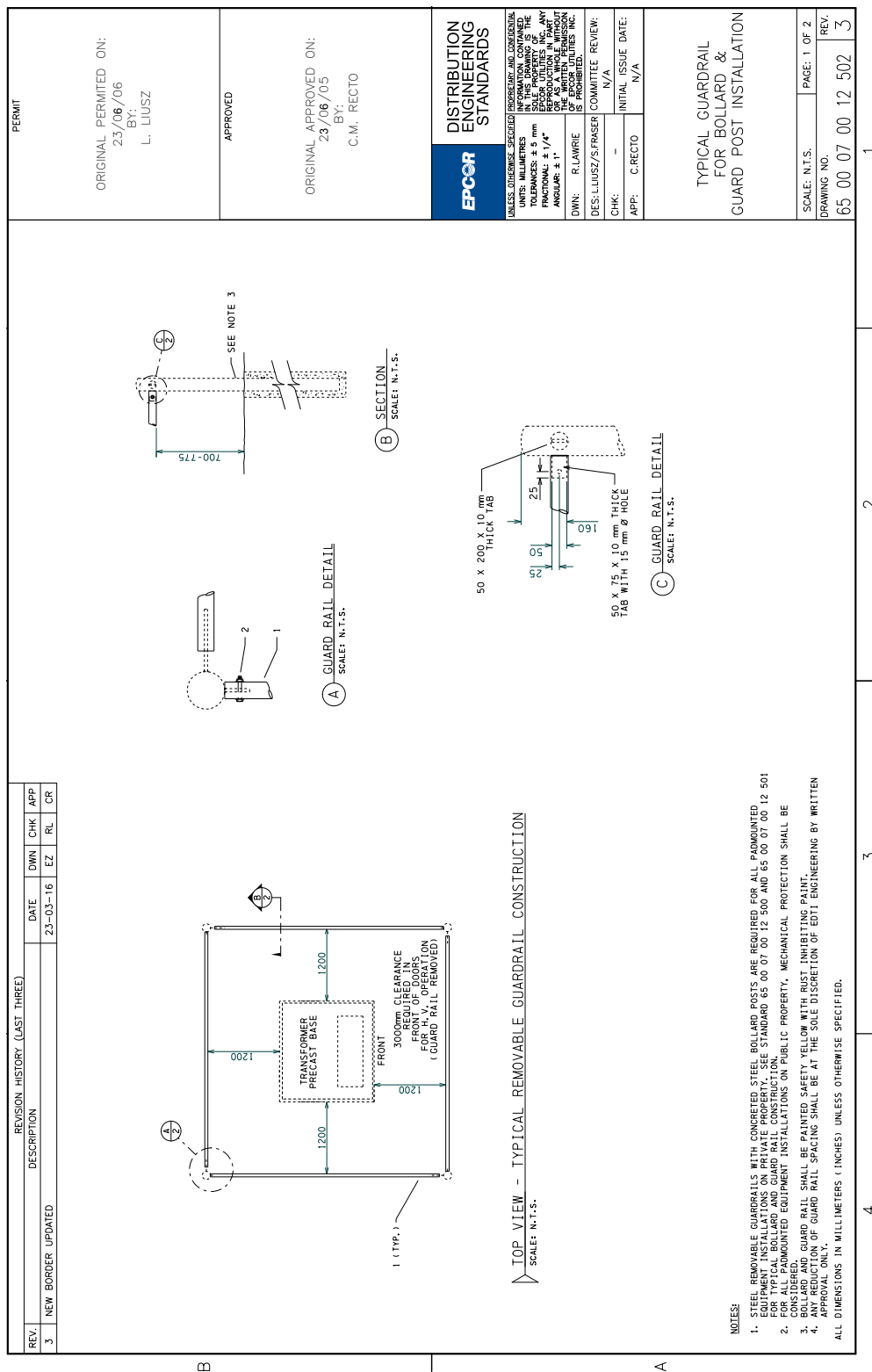
REV.
8

* Page 6 has been excluded from standards as it does not apply to Customer installations.

EDTI CUSTOMER CONNECTION GUIDE
Release Date: August 1, 2025 - Effective Date: August 1, 2025

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**Δ TYPICAL GUARDRAIL FOR BOLLARD & GUARD POST
INSTALLATION
PAGE 1/2**



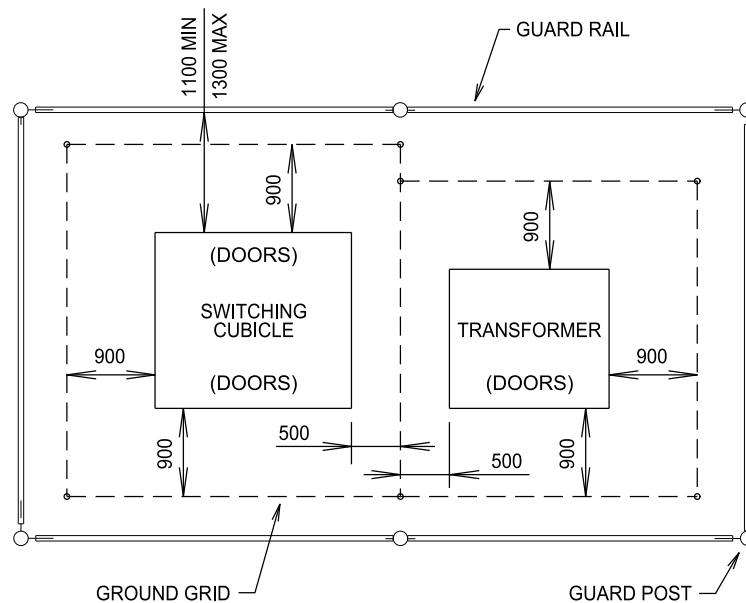
DRAWING 6.9

Δ TYPICAL GUARDRAIL FOR BOLLARD & GUARD POST
INSTALLATION
PAGE 2/2

PERMIT		ORIGINAL PERMITTED ON: 23/06/06 BY: L. LIUSZ	
APPROVED		ORIGINAL APPROVED ON: 23/06/05 BY: C.M. RECTO	
EPCOR		DISTRIBUTION ENGINEERING STANDARDS	
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TYPICAL GUARDRAIL FOR BOLLARD & GUARD POST INSTALLATION		SCALE: N.T.S. DRAWING NO. 65 00 07 00 12 502	
PAGE: 2 OF 2 REV. 3		1 2 3 4	

DRAWING 6.10

GROUND GRID REQUIREMENTS FOR 15kV AND 25kV SWITCHING CUBICLES AND THREE PHASE TRANSFORMER NEXT TO EACH OTHER



NOTE:

1. 3000 mm CLEARANCE REQUIRED IN FRONT OF ANY DOOR FOR HIGH VOLTAGE OPERATION.



CUSTOMER CONNECTION
GUIDE

GROUND GRID REQUIREMENTS FOR 15 kV &
25 kV SWITCHING CUBICLES AND THREE
PHASE TRANSFORMERS NEXT TO EACH OTHER

DATE REVISED:
2017-01-23

DRAWING NO. :
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PAGE NO.
1 / 1

Δ BOLLARDS AND GUARD POST INSTALLATION USING 4 INCHES DIAMETER SCHEDULE 40 STEEL PIPE PAGE 1/2



DRAWING 6.11

Δ BOLLARDS AND GUARD POST INSTALLATION USING
4 INCHES DIAMETER SCHEDULE 40 STEEL PIPE
PAGE 2/2

PERMIT		ORIGINAL PERMITTED ON: 23/06/06 BY: L. LIUSZ	
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BOLLARDS AND GUARD POST INSTALLATION USING 4 INCHES DIAMETER SCHEDULE 40 STEEL PIPE		SCALE: N.T.S. PAGE: 2 OF 2 DRAWING NO. 65 00 07 00 12 500 REV. 3	

ITEM	PART DESCRIPTION	STOCK No.	QTY.
1	POST CORNER STEEL 4" SCH 40 (C/W BRACKETS & CAP) FOR TX BARRICADES	21835	4/R
2	LUG 4/0 COMPRESSION 1 HOLE COPPER	29531	1
3	1/2" x 6" HEX HEAD MACHINE BOLT W/ NUT	N/A	1
4	CONNECTOR GROUND 5/8" ROD - 250 1/C	31914	1
5	WIRE #4/0 STRANDED COPPER BARE	45655	4/R
6	ROD GROUNDING 5/8" x 5'	17288	1

Δ PRECAST BASE / PREFABRICATED BOLLARDS AND GUARD POSTS INSTALLATION PAGE 1/2



Δ PRECAST BASE / PREFABRICATED BOLLARDS
AND GUARD POSTS INSTALLATION
PAGE 2/2

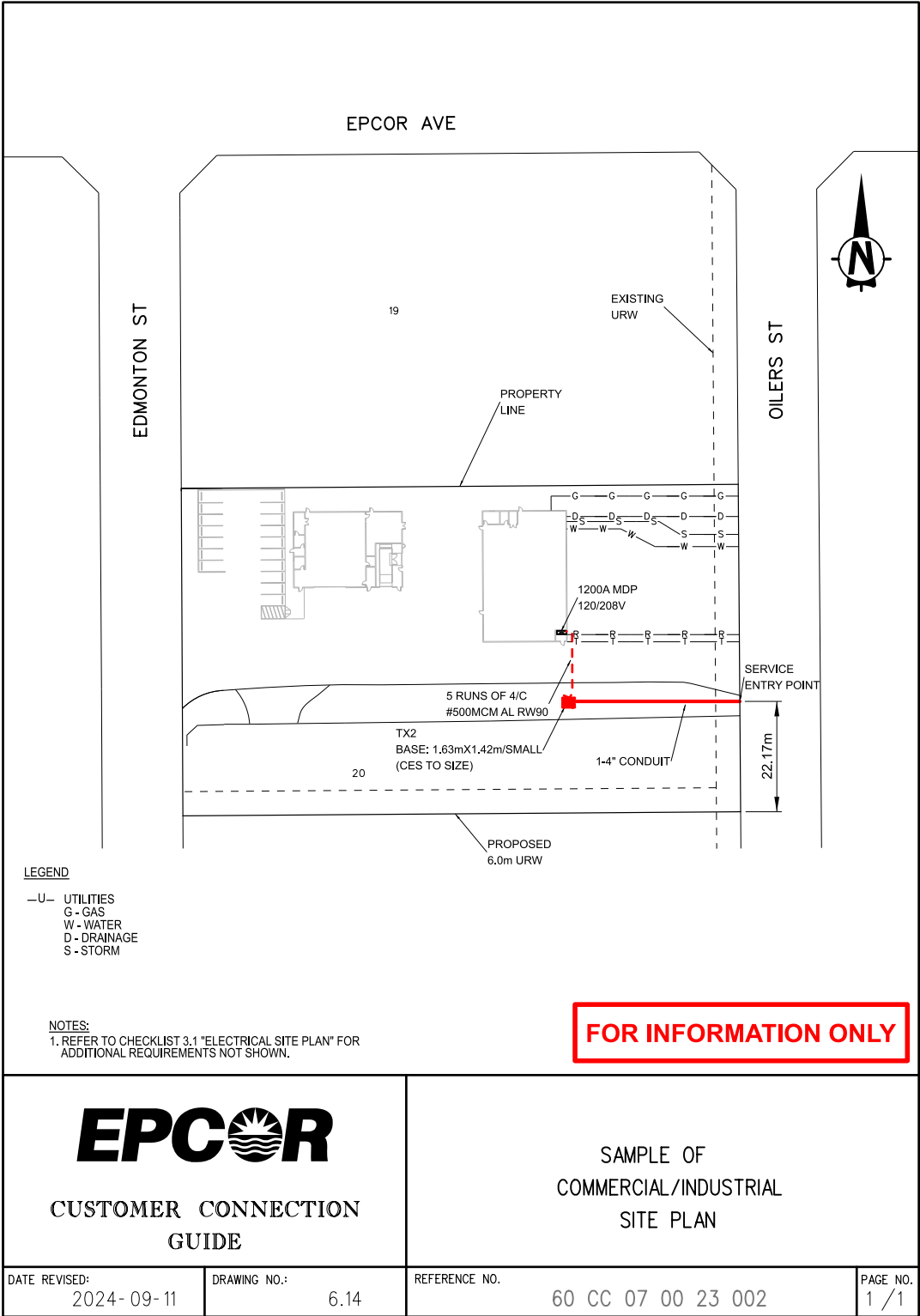
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PRECAST BASE/ PREFABRICATED BOLLARDS AND GUARD POSTS INSTALLATION		SCALE: N.T.S. DRAWING NO. 65 00 07 00 12 501	
PAGE: 2 OF 2 REV. 3		1	
2		3	
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Δ INSTALLATION OF SCREW PILES



DRAWING 6.14

Δ SAMPLE OF COMMERCIAL/INDUSTRIAL SITE PLAN



7.0

Primary Metered Service

7.1 GENERAL INFORMATION

- a. Primary service connections may require in excess of one year lead time prior to the start of construction. Factors in this long lead time are where off-site construction is required, and where ordering primary service equipment from the manufacturer is required. This lead time begins when the servicing details are finalized, and the Customer Acceptance portion of the estimate letter is returned and payment is made.
 - i. EDTI strongly recommends Customers engage an electrical consultant/Engineer early in the design process to determine the primary servicing requirements for their project, and to submit their application for primary service at least 18 months prior to the date service is requested.
- b. Primary metered services are available in the 15kV or 25kV areas only.
- c. Typical installations include very large commercial applications where the demand load will exceed 2,500kVA to one building, an industrial lot with a single Customer, or a commercial lot with a single Customer.
- d. Please see [Table 3.1 – Project Overview](#) for a summary of your responsibilities as the Customer and the responsibilities of EPCOR Distribution and Transmission Inc. (EDTI).
- e. If you decide you require a primary metered service, please visit the [Apply for Connection page](#) and click Apply for Power.
- f. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

7.2 SERVICE TYPE GENERAL REQUIREMENTS

- a. The allowable service size is governed by many factors. Please [contact us](#) for details regarding your specific project/site.
- b. 15kV primary metered services are not permitted within EPCOR's 25kV area, and 25kV primary services are not permitted within EPCOR's 15kV area. If you're in a 5kV area, please [contact us](#) for information on conversion to 15kV. Refer to [Drawings 3.1](#), [3.2](#), and [3.3](#) for the primary voltage in your area, and [contact us](#) for confirmation.

7.3 SWITCHGEAR SUBMISSION DRAWINGS

- a. Submitted drawings must include:
 - i. A site plan containing the duct routing for the main feeder, including location and angle of bends, corner-to-corner distance between bends, any changes in elevation and detailed manhole drawings (including drainage).
 - ii. Complete single-line diagrams showing interlock, all instrument and power transformers, fuses, relays, megavolt-amps (MVA) rating of Customer switchgear, standby generation, transformer sizes, and types of winding, as well as other appropriate information. The control and protection schematic should show the breaker direct current (DC) control wiring, the transfer scheme between the main feeder, the standby feeders, and the pilot wire contacts, where required.
 - iii. Plans showing the switchgear layout in the electrical room, duct and cable routing, and details of EDTI Customer Engineering Services' cable termination cell.

- iv. Shop drawings of the proposed switchgear.
- v. Switchgear must be approved for service entrance.
- vi. Switchgear and electrical room layout details, including provisions for pilot wire relaying, where required.
- vii. Three sets of main breaker specifications and operating conditions.
- viii. Confirmation of the DC power supply for EDTI's pilot wire relay, if applicable.

7.4 SERVICE DUCTS

- a. All permanent commercial services must be in duct.
- b. High Density Polyethylene (HDPE) ducts shall not be permitted, even when certified for the intended use.
- c. The Customer must supply and install a spare conduit between the service entrance point and switchgear to accommodate the replacement of the conductor in the event of a cable fault.
- d. Duct must be installed where primary cable is deemed inaccessible by EDTI.
- e. All ducts must be equipped with bell collars at their ends to avoid damaging the cable.
- f. The installation of primary service cable under buildings/structures is not permitted, even when in duct.
- g. The Customer will provide all conduits, handholes, and manholes required for installing the electrical services on the Customer's property. EDTI approved product shall be used, including rigid PVC, DB2, Carlon Borguard, or Terracon.
- h. The Customer cannot install ducts into an energized manhole or handhole.
- i. Conduit size requirements for primary cables depend on cable size and voltage. See [Drawing 3.1](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.
- j. Service conduits installed by contractors working on behalf of other utilities or the City of Edmonton must follow EDTI's construction standards. Contractors must not work within 1.0m of any electrical equipment.
- k. When EDTI conduits have been stubbed to the property line, Customers must first confirm that the conduit exposed is the correct one, and then connect their supply conduit to EDTI's conduit. [Contact us](#) to arrange for conduit verification.
- l. Where gas easements/utility rights-of-way exist, the service ducts are to be extended past the gas easement/utility right-of-way and capped.
- m. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Section 7.6 – Ground-Mounted Handholes](#) for more information.
- n. The Customer shall be responsible for installing and maintaining conduit sealing, and a suitable means of drainage, for ducts entering a building, per the Canadian Electrical Code.

7.5 DUCT BENDS

- a. All bends exiting transformers and cubicles must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- b. An additional 3,000mm (10 ft.) horizontal section of rigid, thick-walled PVC must be attached to the bend.
- c. All bends must be equipped with bell collars to avoid damaging the cable.
- d. All spare bends are to be covered (taped or covered by some other suitable method) to prevent material falling into them.
- e. Primary ducts exiting switching cubicles must be identified (i.e. identify the piece of equipment the pipe services).
- f. Precast concrete pad must be removed before inserting additional ducts into existing pads.
- g. See [Drawings 3.1](#), [3.2](#) and [3.3](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.

7.6 Δ GROUND-MOUNTED HANDHOLES

- a. EDTI reserves the right of final approval of the handhole size and location.
- b. Communication cables cannot share the same handhole with primary or secondary cables.
- c. Customer-owned facilities cannot share the same handhole with EDTI facilities.
- d. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Drawing 6.1](#) for details.
- e. The cumulative total of all bends between pulling points shall not exceed 360 degrees of bends.
- f. The size of ground-mounted handhole you require depends on the type of cable being installed. See [Table 6.1](#) for details.
- g. Conduits must enter and leave the handhole at the same level.
- h. All bends and conduits entering/exiting handholes, manholes, or vaults must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- i. All customer manhole and handhole lids shall be traffic rated for H-25/HS-25.
- j. Δ Conduits shall not enter/exit through the same wall.

7.7 HANDHOLES IN BUILDINGS

- a. EDTI reserves the right of final approval of the handhole size and location.
 - i. Handholes in buildings must be sized according to EDTI requirements, and shall only be permitted in the electrical room.
 - ii. When installed, handholes shall be lockable and be clearly marked “EPCOR Access Only”.
 - iii. [Contact us](#) to discuss your specific installation.

- b. Communication cables cannot share the same handhole with primary or secondary cables.
- c. Customer-owned facilities cannot share the same handhole with EDTI facilities.
- d. If pulling lengths exceed the maximum pulling tension of the cable, a handhole must be installed.
- e. The cumulative total of all bends between pulling points shall not exceed 360 degrees of bends.
- f. See [Table 6.1](#) for information on primary cable dressing and pulling radius.

7.8 SWITCHING CUBICLES

- a. EDTI reserves the right of final approval for the location of facilities.
- b. EDTI requires truck access to on-property transformers, switching cubicles, poles, and handholes where EDTI will be installing the cable. See [Section 3.16 – Equipment Access](#) for more information.
- c. EDTI will supply, install, and maintain required switching cubicles, and perform all required primary conductor terminations at the switching cubicle and Customer's switchgear.
- d. When a switching cubicle is required on the Customer's property, the Customer must provide the precast concrete bases with an appropriate ground grid and guardrails. Please see [Section 6.5 – Ground Grids and Guardrails for Padmounted Equipment](#).
- e. When a switching cubicle is required for servicing it must be placed on the Customer's site within a registered utility Right-of-Way (easement). See [Section 3.8 – Easements and Utility Rights-of-Way](#) for details.
- f. Switching cubicles must be connected to EDTI's main line in such a manner as to provide a loop feed. No radial-fed cubicle installations will be allowed on private property.
- g. When the Customer is required to install a switching cubicle base, it shall be constructed in accordance with:
 - [Drawing 6.5 – Installation of Precast Concrete Base for 4-Way Single Phase 15kV 200A Dead Front Switching Cubicle](#)
 - [Drawing 6.6 – Installation of Precast Concrete Base for 4-Way Single Phase 25kV 200A Dead Front Switching Cubicle](#)
 - [Drawing 6.7 – Installation of Precast Concrete Base for 4-Way 3 Phase 15kV Switching Cubicle \(All Variants\)](#)
 - [Drawing 6.8 – Installation of Precast Concrete Base for 4-Way 3 Phase 25kV Switching Cubicle \(All Variants\)](#)
- h. The fault indicator lights adjacent to the "B" compartment of switching cubicles must face the main road.
- i. Excavation for transformer and switching cubical bases shall be stepped so that the native backfill is not disturbed under the ground grid area. This will help prevent rods bending and deformation of the ground grid during backfilling and compaction. The area where the ground grid and rods are installed shall not be excavated deeper than required to install the ground grid.
- j. The bottom of the excavation where the base will be installed requires 300mm of compacted 20mm crushed gravel.

- k. Proper sub-base compaction is crucial to ensure transformer and switching cubicle bases are installed correctly. Ensure that 20mm crushed gravel is compacted in lifts of 150mm or less, at optimal moisture. See [Drawings 6.3, 6.4, 6.5, 6.6, 6.7, and 6.8](#).
- l. Pressure-treated lumber is required under all switching cubicle bases and Single phase transformer bases, per [Drawings 6.3, 6.5, 6.6, 6.7, and 6.8](#).
- m. If the location of the precast base is within 4.0m of a building foundation or if soil conditions do not support precast bases, engineered screw piles or concrete piles must be installed.
 - i. When piles are used, wood planks shall not be used. The concrete pad shall sit directly on pile cap/plate. If shims are required, steel shims affixed with welds or appropriate construction adhesive may be used. Drawings authenticated by a Professional Engineer registered in the Province of Alberta with APEGA shall be supplied to EDTI before EDTI will grant approval.
 - ii. When piles are used, the duct bends shall not be less than 36 in. radius bends.
 - iii. See [Drawing 6.13 – Installation of Screw Piles](#) for screw pile installation requirements.
- n. Customer shall submit compaction test reports for all pad installations on site. If adequate compaction cannot be achieved, piles are required. See [Section 3.12 – Trenching and Backfilling](#) for compaction and backfill requirements.
- o. The use of 24 in. bends may be permitted where the edge of the base is within 9.14m (30 ft.) of the property line. This option shall not be used in conjunction with screw piles. Special care to achieve proper compaction is necessary to avoid pull out.
- p. No obstructions that could interfere with high-voltage switching—such as large rocks, decorative boulders, trees, and fences—shall be allowed within 3.0m on the door sides of transformers and switching cubicles.
- q. Within 3.0m of padmounted equipment, landscaping must slope away from the base for proper drainage and safe operational switching per [Drawings 6.3, 6.4, 6.5, 6.6, 6.7, and 6.8](#).
- r. Equipment must not be subject to flooding under runoff conditions.
- s. Rough grade must be established at 100mm to 150mm below final grade and marked on the base prior to inspection.
- t. The height of the top of the concrete base must be between 250mm and 300mm above final grade.
- u. Curbs within 3.0m of the door sides of transformers and switching cubicles require approval from EDTI prior to construction.
- v. When a switching cubicle base is installed, the Customer must install a pull string in each duct between the cubicle and Customer's switchgear.
- w. When padmounted equipment is to be located on top of a structure, other than a precast base, authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA must be submitted to EDTI.

7.9 GROUND GRIDS AND GUARDRAILS FOR PADMOUNTED EQUIPMENT

- a. Transformers and switching cubicles must be protected from mechanical damage. Customers are required to provide guardrails for all installations of transformers and switching cubicles on private property.
- b. Guardrails must have removable sections in front of the doors of equipment, as per [Drawings 6.3](#) and [6.4](#) for transformers, and [Drawing 6.9 – Typical Guardrail for Bollard & Guard Post Installation](#) for switching cubicles. Please note that switching cubicles have two sets of doors, requiring removable sections in front of each.
- c. A single welded stud on the guardrail post in lieu of a double bolt connect shall be permitted, so long as the same size bolt is used, and the weld interface is not a spot or stitch weld (e.g.: full weld all around).
- d. Customers are responsible for installing ground grids around all padmounted equipment. They must consist of four copper-clad ground rods interconnected by 4/0 bare copper grounding conductor and an additional two 4/0 bare copper grounding conductor tails, connected to the ground bus of the equipment.
- e. A sufficient length of #4/0 bare copper grounding conductor must be installed to allow 5.0m (no more or less) to be left above the top of the precast transformer base. The conductor must be left in an organized manner to allow for easy removal and shaping.
- f. Ground rod resistance must measure 6 ohms or less.
- g. All stubbed ducts shall extend a minimum of 1.0m past the ground grid's outer edge.
- h. The minimum distance to the property line for the ground grids of padmount transformers and switching cubicles is 1.0m.
- i. When non-EDTI equipment or buildings/structures are placed within 3.0m of the edge of EDTI equipment, the ground grid of the EDTI equipment must be bonded using two tails to the ground of the non-EDTI equipment or buildings/structure. The Customer must show details on the power plan of how the bonding is to be achieved. The detail must also show the clearance between the edge of the EDTI equipment and non-EDTI equipment/ buildings/structure. The non-EDTI equipment or buildings/structure cannot be installed within 1.0m of the EDTI ground grid; and may not be located within the guardrails.
- j. Ground grids for padmount equipment located on the top of a parkade must be bonded to the rebar of the building with two #4/0 conductors terminating to a remote ground grid. These conductors must be physically separated. The equipment base must be encircled by a #4/0 bare copper conductor embedded in the concrete 900mm outside of the base. The gradient control conductor must be bonded to the rebar in the four corners, with two tails from alternate corners entering the base and a length of 5.0m extending above the top of the base. Authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA must be submitted to EDTI.

- k. See [Drawing 6.10 – Ground Grid Requirements for 15kV and 25kV Switching Cubicles and Three Phase Transformers Next to Each Other](#) for ground grid requirements when cubicles and transformers are next to each other.
- l. Fine-grain clay backfill is required around the ground grid.
- m. Special care must be taken to ensure that the subgrade around and under the base is compacted without damaging the ground rods, ground grid or the ground conductors (tails).

7.10 CONDUCTORS

- a. See [Drawing 3.1](#) for primary voltage and [Table 6.1](#) for primary cable, duct, and handhole standards.

7.11 CABLE INSTALLATION

- a. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Section 6.9 – Ground-Mounted Handholes](#) for more information.
- b. Telephone and television cables can be installed in the same trench as power conductors. Design drawings must be forwarded to the appropriate organizations for their approval.
- c. Cable cannot be installed on building footings or weeping tile.
- d. Primary cable ends must be wrapped with elastomeric tape (e.g. Greenline) to prevent the migration of moisture in the cable before testing. Elastomeric tape must be wrapped in a spiral shape overlapping half of each previous wrap at a time and then covered with black low-voltage vinyl tape. A minimum of two layers of half-lapped tape is to be applied. Immediately after testing, heat shrink caps must be installed on primary cable ends.
- e. EDTI will terminate primary conductors to line side of the Customer's main breaker and the cubicle.
- f. EDTI will supply and install all primary conductors in the Customer-prepared conduit after the primary ductwork has passed an electrical inspection. Multi-family sites are an exception to this rule.
- g. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

7.12 COORDINATION STUDY

- a. A coordination study, prepared by a Professional Engineer registered in the Province of Alberta with APEGA, shall be submitted to EDTI for approval. The study must include the following information:
 - i. Two sets of drawings, one for phase current and the other for residual current, plotted on "log-log" graph paper.
 - ii. EDTI's relay time/current characteristics that are provided by the utility to the Customer
 - iii. Relay time/current characteristics at the Customer's incoming feeder and at least one level downstream from the incoming feeder.
 - iv. Types of relays with proposed settings, size, and type of fuses (ANSI type).
 - v. Size and characteristics of any other protective devices.
 - vi. Single-line sketch indicating the protective elements covered by the study.

7.13 SWITCHGEAR

- a. Switchgear must be approved for service entrance.
- b. All enclosures housing live parts on the line side of the main breaker must bear a warning sign stating “Access Limited to EPCOR Distribution Only” per the Canadian Electrical Code.
- c. Precautionary measures are to be taken to prevent water entering the top-connected switchgear.
- d. The interrupting capacity of main switches and breakers must be sized according to [Table 3.3 – Main Switch or Breaker Minimum Interrupting Capacity](#).
- e. If the Customer's connected load will be above 3MVA, breakers must be provided instead of loadbreak switches.
- f. The Customer must provide and maintain overcurrent protection in accordance with Section 14 and Rule 36-204 of the Canadian Electrical Code – Part I.
- g. Protection devices must be verified and acceptable to EDTI to ensure compatibility with our distribution system's overcurrent protection.
- h. The Customer must provide 20mm grounding ball on main bus and ground bus in a clearly identified location. Fitted insulation caps for the grounding balls shall be provided and installed in the incoming cell.
- i. The Customer must provide space for and install EDTI-supplied revenue metering current and potential transformers in the Customer's switchgear on the load side of the main breaker.
- j. The minimum clear distance between different polarities/phases, and live and case/grounded parts for the terminations, shall be required as per [Table 7.1 – Cable Terminations in Customer-Owned Switchgear](#).
- k. Space must also be provided within the Customer's switchgear for terminating the primary feeders. [Contact us](#) prior to designing, specifying, or ordering switchgear for specific requirements.
- l. A permanent, legible, single-line diagram of the switchgear and operating instructions will be provided by the Customer. It must be under a frame of glass in a noticeably visible location within sight of the switchgear. The markings on the switchgear must cross-reference the diagram.
- m. The Customer shall provide and install lamacoids for EDTI Control Designation as per [Drawing 7.2 – Customer Owned Switchgear Lamacoid Label Dimensions](#).
- n. The Customer is responsible for providing regular maintenance on all facilities on their side of the point of service and keeping a record of maintenance. Proof of maintenance must be provided upon our request.
- o. Automated or manual transfer to the standby feeder will be permitted on a “break before make” scenario. Switching between feeders requires prior permission from EDTI's Control Centre.
- p. EDTI has the right to examine and confirm all proposed settings of the Customer's protection equipment to ensure compatibility with our protection devices.
- q. EDTI reserves the right to determine whether pilot wire relaying is required on the service. The Customer must provide for pilot wire relaying and associated instrumentation transformers, if deemed necessary by EDTI.
- r. EDTI has the right to witness all commissioning of the new service as EDTI deems necessary in its sole option.

7.14 BREAKER SPECIFICATIONS (MAIN SERVICE)

- a. Breakers must have a maximum total clearing time of five cycles.
- b. Protection and alternating current (AC) tripping-current transformers must have adequate ratings to operate the relays, and be designed to function properly under maximum fault conditions.
- c. A direct current (DC) supply, from storage batteries, must be provided for tripping the 13.8kV and 25kV circuit breakers on the main incoming feeders from EDTI's distribution system. Battery control power must comply with Rule 14-308 of the Canadian Electrical Code – Part I.

7.15 PROTECTION AND CONTROL REQUIREMENTS (OVERCURRENT PROTECTION)

- a. The Customer will provide overcurrent protection on electrical systems on the Customer's side of the point of service, in accordance with the Canadian Electrical Code – Part I.
- b. A protection Coordinating Time Interval (CTI) of 0.3 seconds for relays and 0.2 seconds for fuses is required.
- c. Phase and residual overcurrent relays with instantaneous and inverse time characteristics are required on the main breaker.
- d. To coordinate with EDTI's system relays, the relay curves cannot exceed:
 - i. On the 25kV system, the equivalent of an EEI-NEMA #100 K fuse
 - ii. On the 15kV system, the equivalent of an EEI-NEMA #140 K fuse
- e. If the requirements noted above cannot be achieved, [contact us](#) to discuss possible alternatives.

7.16 Δ PROTECTION WITH PILOT WIRE RELAYING

In general, this is a requirement for dedicated feeders. When we require pilot wire relaying, the Customer will do the following:

- a. Δ Provide adequate space for EDTI to mount pilot wire relaying equipment including but not limited to protective relays, auxiliary relays, lockout relays, and functional test (FT) switches. Arrangement of space for equipment to be confirmed with EDTI during design development.
- b. Include provisions for our relays to trip and electrically block closing of their main breakers.
- c. Δ Supply a nominal 129V, direct current, (129V, DC), continuous output, ungrounded power supply. Power supply amperage requirements to be confirmed with EDTI during design development. DC Battery control power must comply with Rule 14-308 of the Canadian Electrical Code – Part I.
- d. Provide space near the entry point of the 53mm (2 in.) pilot wire conduit into the electrical room. The space is required for installing cabinets and boxes containing pilot wire relaying equipment.

7.17 AERIAL SERVICES

- a. EDTI Customer Engineering Services will only allow aerial industrial service connections in special circumstances. To verify whether your service connection applies, [contact us](#).
- b. Installation must comply with Part 1 of the Canadian Electrical Code and the Alberta Electrical Utility Code.
- c. See [Section 4 – Aerial Secondary Service](#) for more information related to overhead services.

7.18 COMMISSIONING

- a. Prior to commissioning of the electrical service, the Customer must submit the following to EDTI, in writing and under the seal of a registered Professional Engineer:
 - i. As-built drawings.
 - ii. Confirmation of the operational readiness of the main service equipment.
 - iii. Test reports on the Customer's protection equipment, verification of transfer characteristics of the main breakers, and confirmation that a key-interlock system is safe and functional.
 - iv. Field calibration tests on the overcurrent relays with verification of the response time for 1.5, 6, and 20 times the tap setting.
 - v. Field saturation checks on the current transformers and measurement of the direct current (DC) resistance burden on each current transformer.
 - vi. Confirmation of the DC power supply for EDTI's pilot wire relay.
 - vii. Confirmation that trip checks will be performed from protection schemes to circuit breakers prior to energization.
 - viii. Confirmation that load and vector checks will be performed at the relay terminals upon energization of the electrical service.
- b. EDTI Customer Engineering Services reserves the right to witness all checking and testing, and meet with the Customer's operator to confirm the rules for operating the main incoming feeder.

IMAGE 7.1

EXAMPLES OF FULLY INSULATED SWITCHGEAR TERMINATIONS



Δ CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

PAGE 1/5

EDTI CUSTOMER CONNECTION GUIDE
Release Date: August 1, 2025 - Effective Date: August 1, 2025

DRAWING 7.1

CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

PAGE 3/5

PERMIT

PERMIT TO PRACTICE

EPCCOR DISTRIBUTION & TRANSMISSION INC.

MANUFACTURING

77109

2024-01-12

PERMIT NUMBER: P007061

The Association of Alberta, Inc. (A.A.A.)

I confirmed that

PROFESSIONAL ENGINEER ALBERTA

M. RECTO

2024 January 09

EPCCOR

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FRACTIONAL: ± 1/4"

ANGULAR: ± 1/4°

DWN: R. LAWRE

DES: C. M. RECTO

CHK: -

APP: C.M. RECTO

COMMITTEE REVIEW: YEAR-MM-DD

INITIAL ISSUE DATE: N/A

CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

SCALE: N.T.S.

PAGE: 3 OF 5

DRAWING NO. 63 00 07 15 48 238

REV. 2

TERMINATOR SPACING REQUIREMENTS

SEE FIG. 1 FOR DIAGRAM REFERENCE

STOCK NUMBER	TYPE	INSULATION LEVEL	PHASE-TO-PHASE EXPOSED LIVE PARTS (A)	PHASE-TO-GROUND EXPOSED LIVE PARTS (B)	INSULATION PHASE-TO-PHASE, PHASE-TO-GROUND (C)	INSULATED TERMINATION POTENTIAL (D)
74316	3M QT I/QT III TERMINATOR KIT	15kV	190 mm	127 mm	30 mm	20 mm
26617	RATCHM/TE FFT-51E-G	15kV	175 mm	100 mm	35 mm	23 mm
26616	RATCHM/TE FFT-51E-G	15kV	175 mm	100 mm	35 mm	23 mm
75212	3M QT I/QT III TERMINATOR KIT	25kV	287 mm	190 mm	35 mm	23 mm
NA	RATCHM/TE	25kV	225 mm	150 mm	40 mm	25 mm

BUS COVER REQUIREMENTS:

1. PREFERRED INSULATION SCHEME FOR THE BUS AND LIVE PARTS IS CUSTOM BUS COVERS MANUFACTURED BY A THIRD PARTY FOR PROPER FIT.

2. TAPING THE BUS IS NOT PREFERRED BUT MAY BE ALLOWED AS AN ALTERNATIVE IN SOME CASES. THIS REQUIRES ENGINEERING APPROVAL.

3. EXCEPTIONS TO BUS COVER REQUIREMENTS MAY BE CONSIDERED ON A CASE-BY-CASE BASIS AND REQUIRES ENGINEERING APPROVAL.

1

2

3

4

A

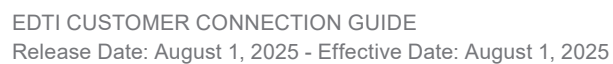
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EDTI CUSTOMER CONNECTION GUIDE

Release Date: August 1, 2025 - Effective Date: August 1, 2025

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CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR
PAGE 4/5



DRAWING 7.1

CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

PAGE 5/5

PERMIT

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EPCOR DISTRIBUTION & TRANSMISSION INC.

IN STRUCTURE

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2024-01-12

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The Association of Alberta, Inc. (A.A.A.)

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M. RECTO

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TOLERANCES: ± 5 mm

FRACTIONAL: 1/4"

ANGULAR: 1/4°

DESIGN: R. LAWRE

COMMITTEE REVIEW: YEAR-MM-DD

CHK: -

APP: C.M. RECTO

INITIAL ISSUE DATE: N/A

CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

SCALE: N.T.S.

DRAWING NO. 63 00 07 15 48 238

PAGE: 5 OF 5

REV. 2

ITEM

PART DESCRIPTION

STOCK No.

QTY.

1

TAPE ELECTRICAL 1/2" x 60" INSULATION PUTTY 3M

35952

A/R

2

TAPE SILICONE NO.70 RUBBER 3M

25115

A/R

3

CABLE CLAMP, PATTON & COOKE *5MRB-3-1670

NON-STOCK

A/R

4

TAPE SCOTCH 130C 3/4 IN. X 30 FT.

52125

A/R

5

TAPE SCOTCH 130C 1 1/2 IN. X 30 FT.

56010

A/R

6

TAPE BRATHENE P/N VR1202 - 0.010

49716

A/R

LIST OF CUSTOMER SWITCHGEAR AND SWITCHGEAR CELL OBSOLETE STANDARDS FOR SPECIFIC REFERENCE

NOTE: OBSOLETE STANDARDS ARE FOR RECORDS ONLY. THESE STANDARDS ARE NO LONGER REVIEWED OR REVISED

PILC IN POTHEADS

630007542255 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 KV PILC CABLE IN SWITCHGEAR CELL

630007542256 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 KV PILC CABLE IN SWITCHGEAR CELL

630007542257 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 KV PILC CABLE IN SWITCHGEAR CELL

630007542258 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542259 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542260 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542261 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542262 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542263 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 KV PILC CABLE IN CUSTOMER SWITCHGEAR

630007542264 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 KV PILC CABLE TO POthead IN SWITCHING CUBICLE DEEP BASEMENT

630007542265 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 KV PILC CABLE TO POthead IN SWITCHING CUBICLE DEEP BASEMENT

630007542266 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 KV PILC CABLE TO POthead IN SWITCHING CUBICLE DEEP BASEMENT

SOLID DIELECTRIC CABLES

630007542255 - INSTALLATION AND TERMINATION OF 3-1/C 250 MCM 15 KV XLPE CABLE IN SWITCHGEAR CELL

630007542256 - INSTALLATION AND TERMINATION OF 3-1/C 500 MCM 15 KV XLPE CABLE IN SWITCHGEAR CELL

630007542257 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 KV XLPE CABLE IN SWITCHGEAR CELL

630007542258 - INSTALLATION AND TERMINATION OF 3-1/C 250 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542259 - INSTALLATION AND TERMINATION OF 3-1/C 500 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542260 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542261 - INSTALLATION AND TERMINATION OF 3-1/C 250 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542262 - INSTALLATION AND TERMINATION OF 3-1/C 500 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542263 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 KV XLPE CABLE IN CUSTOMER SWITCHGEAR

630007542264 - INSTALLATION AND TERMINATION OF 3-1/C 250 MCM 15 KV XLPE CABLE IN SUBSTATION

630007542265 - INSTALLATION AND TERMINATION OF 3-1/C 500 MCM 15 KV XLPE CABLE IN SUBSTATION

630007542266 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 KV XLPE CABLE IN SUBSTATION

1

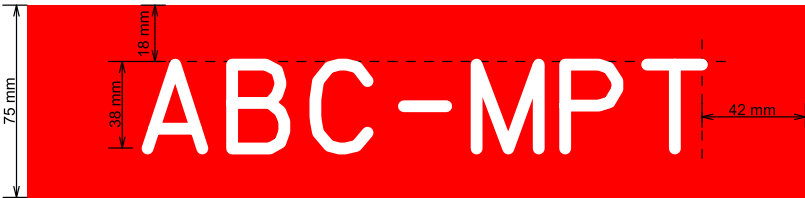
2

3

4

DRAWING 7.2

CUSTOMER OWNED SWITCHGEAR LAMACOID LABEL DIMENSIONS



NOTES:

- 1. EPCOR TO PROVIDE LABEL TEXT FOR CUSTOMER
- 2. LAMACOID THICKNESS SHALL MATCH STANDARD THICKNESS OF 1.6mm

FOR INFORMATION ONLY

 CUSTOMER CONNECTION GUIDE		CUSTOMER OWNED SWITCHGEAR LAMACOID LABEL DIMENSIONS	
DATE REVISED: 2023-07-20	DRAWING NO.: 7.2	REFERENCE NO. N/A	PAGE NO. 1 / 1

8.0

Network Service

8.1 Δ GENERAL INFORMATION

- a. Δ A network service is a 120/208V service connected to EDTI's network system. The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. See [Drawings 3.1](#) and [3.2](#) for details.
- b. New or increased 347/600V, 3-phase, 4-wire services fed from the network system will only be supplied if approved by EDTI.
- c. Please [contact us](#) to confirm the network voltage available in your area.
- d. Typical installations include medium to large commercial applications.
- e. Please see [Table 3.1 – Project Overview](#) for a summary of your responsibilities as the Customer and the responsibilities of EDTI.
- f. Many of the new buildings in the network area are fed with a primary or padmount transformer service. If, after consulting with us, you find that this is the case, please see [Section 3.5 – Selecting the Service Type](#).
- g. If you decide that you require a feed from EDTI's network system, please visit the [Apply for Connection page](#) and click Apply for Power. See [Section 3.3 – Applying for Service](#) for details.
- h. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

8.2. SERVICE TYPE GENERAL REQUIREMENTS

- a. All service connections under this section must have a fused main switch or main breaker with adequate interrupting capacity installed on the line side of all equipment. This includes meters and metering equipment. See [Table 8.1 – Main Switch or Breaker Minimum Interrupting Capacity – Downtown Secondary Network Services](#) for details.
- b. **Co-generation is not allowed on services connected to EDTI's network system.**

8.3 DRAWING REQUIREMENTS

- a. Please [contact us](#) to determine the application drawing requirements for your project.
- b. A drawing showing details of EDTI's cable termination cell, including size, shape, and access door locations, is required.
- c. Anticipate the drawing requirements will be similar to those of the Primary Metered Service requirements. See [Section 3.3 – Applying for Service](#) for details.

8.4 SERVICE DUCTS

- a. All permanent commercial services must be in duct.
- b. High Density Polyethylene (HDPE) ducts shall not be permitted, even when certified for the intended use.
- c. For residential installations, EDTI highly recommends, and may require, installing any cable that will ultimately end up under a buildings/structure or hard surface in duct. See [Drawing 5.3 – Typical Underground Residential Service Installation on Property](#) for a typical underground service installation.
- d. All ducts must be equipped with bell collars at their ends to avoid damaging the cable.
- e. The Customer will provide all conduits, handholes, and manholes required for installing the electrical services on the Customer's property. EDTI approved product shall be used, including rigid PVC, DB2, Carlon Borguard, or Terracon.
- f. The Customer cannot install ducts into an energized manhole or handhole.
- g. Service conduits installed by contractors working on behalf of other utilities or the City of Edmonton must follow EDTI's construction standards. Contractors must not work within 1.0m of any electrical equipment.
- h. When EDTI conduits have been stubbed to the property line, Customers must first confirm that the conduit exposed is the correct one, and then connect their supply conduit to EDTI's conduit. [Contact us](#) to arrange for conduit verification.
- i. Where gas easements/utility Rights-of-Way exist, the service ducts are to be extended past the gas easement/utility right-of-way and capped.
- j. See [Table 8.2 – Acceptable Conductors and Conduit Size – Downtown Secondary Network Services](#) for appropriate conductors.
- k. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Section 8.6 – Ground-Mounted Handholes](#) for more information.
- l. The Customer shall be responsible for installing and maintaining conduit sealing, and a suitable means of drainage, for ducts entering a building, per the Canadian Electrical Code.

8.5 DUCT BENDS

- a. All bends must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- b. An additional 3,000mm (10 ft.) horizontal section of rigid, thick-walled PVC must be attached to the bend.
- c. All bends must be equipped with bell collars to avoid damaging the cable.
- d. All spare bends are to be covered (taped or covered by some other suitable method) to prevent material falling into them.

8.6 Δ GROUND-MOUNTED HANDHOLES

- a. EDTI reserves the right of final approval of the handhole size and location.
- b. Communication cables cannot share the same handhole with primary or secondary cables.
- c. Customer-owned facilities cannot share the same handhole with EDTI facilities.
- d. If the pulling tension of the cable exceeds its allowable limit, a handhole must be installed. See [Drawing 6.1](#) for details.
- e. The cumulative total of all bends between pulling points shall not exceed 360 degrees of bends.
- f. The size of the ground-mounted handhole required depends on the type of cable being installed. See [Table 6.1](#) for details.
- g. Conduits must enter and leave the handhole at the same level.
- h. All bends and conduits entering/exiting handholes, manholes, or vaults must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- i. All customer manhole and handhole lids shall be traffic rated for H-25/HS-25.
- j. Δ Conduits shall not enter/exit through the same wall.

8.7 HANDHOLES IN BUILDINGS

- a. EDTI reserves the right of final approval of the handhole size and location.
 - i. Handholes in buildings must be sized according to EDTI requirements, and shall only be permitted in the electrical room.
 - ii. When installed, handholes shall be lockable and be clearly marked “EPCOR Access Only”.
 - iii. [Contact us](#) to discuss your specific installation.
- b. Communication cables cannot share the same handhole with primary or secondary cables.
- c. Customer-owned facilities cannot share the same handhole with EDTI facilities.
- d. If pulling lengths exceed the maximum pulling tension of the cable, a handhole must be installed.
- e. The cumulative total of all bends between pulling points shall not exceed 360 degrees of bends.

8.8 Δ CONDUCTORS

- a. Δ EDTI will supply and install the secondary cable for all services connected to EDTI's network system. The cables types provided are either 7-Conductor (7/C) 4/0 Cu -Network Service OR 4-conductor (4/C) 500 MCM Cu XLPE – Consult EPCOR Designer for cable chosen for project.
- b. The 7-conductor (7/C) network service cable is a multiplexed cable rated at 400A. It consists of six #4/0 CU conductors (two per phase) with one # 500 MCM CU. XLPE USEI 90 cable neutral.

- c. For network services 400A and larger, EDTI will supply and install parallel runs of network service cable. (One 7/C run is 400A, two 7/C runs are 800A, three 7/C runs are 1,200A, and four 7/C runs are 1,600A.)
- d. See [Table 8.2 – Acceptable Conductors and Conduit Size – Downtown Secondary Network Services](#) for appropriate conductors.

8.9 CABLE INSTALLATION

- a. EDTI will supply and install the secondary cable for all services connected to EDTI's network system.
- b. Telephone and television cables can be installed in the same trench as power conductors. Design drawings must be forwarded to the appropriate organizations for their approval.
- c. Cable cannot be installed on building footings or weeping tile.
- d. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

8.10 Δ TERMINATION

- a. A drawing showing details of EDTI's cable termination cell, including size, shape, and access door locations, is required. See [Section 8.3 – Drawing Requirements](#).
- b. Provisions shall be made by the Customer for the installation of current limiting fuses on the incoming secondary spades, by EDTI when they terminate the service conductors. [Contact us](#) for current limiting fuse details prior to designing switchgear.
- c. The Customer's main switch must be equipped with a sufficient number of solderless terminals to allow for terminating the appropriate service conductors. See [Table 8.2 – Acceptable Conductors and Conduit Size – Downtown Secondary Network Services](#) for appropriate conductors.
- d. The Customer's main disconnect switches must have sufficient #4/0 lugs to accommodate the number of 4/0 CU phase conductors required for rating the service (Allen-key-type terminations at the breaker are not acceptable).
- e. EDTI will make all terminations on the line side of the Customer's main switch or breaker.
- f. Δ Customer shall supply and install network secondary gear terminations 30" min above the ground/floor to allow for EDTI to supply and install their secondary cables and terminations.

TABLE 8.1

MAIN SWITCH OR BREAKER MINIMUM INTERRUPTING CAPACITY – DOWNTOWN SECONDARY NETWORK SERVICES

MAIN SWITCH OR BREAKER SIZE	INTERRUPTING CAPACITY	
	120/208V 3-PHASE, 4-WIRE	347/600V 3-PHASE, 4-WIRE
Up to 1,000A	100,000A	100,000A
1,001 - 1,600A	100,000A	100,000A
1,601 - 2,500A	100,000A	100,000A
2,501 - 3,000A	150,000A	100,000A

All the current ratings specified in this table are root-mean-square (RMS) symmetrical values. The minimum interrupting capacity must apply to all components and to the assembly.

TABLE 8.2

ACCEPTABLE CONDUCTORS AND CONDUIT SIZE – DOWNTOWN SECONDARY NETWORK SERVICES

CONDUCTOR SIZE	RATING PER PHASE	CONDUIT SIZE
#2 AWG CU (For 2-phase, 3-wire, or 3-phase, 4-wire)	100A	100mm (4 in.)
4/0 CU	200A	100mm (4 in.)
7-conductor (7/C) network cable consisting of two 4/0 CU per phase and one 500MCM CU XLPE (USEI 90 cable) neutral	400A or Multiples of 400A	100mm (4 in.)
4/C 500mcm cu network cable consisting of three 500mcm cu phase and one 500mcm cu xlpe (usei 90 cable) neutral	400A or Multiples of 400A	100mm (4 in.)

- Conductor shall be cross-link polyethylene insulated with polyvinylchloride jacket.
- For network services 400A and larger, EDTI will supply cable with parallel runs of network service cable.
 - One 7/C run is 400A, two 7/C runs is 800A, three 7/C runs is 1,200A, and four 7/C runs is 1,600A.
- Depending on duct arrangements, handholes may be required in the building. For further information, see [Section 8.7 – Handholes in Buildings](#).
- The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

9.0

Unmetered
Service

9.1 GENERAL INFORMATION

- a. Unmetered services are only available to the City of Edmonton, telecommunication, and utility companies.
 - ii. An unmetered service shall only be provided when **ALL** the following conditions are met:
 - iii. **When in EDTI's sole option, it is not practical to provide a metered service.**
 - iv. The unmetered load is located within the City of Edmonton road Right-of-Way.
 - v. The connected load is small, consistent, and predictable, and electrical consumption can be easily calculated.
 - vi. The standard supply voltage is one of the voltage services available from EDTI.
 - vii. The maximum current requirements are less than 60A per service connection.
- b. Typical installations include streetlights, traffic signals, and small utility services.
- c. Please see [Table 3.1](#) for a summary of your responsibilities as the Customer and the responsibilities of EPCOR Distribution and Transmission Inc. (EDTI).
- d. If you decide you require an unmetered service, please complete the [Unmetered Application Form](#).
- e. See [Section 12 – Additional Information](#) to learn about such topics as temporary power, splicing, operations, equipment relocation, and pre-inspection checklists.

9.2 SERVICE TYPE GENERAL REQUIREMENTS

- a. Unmetered services are available from EDTI Customer Engineering Services' aerial and underground distribution systems.
 - i. Aerial (overhead) services will not be provided in areas served by underground electrical facilities.
- b. Customers are responsible for maintaining all civil work they install, including maintaining the level of equipment.
- c. EDTI Customer Engineering Services reserves the right at any time to field-measure the unmetered service connection. The Customer or the Customer's retailer will be notified of the field-measured consumption recording, as well as of the accuracy of the measuring devices.

9.2.1 Conversion to Metered Service

- a. EDTI reserves the right to require any unmetered service to be reconnected as a metered service connection.
- b. EDTI will provide 30 calendar days written notice that an unmetered service is being reconnected as a metered service.
- c. Customers have the option of installing an EDTI-approved meter socket at a location acceptable to EDTI, and applying for reconnection as a metered service connection; or, discontinuing the unmetered service.
 - i. Failure to reply within 30 calendar days of written notice being provided, will result in the unmetered service being disconnected. The services will remain disconnected until reconnection as a metered service is requested by the Customer.

- d. The Customer will pay the cost of reconnection, including an approved meter base, protective housing, and ancillary equipment.
- e. EDTI will provide the meter and will notify the Customer where the meter base and protective housing are to be located.

9.2.2 Streetlighting

- a. The City of Edmonton is typically the owner and operator of all streetlight systems within the City's road rights-of-way.
- b. The City of Edmonton reviews developer drawings to ensure the streetlight designs and layouts adhere to standards stated in the most recent publication of the City of Edmonton Servicing Standards Manual.
- c. City of Edmonton-approved engineering drawings for the complete streetlight installation shall be supplied.
- d. The Customer shall ensure that grounding installed for street light disconnect is bonded to ground for an existing distribution transformer, both underground and on the pole near the disconnect device.
- e. For pole-mounted installations, ensure that the new relay installation maintains the required 1.0m of clearance from any communication installation.

9.2.3 Lane Lighting (Alley Lighting)

- a. Requests for lane lighting must be made by contacting the City of Edmonton.
- b. To inquire about existing lane lighting systems, please contact the City of Edmonton.
- c. All new lane lighting additions, and modifications to existing security lighting systems must be metered and installed as per Part 1 of the Canadian Electrical Code.

9.2.4 Security Lighting (Public & Private)

- a. All new security lighting, additions, and modifications to existing security lighting systems must be metered and installed as per Part 1 of the Canadian Electrical Code.
- b. No new private security lighting installations, additions, or modifications shall be permitted.
- c. To inquire about existing EDTI security lighting systems, please [contact us](#).
- d. To request disconnection of existing security lighting, first contact the retailer to have billing stopped, and then [contact us](#).

9.3 AS-BUILT DRAWING REQUIREMENTS

- a. Once construction is complete, submit as-built information to EDTI.
- b. As-built drawings, authenticated drawings prepared by a Professional Engineer registered in the Province of Alberta with APEGA are to be forwarded to EDTI before energization.
- c. As-built drawings are to confirm the Customer's installation, including equipment and conductor specifications. Equipment and conductor locations are to be drawn to scale, with dimensions or coordinates. Any revision to the original design must be indicated on the drawing.

9.4 SERVICING LOCATION

- a. It is critical that you receive approval from EDTI for your site-specific servicing location before beginning construction. This location can differ based on a number of circumstances.
- b. The Customer will designate the service pole, pedestal, or transformer they would prefer to connect to. EDTI in its sole option will then make the final determination of the servicing location. **The EDTI final location is required prior to start of construction.**
- c. See [Section 3.7 – Service Entry Point](#) for further details.

9.5 SERVICE DUCTS (UNDERGROUND)

- a. High Density Polyethylene (HDPE) ducts shall not be permitted, even when certified for the intended use.
- b. All ducts must be equipped with bell collars at their ends to avoid damaging the cable.
- c. Cable that will ultimately end up under roads, driveways, decks, etc. must be installed in duct.
- d. Duct must be installed where cable under EDTI control is deemed inaccessible.
- e. The Customer will provide all conduits, handholes, and manholes required for installing the electrical services to the Unmetered Service. EDTI approved product shall be used, including rigid PVC, DB2, Carlon Borguard, or Terracon.
- f. The Customer cannot install ducts into an energized manhole or handhole.
- g. Service conduits installed by contractors working on behalf of other utilities or the City of Edmonton must follow EDTI's construction standards. Contractors must not work within 1.0m of any electrical equipment.
- h. When EDTI conduits have been stubbed, Customers must first confirm that the conduit exposed is the correct one, and then connect their supply conduit to EDTI's conduit. [Contact us](#) to arrange for conduit verification.
- i. The Customer shall be responsible for installing and maintaining conduit sealing, and a suitable means of drainage, for ducts entering a building, per the Canadian Electrical Code.

9.6 DUCT BENDS (UNDERGROUND)

- a. All bends exiting transformers and cubicles must be made of rigid, thick-walled PVC (Schedule 40) with minimum wall thickness of 6.0mm for a 100mm (4 in.) diameter duct, 6.6mm for a 125mm (5 in.) diameter duct, and 7.1mm for a 150mm (6 in.) diameter duct. DB2 bends are not acceptable.
- b. An additional 3,000mm (10 ft.) horizontal section of rigid, thick-walled PVC must be attached to the bend.
- c. The secondary ducts must be aligned directly underneath the secondary transformer bushings and centered within the base opening, per [Drawings 6.3](#) and [6.4](#). The conduit bends must exit the earth at 90 degrees.
- d. All bends must be equipped with bell collars to avoid damaging the cable.
- e. All spare bends are to be covered (taped or covered by some other suitable method) to prevent material falling into them.

9.7 Δ CONDUCTORS (UNDERGROUND)

- a. Δ #8 RW90 cable is acceptable for streetlight and traffic supply conductors (60A max), or per [Table 5.1](#) as required. Cable can be direct-buried USEB, RWU90 in duct, or RW90 in duct.
- b. Armoured or metal-sheathed (TECK) cable cannot be used for permanent services.
- c. Δ With EDTI review, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See [Section 12.5 – Temporary Connections](#) for details.

9.8 CABLE INSTALLATION (UNDERGROUND)

- a. Telephone and television cables can be installed in the same trench as power conductors. Design drawings must be forwarded to the appropriate organizations for their approval.
- b. Cable cannot be installed on building footings or weeping tile.
- c. Secondary cable ends must have heat shrink caps.
- d. EDTI will make the final connection in the cubicle, transformer, or pedestal.
 - i. Terminations must be done by journeymen power electricians and linemen. All workers require certification as qualified electrical utility personnel.
- e. EDTI will energized the unmetered service upon receipt of as-built plan(s), permit(s), and inspection approval(s).
- f. Customers will supply and install secondary conductors to 1.0m from the ground grid, leaving a neatly bound coil of a length specified by EDTI.
- g. A maximum of six runs of secondary conductors, are permitted for all single phase padmount transformers; except for multifamily installations with pedestals where the limit shall be nine, and for single family installations where the limit shall be twelve.
- h. A maximum of six runs of secondary conductors total (includes both permanent and temporary services) are permitted for 3-phase padmount transformers up to 750kVA.

9.9 CABLE IDENTIFICATION (UNDERGROUND)

- a. The Customer will identify service conductors at the transformer by the owner's name and use of the Unmetered Service (street lights, traffic lights, booster, etc.) by using long-life ink on a tie-wrap attached to the conductors.

9.10 ATTACHMENT METHODS (OVERHEAD)

- a. EDTI reserves the right to require that the attachment point be adjusted to minimize or eliminate a service trespass to neighbouring properties, including those properties owned by the Customer if on a separate title.
- b. A Customer shall not move their service connection as to cause the conductor to pass over another property.
- c. The attachment point for the electrical service must be above any communication services.

- d. Where the Unmetered Service attachment is not located on the pole line:
 - i. Attachment devices must be secured to withstand the service wire pulling tension requirements.
 - ii. The attachment point and weatherhead must face the pole line and as close as is practical to the service pole (minimum 3.0m clearance to service pole).
 - iii. The attachment shall be vertical, unless prior permission has been obtained from the City of Edmonton and EDTI to place it horizontally.
 - a. Horizontal attachments may be used to increase clearances, depending on the angle of pull from the pole to the building. If you're not sure if you can use a horizontal attachment, request guidance from the City of Edmonton and EDTI.
 - iv. The attachment point is to be a maximum of 6.0m from final grade and must be accessible by a ladder.
 - v. The weatherhead must be above the attachment point.
 - vi. Ensure the vertical distance between the attachment point and the weatherhead is a minimum of 150mm and a maximum of 300mm.
 - vii. Ensure the horizontal distance between the attachment point and the weatherhead is a minimum of 300mm and a maximum of 1000mm.
 - viii. A minimum vertical clearance of 0.6m and a minimum horizontal clearance of 1.0m must be maintained between attachment devices.

9.11 WIRE INSTALLATION (OVERHEAD)

- a. EDTI will make the final connection.
- b. Services exceeding the maximum spans noted in [Table 4.1](#) may require an intermediate pole, or the Customer will have to redesign the service as an underground system.
- c. EDTI will supply and install up to 30.0m of service wire, according to spans noted in [Table 4.1](#), and make all terminations at the weatherhead, once inspection approval is received.
- d. The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

10.0

Metering

One of the most important parts of your construction is correctly installing the meter so that it will accurately measure the amount of electricity you use.

Each following section outlines the specific metering requirements based on the type of service you are installing. Please see the applicable metering section below.

The Customer electrical service shall be metered at the voltage supplied by EDTI.

10.1 CONTACT FOR METERING DISCONNECTIONS AND RECONNECTIONS

For service changes and upgrades, the Customer's contractor will coordinate the disconnection and reconnection of the service with EDTI's Meter Operations.

Please call (780) 412-3288 or email powermetering@epcor.com to arrange disconnection/reconnection.

10.2 REQUESTING METERING TRANSFORMERS (600V OR LESS)

To request EDTI metering transformers for your service, send an email to powermetering@epcor.com with the following information:

- a. Subject Line: "CT-PT req." followed by the address and permit number.
- b. Billing Permit Address. (It is critical this is correct.)
- c. Please include a note stating if the work is for an existing service, if there has been an upgrade or downgrade to the service, or no change is being made to the service (e.g. rewire/renovation/etc.).
 - i. The existing EDTI meter number.
- d. Sub-service amperage (or setting if not the same) and voltage.
 - i. If your amperage is between 1,000-1,600A, state if you prefer donut or bar type units.

After receiving your request, EDTI will confirm metering transformer availability. They will notify you by a reply email when and where the metering transformers may be picked up.

Only send one email per permit/request.

10.3 ▲ GENERAL REQUIREMENTS

- a. The Customer is to supply the meter socket.
- b. The installations of meters shall align to the legal property titles, entities of ownership, or use of service, as EDTI determines in its sole option.
- c. The Customer is responsible for installing meter bases on private property.
- d. The metering equipment must be installed on the load side of the main disconnect, unless noted otherwise.
- e. Metering is not supplied on the secondary side of Customer-owned transformers.

- f. No junction box, or other point of disconnect, shall be allowed between the service entrance and the meter socket lugs.
 - i. Δ This shall not apply where a junction box is required to pull in a service, or to provide a drain point. The access for the junction box must be equipped to be able to be locked with an EPCOR padlock.
- g. The service will not be energized unless the meter socket and the service conduit are attached to the permanent structure.
- h. Meter sockets must also be in a location acceptable to the inspection authority and EDTI.
- i. The meter must be placed in a location that EDTI can access at all times. Access to EDTI meters shall not be restricted, unless contained within a building.
- j. Meter sockets cannot be recessed into walls, enclosed, boxed in, or otherwise obstructed in a way that would impede removal, reading, testing, or reinstallation.
- k. All electrical equipment must bear the evidence-of-approval marking of certification organizations that are recognized by the Standards Council of Canada and acceptable to EDTI.
- l. Where lockable disconnects are required, the main disconnect itself shall be lockable – lockable covers shall not be used in lieu, unless integral to the device.
- m. The meter socket for single phase services that are 100A and larger must be a minimum of 300mm high, 190mm wide, and 100mm deep so it meets the minimum bending radius of the aluminum secondary conductors – unless noted otherwise.
- n. Where multi-meter installations are installed, each individual meter socket and disconnect shall be labelled using a Lamicoid with the corresponding address.
 - i. Lamicoids must be applied prior to inspection, if the Lamicoid is not present at the time of inspection, the inspection will not be passed and re-inspection fees will apply.
- o. Where underground service conductors are pulled down so the conductors are too short for proper connections AND an obstruction (deck, concrete slab, other) impedes the ability to complete an underground splice, the contractor is required to install an oversized meter socket and extend the service conductors using compression splices.
- p. Where there is no room for the meter socket and mast kit on the pole line side, the meter socket and mast kit can be installed on an adjacent side of the house/garage as long as the mast kit is not more than 24" on center from the pole line side.
- q. All sub services shall be clearly identified with lamacoid labels.
- r. No exhaust vents shall be installed within 1.0m horizontally (measured from the center) on either side of the electrical meter.
- s. Δ A minimum working space of 1.0 m wide from center of the meter by 2.2 m high is required in front of all electrical equipment, and to the sides and back.
- t. Δ It is not permissible to mount water, sewer, gas, equipment, or other pipes foreign to the electrical metering installation directly above electrical metering equipment or to encroach on minimum working space around electrical metering equipment.
- u. Δ Metering equipment cannot be located in areas difficult to access (open pits, hatchways, closets, stairways) or that are hazardous to anyone working on that equipment, or to the metering equipment itself. Hazardous locations are defined as any area involving moving machinery/equipment, dust, vibration, water and/or moisture, fumes, or explosive/hazardous vapors.

- v. Δ The meter socket height is to be measured from the adjacent working surface (ex.a raised deck, elevated platform or final grade)
- w. Δ Service(s) that are greater than 200A shall require an engineering analysis by EPCOR's Customer Engineering Group. This includes sites that are multi-serviced by 100A Services – the total services calculations that are over 200A shall require further review. Please send a request to ces@epcor.com for further details.

10.4 Δ RESIDENTIAL – 200 AMPS OR LESS

- a. Meter sockets must be located outdoors on the exterior of the house or garage to provide unimpeded access at all times to anyone installing, changing, testing, or reading the metering equipment.
- b. Meter sockets cannot be located in proximity to sun decks, balconies, carports, or breezeways that could be enclosed in the future.
- c. The Customer will not enclose a meter socket without a written exception from EDTI. If an exception is given, the Customer is responsible for all costs associated with relocating the meter to an accessible location. See [Section 1.6 – Exceptions](#) for details.
- d. When electrical services are supplied by an underground service conductor larger than 1/0 CN, the meter socket must be a minimum of 400mm high, 280mm wide, and 100mm deep.
- e. For underground fed facilities only, the contractor is to make the termination on the load side of meter socket. EDTI Requires 450mm of service conductor to be left above the meter socket for termination purposes.
- f. Existing 60A services may maintain the use of the round meter sockets only on services using #6 AWG or smaller.
- g. The meter socket shall be installed on the line side of the main disconnect – exceptions apply for multi-family with multi-meter installations, see below for details.
- h. Multi-Family with Multi-Meter requirements:
 - i. If the service conductors are fed directly from a **transformer** and run to a **multi-meter socket** on the side of a multi-family unit, they must be limited to four consumer services on that building. The multi-meter sockets shall not have their own individual lockable service switch on the line side of the meter socket; however, a disconnecting device shall be installed on the load side of each meter socket.
 - ii. If the service conductors are fed directly from a **Customer service pedestal** and run to a **multi-meter socket** on the side of a multi-family unit, they must be limited to four consumer services on that building. The multi-meter sockets do not need to each have their own individual lockable service switch on the line side of the meter socket; however, a protective disconnecting device with corresponding ampacity shall precede the multi-meter sockets on the line side, and a disconnecting device shall be installed on the load side of each meter socket.

- iii. If the service conductors are fed directly from a **transformer** or a **Customer service pedestal** and run to a splitter on the side of a multi-family unit, the splitter shall have a service disconnect switch with corresponding ampacity preceding it, and the meter sockets fed from that splitter must each have their own individual lockable service switch, per [Drawing 10.1 – Multi-Meter Installation](#).
- iv. It is the Customer's responsibility to ensure that each metering sockets is labelled with the corresponding unit number.
- i. When Customers are installing a combination main breaker and meter socket, [Image 10.1 – Acceptable Combination Main Breaker and Meter Socket](#) is the only type of box that is acceptable for underground fed services. The underground cable must extend through the gutter on the right side in the top section of the enclosure. Microelectric has two models that are acceptable: Model #C01-100G for 100A and Model #C02-200G for 200A – approved alternatives may be granted upon review and acceptance by EDTI Metering.
- j. Δ Customers shall cut in and terminate to the line side of the meter socket. When doing so, the following requirements shall be adhered to:
 - i. All conductors are to be tucked to the side of the enclosure and the run to the top of the meter enclosure prior to coming down to the termination points.
 - ii. The neutral conductor shall be either equipped with a white insulated sleeve or taped white for its entirety within the enclosure.
 - iii. The jacket of the conductor shall be trimmed as close as possible to the connector while still extending through.
 - iv. The load side conductor length shall be kept to a minimum, but allowing enough conductor to terminate in a neat and orderly fashion.
 - v. See [Image 10.2 – Examples of Residential Line Side Meter Termination](#) for an example.
- k. Δ The conduit must enter the enclosure as identified in [Drawing 10.4 – instrument Transformer Metering Layout](#), using approved factory provided knockouts

10.5 Δ RESIDENTIAL – GREATER THAN 200 AMPS

- a. Meter sockets must be located outdoors on the exterior of the house or garage to provide unimpeded access at all times to anyone installing, changing, testing, or reading the metering equipment.
- b. Δ For all transformer-rated services, the meter socket in [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) must be used. The socket must be Thomas & Betts Cat. #CT108-SWL, or an approved equivalent 8 jaw meter socket and test switch. The test switch must be pre-wired.
- c. Meter socket and instrument enclosures must conform to the sizes noted in [Table 10.1 – Meter Socket and Instrument Enclosures](#). See [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) for the meter and test block enclosure.
- d. The meter socket and instrument transformer enclosure must be connected by a 32mm (1.25 in.) conduit or raceway and shall not include any LBs, if possible. The conduit or raceway must only contain the wires used for the meter installation. The total length of conduit from the metering transformer to the meter cannot exceed 6.5m.

- e. The conduit must enter the enclosure as identified in [Drawing 10.4 – Instrument Transformer Metering Layout](#), using approved factory provided knockouts.
- f. Δ The instrument transformer enclosure cannot be located within a residence. It must be located outdoors in a weatherproof enclosure or, for aesthetics, it may be mounted inside the garage. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).
- g. The instrument transformer enclosure must only contain the metering transformer installation. The conduit entering the enclosure must not interfere with the installation of any primary wires, the transformer, or the enclosure cover. The conduits carrying the main service conductors must also enter the enclosure in a way that won't interfere with installing conductors to the metering cabinet.
- h. Current transformers must be mounted on the inside back wall of the instrument transformer enclosure and have the polarity marks on the line side, as per [Drawing 10.3 – Three Phase Instrument Transformers for Installations Over 200A – Enclosure Layout Diagram](#). Mounting must allow for removing the current transformers without needing to remove the enclosure.
- i. Rigid bus and suitable insulators must be used on all services over 600A. The bus must be continuous from the main switch to the current transformers and from the transformers to sub-switching or splitter bars.
- j. Service conductors can be used on services 600A or less; however, a short piece of rigid bus and suitable insulators are to be connected on either side of the current transformers, per [Drawing 10.3 – Three Phase Instrument Transformers for Installations Over 200A – Enclosure Layout Diagram](#) – for examples see [Image 10.3 – Examples of 3-Phase Metering Transformer Installations](#). The service conductor shall not exceed 500MCM AL or 350MCM CU in size. This requires a custom metering transformer enclosure. A drawing of the enclosure must be submitted to EDTI prior to construction approval – the drawing shall be authenticated by a Professional Engineer registered in the Province of Alberta, or be accompanied by proof of CSA certification.
- k. All metering transformer enclosures shall bare a valid certification mark for the enclosure and bus bar kit, with relevant manufacturer name and model number clearly listed.
- l. For any service over 600A, the metering transformer compartment shall be part of the manufactured switchgear assembly.
- m. All meter sockets and instrument transformer enclosures must be securely mounted plumb, level, and clear of all objects, and conform to [Drawings 10.3, 10.4, and 10.5](#).
- n. Δ The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. The access doors must be equipped to be able to be locked with an EPCOR padlock.
- o. Δ Service(s) that are greater than 200A shall require an engineering analysis by EPCOR's Customer Engineering Group. This includes sites that are multi-serviced by 100A Services – the total services calculations that are over 200A shall require further review. Please send a request to ces@epcor.com for further details.

10.6 Δ COMMERCIAL – 200 AMPS OR LESS

- a. For single-meter installations where the service voltage is 120/240V, 120/208V, or 240V Delta, and 200A or less, the meter socket must be installed on the line side of the main disconnect and on the outside of the building.
- b. For single-meter installations where the service voltage is 277/480V or 347/600V, and 200A or less, the meter socket must be installed on the outside of the building and on the load side of the main disconnect.
- c. When electrical services are supplied by an underground service conductor larger than a 1/0 CN, the meter socket must be a minimum of 400mm high, 280mm wide, and 100mm deep.
- d. Existing 60A services may maintain the use of the round meter sockets only on services using #6 AWG or smaller. Does not apply to multi-meter installations.
- e. For single-meter installations on public property where the service voltage is 120/240V, and 200A or less, the Customer shall install a combination utility meter socket/distribution panel (meter/panel) pedestal, affixed to a concrete base per the manufactures specification. The meter/panel pedestal shall be equipped with a PVC riser, be service entrance rated with a main circuit breaker on the load side of the meter, and be fully CSA certified (e.g. AC Dandy Model# DMSB2-1-200-240). Customer shall provide product information to EDTI for review and acceptance prior to installation. **This option is only available to the City of Edmonton, utilities, and telecommunication companies.**
- f. In multiple-meter installations, each meter must be installed on the load side of its own lockable disconnecting device, as depicted in [Drawing 10.1 – Multi-Meter Installation](#). The disconnecting device must not interrupt service to any other meter.
- g. Δ The main disconnect device may be either a fused switch or a breaker suitable for service entry. These disconnects must have the supply voltage clearly marked (e.g. 480V, 600V). This is not applicable to multi-family units and mobile home parks. The conduit must enter the enclosure as identified in [Drawing 10.4 – instrument Transformer Metering Layout](#), using approved factory provided knockouts.
- h. Δ When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).

10.7 Δ COMMERCIAL – GREATER THAN 200 AMPS

- a. Metering equipment must be installed on the load side of the main disconnect.
- b. In cubicles containing switches or air circuit breakers over 600A, the meter socket must be mounted remote from the switchgear.
- c. Δ On outdoor transformer-rated freestanding installations, the meter socket must be mounted on supports remote from the switchgear. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).
- d. For all transformer-rated services, the meter socket in [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) must be used. The socket must be Thomas & Betts Cat. # CT113-SWL, or an approved equivalent with a 10-pole test switch and 13-jaw meter socket. The test switch must be pre-wired. The socket must be CSA-approved.

- e. Meter socket and instrument enclosures must conform to the sizes noted in [Table 10.1 – Meter Socket and Instrument Enclosures](#). See [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) for the meter and test block enclosure.
- f. The meter socket and instrument transformer enclosure must be connected by a 32mm (1.25 in.) conduit or raceway and shall not include any LBs, if possible. The conduit or raceway must only contain the wires used for the meter installation. The total length of conduit from the metering transformer to the meter cannot exceed 6.5m. The conduit must enter the enclosure as identified in [Drawing 10.4 – Instrument Transformer Metering Layout](#), using approved factory provided knockouts.
- g. The instrument transformer enclosure must only contain the metering transformer installation. The conduit entering the enclosure cannot interfere with the installation of any of the conductors, the transformer, or the enclosure cover. The conduits carrying the main service conductors must also enter the enclosure in a way that won't interfere with the installation of the conductors to the metering cabinet.
- h. In multiple-meter installations, each meter must be installed on the load side of its own lockable disconnecting device. The disconnecting device must not interrupt service to any other meter.
- i. Δ The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. The access doors must be equipped to be able to be locked with an EPCOR padlock.
- j. Current transformers must be mounted on the inside back wall of the instrument transformer enclosure and have the polarity marks on the line side, as per [Drawing 10.3 – Three Phase Instrument Transformers for Installations Over 200A – Enclosure Layout Diagram](#) – for examples see [Image 10.3 – Examples of 3-Phase Metering Transformer Installations](#). Mounting must allow for removing the current transformers without needing to remove the enclosure.
- k. Potential transformers should be mounted on the bracket supplied. If no brackets are supplied, the transformers shall be mounted on the back, sides, or bottom of the cabinet and shall be spaced to provide ease of wiring (approximately 100mm).
- l. The path for the metering transformer wiring shall be clearly indicated, with adequate provisions for support of the wiring provided. A removable non-conductive wiring support bar placed in front of the metering transformers with adequate clearance is preferable.
- m. Rigid bus and suitable insulators must be used on all services over 600A. The bus must be continuous from the main switch to the current transformers and from the transformers to sub-switching or splitter bars.
- n. Service conductors can be used on services 600A or less; however, a short piece of rigid bus and suitable insulators are to be connected on either side of the current transformers, per [Drawing 10.3 – Three Phase Instrument Transformers for Installations Over 200A – Enclosure Layout Diagram](#) – for examples see [Image 10.3 – Examples of 3-Phase Metering Transformer Installations](#). The service conductor shall not exceed 500MCM AL or 350MCM CU in size. This requires a custom metering transformer enclosure. A drawing of the enclosure must be submitted to EDTI prior to construction approval – the drawing shall be authenticated by a Professional Engineer registered in the Province of Alberta, or be accompanied by proof of CSA certification.
- o. All metering transformer enclosures shall bare a valid certification mark for the enclosure and bus bar kit, with relevant manufacturer name and model number clearly listed.

- p. For any service over 600A, the metering transformer compartment shall be part of the manufactured switchgear assembly.
- q. All meter sockets and instrument transformer enclosures must be securely mounted plumb, level, and clear of all objects, and conform to [Drawings 10.3, 10.4](#) and [10.5](#).

10.8 Δ NETWORK AREA – 200 AMPS OR LESS

- a. For a single-meter installation where the service required is 120/208V, 2-phase, 3-wire, a 5-jaw meter socket ([Drawing 10.1 – Multi-Meter Installation](#)) must be installed on the load side of the main disconnect and on the outside of the building.
- b. When the service voltage is 347/600V, the meter socket must be installed on the outside of the building on the load side of the main disconnect.
- c. When electrical services are supplied by an underground service conductor larger than a 1/0 CN, the meter socket must be a minimum of 400mm high, 280mm wide, and 100mm deep.
- d. Existing 60A services may maintain the use of the round meter sockets only on services using #6 AWG or smaller.
- e. In multiple meter installations, each meter must be installed on the load side of its own lockable disconnecting device, as depicted in [Drawing 10.1 – Multi-Meter Installation](#). The disconnecting device must not interrupt service to any other meter.
- f. The main disconnect device may be a fused switch or a breaker suitable for service entry. These meter bases must have the supply voltage clearly marked (e.g. 600V).
- g. Δ When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).
- h. Δ The conduit must enter the enclosure as identified in [Drawing 10.4 – instrument Transformer Metering Layout](#), using approved factory provided knockouts.

10.9 Δ NETWORK AREA – GREATER THAN 200 AMPS

- a. Metering equipment must be installed on the load side of the main disconnect.
- b. In cubicles containing switches or air circuit breakers over 600A, the meter socket must be mounted remote from the switchgear.
- c. Δ On outdoor transformer-rated freestanding installations, the meter socket must be mounted on supports remote from the switchgear. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).
- d. For all transformer-rated services, the meter socket in [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) must be used. The socket must be Thomas & Betts Cat. # CT113-SWL, or an approved equivalent with a 10-pole test switch and 13-jaw meter socket. The test switch must be pre-wired. The socket must be CSA-approved.
- e. Meter socket and instrument enclosures must conform to the sizes noted in [Table 10.1 – Meter Socket and Instrument Enclosures](#). See [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) for the meter and test block enclosure.

- f. The meter socket and instrument transformer enclosure must be connected by a 32mm (1.25 in.) conduit or raceway and shall not include any LBs, if possible. The conduit or raceway must contain only those wires used for the meter installation. The total length of conduit from the metering transformer to the meter cannot exceed 6.5m. The conduit must enter the enclosure as identified in [Drawing 10.4 – Instrument Transformer Metering Layout](#), using approved factory provided knockouts.
- g. The instrument transformer enclosure must only contain the metering transformer installation. The conduit entering the enclosure must not interfere with the installation of any conductors, the transformer, or the enclosure cover. The conduits carrying the main service conductors must also enter the enclosure in a way that won't interfere with installing conductors to the metering cabinet.
- h. Current transformers must be mounted on the inside back wall of the instrument transformer enclosure and have the polarity marks on the line side, as per [Drawing 10.5](#). Mounting must allow for removing the current transformers without needing to remove the enclosure.
- i. Potential transformers should be mounted on the bracket supplied. If none are supplied, they shall be mounted on the back, sides, or bottom of the cabinet and shall be spaced to provide ease of wiring (approximately 100mm).
- j. The path for the metering transformer wiring shall be clearly indicated, with adequate provisions for support of the wiring provided. A removable non-conductive wiring support bar placed in front of the metering transformers with adequate clearance is preferable.
- k. Rigid bus and suitable insulators must be used on all services over 600A. The bus must be continuous from the main switch to the current transformers and from the transformers to sub-switching or splitter bars.
- l. Service conductors can be used on services 600A or less; however, a short piece of rigid bus and suitable insulators are to be connected on either side of the current transformers, per [Drawing 10.3 – Three Phase Instrument Transformers for Installations Over 200A – Enclosure Layout Diagram](#) – for examples see [Image 10.3 – Examples of 3-Phase Metering Transformer Installations](#). The service conductor shall not exceed 500MCM AL or 350MCM CU in size. This requires a custom metering transformer enclosure. A drawing of the enclosure must be submitted to EDTI prior to construction approval – the drawing shall be authenticated by a Professional Engineer registered in the Province of Alberta, or be accompanied by proof of CSA certification.
- m. All metering transformer enclosures shall have a valid certification mark for the enclosure and bus bar kit, with relevant manufacturer name and model number clearly listed.
- n. For any service over 600A, the metering transformer compartment shall be part of the manufactured switchgear assembly.
- o. All meter sockets and instrument transformer enclosures must be securely mounted plumb, level, and clear of all objects, and conform to [Drawings 10.3](#), [10.4](#), and [10.5](#).
- p. Δ The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. The access doors must be equipped to be able to be locked with an EPCOR padlock.

10.10 PRIMARY METERING

- a. Provisions must be made for three-element metering.
- b. Metering transformers are to be installed on the load side of the circuit breakers and must be capable of being isolated electrically from both supply and load. On services with an alternate source, such as an on-site generator or feeder, switches shall be installed to allow isolation of metering equipment.
- c. Metering transformers must be mounted so they are readily accessible for testing or changing, with adequate working space provided.
- d. Space must be provided in the Customer's main metering cell for revenue metering transformers. Metering current transformers and potential transformers (with fusing) will be supplied by EDTI and, where feasible, will be installed at the factory when the main cubicle is being fabricated. Where this is not possible, EDTI will make the transformers available for installation by the Customer.
- e. A grounding bus must be provided adjacent to the metering transformers. Transformer cases are to be bonded to ground.
- f. All metering transformers must be mounted in such a way as to allow for easy access for wiring and a visual inspection of all connections, grounding and wiring.
- g. There must be no terminal blocks wired into the secondary of EDTI's metering transformers.
- h. All secondary wiring from meter base to EPCOR's metering transformers will be completed by EPCOR.
- i. The high-potential conductors of revenue potential transformers must be connected on the EDTI side of the revenue current transformers.
- j. EDTI shall have the right to read, inspect, remove, and test metering – pursuant to [EDTI Terms & Conditions](#). Upon EDTI request, a key for the electrical room shall be provided to EDTI.
- k. When the meter socket is contained within a metallic enclosure, a 200mm x 200mm window shall be provided directly in front of the meter for viewing of the meter, and to allow communications.
- l. The meter socket in [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) must be used. The socket must be Thomas & Betts Cat. # CT113-SWL, or an approved equivalent with a 10-pole test switch and 13-jaw meter socket. The test switch must be pre-wired. The socket must be CSA-approved.
- m. The meter socket and instrument enclosures must conform to the sizes noted in [Table 10.1 – Meter Socket and Instrument Enclosures](#). See [Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket](#) for the meter and test block enclosure.
- n. The meter socket and instrument transformer enclosure must be connected by a 32mm (1.25 in.) conduit or raceway and should not include any LBs, if possible. The conduit or raceway must contain only those wires used for the meter installation.
- o. The length of conduit should be such that the total length of metering wiring from instrument transformers to the meter socket should not exceed 6.5m. The conduit must enter the meter enclosure as identified in [Drawing 10.4 – Instrument Transformer Metering Layout](#), using approved factory provided knockouts.

- p. All meter sockets must be securely mounted plumb, level, and clear of all objects, and conform to [Drawings 10.5 – Instrument Transformer Wiring Diagram](#).
- q. In cubicles containing switches or air circuit breakers, the meter socket must be mounted remote from the switchboard.
- r. On outdoor freestanding installations, the meter socket must be mounted on supports remote from the switchgear.
- s. When a main feeder and a standby feeder are provided to one site, they must be separately metered. The metering must be installed on the line side of the Customer's transfer switch.

IMAGE 10.1

ACCEPTABLE COMBINATION MAIN BREAKER AND METER SOCKET



Thomas & Betts CO1

Note: For underground installations, the conductor must enter at the bottom right and run through the gutter into the meter socket.

IMAGE 10.2

EXAMPLES OF RESIDENTIAL LINE SIDE METER TERMINATION



IMAGE 10.3

EXAMPLES OF 3-PHASE METERING TRANSFORMER INSTALLATIONS

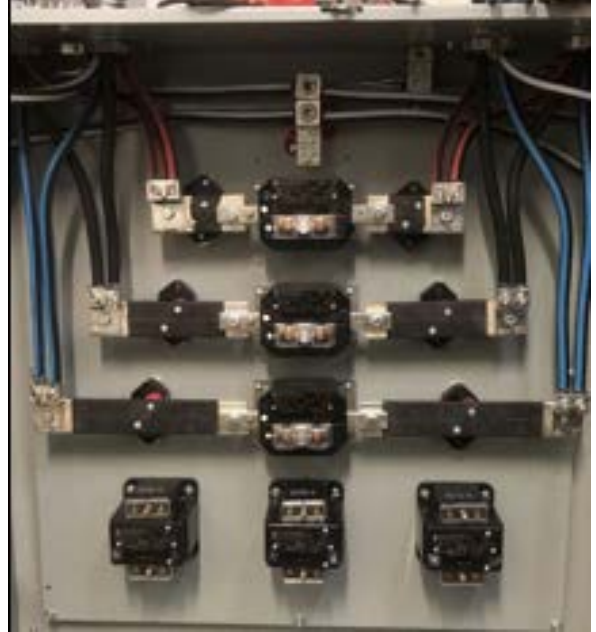
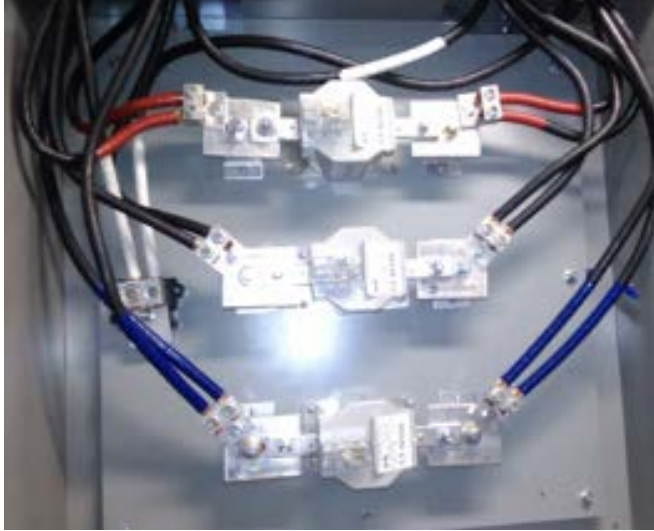


TABLE 10.1

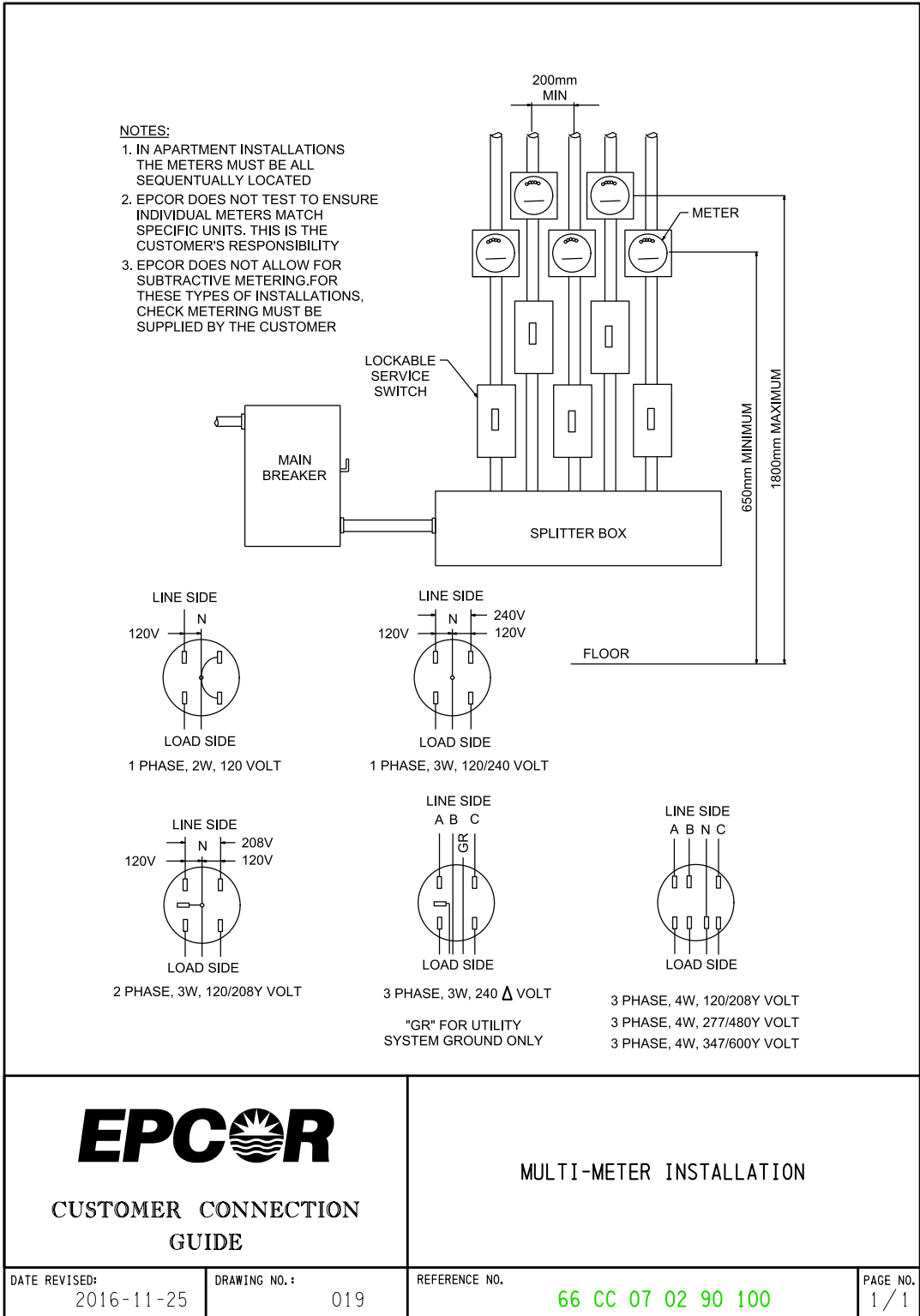
Δ METER SOCKET AND INSTRUMENT ENCLOSURES

SERVICE				
SWITCH OR BREAKER AMPERAGE	VOLTAGE	METER CABINET	SIZE OF CURRENT TRANSFORMER ENCLOSURE	METERING LEAD CONDUIT
Up to 200A		Socket	N/A	35mm (1.25 in.) Diameter. Maximum 6.5m in length.
201 to 399A With current transformers only	Less than 240V	Current and potential transformer rated meter socket. See Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket for details.	900 x 900 x 250mm	
201 to 399A With current and potential transformers				
400 to 600A	240V or greater		Δ Metering Transformer compartment shall be part of the manufactured switchgear assembly. See note for sub-service	
Over 600A				

- All enclosure sizes are for 600V services or less.
- All dimensions listed are inside dimensions.
- EDTI Metering shall provide review and direction for over 600A sub-service. Contact us for details.
- CT's installed shall have CSA approved Stand offs.
- Instrument transformer enclosure shall have bonding terminal for #10 Wire.
- CT & metering enclosure shall be installed in the same room.
- All sub-services shall be identified with lamacoid label.

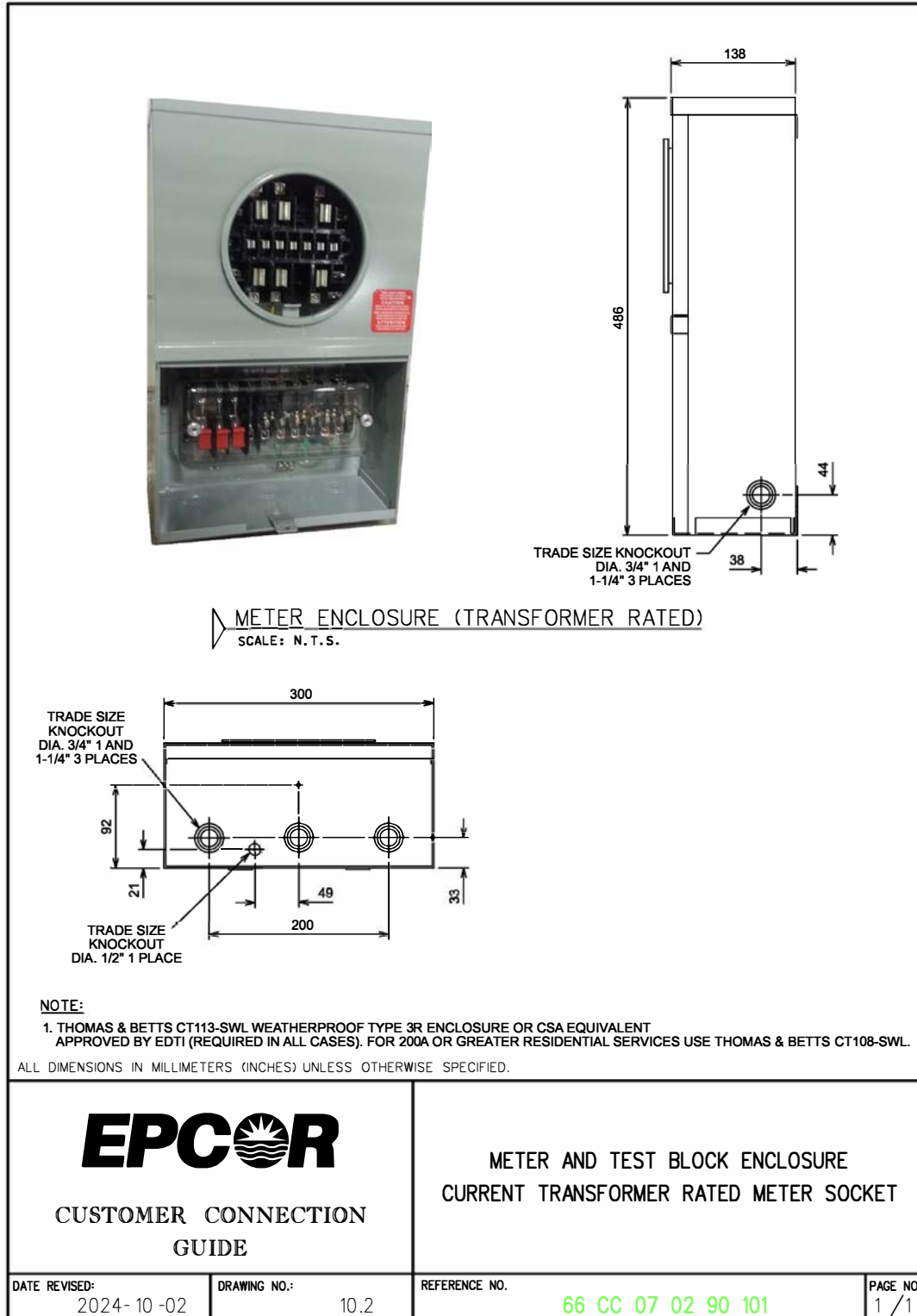
DRAWING 10.1

MULTI-METER INSTALLATION



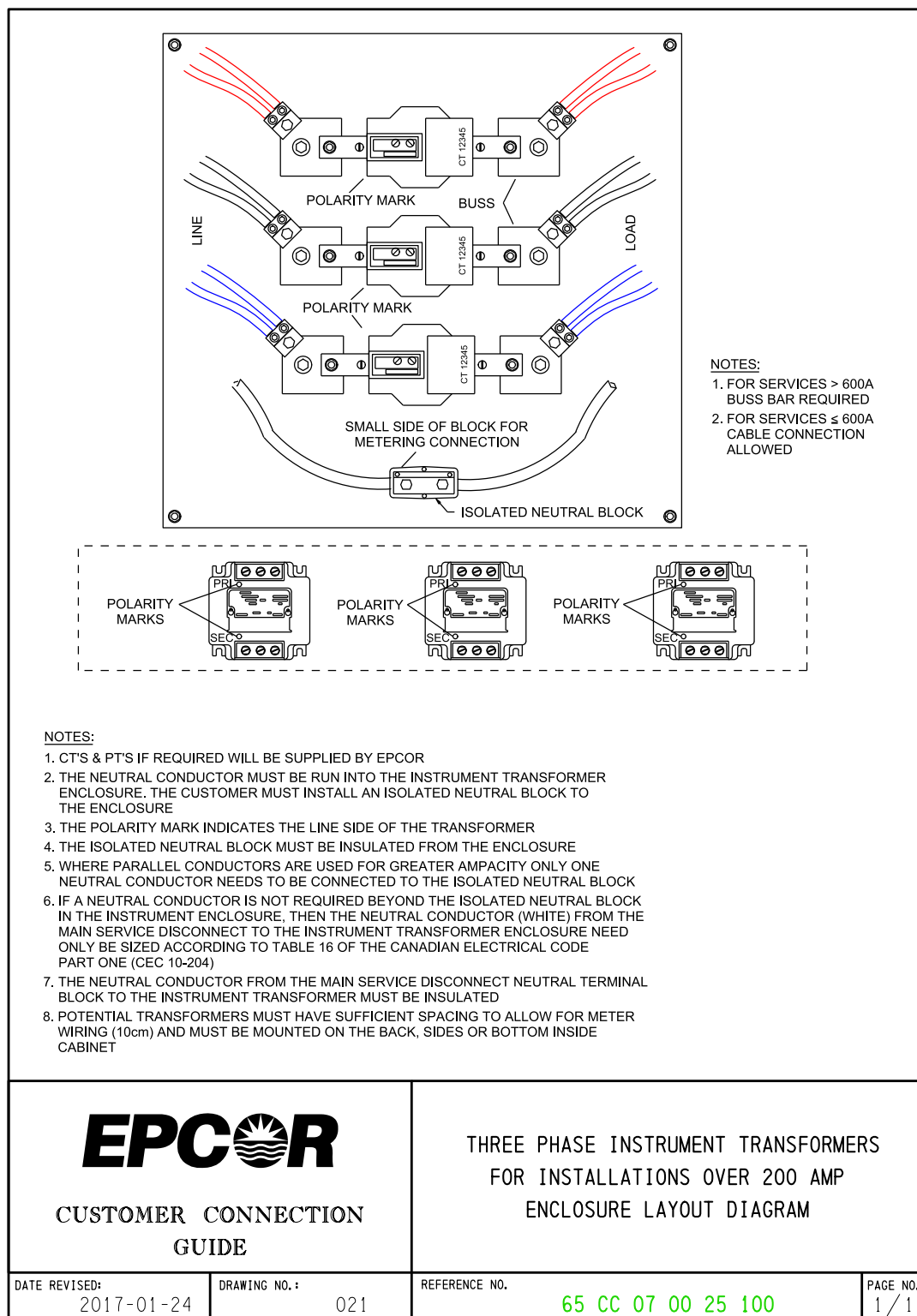
DRAWING 10.2

Δ METER AND TEST BLOCK ENCLOSURE – CURRENT TRANSFORMER RATE METER SOCKET



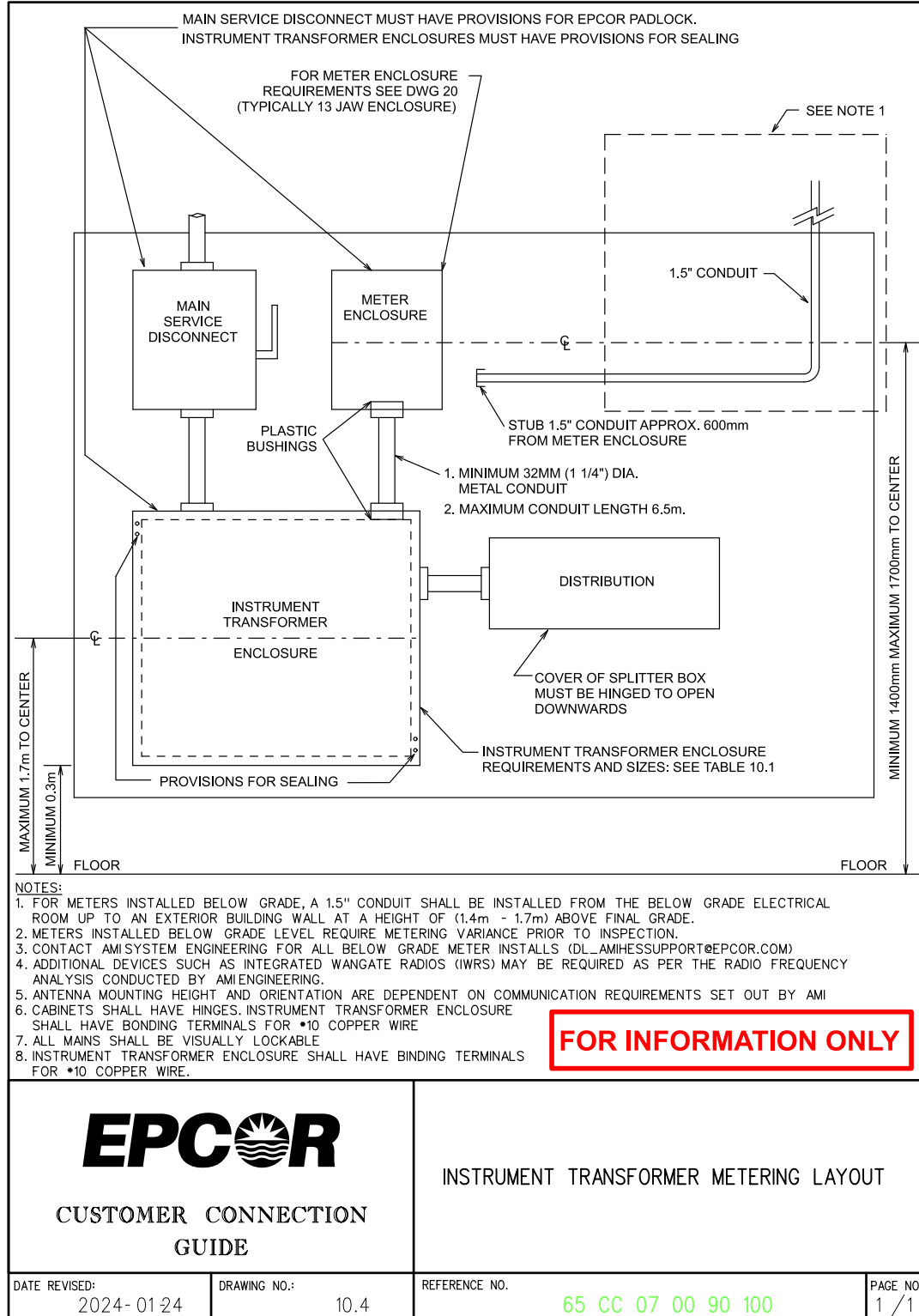
DRAWING 10.3

THREE PHASE INSTRUMENT TRANSFORMERS FOR INSTALLATIONS OVER 200A – ENCLOSURE LAYOUT DIAGRAM



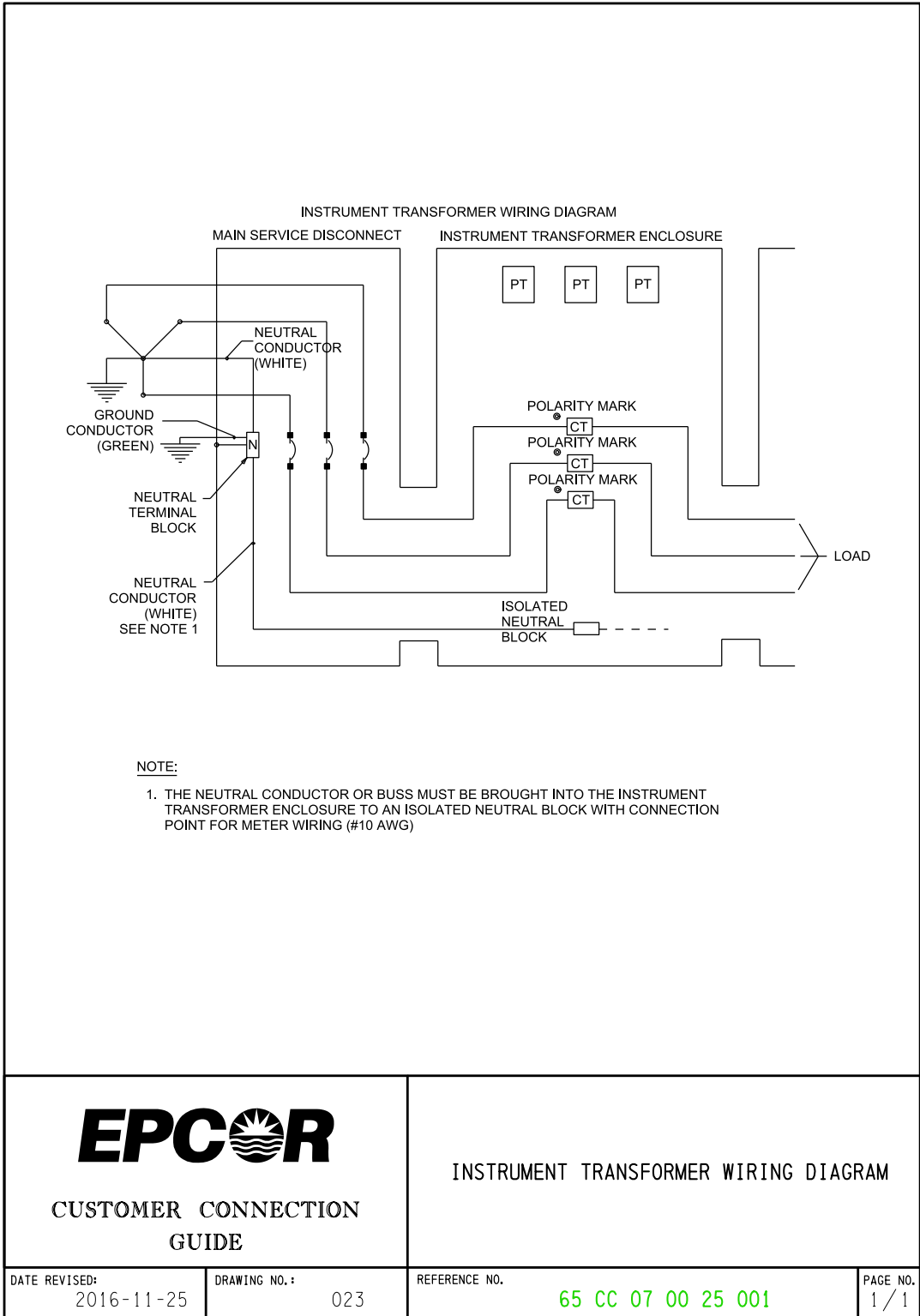
DRAWING 10.4

Δ INSTRUMENT TRANSFORMER METERING LAYOUT



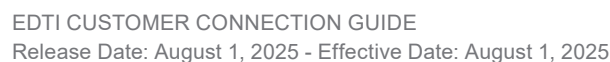
DRAWING 10.5

INSTRUMENT TRANSFORMER WIRING DIAGRAM



Δ AMI ROUTER INSTALLATION

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Δ AMI ROUTER INSTALLATION
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EDTI CUSTOMER CONNECTION GUIDE
Release Date: August 1, 2025 - Effective Date: August 1, 2025

DRAWING 10.6

Δ AMI ROUTER INSTALLATION
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ITEM NO.	DESCRIPTION	STOCK NUMBER	QTY.
1	MOUNTING BRACKET – DISTRIBUTION AUTOMATION	10353	1
2	LEGACY ROUTER	VMI	A/R
3	SERIES SIX ROUTER	VMI	A/R
4	RF ANTENNA – AMI	VMI	1
5	RAIN GUARD	VMI	1
6	POWER ROUTER CABLE	VMI	1
7	POLE WOOD/FIBERGLASS – SEE STANDARD 6100070005100 FOR DETAILS	AS REQ'D	1
8	BOLT MACHINE GALV 5/8" X 14"	29852	2
9	WASHER SQUARE GALV 2" X 2" – 5/8" BOLT SIZE	34874	4
10	WASHER LOCK THACKERAY 5/8" BOLT SIZE	8150	2
11	CABLE SECONDARY #4 AWG 600 VOLT 2/C XLPE ALUMINUM	30216	A/R
12	STRAP PIPE 2" – 2 HOLE	33690	A/R
13	ROAD CRUSH – 3/4"	N/A	A/R
14	ELECTRICAL JUNCTION BOX WITH CONNECTOR	14604	1
15	PIPE PVC RIGID 3/4" X 10'	67303	A/R
16	SCREW LAG GALV 1/4" X 2"	34160	A/R
17	WEATHERHEAD SERVICE 3/4" – METAL	44779	1
18	GROUND ROD ASSEMBLY	47010	1
19	BEND PVC 90° – 2"	47130	1
20	WIRE #6 COPPER SOLID 1/C POLY COVERED	15981	A/R
21	STAPLE GROUND 1 1/2"	VMI	A/R
22	ADAPTER COUPLING 2" DB2 – 2" PVC/FRE	10220	2
23	PIPE DUCT FRE 2" RISER 3m LENGTH X 0.235" WALL THICKNESS	93081	1
24	COUPLING PVC 3/4"	58213	A/R
25	ADAPTER ELECTRICAL PVC TERMINALS 3/4"	58779	1
26	STRAP POLE BAND 3/4" X 60"	17703	A/R
27	CLAMP TUBE RUBBER CUSHION 1/2"	14752	A/R
28	CONNECTOR TERMINAL #6 X 3/8" HOLE	25125	4
29	PADLOCK SHORT SHACKLE KEYED ALIKE	VMI	A/R
30	STRAP PIPE 3/4" – 2 HOLE	46369	A/R
31	PIPE DUCT DB2 – 2" X 20'	61508	1

APPROVED (AMI NETWORK COMMUNICATION)



APPROVED (CONSTRUCTION STANDARD)



PERMIT



DISTRIBUTION
ENGINEERING
STANDARDS

UNLESS OTHERWISE SPECIFIED, DIMENSIONS AND CONCENTRIC INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF EPCOR UTILITIES INC. AND SHALL BE REPRODUCED IN ANY REPRODUCTION IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF EPCOR UTILITIES INC.

DWN: A. PERLYNN
DES: B. O'SULLIVAN
APP: E.BABJ
APP: P.PATEL

COMMITTEE REVIEW:
N/A
INITIAL
N/A

AMI ROUTER
INSTALLATION

SCALE: N.T.S.

PAGE: 3 OF 3

DRAWING NO.
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11.0

Generation & Batteries

11.1 Δ GENERAL INFORMATION

- a. Albertans are allowed, under specific provincial regulations, to generate their own environmentally friendly electricity and receive credit for any unused power that is exported onto the distribution grid.
- b. The regulatory framework currently allowing for Customer generation include: Micro-Generation, Small Scale Generation (including Community Generation), or Municipal Own-Use Generation. Customers may also select to apply to connect their generation site as a standard distributed generator. Each regulatory regime has different benefits and restrictions.

	MICRO- GENERATION	SMALL SCALE GENERATION	COMMUNITY GENERATION	DISTRIBUTED GENERATION
GENERATOR SIZE	<5MW	Based on Hosting Capacity		
CUSTOMER TYPE	All Customers		"Community Group" per regulation definition.	All Customers
GENERATION SOURCE	Renewable or alternative			All fuel types
PRIMARY ENERGY USE	Offset consumption	Offset consumption and/or export for sale to market		Export for sale to market
METERING COSTS	by EDTI	by Customer	by EDTI	by Customer

- c. A quick description of each is below, however Customers are encouraged to engage a knowledgeable consultant to determine which approach is best for their situation.

i. Micro-Generation

This regulation allows Customers to install renewable or alternative energy generation on their site. To qualify under this regulation the generator must meet the following criteria:

- a. Have a total nameplate capacity that does not exceed the lesser of 5MW or rating of the Customer's service.
- b. Exclusively uses sources of renewable or alternative energy; having the EcoLogo certification, or is of a generation source that has greenhouse gas intensity less than 418 kg per MWh.
- c. Supplies electric energy only to a site that is located on property the Customer owns or leases.
- d. Is intended to meet all or a portion of the Customer's total annual energy consumption at the Customer's site or aggregated sites.

- e. When sites are aggregated they shall be:
 - i. Located on the property above or on a property that the Customer owns or leases, that is adjacent to the property above.
 - ii. Connected to the same single electric distribution system feeder as the property above.
 - iii. Enrolled with the same retailer or regulated rate provider.

Governed by [Micro-Generation Regulation](#), [AUC Rule 024: Rules Respecting Micro-Generation](#), and other applicable legislation, codes, standards, and guidelines. It is the responsibility of the applicant to know and meet all the requirements of the most recent versions of each document.

iv. Small Scale Generation (including Community Generation)

This regulation enables eligible generating units using sources of renewable or alternative energy to be qualified as small-scale generation, and if social, environmental or economic benefits are conferred to a community group, to be qualified as community generation. To qualify under this regulation the generator must meet the following criteria:

- a. Have a total nameplate capacity that does not exceed the distribution system hosting capacity at the point of interconnection.
- b. Exclusively uses sources of renewable or alternative energy; having the EcoLogo certification, or is of a generation source that has greenhouse gas intensity less than 418 kg per MWh.

Governed by [Small Scale Generation Regulation](#), [AUC Requirements](#), and other applicable legislation, codes, standards, and guidelines. It is the responsibility of the applicant to know and meet all the requirements of the most recent versions of each document.

iii. Municipal Own-Use Generation

This regulation is governed under the Electric Utilities Act and establishes the circumstances, in addition to those permitted under Section 95 of that Act, in which a municipality or a subsidiary of a municipality may hold an interest in a generating unit. It also establishes the requirement for a compliance plan prior to exchanging energy with the interconnected electric system.

Governed by [Municipal Own-use Generation Regulation](#), and other applicable legislation, codes, standards, and guidelines. It is the responsibility of the applicant to know and meet all the requirements of the most recent versions of each document.

iv. Standard Distributed Generation

Where the exemption regulations above do not apply, a Customer may be able to install a generator as allowed for under [AUC Rule 007: Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations, Hydro Developments and Gas Utility Pipelines](#). In addition of the regulation, other applicable legislation, codes, standards, and guidelines may apply. It is the responsibility of the applicant to know and meet all the requirements of the most recent versions of each document.

11.1.1 Δ Backup Generators and Non-Export Batteries

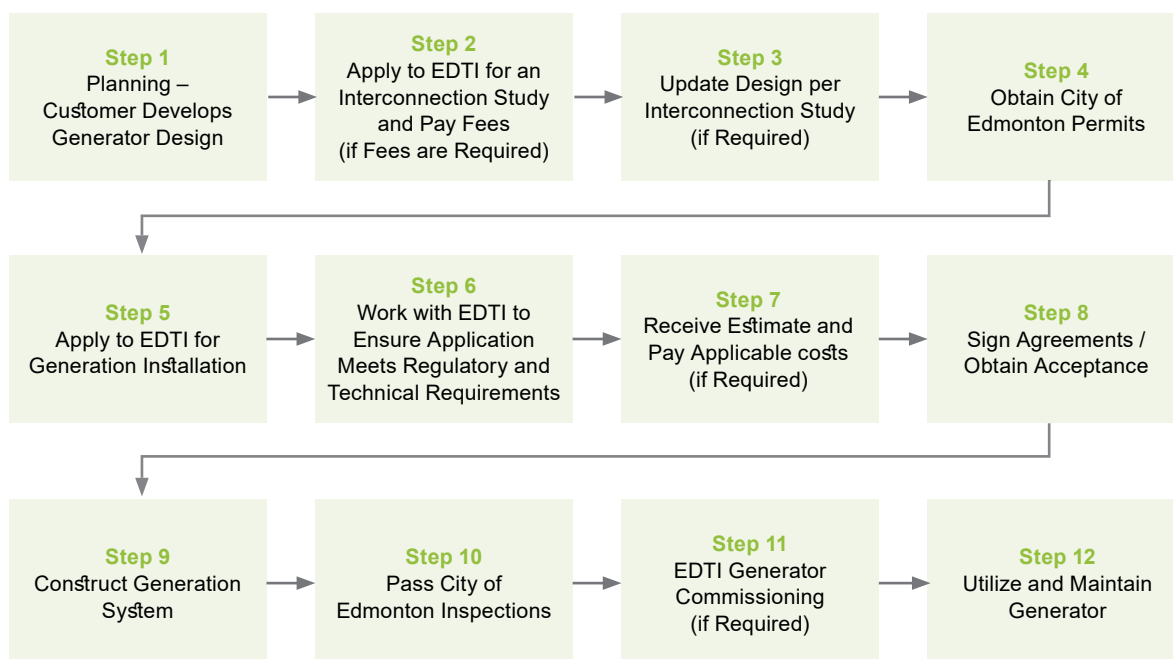
- a. Δ Backup generators or batteries that are installed with a 'Closed Transition (make before break)' transfer switch or interlock must be reviewed and accepted by EPCOR prior to installation.
- b. Δ Backup generators or batteries that are installed with an 'Open Transition (break before make)' transfer switch or interlock that prohibits the use of the generator while connected to the distribution grid so that it may not export (backfeed), do not require EDTI's permission to install.
- c. Backup generators or batteries that are installed with only software that prohibits the use of the generator while connected to the distribution grid so that it may not export (backfeed), requires the Customer confirm that suitable metering is in place. See [Section 11.6 – Generation Metering](#) before proceeding with installation; otherwise EDTI's permission is not required to install.
- d. There may be other requirements by the municipality to install these devices; the Customer should check with the municipality for details.

11.1.2 Exporting Batteries

- a. Batteries that are able to export energy to the distribution system are treated the same as generators, except there is no specific regulation permitting their installation.
- b. EDTI reviews applications for these battery installations on an individual basis. EDTI will determine if it is feasible, in its sole option, to install and operate a battery at a particular site.
- c. All costs to investigate the proposed installation, and to modify the distribution system as EDTI deems necessary, shall be paid by the Customer in full in advance of the work.
- d. EDTI shall provide an interconnection study for each installation, as detailed in [Section 11.4.1 – Interconnection Studies](#).

11.2 PROCESS

The process below details the high-level process for the typical generator or battery application to EDTI. It does not include all potential steps with other third-parties, including but not limited



to, the Alberta Utilities Commission (AUC), the Customer's energy retailer, Environment Canada, Transport Canada, the municipality, and other federal and provincial agencies.

11.3 Δ PLANNING

- a. Review the following documents and ensure compliance where applicable:
 - i. The respective regulation you are applying under:
 - Micro-Generation Regulation
 - Small Scale Generation Regulation
 - Municipal Own-use Regulation
 - ii. The relevant AUC rules:
 - Rule 007: Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations, Hydro Developments and Gas Utility Pipelines
 - Rule 012: Noise Control
 - Rule 024: Rules Respecting Micro-Generation
 - iii. City of Edmonton Permitting Requirements
 - iv. CSA – C22.1 Canadian Electrical Code
 - v. CSA – C22.2 No.107.1 Power Conversion Equipment
 - vi. CSA – C22.2 No. 257 Interconnecting Inverter-based Micro-Distributed Resources to Distribution Systems
 - vii. CSA – C22.3 No. 9 Interconnection of Distributed Resources and Electricity Supply Systems
 - viii. IEEE 1547 – Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
 - ix. UL1741SA – Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources (Note: UL1741SB compliance will be required after December 31, 2022)
- b. Δ Before starting the design, if you are designing a single-family residential micro-generation system that is equal to or greater than 19.2kW, contact EDTI's Customer Engineering Services at distgen@epcor.com. There may be special requirements for larger micro-generation applications.
- c. You will need to request an Interconnection Study if you meet any of the criteria below:
 - i. 50kW or greater single phase
 - ii. 150kW or greater 3-phase
 - iii. Network Area
 - iv. Exporting (backfeeding) battery
 - v. Other reasons as determined by EDTI in its sole option.See [Section 11.4.1 – Interconnection Studies](#) for details on applying for an Interconnection Study.
- d. See [Table 11.1 – Project Overview](#) for a non-exhaustive list of requirements of note for different sized generators.

11.4 Δ APPLICATION

- a. Applications for Interconnection Studies and new generation/battery sites shall include the following information.
 - i. Completed [Form A – Generation Notice](#) (unsigned if for an Interconnection Study – See [Section 11.4.1 Interconnection Study](#) for details).
 - ii. [Third-Party Authorization and Consent Form](#) (if a contractor/consultant is acting on behalf of the Customer). See [Form 1.1 – Third-Party Authorization and Consent Form](#) for a blank copy.
 - iii. A copy of the City of Edmonton electrical permit issued. (See [Section 11.4.2 – Permits](#) for details.)
 - iv. A copy of the building permit issued for site construction (if applicable).
 - v. A single line diagram with the information outlined in [Section 11.4.3.1 – Single Line Drawing Requirements](#).
 - vi. Site plan, real property report, or satellite aerial image with the information outlined in [Section 11.4.3.2 – Site Plan/Real Property Report /Satellite Aerial Image](#).
 - vii. Manufacturer information documents showing a Canadian standard approval identified in [Table 11.2 – Canadian Standard Approvals](#). Alternatively, drawings of the proposed micro-generation system (e.g. solar panels, inverters, etc.) devices to be stamped by the manufacturer's engineer registered in the province of Alberta.
 - viii. If combustion fuels are used, then calculations for greenhouse gas intensity must be provided, and shall be sufficient per EDTI to meet the requirements for the regulation applied under.
- b. Where installing a synchronous generator, include the following information in a separate PDF document, in the order below:
 - i. Machine make and model
 - ii. Number of phases [1, 3]
 - iii. Rated voltage [kV]
 - iv. Rated apparent power [kVA]
 - v. Rated power factor [%]
 - vi. Minimum reactive power limit [kVAR]
 - vii. Maximum reactive power limit [kVAR]
 - viii. Connection type of stator winding [D, Y, I]
 - ix. Is Y-connected generator grounded? [Yes, No]
 - x. Fault Contribution [%]
 - xi. X_d – Direct axis unsaturated synchronous reactance [%]
 - xii. X'_d – Direct axis unsaturated transient reactance [%]
 - xiii. X''_d – Direct axis unsaturated sub-transient reactance [%]
 - xiv. T_a – Aperiodic time constant [sec]

- xv. $T'd$ – Transient time constant [sec]
- xvi. $T''d$ – Sub-transient time constant [sec]
- xvii. $X2$ – Unsaturated negative sequence reactance [%]
- xviii. $X0$ – Unsaturated zero sequence reactance [%]
- c. If any information is missing or invalid, the application shall be considered incomplete and returned to the Customer for correction.
- d. Submit the complete application package with all required documentation in PDF format to distgen@epcor.com.

11.4.1 Interconnection Studies

- a. To obtain an Interconnection Study, the Customer shall make an application that includes an email detailing they are requesting an Interconnection Agreement. The email shall include a completed copy of Form A without any signatures.
- b. EDTI shall provide a quote to the Customer for the cost involved with completing the requested Interconnection Study, if applicable. These costs shall be paid in full prior to the study commencing.
- c. The development of an interconnection study does not guarantee the proposed installation will be permissible. In the event that the Customer's proposal cannot be accommodated, no refund of any study costs shall be provided. The Customer may make amendments to their proposal, which EDTI will review at additional cost to the Customer.
- d. EDTI may at its sole option provide a letter of acceptance, detailing specific requirements for the installation, in lieu of a full interconnection study report.
- e. The Customer shall update their final application to include all requirements set forth in the Interconnection Study. Applications that are not fully updated to comply with the Interconnection Study requirements shall be considered incomplete and returned to the Customer to be corrected before they will be accepted for review.

11.4.1.1 Communication & Control Requirements

- a. EDTI requires visibility and controllability of generation/battery units 250kW and over, any units that are on the network, or in otherwise cases as deemed necessary by EDTI.
- b. EDTI may require visibility without controllability of generation/battery units as it deemed necessary.
- c. EDTI will typically implement communication through either a direct fiber connection or a radio communication system depending on their analysis of the project. Communication must be via 100% utility infrastructure.

- d. When communication is by radio, the Customer shall provide the following or alternative, as directed by EDTI:
 - i. **Antenna:** PCTEL BOA9025
 - ii. **Antenna Mount:** PCTEL BAM1005 Mast Mount
 - iii. **Pipe:** 2.0 in. diameter, affixed to structure, in a location selected by EDTI.
 - iv. **Radio Cabinet:** Lockable per EDTI Interconnection Guide/Report
 - v. **Coax Radio Cable:** Supply sufficient length from antenna to EDTI radio location, with ample length to terminate. EDTI technician to terminate radio end.
 - vi. **Bonded Conductor:** #6 AWG. Supply sufficient length to EDTI radio location, with ample length to terminate. EDTI technician to terminate radio end.
 - vii. **Power:** 120V 15A AC outlet within 3-feet of radio location.
- e. The interconnection report will provide the general communication requirements for your project. EDTI will work with you directly on the specific detailed communication requirements to meet these needs after your successful application.
- f. Typical Visibility Requirements:
 - i. Active Power (W)
 - ii. Reactive Power (VAR)
 - iii. Voltage (V)
 - iv. Current (A)
 - v. Frequency (Hz)
 - vi. Operational State – At a minimum on/off status.
 - vii. Connection Status (including main breaker 52a & 52b statuses)
 - viii. Alarm Status
 - ix. Operational State of Change (for Batteries)
- g. Controllability Requirements:
 - i. Control output to open each breaker
 - ii. Control output to close each breaker
- h. IEC61850 Enabled.

11.4.2 Permits

All applicable permits from the City of Edmonton must be applied for and obtained prior to submitting the final Form A application. Contact the City of Edmonton (311) for all necessary information on the permits required.

11.4.3 Drawings

Below are the various requirements and details for the drawings that are required as part of your application package. Customers are responsible to review the information below and to meet all the requirements.

11.4.3.1 Δ Single Line Drawing Requirements

- a. See [Image 11.1](#) for a sample single line diagram from Customer Engineering.
- b. Must be stamped by Professional Engineer if system is greater than 50kW (single phase) or 150kW (three phase).
- c. The following are EPCOR's requirements for single line diagrams (SLDs).
 - i. Module brand, model, certification mark, quantity, combined DC STC output, and location.
 - ii. Service entrance information (line phase, voltage, wire service provider).
 - iii. All bonding and grounding conductors, and system grounding electrodes.
 - iv. All sub and main panel bus bar ratings and feeder breaker sizes.
 - v. DC and AC disconnect locations on site.
 - vi. Minimum conductor size and length.
 - vii. Inverter brand, model, certification mark, quantity, individual and combined output rating (current, voltage, and ac power), and their locations.
 - viii. Combiner box details, with fuse ratings where applicable.
 - ix. Solar array DC circuit rating per module for micro-inverters or DC Optimizers, or combined string ratings, at Standard Testing Conditions: Voltage Open Circuit, Max Power Voltage, Max Power Current, Show number of modules per string.
 - x. Δ De-rated kilowatt value must be shown for equipment.

11.4.3.2 Δ Site Plan

- a. See [Image 11.2](#) for a sample site plan from Customer Engineering.
- b. Δ Show the orientation of all existing and proposed structures.
- c. Show the location of the meter socket.
- d. Δ Azimuth and slope of panels must be provided for solar installations.

11.5 REVIEW OF APPLICATION

- a. EPCOR will review your application to ensure it complies with EDTI standards, regulations, AUC Guidelines, and other requirements.
- b. If any information is missing or invalid, the application shall be considered incomplete and returned to the Customer for correction.
- c. If the application has apparent errors that would prevent it being accepted under the requested regulatory regime, the application shall be considered incomplete and returned to the Customer for correction. If the Customer requests to proceed without correction, EDTI will be required to reject the application or dispute it per the requirements of the regulatory regime.

- d. Following the successful review of your application, either:
 - i. an email confirming you may proceed with installation as applied for will be provided by EDTI, or;
 - ii. an Interconnection Agreement will be sent to you by EDTI for your review and signature. Upon signing and returning the Interconnection Agreement you may proceed with installation and final inspection. The Interconnection Agreement shall be present for final inspection.

11.6 GENERATION METERING

- a. An EPCOR installed Measurement Canada approved bi-directional meter suitable for net billing is required for all generation/battery sites.
- b. Sites where the generator or battery system is prohibited from exporting by software controls only are required to have an EDTI installed Measurement Canada approved bi-directional meter for safety and reliability purposes. [Contact us](#) before installing such a generator or battery system to ensure you comply with this requirement.
- c. Meter bases with dual lug kits are acceptable for connecting micro-generation systems only if the DER system disconnect is located within 1m of the meter socket and appropriate anti-islanding protections are in place.

11.7 INSPECTION

- a. Your micro-generation system must pass an electrical inspection before connecting it to the EPCOR distribution system. Contact the City of Edmonton (311) to make these arrangements.
- b. Upon passing inspection, forward a copy of the passed electrical inspection report via email in PDF format to distgen@epcor.com.

11.8. COMMISSIONING

- a. Any commissioning activities identified by EDTI in the Interconnection Study or otherwise shall be completed to EDTI's satisfaction before energizing the generator/battery.
- b. EDTI shall provide written confirmation to the Customer once the commissioning activities are complete.

TABLE 11.1

PROJECT OVERVIEW

GENERATION SIZE	SPECIAL REQUIREMENTS OF NOTE
Less than 50kW	• None
50kW to less than 250kW	• Request Interconnection Study from EDTI before applying to City of Edmonton for permit.
250kW to less than 1MW	• Request Interconnection Study from EDTI before applying to City of Edmonton for permit. • Requires visibility and controllability via SCADA communications.
1MW and greater	• Request Interconnection Study from EDTI before applying to City of Edmonton for permit. • Requires visibility and controllability via SCADA communications. • Transfer switch required.
Network Area (See Drawing 3.2 – EPCOR Primary Voltage Service Areas – Downtown Network (Detailed) for area.)	• Request Interconnection Study from EDTI before applying to City of Edmonton for permit. • Requires visibility and controllability via SCADA communications.

TABLE 11.2

CANADIAN STANDARD APPROVALS

CERTIFICATION BODY	CERTIFICATION MARKS	MARK DESCRIPTION
CSA INTERNATIONAL		The CSA certification mark alone without any identifier indicates products approved to Canadian national standards. If another country's identifier is present (i.e., US, NRTL), then the small 'C' Canadian identifier is required to indicate that the product also complies with Canadian national standards.
CURTIS-STRAUS LLC		The Curtis-Straus LLC certification mark requires the small 'C' Canadian identifier at the 8 o'clock position to indicate compliance to Canadian national standards.
ETL INTERTEK ENTELA		The ETL Intertek Entela certification mark requires the small 'C' Canadian identifier at the 8 o'clock position to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
ETL INTERTEK SEMKO		ETL Intertek Semko has two certification marks, the ETL mark and the WH mark. Each mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
FM APPROVALS		The FM certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
LABTEST CERTIFICATION INC.		The Labtest Certification Inc. certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.

TABLE 11.2 - CONTINUED

CANADIAN STANDARD APPROVALS

CERTIFICATION BODY	CERTIFICATION MARKS	MARK DESCRIPTION
MET LABORATORIES	 	The MET certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
NEMKO CANADA INC.		The Nemko certification mark requires the small 'C' Canadian identifier at the 8 o'clock position to indicate compliance to Canadian national standards.
NSF INTERNATIONAL		The NSF International certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
OMNI-TEST LABORATORIES INC.		The OMNI-Test Laboratories Inc. certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
QUALITY AUDITING INSTITUTE		The QAI certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
QPS EVALUATION SERVICES INC.		The QPS certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.

TABLE 11.2 - CONTINUED

CANADIAN STANDARD APPROVALS

CERTIFICATION BODY	CERTIFICATION MARKS	MARK DESCRIPTION
TÜV RHEINLAND OF NORTH AMERICA		The TÜV Rheinland certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
TÜV PRODUCT SERVICE		The TÜV Product Service certification mark requires the small 'C' Canadian identifier to indicate compliance to Canadian national standards. Identifiers for other countries may be present but in all cases, the small 'C' is required.
UNDERWRITERS' LABORATORIES		The ULC certification mark is a Canada-only mark indicating compliance to Canadian national standards. It does not require a small 'C' Canadian identifier.

IMAGE 11.1
 SINGLE LINE DIAGRAM EXAMPLE

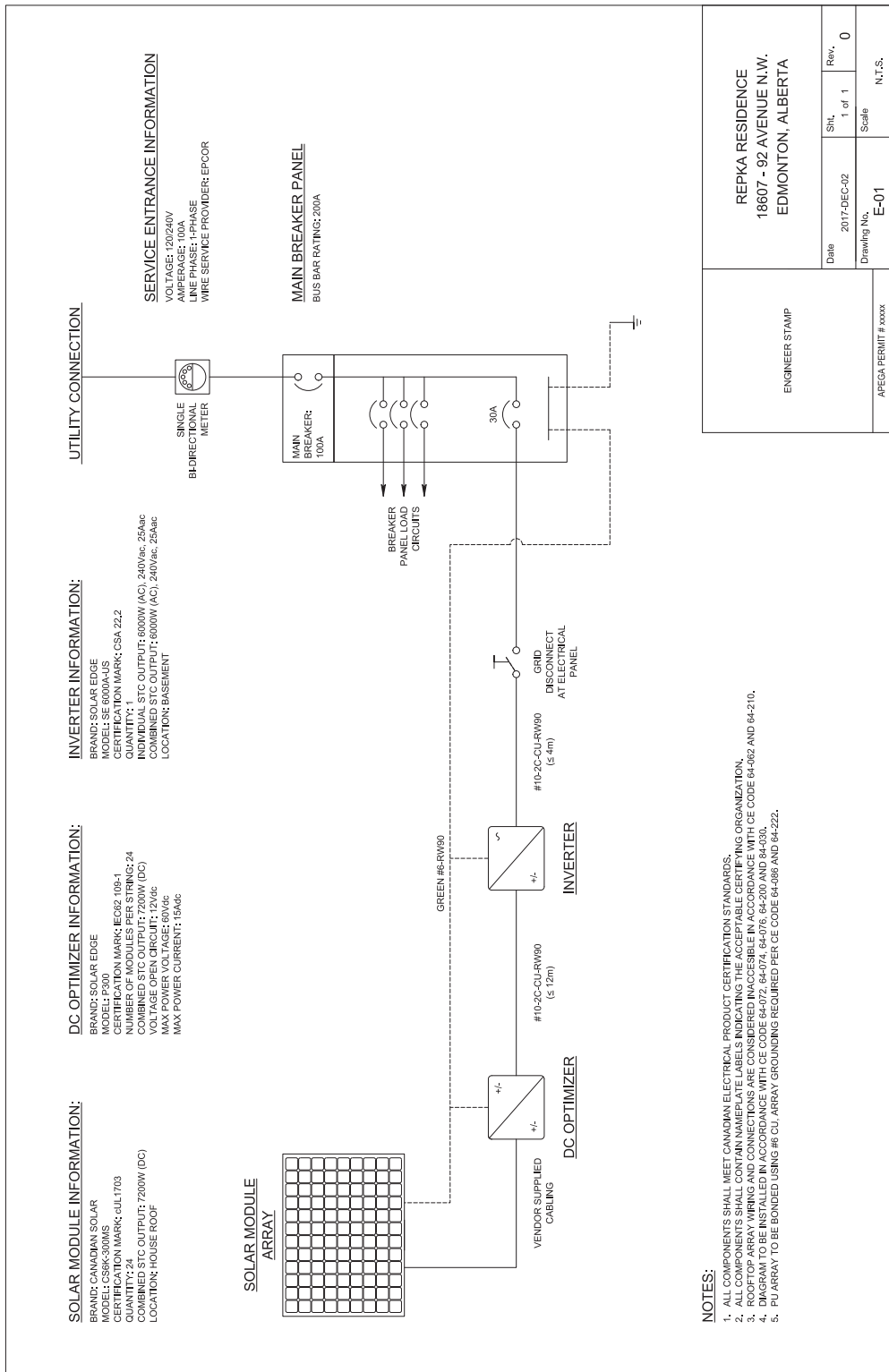
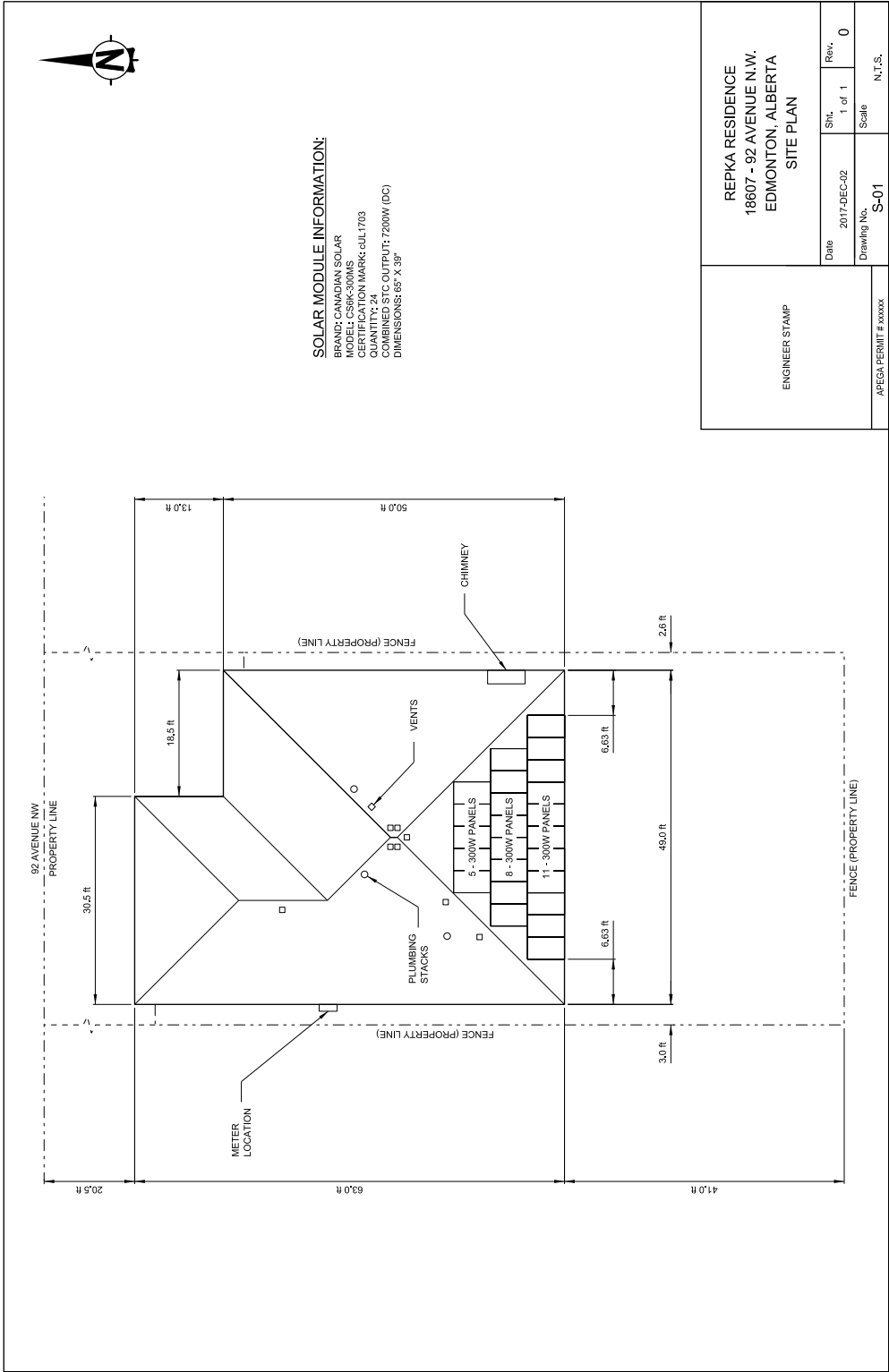


IMAGE 11.2

SITE PLAN EXAMPLE



12.0

Additional Information

12.1 CHECKLISTS

EDTI provides the following checklists to assist Customers:

- [Checklist 12.1 – New Power Connection Site Ready Checklist](#)
- [Checklist 12.2 – Single Phase Transformer Inspection Stages Checklist](#)
- [Checklist 12.3 – Three Phase Transformer Inspection Stages Checklist](#)

12.2 OPERATIONS

- a. The Customer must supply a 24-hour contact number for a Customer representative qualified to operate the Customer circuit breakers. EDTI's personnel will not operate Customer circuit breakers or main disconnects.
- b. The Customer must also notify EDTI when harmonic loads are added to an existing utility transformer.
- c. The Customer will make any required repairs (other than temporary emergency repairs to restore service that may be made by EDTI) to equipment they own.
- d. EDTI has the right to require the Customer to install additional equipment that will reduce or correct flicker resulting from high-surge equipment connected to the service connection. If this is the case, we will notify the Customer.
- e. The electrical service may be subject to voltage fluctuations and other similar issues. Customers should consider installing voltage regulation and surge protection equipment.

12.3 TREE TRIMMING

Tree limbs that fall into power lines cause many power outages and are a potential danger for you and your property. Routine tree trimming and avoiding planting trees under or near power lines can help prevent this. For complete information on what needs to be done and who's responsible for the work, visit [Request a Tree Trimming](#) page on epcor.com.

12.4 HYDRO-EXCAVATION PROCEDURE (HYDROVAC) OVER PRIMARY AND SECONDARY CABLES ON PRIVATE PROPERTY

- a. Always follow updated EDTI hydro excavating standards (i.e. water temperature, water pressure limits, and neoprene oscillating head). The hydro excavating (hydrovac) operator must be familiar with this specific standard before starting work to avoid damage to the cable or exposure to an electrical hazard. A copy of the updated standard must be on-site and made available to EDTI upon request. [Contact us](#) for the most recent standard.
- b. EDTI will allow a contractor to over trench up to 5.0m from energized facilities by hand or hydro excavating (hydrovac). [Contact us](#) before starting work.

- c. Exposed energized cables cannot be left unattended. If the excavation is narrow or small, the primary cable must be covered with soil bags or secured with another suitable temporary method. [Contact us](#) for more details.
- d. Under no circumstances can energized primary cables be moved or handled in any way, unless under the direct supervision of an EDTI Underground Tradesperson.

12.5 **Δ** TEMPORARY CONNECTIONS

- a. **Temporary services are electrical services required by the Customer for 12 months or less. Where a service is required for over 12 months, a permanent service shall be required.**
- b. Examples of temporary services are those for Christmas tree lots and electrical service requirements during construction. [Contact us](#) to see if your service requirements can be met with a temporary service.
- c. The Customer requesting the temporary service connection will be required to pay EDTI for the cost of any facilities required for the connection, along with the cost of their installation and removal, less the value of salvaged material. EDTI will provide an estimate for these services, and all costs must be paid in advance.
- d. EDTI will provide a temporary connection for emergency purposes, at EDTI's sole option, for a period of up to 30 days. The Customer will be notified to complete the repairs within that period. At the end of the 30-day period, the temporary connection will be removed. If the end of the 30-day period occurs between November 15 and April 15, EDTI may not remove the temporary connection until after April 15 due to winter weather conditions.
- e. When small, intermittent electrical loads for construction power are needed, an existing underground residential service stub, intended for permanent service, may be permitted for temporary power. [Contact us](#) to determine availability and the location of the service stub.

When an existing underground residential service stub is used for a temporary service:

- i. The Customer must [contact us](#) for the location of the residential service stub.
- ii. The Customer is responsible for any additional cable, splicing, trenching, and temporary posts for service.
- iii. The maximum continuous load shall not exceed 7.2kW (30A@240V).
- iv. The service shall not be used for electric heating.
- v. Should an outage occur on a service connection for a URD site where electricity is being used for construction purposes and EDTI determines, at its sole option, that the outage was caused by a maximum continuous load of greater than 7.2kW at the URD site, then the Customer responsible for the site will be required to pay the URD site construction overload outage response fee set out in the [Fee Schedule](#). After which:
 - a. EDTI will only fully re-energize the service connection if the Customer confirms to our satisfaction that the consumption at the site will be reduced to a maximum continuous consumption of 7.2kW.
 - b. If the Customer fails to do so, or if we are unable to contact the Customer through reasonable efforts, we will only reconnect and re-energize the service connection at 120V.

- c. If additional outages occur at a URD site where electricity is being used for construction purposes and EDTI determines, at its sole option, that the outages were caused by a maximum continuous load of greater than 7.2kW, EDTI will disconnect the service to protect the safety and reliability of the distribution system.
- vi. When continuous electricity consumption (such as electric heater loads used during construction) of greater than 7.2kW will be required at, the Customer must notify EDTI and apply for the installation of a temporary service connection that's capable of handling the higher load.
- f. Δ Prior to construction, EDTI to review use of armored or metal-sheathed (TECK) cable for temporary installations. TECK cable is not allowed for permanent installations. The Customer must supply all associated fittings, including connectors and grounding bushings.
- g. The service interrupting capacity of temporary service equipment must match the available fault current of the transformer size and type used, as per [Table 3.3 – Main Switch or Breaker Minimum Interrupting Capacity](#) or [Table 8.1 – Main Switch or Breaker Minimum Interrupting Capacity – Downtown Secondary Network Services](#).
- h. In aerial distribution areas, aerial temporary services must be mounted on a wood utility pole or wood post. The pole or post shall be:
 - i. Installed on the Customer's property.
 - ii. Mounted as close as practical to the EDTI distribution pole, but no closer than the minimum design clearances specified in the Alberta Electrical Utility Code.

Where a wood post is used, it shall be:

- iii. Δ Secure a 1.2m long, 38mm x 140mm (2 in. x 6 in. nominal) pressure treated cross arm, 600mm below the conductor attachment point on the wood pole. Secure to pole using a minimum of two ½ in. diameter, 4 in. long, Galvanized Lag Bolts with matching washers – installed 38mm from the edge of cross arm and post – installed top and bottom staggered on cross arm. Predrill for fastener per manufacturer's recommendations.
- iv. Exhibit no movement when pushed or pulled by EDTI crews.
- v. For more information regarding power poles on customer property, see [Drawings 4.1](#) and [4.2](#).
- i. EDTI will not connect any temporary service to the City of Edmonton's streetlight system.
- j. Where temporary TECK cable terminations have been approved by EPCOR, the customer shall provide all required TECK cable with an additional 5m coil of stripped cable, an appropriately sized TECK connector, and an appropriately sized electrical enclosure hole seal to be installed after temporary connection is removed. See [Image 12.1](#) for example.

12.6 RELOCATION OF EDTI EQUIPMENT

- a. Requests to relocate EDTI's electrical facilities (poles, transformers, switching cubicles, and pedestals) shall be made to EDTI. [Contact us](#) for details.
- b. In most cases, the Customer is responsible for all costs associated with relocation of electrical facilities. On request, EDTI will provide an estimate of the costs the Customer will be required to pay.

- c. The Customer will be required to pay the estimated cost of relocation in advance.
- d. The Customer must also make arrangements for the relocation of all other utilities that may jointly use electrical facilities, such as neighboring properties, telecommunication services, City services, and others before relocation.
- e. The Customer may be required, at EDTI's option, to provide a new location and easement on their property to relocate the EDTI equipment to.

12.7 DEMOLITIONS

- a. Before the demolition of any building can begin, it's important for electricity and other utilities to be properly disconnected. Electrical services can pose a severe hazard if still active when the demolition takes place.
- b. If you plan to demolish a building, you must contact your electrical retailer well in advance of the demolition date. Here are some important points to remember when dealing with different types of projects:
 - i. **Residential** – Contact your retailer, request to Remove Meter and Service for Demolition.
 - ii. **Small Commercial** – If no EDTI infrastructure, such as padmount transformers, need to be removed, request to Remove Meter and Service for Demolition when you contact your retailer.
 - iii. **Commercial/Industrial** – Contact your retailer, request to Remove Meter and Service for Demolition. You must then [contact us](#) to arrange for infrastructure removal, which may include padmount transformers, primary cables, aerial transformers, poles, and conductors.
- c. Here are some other important things to know before any demolition:
 - i. EDTI will not remove the meter until EDTI receives confirmation the site has been de-energized.
 - ii. Once we receive notification, EDTI will check voltages and remove all current and potential transformers from the site, along with the meter.
 - iii. The Customer must not begin demolition until we have provided written confirmation of de-energization (a guarantee of isolation) and all EDTI assets have been removed.
- d. Where EDTI equipment is located on a Customer's property:
 - i. The Customer is responsible for all costs associated with relocation of electrical facilities. On request, EDTI will provide an estimate of the costs the Customer will be required to pay.
 - ii. The Customer will be required to pay the estimated cost of removal in advance.
 - iii. The Customer must also make arrangements for the relocation of all other utilities that may jointly use electrical facilities, such as neighbouring properties, communication network, City services, and others before relocation.
 - iv. The Customer may be required at EDTI's option to provide a new location and easement on their property to relocate the EDTI equipment to.

12.8 SPLICING PRIMARY AND SECONDARY CABLES ON PRIVATE PROPERTY

- a. When the Customer installs EDTI approved material on private property, EDTI will provide primary and secondary splicing or cable repair.
- b. Primary cable splice pits must be 3.0m long (parallel to the trench), 2.0m wide, and 150mm deeper than the cable trench.
- c. For secondary cable repair, the splice pit must measure 1.5m long by 1.2m wide. It must be a minimum of 900mm and a maximum of 1,200mm deep, or as deep as the bottom of the stub-outs, whichever is less.
- d. For larger secondary connections, the splice pit may need to be longer.
- e. The Customer is responsible for all landscaping, concrete, paving repairs, and backfilling of materials after the electrical inspection has passed.
- f. At the Customer's cost, EDTI will perform temporary emergency repairs to restore service on Customer-owned materials and equipment. The Customer is responsible for performing all other repairs.
- g. When cables are in duct, buried at a depth greater than 1.0m, or under concrete walks, slabs, or driveways, fault location may not be accurate. EDTI takes no responsibility for inaccurate fault locating due to site conditions.
- h. EDTI will not splice or repair facilities when the splice or repair would require items that we do not stock. When cable or equipment failures on the Customer's property are caused by third-party damage, we will charge the Customer the full cost for all repairs, including splicing. It will be the property owner's responsibility to collect from any third party. See [Section 12.9 – Cable Faults](#) for more information.

12.9 CABLE FAULTS

In accordance with EDTI's Terms and Conditions, Customers or property owners are responsible for installing and maintaining all electrical service connections located on their property. This responsibility includes all civil work, such as excavation, trenching, backfilling, and landscaping, as well as duct or service conduit repair, and any cabling owned by the Customer.

12.9.1 Service Cable

- a. If the service disruption to the Customer's property was likely caused by a failure of the service cable (if the cable route is on both public and private property), EDTI will assess the location of the disruption and provide that information at no cost.
- b. If the location of the disruption is determined to be on public lands or in a utility Right-of-Way, EDTI will ensure that repairs are completed as soon as possible at EDTI's cost.
- c. If the location of the disruption is on private property, the property owner will be responsible for all civil work, as described above. EDTI will complete all electrical connections and cable repairs (e.g. cable splicing, including short lengths of cable) to EDTI owned cables at no cost to the property owner, provided that the original installation meets EDTI standards.

- d. If the faulted cable is in a common trench with high-voltage conductors, EDTI will complete the necessary civil work and charge the Customer for the service.
- e. If it's evident that the service disruption was caused by third-party damage (e.g., fence posts, piles, non-standard material, workmanship, etc.), all costs to repair the cable will be the Customer's responsibility.

12.9.2 Secondary Cable

- a. If the service disruption to the Customer's property was caused by the failure of an EDTI owned low-voltage cable (secondary cable up to 750V) wholly on private property, the property owner is responsible for locating the disruption and all civil work described above.
- b. EDTI will assess the location of the disruption along the EDTI owned cable and provide that information at no cost.
- c. EDTI will make the cable safe for the Customer to complete their work at no cost. This applies to Customer-owned cables where there are no other safe means of disconnect by the Customer.
- d. EDTI will complete all electrical connections and cable repairs (including short lengths of cable) to EDTI owned cables at no cost to the property owner, provided that the original installation meets EDTI's standards.
- e. If the faulted cable is in a common trench with high-voltage conductors, EDTI will complete the necessary civil work and charge the Customer for the service.
- f. If it's evident that the service disruption was caused by third-party damage (e.g., fence posts, piles, non-standard material, or workmanship), all costs to repair the cable will be the Customer's responsibility.

12.9.3 Primary Cable

- a. If the service disruption to the Customer's property was caused by the failure of an EDTI-owned high-voltage cable (primary cable over 750V) wholly on private property, EDTI will make service repairs for safety reasons and to maintain system reliability.
- b. EDTI will assess the location of the disruption along the EDTI-owned cable and provide, excavation, cable repair, and rough backfill to grade. EDTI will complete all electrical connections and cable repairs (including short lengths of cable) at no cost to the Customer.
- c. The Customer will be responsible for the costs of locating the disruption and all civil work described above to repair the cable. It is the Customer's responsibility to complete the final restoration at their own cost.
- d. Note that final restoration may include, but is not limited to, final compaction of the soil, landscaping, and restoring concrete or other surfaces, such as but not limited to, patio surfaces, driveways, and paving stones.
- e. If it's evident that the service disruption was caused by third-party damage (e.g. fence posts, piles, non-standard material, workmanship, etc.), all costs to repair the service cable will be the Customer's responsibility.

12.10 PRIVACY POLICY

See [EPCOR's Privacy Policy](#).

IMAGE 12.1

**ADDITIONAL MATERIAL REQUIREMENTS FOR
TEMPORARY TECK SERVICES**



ELECTRICAL ENCLOSURE HOLE SEAL EXAMPLE
(MUST BE SIZED TO MATCH CONNECTOR)



TECK CABLE CONNECTOR
(MUST BE SIZED TO MATCH PROVIDED CABLE SIZE)

CHECKLIST 12.1

Δ NEW POWER CONNECTION SITE READY CHECKLIST

New Power Connection Site Ready Checklist

Customer Connections

Here is the list of everything that must be completed before our crews can connect your site to the electricity grid. Please review this list and contact your EPCOR representative if you have any questions or concerns.

- ☐ Power cable is coiled at Service Entry Point (SEP)
- ☐ Transformer or cubicle base is facing the correct direction
- ☐ Transformer or cubicle base is level
- ☐ Switching cubicle base is built properly
 - ☐ Ducts are in the correct compartments
 - ☐ Correct type of ducts are installed
 - ☐ Site duct is connected to proper conduit (i.e. C or D)
- ☐ Transformer base is built properly
 - ☐ Guardrails are installed
 - ☐ The duct is in the correct location
- ☐ Ground wire is in the base
- ☐ Power cable is pulled to base
 - ☐ Secondary - size/type installed:
 - ☐ Multi-Family Unit primary – size/type/voltage installed
 - ☐ The phasing of conductors identified
- ☐ Make sure that either:
 - ☐ The stub-out location is marked at property line. Note: you must confirm the location of the stub out with your EPCOR representative by email; **or**
 - ☐ The duct is connected to EPCOR stub-out. You must confirm location of the stub out with your EPCOR representative by email.
- ☐ Backfilled to rough grade is complete
- ☐ Proper elevation is observed for the following (requirements are outlined in EPCOR's Customer Connection Guide):
 - ☐ Depth of conduit
 - ☐ Height of pad
- ☐ Proper access to work locations cleared and available
 - ☐ Site is level/drivable
 - ☐ All construction debris or equipment is cleared away from the electrical infrastructure
- ☐ Trees and other landscaping are trimmed or removed from around electrical equipment
- ☐ If there is an on site generator it must be installed as per the manufacturer's specifications downstream from the main
- ☐ If required, the Splice pit is ready for the EPCOR crew to work
- ☐ Pull string between switching cubicle and transformer (for customer installed cubicle only)
- ☐ Phone line infrastructure completed for Primary Service

CHECKLIST 12.2

SINGLE PHASE TRANSFORMER INSPECTION STAGES CHECKLIST



SINGLE PHASE TRANSFORMER INSPECTION STAGES:

A SEPARATE SITE SERVICES PERMIT IS REQUIRED FOR ALL TRANSFORMER INSTALLATIONS. PHONE NUMBER FOR EPCOR'S INSPECTION REQUEST LINE IS (780)412-3772. REQUEST TO BE CALLED IN BY ELECTRICIAN, HAVE PERMIT NUMBER READY.

STAGE ONE, 1 INSPECTION: PRIMARY AND SECONDARY DUCT INSTALLATION.

1. The Primary duct installation:

- ☐ **EPCOR** reviewed and accepted site drawings are required at this time, to determine the proper requirements for the installation methods used.
- ☐ The service entry point at the property line shall be clearly marked and identified. **Rule 3.7 CCG**
- ☐ All primary cables must be installed in duct on private property.
- ☐ When **EPCOR** conduits have been stubbed to the property line, the customer must first confirm that the conduit exposed is the correct conduit, and then attach their supply conduit to **EPCOR's** conduit. **Rule 5.5e CCG**
- ☐ All Primary sweeps entering the transformer base must be in compliance with **Rule 5.6 CCG**.
- ☐ All other sweeps through-out run shall be of the 36" radius bend type.
- ☐ Reference **Drawing 6.5 CCG** for Primary and Secondary Duct depths.
- ☐ Clearances to all other utilities shall comply with **Rule 3.10 CCG**.
- ☐ **The Primary duct shall be installed through-out its entirety and remain open for inspection purposes.**

2. The Secondary duct installation:

- ☐ All Secondary sweeps entering the transformer base must be in compliance with **Rule 5.6 CCG**.
- ☐ If conduit is used, all other sweeps through-out run shall be of the 36" radius bend type and shall be buried to the depth requested on **Drawing 6.5 CCG**.
- ☐ If cable is being used, cable shall be laid in an orderly fashion on a bed of sand, and are not to cross each other. Sand must be placed above the cable as well. Reference **Rule 3.12.l & Rule 3.12.m CCG** for sand depths.
- ☐ A maximum of ten (10) 4/0 secondary cables or twelve (12) 2/0 cables are permitted. **Rule 5.8.g CCG**
- ☐ Clearances to all other utilities shall comply with **Rule 3.10 CCG**.
- ☐ **The Secondary duct shall be installed through-out its entirety and remain open for inspection purposes.**

*****PLEASE NOTE, IF FOR ANY REASON THE PRIMARY AND SECONDARY DUCTS CANNOT BE COMPLETED THROUGH-OUT THEIR ENTIRETY FOR THE STAGE ONE INSPECTION, PROGRESSIVE INSPECTIONS (FOR AN ADDITIONAL FEE) WILL BE REQUIRED.**

STAGE TWO, 1 INSPECTION: TRANSFORMER PAD AND GROUND GRID INSTALLATION.

1. Service Ducts installation at Transformer Base location:

- ☐ The primary and secondary ducts should be backfilled through-out their entirety at this stage.

- ☐ At the transformer location, the Primary duct shall be installed (when facing the front of the transformer) **as far left** in the transformer pad opening, remaining fully exposed with-in the transformer window. **Drawing 6.3 CCG**
- ☐ At the transformer location, the Secondary ducts shall be grouped as tightly as possible and shall be installed (when facing the front of the transformer) **as far right** in the transformer pad opening, remaining fully exposed with-in the transformer window. **Drawing 6.3 CCG**
- ☐ All conduits entering the base shall have (no more, no less) than the required length on **Drawing 6.3 CCG** extending above the road crush.
- ☐ All bends must be equipped with bell collars. **Rule 6.7.e CCG**

2. Transformer Pad installation:

- ☐ A road crush base shall be installed for the transformer pad, and shall come with evidence of a compaction test. 2X10in. pressure treated lumber is required under all single phase transformer bases. Reference **Rule 6.4.l & Rule 6.4.n CCG** for road crush thickness.
- ☐ If a road crush base and pressure treated lumber is not being installed, a minimum of four (4) screw piles shall be installed, equally spaced beneath the transformer pad, and shall come with evidence of torque settings.
Rule 6.4.o CCG
*****In both the above instances, the findings shall be submitted to your EPCOR representative. Services will not be energized without these submittals.**
- ☐ Align conduits in base opening as described in sub-rule 1.
- ☐ Clearly identify finished grade on all four sides of the transformer pad. **Rule 6.4.u & Rule 6.4.v CCG**

3. Ground Grid installation: Drawings 6.3, 6.5, 6.6, and 6.9

- ☐ Eight (8) 5' x 5/8" copper clad ground rods shall be installed. **Drawing 6.3 CCG**
- ☐ The ground grid shall be of 4/0 stranded copper. **Rule 6.5.d CCG**
- ☐ The ground grid shall be installed in compliance with **Rule 6.5.j CCG** from the edge of the pad on all four sides.
- ☐ The ground grid shall be installed at the depth requested on **Drawing 6.3 CCG** below finished grade.
- ☐ Two ground tails tapped off ground rods from opposite corners to be installed in compliance with **Rule 6.5.j CCG**.
- ☐ Four 4/0 stranded copper ground tails (one off each rod) to be left for the bonding of each guard post.
Rule 6.5.e CCG
- ☐ The ground grid shall be installed in compliance with **Rule 6.5.h CCG** from the property line.

*****PLEASE NOTE, THE DUCT ALIGNMENT INSIDE OF THE TRANSFORMER PAD AND THE GROUND GRID SHALL REMAIN FULLY EXPOSED FOR INSPECTION. NO PORTIONS OF THE 90' BENDS SHOULD BE VISIBLE IN THE BASE.**

STAGE 3, 1 INSPECTION: CABLE, ROUGH GRADING, AND GUARDRAIL INSTALLATION FOR ENERGIZATION OF TRANSFORMER

1. CABLE installation:

- ☐ Secondary conductors shall be installed in compliance with **Rule 6.11.h CCG** at this stage.
- ☐ Cable ends shall be capped with heat shrink caps to prevent moisture infiltration. **Rule 6.11.d CCG**
- ☐ Secondary conductors shall be coiled neatly in a clockwise rotation inside the transformer base and clearly identified at intervals outlined in **Rule 6.11.h CCG**.

2. ROUGH GRADING installation:

- ☐ The ground grid shall be backfilled with fine clay. **Rule 6.5.l CCG**
- ☐ Rough grade shall be established in compliance with **Rule 6.4.u CCG** below the finished grade mark that is clearly identified on all four sides of the transformer pad.
- ☐ Rough grade shall be sloping away from the transformer pad at a 3 to 10% grade for a distance no less than 3m, **ON ALL SIDES.**

3. GUARD RAIL installation:

- ☐ Guard rail corner posts shall be 100mm schedule 40 steel pipe with a steel cap, buried to a depth outlined on **Drawings 6.9 CCG** and concrete encased.
- ☐ Guard rails shall be 50mm schedule 40 steel pipe, at the height outlined on **Drawings 6.9 CCG.**
- ☐ The guard rail portion in front of the transformer shall be removable. **Drawing 6.9 CCG**
- ☐ Each of the four corner posts shall be bonded by the four (4) bond tails left, tapped of the ground rods.

4. ROADWAY AND ACCESS TO TRANSFORMER:

- ☐ A roadway in compliance with **Rule 3.16.d CCG.**
- ☐ A clear path without obstructions shall be provided for the EPCOR vehicle.

5. MAIN SERVICE:

- ☐ The main service shall be ready for energization at the time of inspection. Co-ordination between other parties may be required prior to the **STAGE 3** inspection request. **NOTE: THE MAIN SERVICE MUST BE READY FOR ENERGIZATION AT THE TIME OF THE THIRD STAGE INSPECTION.**

6. FINAL INSPECTION:

- ☐ A final inspection of the Site Services Permit will be conducted once final grading and all landscaping has been completed. Decorative boulders, trees and fences shall not be with-in the guard rails or with-in 3.0m of the front of the transformer. **Rule 6.4.r CCG**

CHECKLIST 12.3

THREE PHASE TRANSFORMER INSPECTION STAGES CHECKLIST



THREE PHASE TRANSFORMER INSPECTION STAGES:

A SEPARATE SITE SERVICES PERMIT IS REQUIRED FOR ALL TRANSFORMER INSTALLATIONS. PHONE NUMBER FOR EPCOR'S INSPECTION REQUEST LINE IS (780) 412-3772. REQUEST TO BE CALLED IN BY ELECTRICIAN, HAVE PERMIT NUMBER READY.

STAGE ONE: 1 INSPECTION: PRIMARY AND SECONDARY DUCT INSTALLATION.

1. The Primary duct installation:

- ☐ EPCOR reviewed and accepted site drawings are required at this time, to determine the proper requirements for the installation methods used.
- ☐ The service entry point at the property line shall be clearly marked and identified. **Rule 3.7 CCG**
- ☐ When EPCOR conduits have been stubbed to the property line, the customer must first confirm that the conduit exposed is the correct conduit, and then attach their supply conduit to EPCOR's conduit. **Rule 5.5.e CCG**
- ☐ All Primary sweeps entering the transformer base must be in compliance with **Rule 5.6 CCG**.
- ☐ All other sweeps through-out run shall be of the 36" radius bend type.
- ☐ Reference **Drawing 6.7 CCG** for Primary and Secondary Duct depths.
- ☐ Clearances to all other utilities shall comply with **Rule 3.10 CCG**.
- ☐ **The Primary duct shall be installed through-out its entirety and remain open for inspection purposes.**

2. The Secondary duct installation:

- ☐ All Secondary sweeps entering the transformer base must be in compliance with **Rule 5.6 CCG**.
- ☐ All other sweeps through-out run shall be of the 36" radius bend type.
- ☐ The Secondary duct shall be buried to a depth that meets the requirements outlined on **Drawing 6.7 CCG**.
- ☐ Clearances to all other utilities shall comply with **Rule 3.10 CCG**.
- ☐ **The Secondary duct shall be installed through-out its entirety and remain open for inspection purposes.**

*****PLEASE NOTE, IF FOR ANY REASON THE PRIMARY AND SECONDARY DUCTS CANNOT BE COMPLETED THROUGH-OUT THEIR ENTIRETY FOR THE STAGE ONE INSPECTION, PROGRESSIVE INSPECTIONS (FOR AN ADDITIONAL FEE) WILL BE REQUIRED.**

STAGE TWO: 1 INSPECTION: TRANSFORMER PAD AND GROUND GRID INSTALLATION.

1. Service Ducts installation at Transformer Base location:

- ☐ The primary and secondary ducts should be backfilled through-out their entirety at this stage.
- ☐ At the transformer location, the Primary duct shall be installed (when facing the front of the transformer) **as far left** in the transformer pad opening, remaining fully exposed with-in the transformer window. **Drawing 6.4 CCG**

- ☐ At the transformer location, the Secondary ducts shall be grouped as tightly as possible and shall be installed (when facing the front of the transformer) **as far right** in the transformer pad opening, remaining fully **exposed** with-in the transformer window. **Drawing 6.4 CCG**
- ☐ At no point with-in the transformer opening, shall the space between the primary and secondary ducts be less than the required depth on **Drawing 6.4 CCG**.
- ☐ All conduits entering the base shall have (no more, no less) than the required length on **Drawing 6.4 CCG** extending above the road crush.
- ☐ All bends must be equipped with bell collars. **Rule 6.7.e CCG**

2. Transformer Pad installation:

- ☐ A road crush base shall be installed for the transformer pad, and shall come with evidence of a compaction test. Reference **Rule 6.4.I & Rule 6.4.P CCG** for road crush thickness.
- ☐ If a road crush base is not being installed, a minimum of four (4) screw piles shall be installed, equally spaced beneath the transformer pad, and shall come with evidence of torque settings.
*****In both the above instances, the findings shall be submitted to your EPCOR representative. Services will not be energized without these submittals.**
- ☐ Align conduits in base opening as described in sub-rule 1.
- ☐ Clearly identify finished grade on all four sides of the transformer pad. **Rule 6.4.u & Rule 6.4.v CCG**

3. Ground Grid installation: Drawings 6.4, 6.7, 6.8 and 6.10

- ☐ Eight (8) 5' x 5/8" copper clad ground rods shall be installed. **Drawing 6.4 CCG**
- ☐ The ground grid shall be of 4/0 stranded copper. **Rule 6.5.d CCG**
- ☐ The ground grid shall be installed in compliance with **Rule 6.5.j CCG** from the edge of the pad on all four sides.
- ☐ The ground grid shall be installed at the depth outlined on **Drawing 6.4 CCG** below finished grade.
- ☐ Two ground tails tapped off ground rods from opposite corners to be installed in compliance with **Rule 6.5.j CCG**.
- ☐ Four 4/0 stranded copper ground tails (one off each rod) to be left for the bonding of each guard post.
Rule 6.5.e CCG
- ☐ The ground grid shall be installed in compliance with **Rule 6.5.h CCG** from the property line.

*****PLEASE NOTE, THE DUCT ALIGNMENT INSIDE OF THE TRANSFORMER PAD AND THE GROUND GRID SHALL REMAIN FULLY EXPOSED FOR INSPECTION. NO PORTIONS OF THE 90' BENDS SHOULD BE VISIBLE IN THE BASE.**

STAGE 3: 1 INSPECTION: CABLE, ROUGH GRADING, AND GUARDRAIL INSTALLATION FOR ENERGIZATION OF TRANSFORMER

1. CABLE installation:

- ☐ Secondary conductors shall be installed in compliance with **Rule 6.11.h CCG** at this stage.
- ☐ Cable ends shall be capped with heat shrink caps to prevent moisture infiltration. **Rule 6.11.d CCG**
- ☐ Secondary conductors shall be coiled neatly in a clockwise rotation inside the transformer base and clearly identified at intervals outlined in **Rule 6.11.h CCG**.

2. ROUGH GRADING installation:

- ☐ The ground grid shall be backfilled with fine clay. **Rule 6.5.I CCG**

- ☐ Rough grade shall be established in compliance with **Rule 6.4.u CCG** below the final grade mark that is clearly identified on all four sides of the transformer pad.
- ☐ Rough grade shall be sloping away from the transformer pad at a 3 to 10% grade for a distance no less than 3.0m, **ON ALL SIDES.**

3. GUARD RAIL installation:

- ☐ Guard rail corner posts shall be 100mm schedule 40 steel pipe with a steel cap, buried to a depth outlined on **Drawings 6.9 CCG** and concrete encased.
- ☐ Guard rails shall be 50mm schedule 40 steel pipe, at the height outlined on **Drawings 6.9 CCG.**
- ☐ The guard rail portion in front of the transformer shall be removable. **Drawing 6.9 CCG**
- ☐ Each of the four corner posts shall be bonded by the four (4) bond tails left, tapped of the ground rods.

4. ROADWAY AND ACCESS TO TRANSFORMER:

- ☐ A roadway in compliance with **Rule 3.16.d CCG.**
- ☐ A clear path without obstructions shall be provided for the EPCOR vehicle.

5. MAIN SERVICE:

- ☐ The main service shall be ready for energization at the time of inspection. Co-ordination between other parties may be required prior to the **STAGE 3** inspection request. **NOTE: THE MAIN SERVICE MUST BE READY FOR ENERGIZATION AT THE TIME OF THE THIRD STAGE INSPECTION.**

6. FINAL INSPECTION:

- ☐ A final inspection of the Site Services Permit will be conducted once final grading and all landscaping has been completed. Decorative boulders, trees and fences shall not be with-in the guard rails or with-in 3.0m of the front of the transformer. **Rule 6.4.r CCG**

APPENDIX I

Δ DISTRIBUTION ASSET OWNERSHIP GUIDE



EPCOR Distribution Asset Ownership Guide

Revision: 2.0

EPCOR DISTRIBUTION ENGINEERING ACCEPTANCE

DISTRIBUTION MANAGER	DISTRIBUTION ENGINEERING GROUP	APPROVAL	DATE
Rada Geddes	ASSET MANAGEMENT	Approved via Email	June 20, 2025
Myles Mix	DISTRIBUTION STANDARDS	Approved via Email	June 16, 2025
Philipp Ramos	CUSTOMER ENGINEERING	Approved via Email	June 6, 2025
Gerald Blouin	DOWNTOWN ENGINEERING	Approved via Email	June 17, 2025
Olaoluwa Ogunbayo	FRANCHISE ENGINEERING	Approved via Email	June 9, 2025
Christopher Donato	CAPITAL ENGINEERING	Approved via Email	June 16, 2025

REVISION HISTORY

DATE OF REVISION	REV DESCRIPTION	REVISED BY
Nov 23, 2021	Created document	Phil Ramos Shane Fraser
June 20, 2025	- Reformatted document - Definitions added - Ownership definitions and exceptions clarified	Ashton Ford

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1 Scope

This guide, subject to certain exceptions, is used to reference the ownership of distribution power assets for installations, maintenance, repairs and removals within EPCOR Distribution & Transmission Inc. service territory.

2 Disclaimer

The following document defines under which circumstances EPCOR Distribution & Transmission Inc. (“EDTI”) owns a particular asset on public or private property within EDTI’s service territory. While the information contained herein reflects EDTI’s standard practice, it may not apply to every situation, and exceptions may exist. Accordingly, EDTI reserves the right to make exceptions to this guide at its discretion based on specific circumstances. Customers are encouraged to consult EDTI for clarification regarding individual circumstances.

In this guide, where no distinction is made between an asset on public and/or private property, the definition shall apply to both public and private properties. This guide is limited to distribution power assets and does not include transmission power assets. There are exceptions to certain ownership conditions, and the EDTI Ownership Definitions shall be read in conjunction with the Exceptions. This guide is intended to be applied to newly built assets. There may be existing assets where ownership does not align with the definitions set in the guide, which will be assessed on a case-by-case basis. In instances where ownership is not defined in this guide, EDTI Distribution Asset Management shall determine ownership in alignment with applicable laws, regulations, standards and industry practices.

3 Definitions

“Base (a.k.a. Pad)” – A concrete structure, either poured in place or precast, that is installed in the ground for electrical equipment to be installed on.

“Building Structure” - A customer’s building that may include civil infrastructure that can accommodate power servicing for a customer’s electrical needs. The building structure includes parkade, foundation, blast walls and service ducts.

“Civil Works” – As defined in the Terms and Conditions.

“Downstream” or “downstream” – Away from the utility-provided power source.

“Distribution” - EPCOR’s departments that own, operate and maintain within voltages up to 25,000 Volts. The power assets that carry the electricity from utility to customer.

“EDTI” – EPCOR Distribution & Transmission Inc., as defined in the Terms and Conditions.

“Fringe Customer” – A customer serviced by another power utility within EDTI’s service territory.

“Luminaire” - Light fixture that houses the light source.

“Lampposts” - Pole or post that supports the luminaire.

“Metered” – An electrical service to a site where the consumption of electricity is recorded by a Utility Meter.

“Metering Point” – The point in an electrical service where a utility meter is connected. This can include the metering of primary power or secondary power.

“Pedestal” - A steel box enclosure mounted on a concrete base that contains two separate compartments, one for secondary power services (serving residential homes or street light wiring) and the other for communication services.

“Point of Service” – The electrical connection point at which EDTI’s service conductors are connected to the conductors or apparatus of a customer, which is more particularly described below:

- For secondary overhead services, the mast head shall be considered the Point of Service.
- For residential underground services, the Point of Service shall be the point at which the secondary underground cable crosses the property line.
- For underground commercial and industrial services, the Point of Service shall be the secondary bus on the transformer.
- For primary metered services, the Point of Service is the point of cable termination in the switchgear or overhead switch.
- For multi-family units (“**MFUs**”), the Point of Service shall be the secondary bus on the transformer or pedestal; whichever is the device that is further downstream. In an MFU where the pedestals are built to Part 1 of the Canadian Electrical Code, the Point of Service shall be the secondary bus of the transformer.
- For streetlights and traffic lights the Point of Service is the first point of disconnect. In underground systems this is a breaker or lug in the first light, relay, pedestal, or control cabinet. In overhead systems, this is the termination point at the relay for the street or traffic lights (i.e. immediately before the relay). EDTI does not have ownership of any relays.

“Powerbase” – A steel box enclosure mounted on a concrete base that supports a street light lamppost and contains two separate compartments, one for secondary power services (serving residential homes or street light wiring) and the other for communication services.

“Primary” – High-voltage utility power in excess of 750 volts. For EPCOR’s distribution system, the nominal primary voltages are 5kV, 15kV and 25kV, depending on the area of Edmonton.

“Secondary” – Low-voltage power of 750 volts or less. Nominal voltages are as outlined in EPCOR’s Customer Connection Guide.

“Security Lighting” – Raised source of light attached overhead to a post that are not along public roadways. These are composed of **luminaires** and **lampposts**. Security lights are maintained by EPCOR and provide a rented lighting service to a customer, indicated via a unique security light site ID on their electricity bill. Typically, security lights are unmetered, provide lighting to titled properties (including some City parks), are owned by EPCOR, and are upstream of a customer’s Point of Service. This includes some City-owned lights after the Point of Service, which are classified as security lighting if they are maintained by EDTI. EDTI does not accept new security lighting customers.

“Service Entry Point” – The civil infrastructure connection point at which EDTI’s civil infrastructure ends and is connected to the Customer’s property or civil infrastructure. This is the property line or edge of the registered utility right-of-way.

“Street Lighting” – Raised source of light attached overhead to a post along public roadway. These are composed of **luminaire** and **lampposts**, which are owned and maintained by the City of Edmonton. Typically, street lighting provides outdoor lighting for the public.

“Terms and Conditions” – EDTI’s Terms and Conditions for Distribution Connection Services.

“Traffic Lighting” – Assets associated with vehicular and pedestrian traffic control and communication.

“Unmetered” – An electrical service to a site where the consumption of electricity is not recorded by a meter and the customer is billed under a fixed rate outlined under EPCOR’s Customer Connection Guide and Terms & Conditions.

“Upstream” or “upstream” – Towards the utility-provided power source.

“Utility Meter” – An electricity revenue meter. Used to record the consumption (and production) of electrical energy at a site and communicates that information to the utility for monitoring and billing.

4 General

4.1 General Exceptions

- a. EDTI does not own assets used to service fringe customers.
- b. EDTI does not own Underground Secondary on private property unless specified under 6.6 - *Underground Cable - Secondary*.

5 Overhead Distribution Systems

5.1 Power Poles

5.1.1 *EPCOR Distribution Ownership Definition*

- a. All poles with primary overhead wire.

Exceptions:

- i. EDTI does not own poles on private property that have primary overhead wire downstream of a metering point.
- b. All poles with EDTI-owned communication infrastructure.

Exceptions:

- i. EDTI does not own a pole that only has non-EDTI communication wires, communication guys, communication anchors, and/or communication downhauled attached.
 - c. All poles on public property with secondary overhead wire.
- ##### Exceptions:
- i. EDTI does not own poles on public property that only have secondary and are downstream of a Point of Service¹.
 - ii. EDTI does not own poles where it only has street lighting or traffic lighting.
 - d. Any pole on private property that serves, or is used to serve multiple customers, or is the last pole in a line of poles on servicing multiple customers.

Exceptions:

¹ In this case, the Point of Service would be a utility metering point or a first point of disconnect if there is no utility meter.

- i. EDTI does not own poles that are located on a shared property line between two or more private properties that service only the properties that share the property line.
- e. Any pole on private property with unmetered security lighting fed directly from EDTI's distribution system.

5.1.2 Notes

- a. Where a pole is on private property and does not meet the EDTI ownership definition, the pole is considered a fixture of the property and shall be defined as the property and responsibility of the property owner, subject to any easements or rights-of-way between EDTI and the property owner registered on the property. This includes poles on the property line between two private properties, providing secondary service to one or more properties.
- b. Where a pole has security lighting that is maintained by EPCOR, the pole shall only be used for the purposes of security lighting. If the pole shall be intended for additional uses, the property owner must take over ownership of the pole.
- c. EDTI can choose to transfer the exclusive and absolute ownership of any pole to Telecommunication companies where EDTI has removed its power assets from, and telecommunication assets still remain on the pole. Upon transfer of this pole all further obligations of EDTI in respect to the maintenance, removal, and disposal of the same shall cease.

5.2 Overhead Wire – Primary

5.2.1 EPCOR Distribution Ownership Definition

- a. All primary overhead wire upstream of any utility meter.

5.2.2 Notes

- a. EDTI does not own primary overhead wire that is downstream of a metering point.

5.3 Overhead Wire – Secondary

5.3.1 EPCOR Distribution Ownership Definition

- a. All secondary overhead wire upstream of a Point of Service².

² For secondary overhead services, the mast head shall be considered the Point of Service.

5.3.2 Notes

- a. EDTI does not own secondary overhead wire that only services streetlight and/or traffic lighting, downstream of the Point of Service³.

5.4 Security Lighting

5.4.1 EPCOR Distribution Ownership Definition

- a. All unmetered security lights, including its supporting assets.

Exceptions:

- i. See Pedestal & Powerbase Ownership Definition and Exceptions for welded assets.

5.5 Guy Wires, Downhauls, and Anchors

5.5.1 EPCOR Distribution Ownership Definition

- a. All primary and secondary guy wires and anchors attached to EDTI-owned poles.

Exceptions:

- i. Communication guy wires for telecommunication company assets.

5.5.2 Notes

- a. EDTI can choose to transfer the exclusive and absolute ownership of any pole to Telecommunication companies where EDTI has removed its power assets from, and telecommunication assets still remain on the pole. Upon transfer of this pole all further obligations of EDTI in respect to the maintenance, removal, and disposal of the same shall cease.

³ For streetlights and traffic lights the Point of Service is the first point of disconnect.

6 Underground Distribution Systems

6.1 Concrete Bases – Transformer, Cubicle, and Pedestal Bases

6.1.1 *EPCOR Distribution Ownership Definition*

- a. All bases upstream of any utility meter or Service Entry Point⁴, whichever is furthest upstream.

Exceptions:

- i. EDTI does not own a base that is integrated into a building structure.

6.1.2 *Notes*

- a. Bases shall be deemed to include the associated ground grid.
- b. EDTI does not own guard rails located on private property.
- c. EDTI does not own alcoves, blast-walls and fence perimeters enclosing padmount equipment.
- d. Bases on private property are considered to be under the control of EDTI while EDTI equipment is installed in/on it. EDTI does not hold any ownership over the base.

6.2 Pedestal & Powerbase

6.2.1 *EPCOR Distribution Ownership Definition*

- a. All pedestals and powerbases upstream of any utility meter or Point of Service⁵, including those where the device on the pad or pedestal base contains the Point of Service. EDTI owned pedestals and powerbases are built to Part 3 of the Canadian Electrical Code.

Exceptions:

- i. EDTI does not own pedestals which are built containing a main disconnect, built to Part 1 of the Canadian Electrical Code.
- ii. EDTI does not own the pedestal or powerbase if it is considered the Point of Service for a streetlight or traffic light service.
- iii. EDTI does not own a pedestal or powerbase that only provides secondary services for streetlight and traffic light Customers.

⁴ The civil infrastructure connection point at which EDTI's civil infrastructure ends and is connected to the Customer's property or civil infrastructure. This is typically the property line or edge of the registered utility right-of-way.

⁵ For underground services which use powerbases and pedestals, the Point of Service is considered to be the secondary bus in the pedestal/powerbase.

6.2.2 Notes

- a. If the powerbase also has a lamppost welded to the powerbase, EDTI owns the lamppost, but not the luminaire.
- b. If the powerbase has a lamppost bolted to the powerbase, EDTI does not own the lamppost or luminaire.
- c. Pedestals and powerbases are considered legacy EDTI assets, meaning that EDTI no longer installs new pedestals or powerbases for system expansion or new developments.

6.3 Pad-Mounted/Underground Transformers

6.3.1 EPCOR Distribution Ownership Definition

- a. All pad-mounted/underground transformers upstream of the Point of Service⁶.

6.3.2 Notes

- a. Transformers with a care and control agreement under EDTI are excluded from EDTI ownership.

6.4 Pad-Mounted/Underground Switching Cubicles

6.4.1 EPCOR Distribution Ownership Definition

- a. All pad-mounted and vault installed switches upstream of the Point of Service⁷ or utility meter.

6.4.2 Notes

- a. Primary switching cubicles with a care and control agreement under EDTI are excluded from EDTI ownership.

6.5 Underground Cable - Primary

6.5.1 EPCOR Distribution Ownership Definition

- a. All primary underground cable upstream of the Point of Service⁸.

⁶ For underground padmount transformer services, the Point of Service shall be the secondary bus on the transformer.

⁷ For underground padmount transformer services, the Point of Service shall be the secondary bus on the transformer.

⁸ For underground primary services, the Point of Service is the point of cable termination in the switchgear.

6.6 Underground Cable - Secondary

6.6.1 *EPCOR Distribution Ownership Definition*

- a. All secondary underground cable upstream of Point of Service⁹.

Exceptions:

- i. For network secondary service, ownership ends at the termination point of the switchgear.
- ii. For security lights, EDTI would own the secondary cable in between each asset.

6.7 Manholes, Hand-Holes, Vaults

6.7.1 *EPCOR Distribution Ownership Definition*

- a. All manholes, hand-holes and vaults upstream of Service Entry Point¹⁰.

Exceptions:

- i. EDTI does not own manholes, handholes, and vaults that are integrated into a building structure.

6.7.2 *Notes*

- a. Manholes, hand-holes, and vaults shall be deemed to include the associated civil works and grounding.
- b. The property line will be assumed to be the Service Entry Point. In situations where a building envelope extends past the property line (outside of private property onto public land), the Service Entry Point will be the edge of the building's footprint.

6.8 Duct Lines, Duct Banks

6.8.1 *EPCOR Distribution Ownership Definition*

- a. All duct lines and duct banks containing primary or secondary cable upstream of a Service Entry Point.

Exceptions:

⁹ For residential underground services, the Point of Service shall be the point at which the secondary underground cable crosses the property line. For underground commercial and industrial services, the Point of Service shall be the secondary bus on the transformer.

¹⁰ The Service Entry Point is the civil infrastructure connection point at which EDTI's civil infrastructure ends and is connected to the customer's property or civil infrastructure. This is typically the property line or edge of the registered utility right-of-way.

- i. EDTI does not own manholes, handholes, and vaults that are integrated into a building structure.
- ii. EPCOR Distribution only owns duct lines and duct banks up to the fence line of an EPCOR Transmission substation. Upstream of the substation fence line, it is owned by EPCOR Transmission.

6.8.2 *Notes*

- a. Refer to 6.7.2 b.

APPENDIX II

Δ ELECTRICAL INSPECTION DEMARCATION - JUNE 21, 2024



PROVIDING MORE

Electrical Inspection Demarcation

Introduction:

This document is intended to provide clarification regarding Consumer installations and the demarcation between EPCOR service inspections and City of Edmonton electrical inspection as jointly agreed to by the City of Edmonton and EPCOR Distribution & Transmission Inc.

Revision: June 21, 2024

Electrical Inspection Demarcation

Revision: June 21, 2024

Disclaimer:

EPCOR Distribution & Transmission Inc. ("EDTI") requires inspection of all utility assets, or assets connected directly to the utility system installed on private property. In addition, EDTI requires an inspection of all service entrance equipment prior to energization to ensure it is safe to energize.

Due to certain requirements of issuing permits under the Alberta Safety Codes Act, the service inspection completed by EDTI only applies to new permanent services, temporary services, all transformer & switching cubicle base installations, and any infrastructure containing EPCOR primary cable. All service upgrades, changes & repairs are inspected by the City of Edmonton.

Inspection Demarcation does not define ownership of assets, for details of asset ownership refer to EPCOR Distribution Asset Ownership Policy. The Point of Inspection Demarcation may extend beyond the Point of Service in order for EDTI to determine that the Service is safe to energize.

There may be installations and configurations not contemplated in the details contained herein, in such cases the customer should contact the City of Edmonton Chief Electrical Inspector for clarification.

EDTI Electrical Inspection Definitions

“EDTI” – EPCOR Distribution & Transmission Inc., as defined in the Terms and Conditions.

“Point of Service” – as defined in the Terms and Conditions and as further detailed below:

- For Residential Overhead Services, the mast head shall be considered the Point of Service.
- For Residential Underground Services, the Point of Service shall be the point at which the secondary underground cable crosses the property line.
- For Commercial, Industrial, and Multi-Family Residential Units (“MFUs”), the Point of Service shall be the secondary bus on the transformer or pedestal; whichever is the device that is further downstream.
- For street lights and traffic lights the Point of Service is the first point of disconnect. This is a breaker or lug in the first light, pedestal, or control cabinet.

“Point of Inspection Demarcation” – the scope of work and infrastructure inspected by EPCOR & its authorized representatives; however, does not mean demarcation for Asset Ownership and/or Care & Control. The demarcation of Asset ownership is outlined in the EPCOR Distribution Asset Ownership Policy within EPCOR’s Customer Connection Guide.

“Terms and Conditions” – means EDTI’s Terms and Conditions for Distribution Connection Services.

Electrical Inspection Demarcation

Revision: June 21, 2024

Service Type	Point of Inspection Demarcation	EPCOR Inspection
Residential (single family detached, semi-detached, and row housing up to 200A)		
Underground	Line side terminal of the customer's meter socket.	<u>Service Inspection Stage 1 (Underground Inspection)</u> : Conduit with cable from property line to the meter stack.
		<u>Service Inspection</u> : Meter socket, riser installation, cable size & terminations. Load calculation. Check system ground & main disconnect is safe to energize.
Overhead/Aerial	Line side terminal of the customer's meter socket.	<u>Service Inspection</u> : Meter socket & riser installation, cable size & terminations. Customer installed poles. Load calculation. Check system ground & main disconnect is safe to energize, check service wire will not trespass over adjacent property.
Residential (multi-unit residential buildings with transformers on private property)		
Any multi-unit residential buildings where transformers are on private property and may or may not have customer owned power pedestal (a pedestal with means of disconnect)	Line side terminal of the meter, meter center or multi-gang meter sockets.	<u>Stage 1</u> : All conduit to the transformer(s) & pedestal(s).
		<u>Stage 2</u> : Base installation including grounding.
		<u>Stage 3</u> : Guard posts & rails, rough grading, access to pads. All cable installations including the underground cable trench between the pedestal and service entrance equipment.
		<u>Service Inspection - Stage 1 (Underground Inspection)</u> : Conduit with cable from the pedestal to the meter stack.
		<u>Service Inspection</u> : Service entrance equipment, cable terminations, meter socket(s). Load Calculation. Check system ground & main disconnect is safe to energize.
		<u>Final Inspection</u> : 1 year after site service inspection, confirm transformer landscaping, pad level & EPCOR transformer access requirements are maintained.

Electrical Inspection Demarcation

Revision: June 21, 2024

Utility owned power pedestal (without means of disconnect)	Line side terminal of the customer's meter socket.	<u>Underground Inspection</u> : Conduit with cable from pedestal to the meter stack (for new installations).
		<u>Service Inspection</u> : Meter socket, riser installation, cable size & terminations. Load Calculation. Check system ground & main disconnect is safe to energize.

Service Type	Point of Inspection Demarcation	EPCOR Inspection
Commercial Service (includes multi-unit residential with a total load calculation over 200A and unmetered services)		
Underground (overhead/aerial or padmount transformer off-site)	Line side terminal of the customer's meter socket or main disconnect, whichever is first.	<u>Underground Inspection</u> : Conduit from property line to the building.
		<u>Service Inspection</u> : Service entrance equipment, meter socket, metering instrument enclosure, cable size & terminations. Load Calculation. Check system ground and main disconnect to ensure it is safe to energize.
Underground (transformer on-site)	Line side terminal of the customer's meter socket or main disconnect, whichever is first.	<u>Stage 1</u> : All primary & secondary conduit up to the foundation.
		<u>Stage 2</u> : Base installation including grounding.
		<u>Stage 3</u> : Guard posts & rails, rough grading, access to pads & cable installations.
		<u>Service Inspection</u> : Stage 1, secondary conduit inside building. Meter socket, instrument enclosure, cable size & terminations. Load Calculation. Check system ground and main disconnect to ensure it is safe to energize.
		<u>Final Inspection</u> : 1 year after site service inspection, confirm transformer landscaping, pad level & EPCOR transformer access requirements are maintained
Network	Line side terminal of the customer's main disconnect.	<u>Service Inspection</u> : Load Calculation. All incoming conduit, service entrance equipment, meter socket & instrument enclosure.

Electrical Inspection Demarcation

Revision: June 21, 2024

Overhead/Aerial	Line side terminal of the customer's meter socket or main disconnect, whichever is first.	<u>Service Inspection</u> : Riser/mast, meter socket, instrument enclosure, cable size & terminations. Customer installed poles. Load Calculation. Check system ground and main disconnect to ensure it is safe to energize. Check service wire will not trespass over adjacent property.
Primary Metered		
Aerial/Overhead/Underground Primary Metered	Line side terminal of the customer's main disconnect.	<u>Service Inspection</u> : Load Calculation. All incoming conduit, poles, service entrance equipment, meter socket & instrument enclosure.

* for EPCOR Inspections that have Stages 1-3, refer to the 1-Phase or 3-Phase Inspection Stages checklist for further clarification to the requirements for each stage.

APPENDIX III

Δ ERRATA - JANUARY 1, 2025



Customer Connection Guide ERRATA

DATE: December 17, 2024

VERSION: 3.0

SUBJECT: 2024 Customer Connection Guide Errata - December

SECTIONS: 3.5.1, 3.6.i, 3.10, 3.10.23, 3.10.2.4, 3.10.2.4.1, 3.10.3.e.ii, 3.12, 3.14.a.ii, 3.14.e.ii 4.5, 5.5, 5.7d, 5.7i, 5.7g, 6.9, 6.10g, 6.10.i, 6.11.k, l, m, 6.11.h.iii, 7.6, 7.16a, 7.16.b, 7.16.c, 7.16.e, 7.16.f, 8.1a, 8.6, 8.8a, 8.10, 9.7a, 9.7c, 10.3, 10.5, 10.4, 10.4j, 10.5.b, 10.5f, 10.5.n, 10.6, 10.6.h, 10.7.c, 10.7.i, 10.8, 10.8.g, 10.9.c, 10.9.p, 11.1.1.a, 11.3.b, 11.4.3.1, 11.4.3.2, 12.5.h.iii, 12.5.h.iii, 12.5.f

DRAWINGS: 3.9, 4.4, 4.5, 5.2, 5.3, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.13, 6.14, 7.1, 10.2, 10.4, 10.6

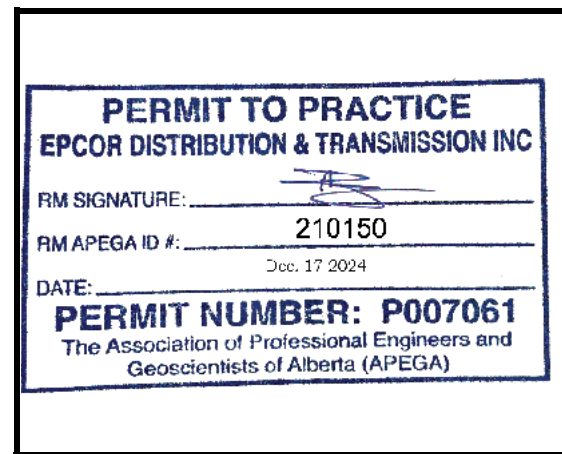
TABLE: 3.1, 3.2, 6.1, 8.2, 10.1

CHECKLISTS: 12.1

Errata are applied retroactively for the version of the Customer Connection Guide for which the errata was issued for above. Designs or construction in progress that are designed to the Customer Connection Guide version above must comply with the errata, unless a written exception has been granted by EPCOR – Customer Engineering Services



2024-12-17
Engineer's stamp



Responsible Member's Permit to Practice
stamp

Revision #	Scope	Engineer Approval	Responsible Member Permit
1	SECTIONS: 3.5.1,3.6.I, 3.10, 3.10.23. 3.10.2.4, 3.10.2.4.1, 3.10.3.e.ii, 3.12, 3.14.a.ii, 3.14.e.ii, 4.5, 5.5, 5.7d, 5.7i, 5.7g, 6.9, 6.10g, 6.10.i, 6.11.k, l, m, 6.11.h.iii, 7.6, 7.16a, 7.16.b, 7.16.c, 7.16.e, 7.16.f, 8.1a, 8.6, 8.8a, 8.10, 9.7a, 9.7c, 10.3, 10.5, 10.4, 10.4j, 10.5.b, 10.5f, 10.5.n, 10.6, 10.6.h, 10.7.c, 10.7.i, 10.8, 10.8.g, 10.9.c, 10.9.p, 11.1.1.a, 11.3.b, 11.4.3.1, 11.4.3.2, 12.5.h.iii, 12.5.h.iii, 12.5.f DRAWINGS: 3.9, 4.4, 4.5, 5.2, 5.3, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.13, 6.14, 7.1, 10.2, 10.4, 10.6 TABLE: 3.1, 3.2, 6.1, 8.2, 10.1 CHECKLISTS: 12.1	Eric Babij	Phil Ramos

The following drawings shall be **updated**

- Drawings, Forms Updated list. pdf

The following shall be **removed** from (Section Underlined)

- Clause/Section, ~~**Removed text struck out and bolded in red**~~

The following shall be **added** to (Section Underlined)

- Clause/Section , **added text bolded in green**

The following shall be **removed** from Table 3.1 – Project Overview (Network Service):

- This is a 120/208V ~~or 347/600V~~ service located in the network area with the transformer connected to EDTI's network system. The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. Typical installations include medium to large commercial applications.

not within a building Customer. NETWORK SERVICE This is a 120/208V ~~or 347/600V~~ service located in the network area with the transformer connected to EDTI's network system. The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. Typical installations include medium to large commercial applications.	Complete civil work on private property. This typically includes all trenching and ducts. Install Current Transformers and Potential Transformers. The Customer maintains all secondary ducts on private property.	Complete all work on public property. Supply and install secondary conductors and make the final connection at the transformer or ring bus and the Customer's switchgear. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Property line.	Switchgear.

The following shall be **added** to Table 3.1: Project Overview

		install revenue metering equipment.		
UNDERGROUND SECONDARY SERVICE This is a secondary underground service fed from an existing transformer, new transformer, or pedestal installed on City of Edmonton property. Typical installations include homes and small to medium commercial applications.	Complete civil work on private property. This typically includes all trenching, ducting, handholes, and grounding. Supply secondary service cable, except for non-MFU residential sites. Install secondary cable. / duct Install Current Transformers and Potential Transformers.	Complete all work on public property. Terminate all secondary conductors at the transformer or pedestal. For non-MFU residential sites, supply secondary service cable from transformer/pedestal to service entry point, plus 30.0m (coiled for Customer to install). Additional cable at Customer's cost. Supply Current Transformers and Potential Transformers. Supply and install revenue metering equipment.	Property line.	Splice at property line if present, otherwise line side meter socket lugs.

The following shall be **removed** from Table 3.2: Service Types:

TABLE 3.2

SERVICE TYPES

	COMMERCIAL SERVICE LIMITS	RESIDENTIAL SERVICE LIMITS
AERIAL SECONDARY SERVICE An overhead service run from a power pole. Typical installations include homes and small commercial applications.	• 120/240V, 1-Ph, 3-W – 400A • 120/208V, 3-Ph, 4-W – 400A • 277/480V, 3-Ph, 4-W – 150A (Temporary Services Only) • 347/600V, 3-Ph, 4-W – 150A	• 120/240V, 1-Ph, 3-W – 400A • Typical services sizes include: 100A, 125A, 150A, 200A
UNDERGROUND SECONDARY A secondary underground service fed from an existing transformer, new transformer, or pedestal installed on City of Edmonton property. Typical installations include homes and small to medium commercial applications.	Pad-Mounted Transformer • 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 2,800A • 277/480V, 3-Ph, 4-W – 2,200A (Temporary Service and Level 3 EV Charging ~~on Public Property~~ Services Only) • 347/600V, 3-Ph, 4-W – 2,400A Pole-Mounted Transformer • 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 400A • 277/480V, 3-Ph, 4-W – 150A (Temporary Services Only) • 347/600V, 3-Ph, 4-W – 150A	• 120/240V, 1-Ph, 3-W – 600A • Typical services sizes include: 100A, 125A, 150A, 200A
PADMOUNT TRANSFORMER A ground-mounted transformer located on private property. Typical installations include medium to large commercial applications, large houses, and multi-family sites.	• 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 2,800A • 277/480V, 3-Ph, 4-W – 2,200A (Temporary Services Only and Level 3 EV Charging ~~on Public Property~~ Services Only) • 347/600V, 3-Ph, 4-W – 2,400A	• 120/240V, 1-Ph, 3-W – 600A • Typical services sizes include: 100A, 125A, 150A, 200A
NETWORK A 120/208V or 347/600V service	• 120/208V, 3-Ph 4-W – 3,000A • 120/208V, 2-Ph, 3-W – 100A	• 120/208V, 2-Ph, 3-W – 100A

The following shall be **removed** from Table 3.2 – Service Types (Network):

- All references to allowable amperage and 347/600V services

NETWORK A 120/208V or 347/600V service connected to EDTI's network system The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. Typical installations include medium to large commercial applications.	• 120/208V, 3-Ph 4-W ~~3,000A~~ • 120/208V, 2-Ph, 3-W ~~100A~~ • 347/600V, 3-Ph, 4-W ~~1,800A~~ Note: Please contact us for confirmation of the network voltage and amperage available in your area.	• 120/208V, 2-Ph, 3-W ~~100A~~ Note: Please contact us for confirmation of the network voltage and amperage available in your area.

The following shall be **removed** from Section 3.5.1 - Electric Vehicle Charging – Alternatives to Service Upgrade:

- ~~Electric Vehicle Charging~~ – Alternatives to a Service Upgrade

3.5.1 ~~Electric Vehicle Charging~~ Alternatives to a Service Upgrade

- A common reason single family residential Customers request service upgrades is to accommodate the addition of a Level 2 (208/240V) electric vehicle charger to their home.
- This is typically the result of the Canadian Electrical Code (CEC) – Part I, Rule 8-200 load calculations exceeding the existing service capacity.

The following shall be **added** to Section 3.6.I:

- Residential services **under 200A** are not designed for electric heating as the primary heat source. If it is to be used as the primary heat source, contact us Customer Engineering Services prior to construction. The Customer may be assessed additional costs based on the type of upgrades required.

The following shall be **added** to Section 3.10 Clearances

- **Add Section 3.10.4 Vertical Clearances to Other Utilities**
 - **a. The following horizontal clearances apply to the specified infrastructure on private property. Where other utility or municipality requirements are more stringent those shall apply.**
 - **b. A minimum of 0.3m vertical separation is required to all EPCOR underground power cables and duct lines when crossing these areas. Crossings are to be made as close to 90 degrees as possible. Expose existing facilities are required.**

The following shall be **added** to Section 3.10.2.3: Primary Conductors:

3.10.2.3 Primary **and Secondary** Conductors

- c. 2.0m to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. The **primary or** secondary cable cannot cross through septic fields and Minnesota Mounds.

The following shall be **removed** from Section 3.10.2.4: Secondary Conductors:

~~3.10.2.4 Secondary Conductors~~

- ~~a. 1.0m to all gas lines.~~
- ~~b. 1.8m to all water lines and cc valves.~~
- ~~c. 2.0m to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. The secondary cable cannot cross through septic fields and Minnesota Mounds.~~

The following shall be **removed** and **added** to Section 3.10.2.4.1: Single-Family and Multi-Family Unit Four-Party Trench Exception:

3.10.2.~~4~~.3.1 Single-Family and Multi-Family Unit Four-Party Trench Exception

- a. On residential properties where a four-party joint-use trench is used, there must be a minimum 0.3m separation to the gas line in the four-party trench, and a marker tape must be installed 0.5m above the service cable. **Please see Drawing 5.2 – Typical Shared Power Trench for details.**

The following shall be **added** to Section 3.10.3.e.iii

3.10.3.iii. Transformers: 3.0m in front of doors, 2.0m on other sides **(including driveways)**

The following shall be **added** and **removed** from Section 3.12 - Trenching and Backfilling

- s. Backfill material over **duct cable** can be the material trenched with a mechanical trencher, if the inspector deems it suitable. Soil with high thermal resistivity that contains large amounts of organics, peat, black loam, sod, hardened clay, stones, straw, snow, or frozen material will not be acceptable. All backfill material is subject to the inspector's approval. Sand or clean backfill material must be substituted for unsuitable backfill.

The following shall be **added** and **removed** from Section 3.12 - Trenching and Backfilling

~~l. If large lumps of clay and soil have hardened due to drying or freezing, and when a backhoe has been used for electrical service installation~~ **Where excavation is completed, sand must be provided.** A 150mm layer of sand must be placed below the **cable** duct.

m. For all service installations, a 300mm layer of sand must be placed above the **cable duct**.

n. When a trench has been backhoed, **cables duct** must be shaded with 300mm of sand. Backhoed material cannot be placed over cable.

s. Backfill material over **cables duct** can be the material trenched with a mechanical trencher, if the inspector deems it suitable. Soil with high thermal resistivity that contains large amounts of organics, peat, black loam, sod, hardened clay, stones, straw, snow, or frozen material will not be acceptable. All backfill material is subject to the inspector's approval. Sand or clean backfill material must be substituted for unsuitable backfill.

The following shall be **added** to Section 3.14.a.ii – ELECTRICAL ROOM:

- All metering equipment for residential sites above 200A shall be on the exterior of the home, exterior/interior of the garage, or in a dedicated electrical room. **When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).** Metering equipment can be enclosed in a non-metallic enclosure for aesthetic proposes.

The following shall be **removed** to Section 3.14.e.ii – ELECTRICAL ROOM:

- If the main electrical room and all revenue meter sockets are to be located below grade. ~~The site will require a line side wired/powerd 120V meter socket installed in a suitable (Utility Power Meter Foreman approved) above grade location inside the building. This meter socket should have a blank cover and be labelled "POWER UTILITY USE ONLY".~~ The location must be accessible to EPCOR for future use. The location and approval shall be noted in the inspection report. See Drawing 10.4 – Instrument Transformer Metering Layout for additional details

The following drawings shall be **added** DRAWING 3.9 – DRIVEWAY NEAR SINGLE PHASE TRANSFORMER

The following shall be **added** to Section 4.5 Attachment Method and Location

- **Add Section 4.5.C.**
- A Customer shall not move their service connection as to cause the conductor to pass over another property. **It is the Customers responsibility to ensure a clear line of sight (free of obstructions) from the proposed service connection point to the nearest EPCOR pole. A Customer shall not move their service connection as to cause the conductor to pass over another property.**

The following drawing and title shall be **updated:** DRAWING 4.4 – TYPICAL OVERHEAD AERIAL SERVICE **UP TO 200A** INSTALLATION

IENT POINT.

TYPICAL RESIDENTIAL AERIAL SERVICE UP TO 200A INSTALLATION (MAXIMUM SERVICE SPAN DISTANCE 30 m)	
REFERENCE NO. 61 CC 07 00 91 100	PAGE NO. 1 / 1

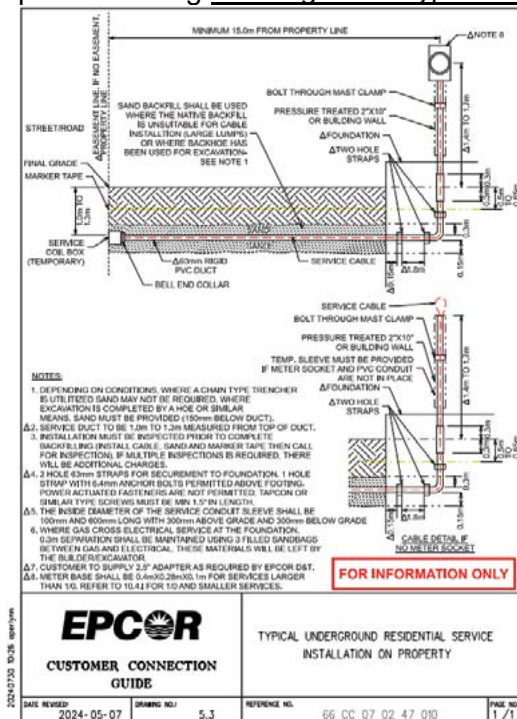
The following drawing and title shall be **updated:** DRAWING 4.5 – TYPICAL RESIDENTIAL AERIAL SERVICE **UP TO 200A** ATTACHMENT DETAILS

TYPICAL RESIDENTIAL AERIAL SERVICE UP TO 200A ATTACHMENT DETAILS (MAXIMUM DISTANCE 30 METERS)	
REFERENCE NO.	PAGE NO.
61 CC 07 00 91 001	1 / 1

The following shall be **removed** from Section 5.5 - Service Ducts

- a. All permanent **commercial** services must be in duct
- c. For residential installations, **EDTI highly recommends, and may require, installing any cable that will ultimately end up under a building/structure or hard surface in duct.** See Drawing 5.3 – Typical Underground Residential Service Installation on Property for a typical underground service installation.

Update drawing Drawing 5.3 – Typical Underground Residential Service Installation on Property



The following shall be **removed** and **added** to Section 5.7.d – CONDUCTORS:

- d. For unmetered secondary services within road allowance, **see Section 9.7 – Conductors (Underground) for allowable cable types. ~~cable can be direct buried USEB, RWU90 in duct, or RW90 in duct.~~**

The following shall be **removed** and **added** to Section 5.7.i – CONDUCTORS:

- i. With EDTI **permission-review**, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See Section 12.5 – Temporary Connections for details.

The following shall be **removed** and **added** from Section 5.7.g – CONDUCTORS:

- e. ~~The phasing of conductors must be identified with colour jacketed cables installed.~~
- g. **The preferred method of phase identification is with colour jacketed cables (Red, Black, Blue, White). Black jacketed cable will be acceptable with phasing identified on the phase cables with white, blue & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP. In the case of single phase commercial services phasing shall be identified on the 2 phase cables with white & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP**

The following shall be **added** to notes under Table 6.1 – Primary Cable, Duct and Handhole Requirements:

- **Conduits shall not enter/exit through the same wall.**

The following shall be **added** to Section 6.9 – Ground-mounted Handholes:

- **j. Conduits shall not enter/exit through the same wall.**

The following shall be **removed** and **added** from Section 6.10.g – CONDUCTORS:

- f. ~~Phasing of the secondary conductors shall be completed with colour jacketed cables installed.~~

- g. **The preferred method of phase identification is with colour jacketed cables (Red, Black, Blue, White). Black jacketed cable will be acceptable with phasing identified on the phase cables with white, blue & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP. In the case of single phase commercial services phasing shall be identified on the 2 phase cables with white & red phasing tape at intervals of 400mm along the entire cable length to be coiled within transformer base, or at SEP**

The following shall be **removed** and **added** to Section 6.10.i – CONDUCTORS:

- i. With EDTI **permission-review**, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See Section 12.5 – Temporary Connections for details.

The following shall be **removed** from Section 6.11.k,l,m - CABLE INSTALLATION:

- ~~• A maximum of six runs of secondary conductors total (includes both permanent and temporary services) are permitted for 3-phase padmount transformers up to 750kVA.~~
- ~~• A maximum of eight runs of secondary conductors total (includes both permanent and temporary services) are permitted for 1,000kVA to 2,500kVA 3-phase padmount transformers.~~
- ~~• Where the service is 2,400A or larger, a maximum of ten runs of secondary conductors total (includes both permanent and temporary services) are permitted.~~

The following shall be **removed** from Section 6.11.h.iii- CABLE INSTALLATION:

~~h.iii Phasing of the secondary conductors shall be completed with colour jacketed cables installed.~~

The following drawings shall be **updated** DRAWING 6.3 – INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS

The following drawings shall be **updated** DRAWING 6.4 – INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS

The following drawings shall be **updated** DRAWING 6.5 – INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 15kV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE

The following drawings shall be **updated** DRAWING 6.6 – INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25kV SINGLE PHASE 200A DEAD FRONT SWITCHING CUBICLE

The following drawings shall be **updated** DRAWING 6.7 – INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 15kV THREE PHASE DEAD FRONT SWITCHING CUBICLE

The following drawings shall be **updated** DRAWING 6.8 – INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25kV THREE PHASE DEAD FRONT SWITCHING CUBICLE

The following drawings shall be **updated** DRAWING 6.9 – TYPICAL GUARDRAIL FOR BOLLARD & GUARD POST INSTALLATION

The following drawings shall be **updated** DRAWING 6.11 – BOLLARDS AND GUARD POST INSTALLATION USING 4 INCHES DIAMETER SCHEDULE 40 STEEL PIPE

The following drawings shall be **updated** DRAWING 6.12 – PRECAST BASE/ PREFABRICATED BOLLARDS AND GUARD POSTS INSTALLATION

The following drawings shall be **updated** DRAWING 6.13 – INSTALLATION OF SCREW PILE

The following drawings shall be **added** DRAWING 6.14 – SAMPLE OF COMMERCIAL/INDUSTRIAL SITE PLAN

The following shall be **added** to Section 7.6 – Ground-mounted Handholes:

- **j. Conduits shall not enter/exit through the same wall.**

The following shall be **removed** from Section 7.16.a – PROTECTION WITH PILOT WIRE RELAYING:

- a. ~~Supply and install a 53mm (2 in.) conduit from the service entry to the main breaker.~~

The following shall be **removed** from Section 7.16.b – PROTECTION WITH PILOT WIRE RELAYING:

- b. ~~Supply and install three 600/5-A, 15kV or 25kV current transformers (relaying accuracy class 2.5L400) per feeder. These are installed on the load side of the main breaker and the revenue metering transformers, but before the isolating switch.~~

The following shall be **removed** and **added** to Section 7.16.c – PROTECTION WITH PILOT WIRE RELAYING:

- c. ~~Provide test blocks for pilot wire relay current transformers and trip output blocking as specified:~~
 - i. ~~For the pilot wire relay, ABB FT-1 style No. 188A 229 G01~~
 - ii. ~~For the trip output blocking, ABB FT-1 style No. 129A 539 G01 with red handles.~~**Provide adequate space for EDTI to mount pilot wire relaying equipment including but not limited to protective relays, auxiliary relays, lockout relays, and functional test (FT) switches. Arrangement of space for equipment to be confirmed with EDTI during design development.**

The following shall be **removed** and **added** to Section 7.16.e – PROTECTION WITH PILOT WIRE RELAYING:

- e. Supply a nominal 129V, direct current, **4A** (129V, DC, ~~4A~~), continuous output, ungrounded power supply. **Power supply amperage requirements to be confirmed with EDTI during design development.** DC Battery control power must comply with Rule 14-308 of the Canadian Electrical Code – Part I.

The following shall be **removed** from Section 7.16.f – PROTECTION WITH PILOT WIRE RELAYING:

- f. ~~Ensure a 650mm wide by 650mm high by 300mm deep space remains in front of the instrument compartment of the main breaker cell. This is for EDTI to cut a hole and mount the relays.~~

The following drawings shall be **updated** DRAWING 7.1 – CABLE TERMINATIONS IN CUSTOMER OWNED SWITCHGEAR

The following shall be **removed** from Section 8.1.a – General Information:

- A network service is a 120/208V ~~or 347/600V~~ service connected to EDTI's network system. The network area extends from 97 to 110 Street and from 97 to 104A Avenue in downtown Edmonton. See Drawings 3.1 and 3.2 for details.

The following shall be **added** to Section 8.6 – Ground-mounted Handholes:

- **j. Conduits shall not enter/exit through the same wall.**

The following shall be **added** to Section 8.8.a - Conductors

- a. EDTI will supply and install the secondary cable for all services connected to EDTI's Network system. **The cables types provided are either 7-Conductor (7/C) 4/0 Cu -Network Service OR 4-conductor (4/C) 500 MCM Cu XLPE – Consult EPCOR Designer for cable chosen for project.**

The following shall be **added** to Section 8.10 - Termination

- **f. Customer shall supply and install network secondary gear terminations 30” min above the ground/floor to allow to allow for EDTI to supply and install their secondary cables and terminations.**

The following shall be **added** to Table 8.2 – Acceptable Conductors and conduit size – Downtown Secondary Network Services

We need another row added to table 8.2 to include a new cable type we offer, a 4/C 500mcm CU

TABLE 8.2

**ACCEPTABLE CONDUCTORS AND CONDUIT SIZE –
DOWNTOWN SECONDARY NETWORK SERVICES**

CONDUCTOR SIZE	RATING PER PHASE	CONDUIT SIZE
#2 AWG CU (for 2 phase, 3-wire, or 3-phase, 4-wire)	100A	100mm (4 in.)
4/0 CU	200A	100mm (4 in.)
7-conductor (7/C) network cable consisting of two 4/0 CU per phase and one 500MCM CU XLPE (USE 90 cable) neutral	400A or Multiples of 400A	100mm (4 in.)

- Conductor shall be cross-link polyethylene insulated with polyvinylchloride jacket.
- For network services 400A and larger, EDTI will supply cable with parallel runs of network service cable.
 - One 7/C run is 400A, two 7/C runs is 800A, three 7/C runs is 1,200A, and four 7/C runs is 1,600A.
- Depending on duct arrangements, handholes may be required in the building. For further information, see [Section 8.7 – Handholes in Buildings](#).
- The maximum length of service conductors permitted in a building is 3.0m, unless they are mechanically protected in rigid metal conduit, in which case the maximum is 7.5m.

ADDITIONAL ROW
(GREEN)
4/C 500MCM CU
NETWORK CABLE
CONSISTING OF
THREE 500MCM
CU PHASE AND
ONE 500MCM CU
XLPE (USE 90
CABLE) NEUTRAL

400A or Multiples of
400A

100mm (4 in.)

The following shall be **added** to Section 9.7.a – CONDUCTORS (UNDERGROUND):

- a. **Cable can be direct-buried USEB, RWU90 in duct, or RW90 in duct.**

The following shall be **removed** and **added** to Section 9.7.c – CONDUCTORS (UNDERGROUND):

- c. With EDTI **permission-review**, TECK cable can be used for temporary installations. The Customer must supply all associated fittings, including connectors, grounding bushings, and weatherheads. See Section 12.5 – Temporary Connections for details.

The following shall be **added and removed** to Section 10.3 General Requirements

- **Remove and add under 10.3 f i**
- No junction box, or other point of disconnect, shall be allowed between the service entrance and the meter socket lugs.
 - i. This shall not apply where a junction box is required to pull in a service, or to provide a drain point. ~~EDTI's written permission is required for the junction box in both of these cases.~~ **The access for the junction box must be equipped to be able to be locked with an Epcor padlock.**
- **Add Section 10.3**
 - **A minimum working space of 1.0 m wide from center of the meter by 2.2 m high is required in front of all electrical equipment, and to the sides and back.**
 - **It is not permissible to mount water, sewer, gas, equipment, or other pipes foreign to the electrical metering installation directly above electrical metering equipment or to encroach on minimum working space around electrical metering equipment.**
 - **Metering equipment cannot be located in areas difficult to access (open pits, hatchways, closets, stairways) or that are hazardous to anyone working on that equipment, or to the metering equipment itself. Hazardous locations are defined as any area involving moving machinery/equipment, dust, vibration, water and/or moisture, fumes, or explosive/hazardous vapors.**
 - **The meter socket height is to be measured from the adjacent working surface (ex. a raised deck, elevated platform or final grade)**

The following shall be **added** to Section 10.3 General Requirements **and** Section 10.5 Residential – Greater than 200 Amps

- **Service(s) that are greater than 200A shall require an engineering analysis by EPCOR's Customer Engineering Group. This includes sites that are multi-serviced by 100A Services – the total services calculations that are over 200A shall require further review. Please send a request to ces@epcor.com for further details.**

The following shall be **added** to Section 10.4 Residential – 200A or Less

- **The conduit must enter the enclosure as identified in Drawing 10.4 – instrument Transformer Metering Layout, using approved factory provided knockouts**

The following shall be **added & Removed** to Section 10.4.j Residential – 200A or Less

- Customers **shall may** cut in and terminate to the line side of the meter socket. When doing so, the following requirements shall be adhered to:

The following shall be **Removed** from Section 10.5.b – RESIDENTIAL – GREATER THAN 200 AMPS:

- For all transformer-rated services, the meter socket in Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket must be used. The socket must be Thomas & Betts Cat. ~~#CT113-SWL~~, #CT108-SWL, or an approved equivalent ~~with a 13 or~~ 8 jaw meter socket and test switch. The test switch must be pre-wired.

The following shall be **added** to Section 10.5.f – RESIDENTIAL – GREATER THAN 200 AMPS:

- **When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).**

The following shall be **added** to Section 10.5.n – RESIDENTIAL – GREATER THAN 200A:

- **The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. The access doors must be equipped to be able to be locked with an Epcor padlock**

The following shall be **added** to Section 10.6 Commercial – 200A or Less

- **The conduit must enter the enclosure as identified in Drawing 10.4 – instrument Transformer Metering Layout, using approved factory provided knockouts**

The following shall be **added** to Section 10.6.h – COMMERCIAL – 200 AMPS OR LESS:

- h. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).**

The following shall be **added** to Section 10.7.c – COMMERCIAL – GREATER THAN 200 AMPS:

- c. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).**

The following shall be **added** to Section 10.7.i – COMMERCIAL – GREATER THAN 200A:

- The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. **The access doors must be equipped to be able to be locked with an Epcor padlock**

The following shall be **added** to Section 10.8h Network Area – 200A or Less

- **The conduit must enter the enclosure as identified in Drawing 10.4 – instrument Transformer Metering Layout, using approved factory provided knockouts**

The following shall be **added** to Section 10.8.g – NETWORK AREA – 200 AMPS OR LESS:

- g. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).**

The following shall be **added** to Section 10.9.c – NETWORK AREA – GREATER THAN 200 AMPS:

- c. When exterior rated equipment is being used, all electrical room equipment must be rated for the same environment (all exterior or all interior).**

The following shall be **added** to Section 10.9.p – NETWORK AREA – GREATER THAN 200A:

- **The metering instrument enclosure must have a hinged access door, or hinged doors to allow for installing and inspecting meter equipment. The access doors must be equipped to be able to be locked with an Epcor padlock**

The following drawings shall be **updated** DRAWING 10.2 – METER AND TEST BLOCK ENCLOSURE – CURRENT TRANSFORMER RATE METER SOCKET

The following drawings shall be **updated** DRAWING 10.4 – INSTRUMENT TRANSFORMER METERING LAYOUT

The following drawings shall be **ADDED** DRAWING 10.6 – AMI ROUTER INSTALLATION

The following drawings shall be **updated** TABLE 10.1 – METER SOCKET & INSTRUMENT ENCLOSURES

TABLE 10.1

Δ METER SOCKET AND INSTRUMENT ENCLOSURES

SERVICE				
SWITCH OR BREAKER AMPERAGE	VOLTAGE	METER CABINET	SIZE OF CURRENT TRANSFORMER ENCLOSURE	METERING LEAD CONDUIT
Up to 200A		Socket	N/A	
201 to 399A With current transformers only	Less than 240V	Current and potential transformer rated meter socket. See Drawing 10.2 – Meter and Test Block Enclosure – Current Transformer Rate Meter Socket for details.	900 x 900 x 250mm	35mm (1.25 in.) Diameter. Maximum 6.5m in length.
201 to 399A With current and potential transformers				
400 to 600A	240V or greater			
Over 600A			Metering transformer compartment shall be part of the manufactured switchgear assembly. See note for sub-service	

- All enclosure sizes are for 600V services or less.
- All dimensions listed are inside dimensions.
- EDTI Metering shall provide review and direction for over 600A sub-service. Contact us for details.
- CT's installed shall have CSA approved Stand offs.
- Instrument transformer enclosure shall have bonding terminal for #10 Wire.
- CT & metering enclosure shall be installed in the same room.
- All sub-services shall be identified with lamacoid label.

The following shall be **added** to Section 11.1.1.a – Backup Generators and Non-Export Batteries:

a. Backup generators or batteries that are installed with a ‘Closed Transition (make before break)’ transfer switch or interlock must be reviewed and accepted by Epcor prior to installation

b. Backup generators or batteries that are installed with an ‘Open Transition (break before make)’ transfer switch or interlock that prohibits the use of the generator while connected to the distribution grid so that it may not export (backfeed), do not require EDTI’s permission to install.

The following shall be **added** to Section 11.3.b – PLANNING:

- b. Before starting the design, if you are designing a single-family residential micro-generation system that is **equal to or** greater than 19.2kW, contact EDTI’s Customer Engineering Services at distgen@epcor.com. There may be special requirements for larger micro-generation applications.

The following shall be **added** to Section 11.4.3.1: Single Line Drawing Requirements:

- x. **De-rated kilowatt value must be shown for equipment**

The following shall be **removed** and **added** from Section 11.4.3.2 Site Plan/~~Real Property Report/Satellite Aerial Image:~~

- b. Show **the orientation of** all existing and proposed structures.
- ~~c. Provide distances from existing and proposed structures to property lines.~~
- ~~d. Provide the proposed micro-generation system dimensions (e.g. solar panels) in relation to any existing and proposed structures.~~
- c. Show the location of the meter socket.
- d. Azimuth and slope of panels must be provided for solar installations.**

The following shall be **removed** and **added** to Section 12.5.f – TEMPORARY CONNECTIONS:

- f. **Special Prior to construction, EDTI to review** ~~permission before construction approval is required from us for~~ use of armored or metal-sheathed (TECK) cable for temporary installations. TECK cable is not allowed for permanent installations. The Customer must supply all associated fittings, including connectors and grounding bushings.

The following shall be **removed** from Section 12.5.h.iii – Temporary Connections:

- Secure a 1.2m long, 38mm x 140mm (2 in. x 6 in. nominal) pressure treated cross arm, 600mm below the conductor attachment point on the wood pole. Secure to pole using a minimum of ~~2-½~~ in. ~~Diameter~~, 4 in. ~~Long~~, Galvanized Lag Bolts with matching washers – installed 38mm from the edge of cross arm and post – installed top and bottom staggered on cross arm. Predrill for fastener per manufacturer’s recommendations.

The following shall be **added** to Section 12.5.h.iii – Temporary Connections:

- Secure a 1.2m long, 38mm x 140mm (2 in. x 6 in. nominal) pressure treated cross arm, 600mm below the conductor attachment point on the wood pole. Secure to pole using a minimum of **two** ½ in. **diameter**, 4 in. **long**, Galvanized Lag Bolts with matching washers – installed 38mm from the edge of cross arm and post – installed top and bottom staggered on cross arm. Predrill for fastener per manufacturer's recommendations.

The following shall be **added** to **Appendix** attached document titled "*Electrical Inspection Demarcation_Final21June 2024*".

The following shall be **removed** from '12.1 New Power Connection Site Ready Checklist':

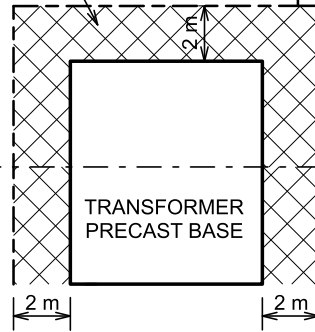
New Power Connection Site Ready Checklist

Customer Connections

Here is the list of everything that must be completed before our crews can connect your site to the electricity grid. Please review this list and contact your EPCOR representative if you have any questions or concerns.

- ☐ Power cable is coiled at Service Entry Point (SEP)
- ☐ Transformer or cubicle base is facing the correct direction
- ☐ Transformer or cubicle base is level
- ☐ Switching cubicle base is built properly
 - ☐ Ducts are in the correct compartments
 - ☐ Correct type of ducts are installed
 - ☐ Site duct is connected to proper conduit (i.e. C or D)
- ☐ Transformer base is built properly
 - ☐ Guardrails are installed
 - ☐ The duct is in the correct location
- ☐ Ground wire is in the base
- ☐ Power cable is pulled to base
 - ☐ Secondary - size/type installed:
 - ☐ Multi-Family Unit primary – size/type/voltage installed
 - ☐ The phasing of conductors ~~must be identified with colour-coded cables installed.~~
- ☐ Make sure that either:
 - ☐ The stub-out location is marked at property line. Note: you must confirm the location of the stub out with your EPCOR representative by email; **or**
 - ☐ The duct is connected to EPCOR stub-out. You must confirm location of the stub out with your EPCOR representative by email.
- ☐ Backfilled to rough grade is complete
- ☐ Proper elevation is observed for the following (requirements are outlined in EPCOR's Customer Connection Guide):
 - ☐ Depth of conduit
 - ☐ Height of pad
- ☐ Proper access to work locations cleared and available
 - ☐ Site is level/drivable
 - ☐ All construction debris or equipment is cleared away from the electrical infrastructure
- ☐ Trees and other landscaping are trimmed or removed from around electrical equipment
- ☐ If there is an on site generator it must be installed as per the manufacturer's specifications downstream from the main
- ☐ If required, the Splice pit is ready for the EPCOR crew to work
- ☐ Pull string between switching cubicle and transformer (for customer installed cubicle only)
- ☐ Phone line infrastructure completed for Primary Service

LANDSCAPED AREA
SEE NOTE 2

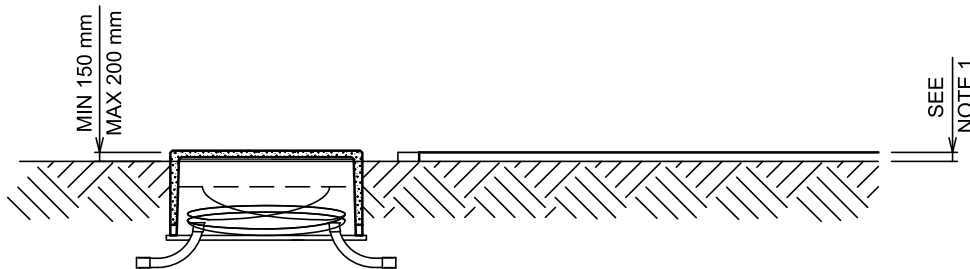


RESIDENTIAL DRIVEWAY

TO SIDEWALK / BOULEVARD



TOP VIEW
SCALE: N.T.S.



SECTION A-A
SCALE: N.T.S.

FOR INFORMATION ONLY

NOTES:

1. TOP OF DRIVEWAY ELEVATION SHALL NOT EXCEED THE TOP OF THE SINGLE PHASE TRANSFORMER PRECAST BASE
2. REFER TO CCG SECTION 3.10.3.f FOR APPROPRIATE LANDSCAPE MATERIALS AROUND TRANSFORMER BASE



**CUSTOMER CONNECTION
GUIDE**

**DRIVEWAYS NEAR
SINGLE PHASE TRANSFORMERS**

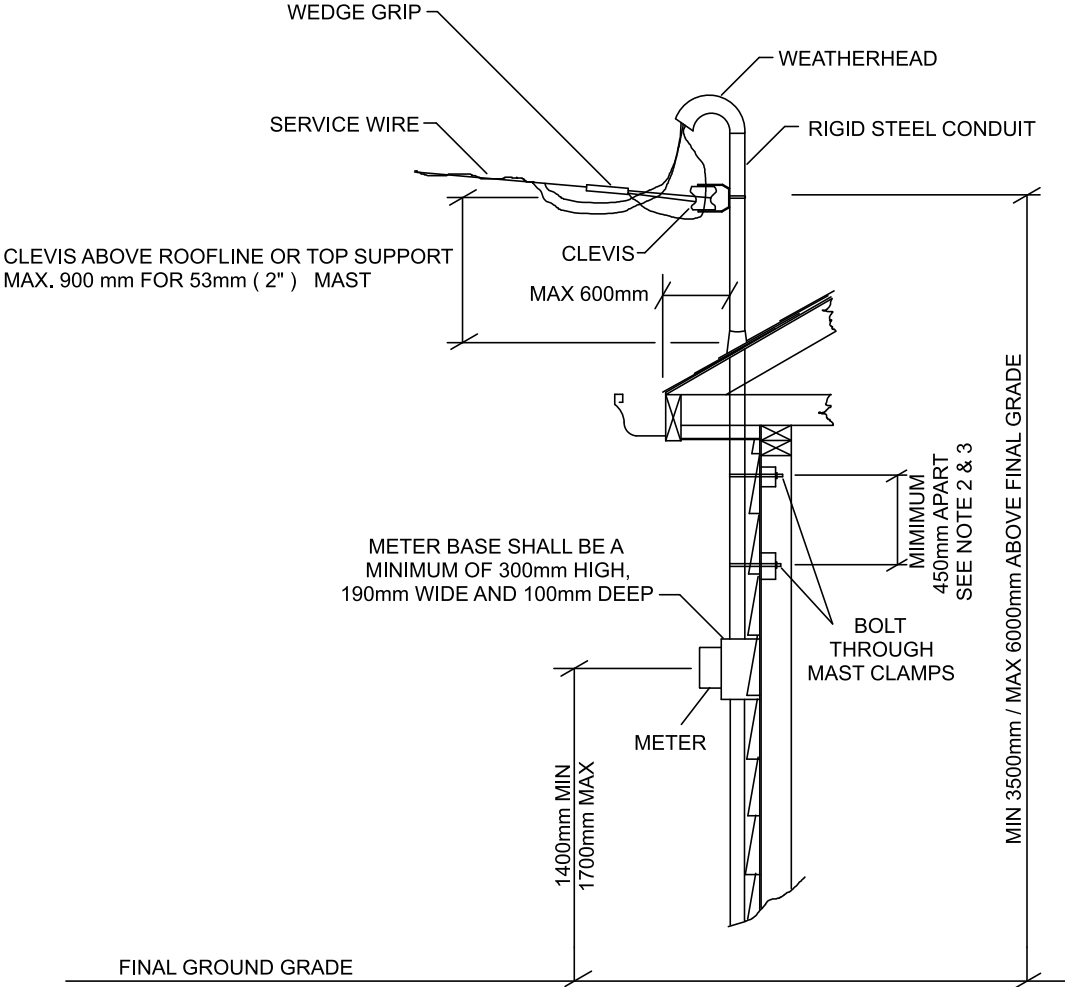
DATE REVISED:
2024-09-12

DRAWING NO.:
3.10.3.e

REFERENCE NO.
65 CC 07 00 27 100

PAGE NO.
1 / 1

INSTALLATION AS
PER CEC PART 1



NOTES:

1. FOR PROPERTIES WITH MORE THAN ONE RESIDENCE, SERVICE CONNECTION SHALL BE LOCATED AT RESIDENCE THAT IS SMALLEST DISTANCE TO POLE LINE. REFERENCE TO SECTION 4.5 FOR DETAILS.
2. BOLT THROUGH MAST CLAMPS MUST BE INSTALLED AT MAXIMUM POSSIBLE SPACING WITH A MINIMUM SPACING OF 450mm APART.
3. TOP MAST CLAMP SHALL BE INSTALLED AS CLOSE TO ROOF PENETRATION AS POSSIBLE.
4. SERVICE ATTACHMENT TO BE ON THE POLE LINE SIDE OF THE BUILDING.

FOR INFORMATION ONLY



CUSTOMER CONNECTION
GUIDE

TYPICAL RESIDENTIAL AERIAL SERVICE UP TO 200A
ATTACHMENT DETAILS
(MAXIMUM DISTANCE 30 METERS)

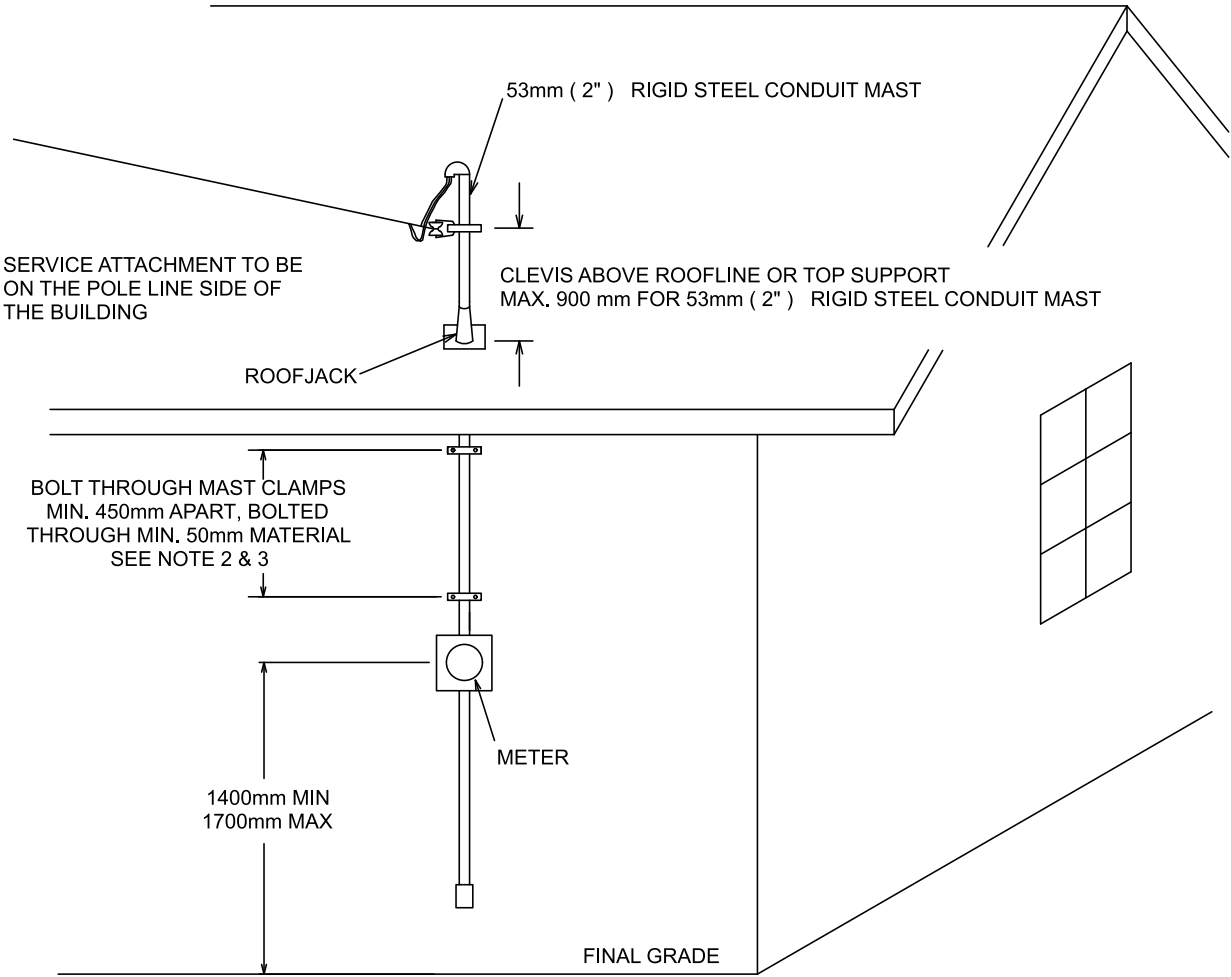
DATE REVISED:
2023-08-16

DRAWING NO.:
4.5

REFERENCE NO.
61 CC 07 00 91 001

PAGE NO.
1 / 1

INSTALLATION AS
PER CEC PART 1



NOTES:

1. FOR PROPERTIES WITH MORE THAN ONE RESIDENCE, SERVICE CONNECTION SHALL BE LOCATED AT RESIDENCE THAT IS SMALLEST DISTANCE TO POLE LINE. REFERENCE TO SECTION 4.5 FOR DETAILS.
2. BOLT THROUGH MAST CLAMPS MUST BE INSTALLED AT MAXIMUM POSSIBLE SPACING WITH A MINIMUM SPACING OF 450mm APART.
3. TOP MAST CLAMP SHALL BE INSTALLED AS CLOSE TO ROOF PENETRATION AS POSSIBLE.
4. SERVICE ATTACHMENT TO BE ON THE POLE LINE SIDE OF THE BUILDING.
5. A MINIMUM 3m HORIZONTAL CLEARANCE IS REQUIRED BETWEEN THE SERVICE POLE AND THE BUILDING SERVICE ATTACHMENT POINT.

FOR INFORMATION ONLY



CUSTOMER CONNECTION
GUIDE

TYPICAL RESIDENTIAL AERIAL SERVICE UP TO 200A
INSTALLATION (MAXIMUM SERVICE SPAN
DISTANCE 30 m)

DATE REVISED:
2024- 07- 30

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4.4

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61 CC 07 00 91 100

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1 / 1

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FRACTIONAL: $\pm 1/4"$

ANGULAR: $\pm 1^\circ$

DWN: R.LAWRIE

DES: B.O'CALLAGHAN

CHK: M.MIX

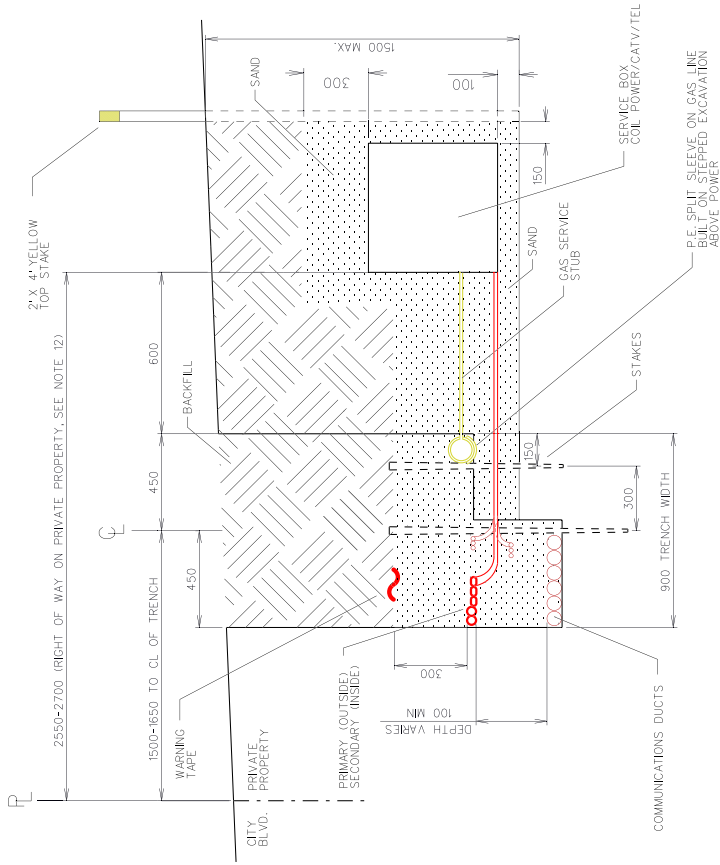
APP: D.BUSILAN

COMMITTEE REVIEW: 2017-05-26

INITIAL ISSUE DATE: 2017-07-07

3 AND 4 PARTY UTILITY
SHARED TRENCH

SCALE: N.T.S.	PAGE: 2 OF 4
DRAWING NO.	REV.
66 00 07 00 46 001	3



A SECTION A - TYPICAL 4 PARTY SHARED TRENCH ON A UTILITY RIGHT-OF-WAY
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RAMIR LALLAM

15 January 2024

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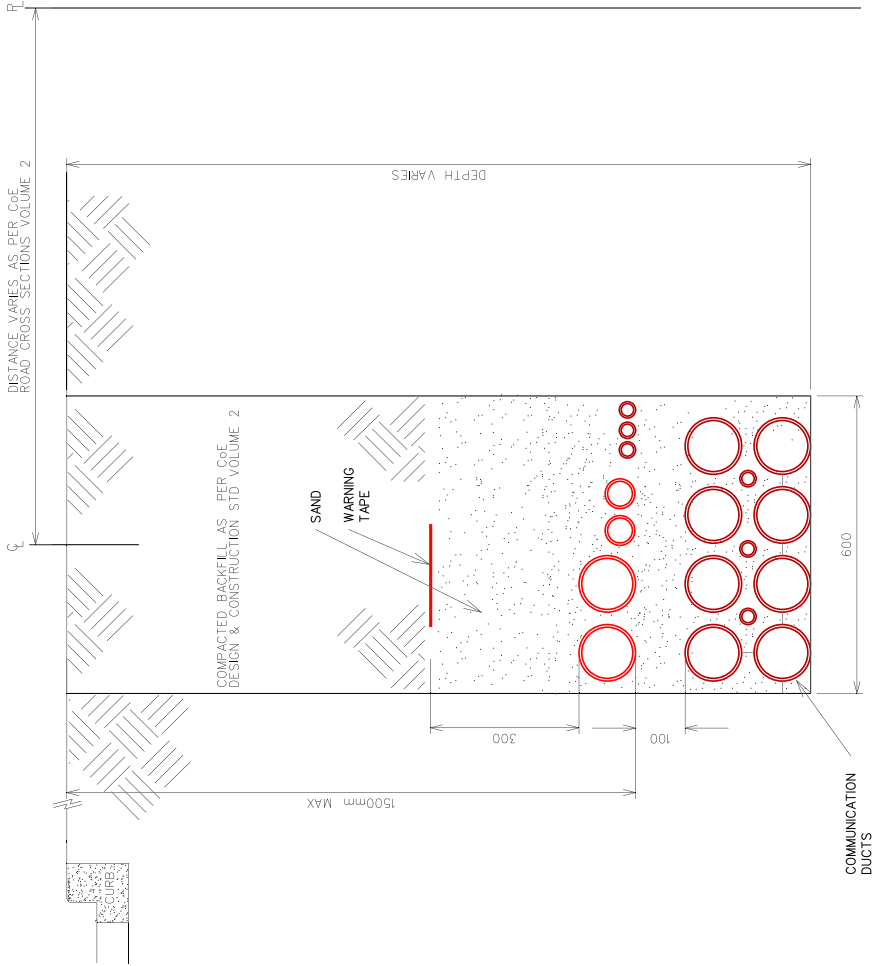
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COMMITTEE REVIEW: 2017-05-26

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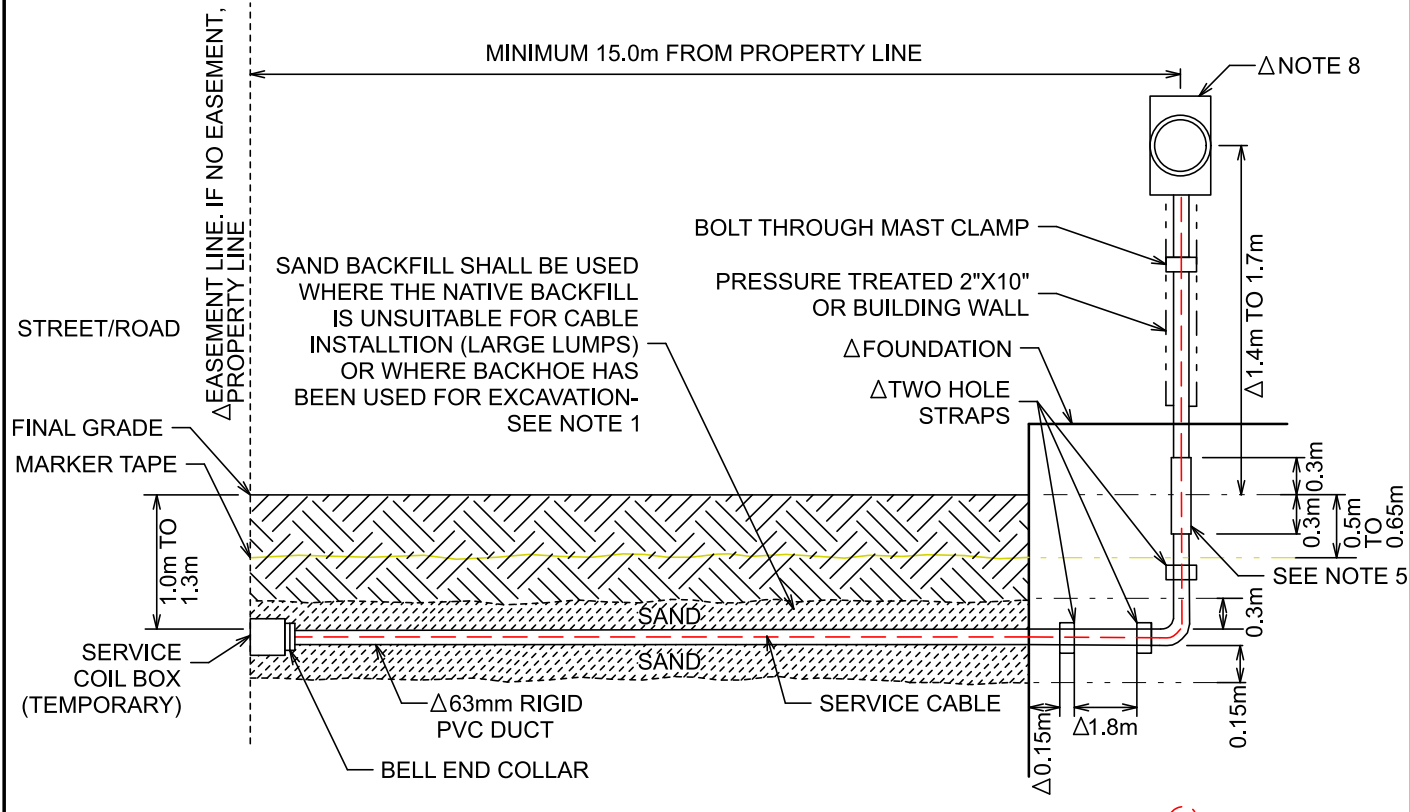
3 AND 4 PARTY UTILITY SHARED TRENCH

SCALE: N.T.S.	PAGE: 3 OF 4
DRAWING NO. 66 00 07 00 46 001	REV: 3



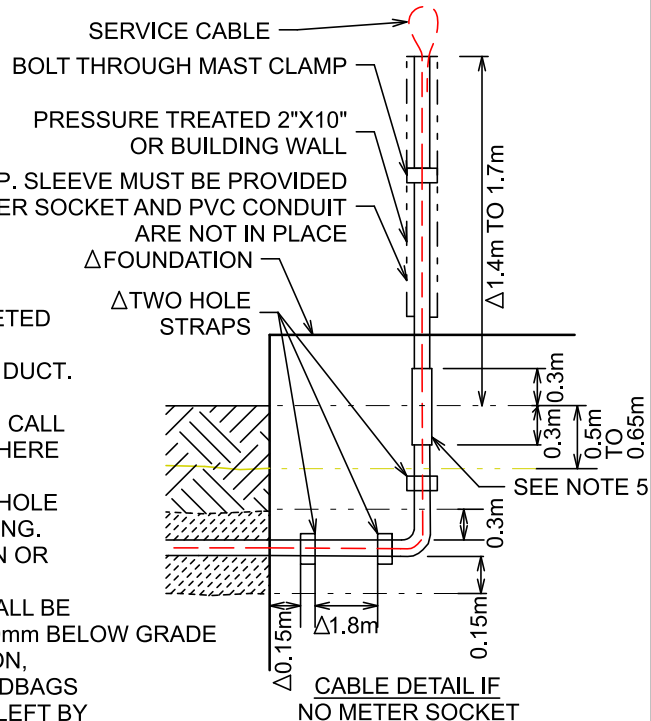
CROSS SECTION OF TYPICAL 3 PARTY SHARED TRENCH (WITHOUT GASION A ROAD ALLOWANCE OR BOULEVARD (GREEN FIELD))
SCALE: N.T.S.

NOTES CONT'D:
13. GAS IS IN A SEPARATE TRENCH (MINIMUM 1.0 METER SEPARATION)(THIS SHEET ONLY).



NOTES:

1. DEPENDING ON CONDITIONS, WHERE EXCAVATION IS COMPLETED SAND MUST BE PROVIDED (150mm BELOW DUCT).
- Δ2. SERVICE DUCT TO BE 1.0m TO 1.3m MEASURED FROM TOP OF DUCT.
3. INSTALLATION MUST BE INSPECTED PRIOR TO COMPLETE BACKFILLING (INSTALL CABLE, SAND AND MARKER TAPE THEN CALL FOR INSPECTION). IF MULTIPLE INSPECTIONS IS REQUIRED, THERE WILL BE ADDITIONAL CHARGES.
- Δ4. 2 HOLE 63mm STRAPS FOR SECUREMENT TO FOUNDATION. 1 HOLE STRAP WITH 6.4mm ANCHOR BOLTS PERMITTED ABOVE FOOTING. POWER ACTUATED FASTENERS ARE NOT PERMITTED. TAPCON OR SIMILAR TYPE SCREWS MUST BE MIN 1.5" IN LENGTH.
- Δ5. THE INSIDE DIAMETER OF THE SERVICE CONDUIT SLEEVE SHALL BE 100mm AND 600mm LONG WITH 300mm ABOVE GRADE AND 300mm BELOW GRADE
6. WHERE GAS CROSS ELECTRICAL SERVICE AT THE FOUNDATION, 0.3m SEPARATION SHALL BE MAINTAINED USING 3 FILLED SANDBAGS BETWEEN GAS AND ELECTRICAL. THESE MATERIALS WILL BE LEFT BY THE BUILDER/EXCAVATOR.
- Δ7. CUSTOMER TO SUPPLY 2.5" ADAPTER AS REQUIRED BY EPCOR D&T.
- Δ8. METER BASE SHALL BE 0.4mX0.28mX0.1m FOR SERVICES LARGER THAN 1/0. REFER TO 10.4.I FOR 1/0 AND SMALLER SERVICES.



FOR INFORMATION ONLY

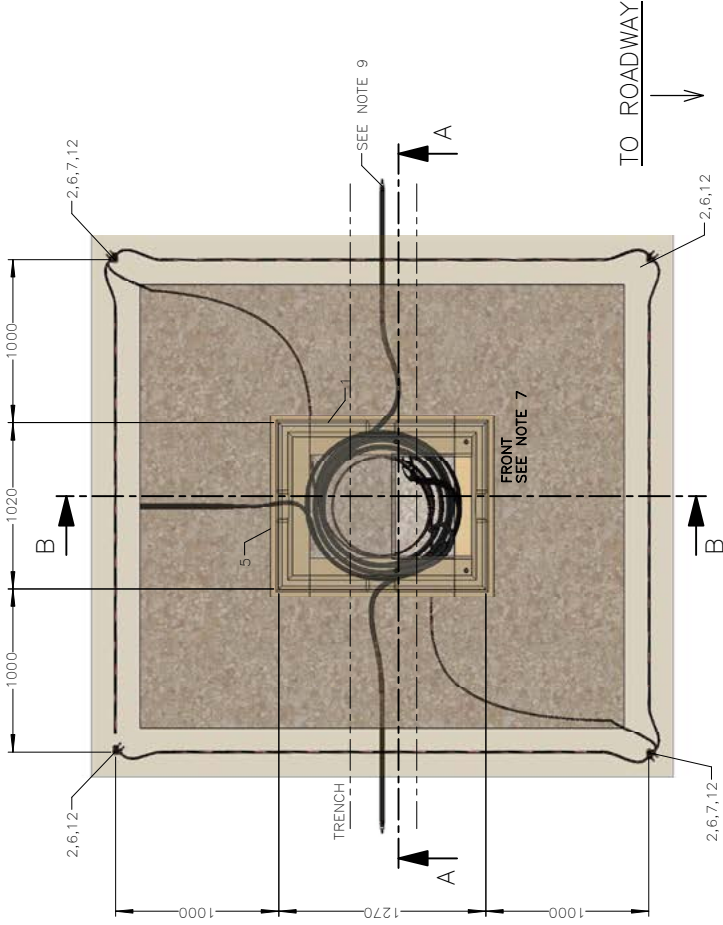


CUSTOMER CONNECTION GUIDE

TYPICAL UNDERGROUND RESIDENTIAL SERVICE INSTALLATION ON PROPERTY

DATE REVISED: 2024-09-18	DRAWING NO.: 5.3	REFERENCE NO. 66 CC 07 02 47 010	PAGE NO. 1 / 1

REVISION HISTORY (LAST THREE)						
REV.	DESCRIPTION	DATE	DWN	CHK	APP	
7	NEW TITLE BLOCK ADDED	23-06-12	RL	NW	CR	
8	NOTE 3 & 10 CHANGED	24-01-12	RL	NW	MM	



TOP VIEW

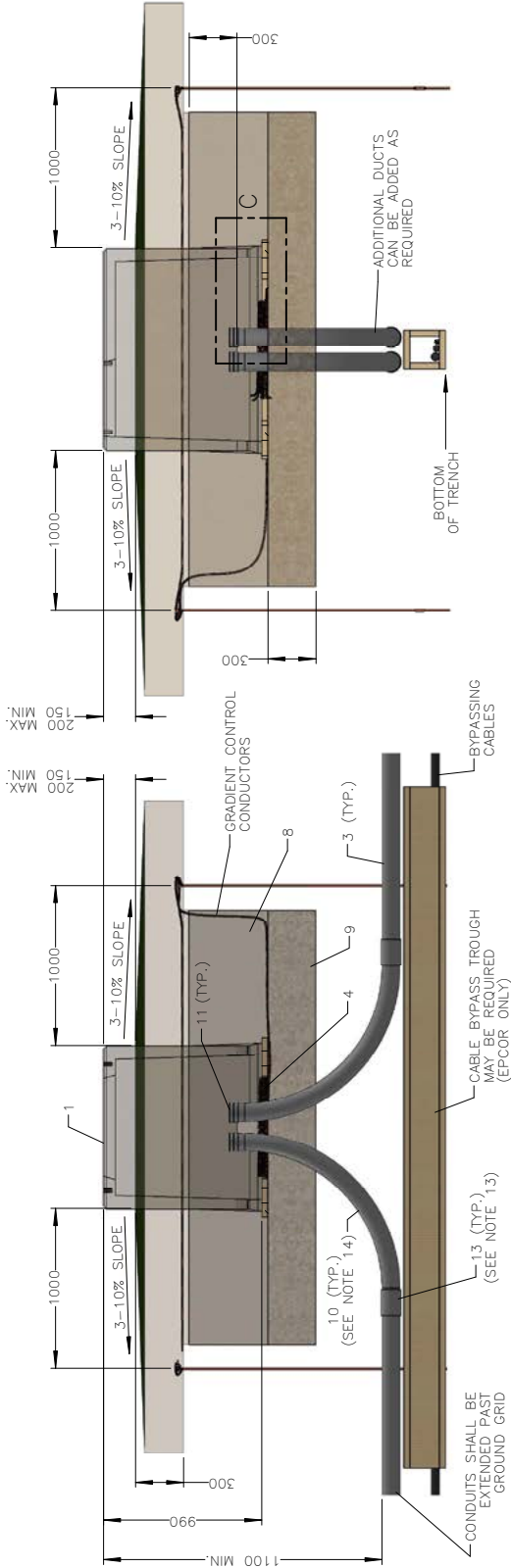
NOTES:

1. INTERCONNECTING GRADIENT CONTROL (GROUND GRID) CONDUCTORS SHALL BE INSTALLED 300 mm BELOW FINAL FINISHED GRADE (NOT ROUGH GRADE) WITH ONE LEG CONTINUOUS AROUND THE PERIMETER AND INTO BASE WITH AN ADDITIONAL CONTINUOUS CONDUCTOR TAIL ATTACHED FROM THE OPPOSITE CORNER.
2. RETAIN 5.0 m OF COILED 4/0 CU PER GROUND CONDUCTOR FOR CONNECTION TO GROUND BUS.
3. ANY DEVIATION IN GROUND GRID SPACING FROM THE ABOVE DIMENSIONS SHALL BE AT THE SOLE DISCRETION OF EDTI ENGINEERING BY WRITTEN APPROVAL ONLY.
4. USE FINE FILL CLAY BACKFILL AROUND GROUND GRID.
5. WHEN SETTING BASE OBSERVE 150 mm MIN. - 200 mm MAX. REQUIREMENT FOR ELEVATION FROM TOP OF BASE TO FINAL FINISHED GRADE (NOT ROUGH GRADE).
6. TYPICAL PUBLIC PROPERTY RESIDENTIAL INSTALLATION IS DIRECT BURIED.
7. IN RESIDENTIAL AREAS IT IS PREFERRED TO HAVE THE FRONT FACING THE ROADWAY.
8. IN DIRECT BURIED INSTALLATION, ONCE MOUSEHOLES ARE FULLY COVERED, THE CONDUIT SHALL BE ADDED USING CONDUIT AS DEPICTED IN CONDUIT APPLICATION VIEWS (SEE PAGE 2). PIPE DUCT (ITEM 5) LENGTH SHALL EXTEND BEYOND GROUND GRID AS SHOWN.
9. ALL INSTALLATIONS FOR COMMERCIAL/INDUSTRIAL/MULTI-FAMILY APPLICATIONS AND ON PRIVATE PROPERTY SHALL HAVE ALL CABLES INSTALLED IN CONDUIT.
10. ALL CABLES SHALL HAVE A MINIMUM OF 5.0 m OF EXTRA CABLE COILED IN BASE AS MEASURED FROM THE TOP OF THE BASE.
11. THE BASE SHALL BE INSTALLED SUCH THAT THE TOP SURFACE IS LEVEL.
12. BASE WEIGHT: 860 kg (1895 lbs.).

ALL DIMENSIONS IN MILLIMETERS [INCHES] UNLESS OTHERWISE SPECIFIED.

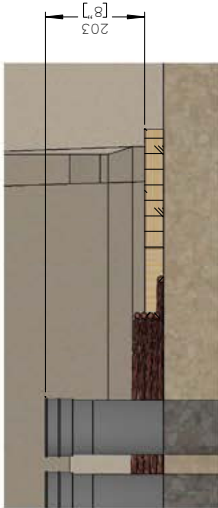
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APPROVED		2	
ORIGINAL APPROVED ON: 24/01/19 BY: M. MIX		B	
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UNITS: MILLIMETRES TOLERANCES: ± 5 mm FRACTIONAL: $\pm 1/4"$ ANGULAR: $\pm 1^\circ$		A	
DWN: R. LAWRIE		1	
DES: A. RAHMAN		A	
CHK: -		1	
COMMITTEE REVIEW: 2017-05-26		A	
APP: C.M. RECTO		1	
INITIAL ISSUE DATE: N/A		A	
INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS		1	
SCALE: 1:30		1	
PAGE: 1 OF 5		1	
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66 00 07 00 27 115		1	
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COMMERCIAL/INDUSTRIAL/MULTI-FAMILY APPLICATION

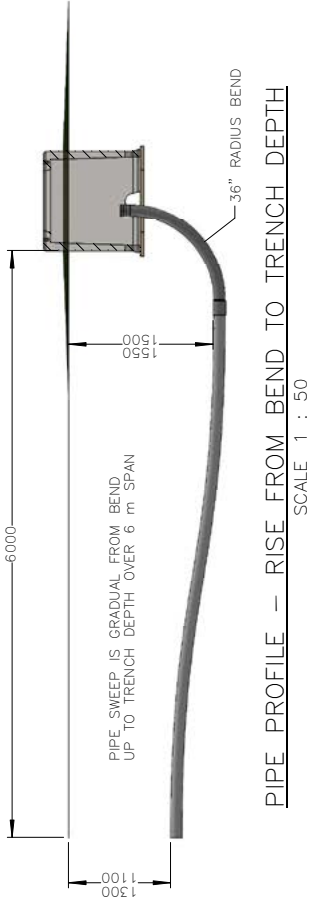


SECTION A-A

SECTION B-B



DETAIL C
SCALE 1 : 10



SCALE 1 : 50

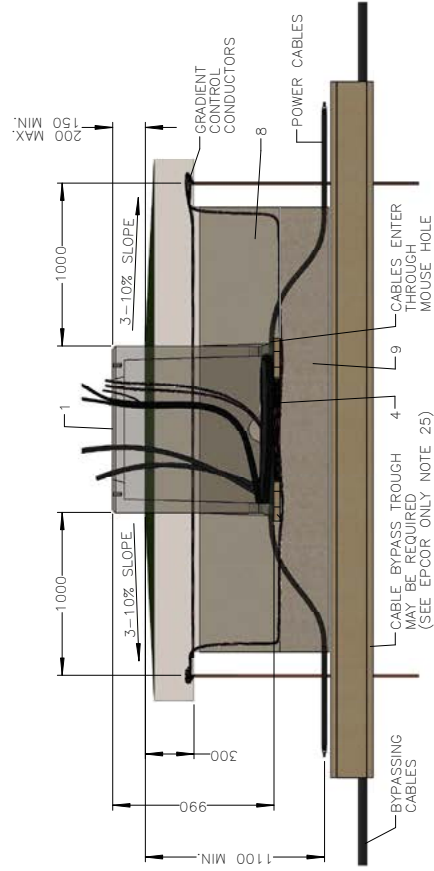
NOTES CONT'D:

- 13. ADAPTER COUPLING IS REQUIRED FOR DB2 CONDUIT.
- 14. ALL PIPES SHALL BE DB2 OR SCHEDULE 40 PVC. CONDUIT BENDS SHALL BE SCHEDULE 40 PVC PIPE. ALL DUCT BENDS SHALL BE 36" RADIUS, ANY OTHER TO BE APPROVED BY EDI.
- 15. STEEL REMOVABLE GUARD RAILS WITH CONCRETE STEEL BOLLARD POSTS ARE REQUIRED FOR ALL TRANSFORMERS ON PRIVATE PROPERTY. REFER TO STANDARDS 65 00 07 12 500 AND 65 00 07 00 12 502 FOR BOLLARD AND GUARD RAIL CONSTRUCTION.
- 16. FOR ALL PADMOUNTED EQUIPMENT INSTALLATIONS ON PUBLIC PROPERTY, MECHANICAL PROTECTION SHALL BE CONSIDERED.

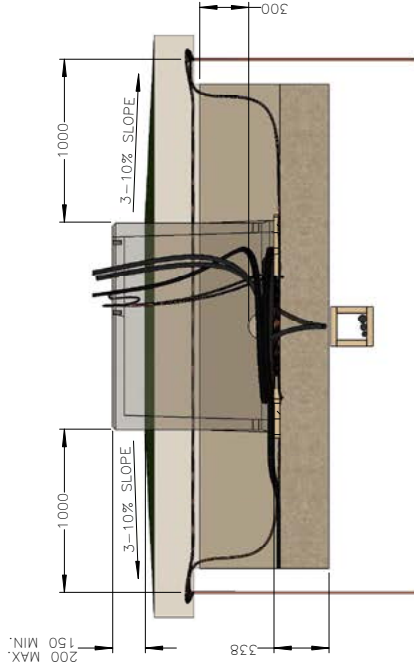
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	UNITS: MILLIMETRES	COMMITTEE REVIEW: 2017-05-26	
	TOLERANCES: ± 5 mm	INITIAL ISSUE DATE: N/A	
	FRACTIONAL: ± 1/4"		
	ANGULAR: ± 1°		
DWN: R. LAWRIE			
DES: A. RAHMAN			
CHK: -			
APP: C.M. RECTO			
INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS			
SCALE: 1:30		PAGE: 2 OF 5	
DRAWING NO. 66 00 07 00 27 115		REV. 8	

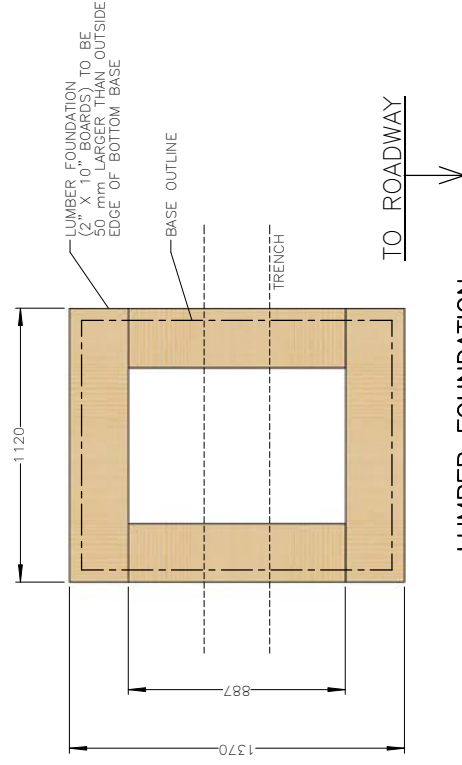
DIRECT BURIED APPLICATION



SECTION A-A



SECTION B-B



LUMBER FOUNDATION
SCALE 1 : 20

TO ROADWAY

NOTES CONT'D:

17. LUMBER FOUNDATION SHOULD BE 2" x 10" PRESSURE TREATED SPRUCE CUT TO 2 - 1120 mm AND 2 - 1625 mm LENGTHS.
18. RE-TREAT ALL ENDS OF LUMBER FOUNDATION BOARDS WITH COPPER NAPHTHATE WOOD PRESERVATIVE.
19. CONCRETE SHALL BE 25 MPa OR GREATER. ALTERNATIVE MATERIALS MAY BE ACCEPTABLE.
20. IF THE LOCATION OF THE PRECAST BASE IS WITHIN 4 m OF A BUILDING FOUNDATION OR IF SOIL CONDITIONS DO NOT SUPPORT PRECAST BASES, ENGINEERED SCREW PILES MUST BE INSTALLED (REFER TO STANDARD 65.00.07.00 TO 4.00). WHEN SCREW PILES ARE INSTALLED WOOD PLANKS ARE NOT REQUIRED. THE CONCRETE PAD IS TO SIT DIRECTLY ON PILE CAP/PLATE.
21. STEP THE FOUNDATION BOARD TO ALLOW SETTLING A SHEET PILE, BELOW FINISHED GRADE, ALLOWING THE ANCHORING OF THE GRADING.
22. LEVEL THE FOUNDATION BOARDS ON 300 mm OF COMPACTED ROAD CRUSH BEFORE SETTING THE BASE.
23. SAND 300 mm ABOVE THE MOUSE HOLES AFTER CABLE INSTALLATION.
24. BACKFILL WITH 300 mm LIFTS OF CLAY OR NATIV SOIL AND COMPACT TO ROUGH GRADE.

EPCOR ONLY NOTES. NOT FOR INSTALLATION ON PRIVATE PROPERTY.

25. FOR CABLE BYPASS TROUGH REQUIREMENTS AND INSTALLATION SEE STANDARD 66 00 07 00 46 005.

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BY:
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DWN: R. LAWRIE	IS PROHIBITED

DWN: R. LAWRIE

UNITS: MILLIMETERS
TOLERANCES: ± 5 mm
FRACTIONAL: $\pm 1/4$ "

FRACTIONAL: $\frac{1}{4}$

ANGULAR: + 1 •

DWN: R. LAWRIE

DES: A. RAHMAN

DFS: A. RAHMAN	COMMITTEE REE

CHK: -

CHK: -	2017-05-26

APP: C.M. RECTO

APP: C.M. RECTO

INSTALLATION OF PRECAST CONCRETE BASE FOR SINGLE PHASE TRANSFORMERS

SCALE: 1-30	PAGE: 3 OF 5

SCALE: 1-30	PAGE: 3 OF 5

DRAWING NO	REV

DRAWING NO	REV

66	00	07	00	27	115	8

66	00	07	00	27	115	8

ITEM	DESCRIPTION	STOCK NO.	QTY.
1	BASE PRECAST TRANSFORMER SINGLE PHASE PADMOUNT 1270 X 1020	62891	1
2	ROD GROUNDING 5/8" X 5'	17288	8
3	PIPE DUCT	AS REQ'D	A/R
	DB2 - 4" - 20' LENGTH	53283	
	RIGID PVC - 4" - 20' LENGTH	10083	
4	WIRE #4/0 STRANDED COPPER BARE	45655	A/R
5	LUMBER SPRUCE PRESSURE-TREATED - 2" X 10" X 8' PWF (RE-TREAT ALL CUT ENDS)	13235	2
6	Connector Ground Rod 5/8" - 250 1/C	31914	2
7	CONNECTOR GROUND ROD 5/8" 250 DOUBLE WIRE	31914	2
8	SAND	N/A	A/R
9	ROAD CRUSH - 20 mm	N/A	A/R
10	BEND RIGID PVC - 4" - 90 DEGREE 36" RADIUS PLAIN END	22960	A/R
11	END BELL COLLAR - 4" PVC	20574	A/R
12	COUPLER - GROUND ROD - 5/8"	17289	4
13	ADAPTER COUPLING - 4" DB2 TO 4" PVC/FRE	38916	A/R

1

PERMIT

ORIGINAL PERMITTED ON:
24/02/14
BY:
G. BLOUIN

2

APPROVED

ORIGINAL APPROVED ON:
24/01/19
BY:
M. MIX

3

DISTRIBUTION
ENGINEERING
STANDARDS



UNLESS OTHERWISE SPECIFIED

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UNITS: MILLIMETRES

TOLERANCES: ± 5 mm

FRACTIONAL: ± 1/4"

ANGULAR: ± 1°

DWN: R. LAWRIE

DES: A. RAHMAN

CHK: -

APP: C.M. RECTO

COMMITTEE REVIEW:
2017-05-26

INITIAL ISSUE DATE:
N/A

4

INSTALLATION OF
PRECAST CONCRETE
BASE FOR SINGLE
PHASE TRANSFORMERS

5

SCALE: 1:50

PAGE: 4 OF 5

DRAWING NO.

REV.

66 00 07 00 27 115

8



NOTES FOR 750 TO 2500 KVA TRANSFORMER BASES:

1. WHEN SETTING BASE, OBSERVE 250 mm MINIMUM AND 300 mm MAXIMUM REQUIREMENT FOR ELEVATION FROM TOP OF BASE TO FINISHED GRADE (NOT ROUGH GRADE).
2. ENSURE 50 m OF 4/0 Cu IS COILED IN BASE FOR EACH GRADIENT CONTROL CONNECTION TO GROUND BUS.
3. ANY DEVIATION IN GROUND GRID SPACING FROM THE ABOVE DIMENSIONS SHALL BE AT THE SOLE DISCRETION OF EDTI ENGINEERING BY WRITTEN APPROVAL ONLY.
4. ANY CONDUCTOR SUPPLIED BASES SHOULD BE CONSISTENT WITH EPCOR SPECIFICATION.
5. 750 - 2500 kVA TRANSFORMERS CAN ACCOMMODATE MAXIMUM 9 CONDUCTORS PER PHASE. ANY INCREASE IN MAXIMUM CONDUCTOR COUNT SHALL BE AT THE SOLE DISCRETION OF EDTI ENGINEERING BY WRITTEN APPROVAL ONLY.
6. ALL CABLES TO HAVE A MINIMUM OF 5 m OF EXTRA LENGTH COILED IN BASE AS MEASURED FROM TOP OF THE BASE.
7. THE BASE SHALL BE INSTALLED SUCH THAT THE TOP SURFACE IS LEVEL.
8. BASE WEIGHT: 2520 kg (5565 lbs). BASE HEIGHT: 1000 mm (39.4 in).
9. INTERCONNECTING GRADIENT CONTROL (GROUND GRID) CONDUCTORS SHALL BE INSTALLED 300 mm BELOW FINAL FINISHED GRADE (NOT ROUGH GRADE) WITH ONE LEG CONTINUOUS AROUND THE PERIMETER AND INTO THE BASE WITH AN ADDITIONAL CONTINUOUS CONDUCTOR TAIL ATTACHED FROM THE OPPOSITE CORNER.

GRADE (NOT ROUGH GRADE).

2. ENSURE 5.0 m OF 4/0 Cu IS COILED IN BASE FOR EACH GRADIENT CONTROL CONNECTION TO GROUND BUS.

3. ANY DEVIATION IN GROUND GRID SPACING FROM THE ABOVE DIMENSIONS SHALL BE AT THE SOLE DISCRETION OF EDIT ENGINEERING BY WRITTEN

[illegible]

SHALL BE AT THE SOLE DISCRETION OF EDCI ENGINEERING BY WRITTEN APPROVAL ONLY. 9 CONDUCTORS PER PHASE; ANI INCREASE IN MAXIMUM CONDUCTOR COUNT.

6. ALL CABLES TO HAVE A MINIMUM OF 5 m OF EXTRA LENGTH COILED IN BASE AS MEASURED FROM TOP OF THE BASE SHALL BE AT THE SOLE DISCRETION OF THE ENGINEERING OFFICE. WHEN APPROVED ONCE.

7. THE BASE SHALL BE INSTALLED SUCH THAT THE TOP SURFACE IS LEVEL.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

PERMIT

ORIGINAL PERMITTED ON:
24/03/01
BY:
C. TING

APPROVED

ORIGINAL APPROVED ON:
24/03/01
BY:
M. MIX

DISTRIBUTION ENGINEERING STANDARDS

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UNITS: MILLIMETERS TOLERANCES: ± 5 mm FRACTIONAL: $\pm 1/4$ " ANGULAR: $\pm 1^\circ$	INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF EPCOR UTILITIES INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF EPCOR UTILITIES INC. IS PROHIBITED.
DWNI: R. LAWRIE	

DWN: R. LAWRIE

DEC. A. BALMAN

CHK: -

APP: C. M. REC

INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS

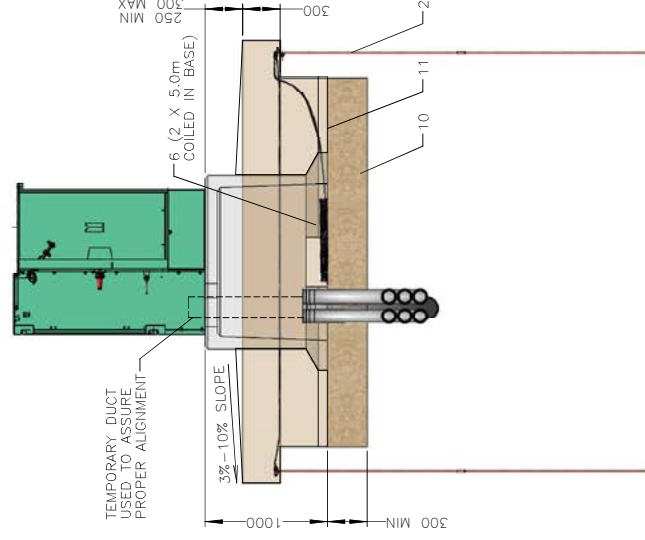
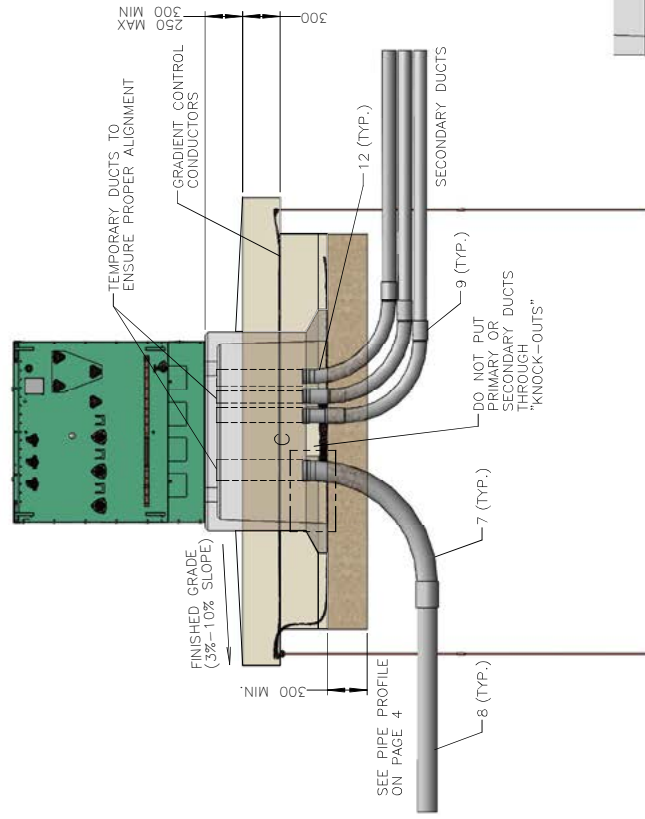
SCALE: 1-40	PAGE: 2 OF 6

DRAWING NO	REV

[illegible]

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BASE AND DUCTING DETAILS FOR 75 TO 500 kVA AND 750 TO 2500 kVA TRANSFORMERS



DETAIL C
SCALE 1 : 20

SECTION A-A

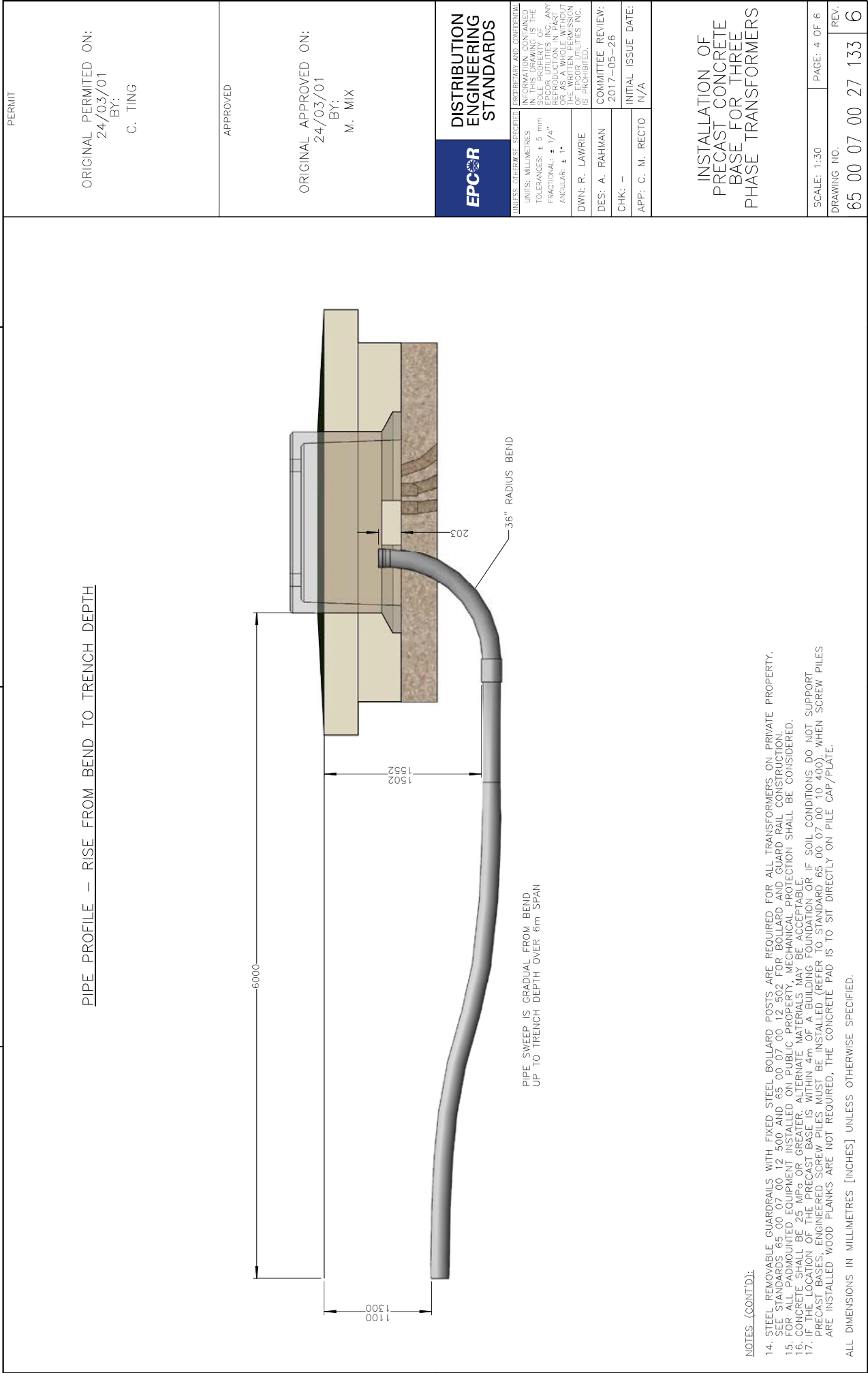
SECTION B-B

NOTES (CONT'D):

10. MINIMUM PRIMARY CONDUCTOR DUCT SIZES SHALL BE AS PER 63 00 07 00 37 001.
11. MINIMUM SECONDARY CONDUCTOR DUCT SIZES SHALL BE AS PER 63 00 07 00 37 002.
12. 36" RADIUS BENDS ARE PREFERRED FOR ALL DUCT BENDS.
13. COMPACTED SAND SHOULD BE INSTALLED TO TOP OF MOUSE HOLE.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

PERMIT		ORIGINAL PERMITTED ON: 24/03/01 BY: C. TING	
APPROVED		ORIGINAL APPROVED ON: 24/03/01 BY: M. MIX	
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UNITS: MILLIMETRES		COMMITTEE REVIEW: 2017-05-26	
TOLERANCES: ± 5 mm		INITIAL ISSUE DATE: N/A	
FRACTIONAL: ± 1/4"			
ANGULAR: ± 1°			
DWN: R. LAWRIE			
DES: A. RAHMAN			
CHK: —			
APP: C. M. RECTO			
INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS			
SCALE: 1:40		PAGE: 3 OF 6	
DRAWING NO.		REV.	
65 00 07 00 27 133		6	



1

2

3

4

PERMIT

ORIGINAL PERMITTED ON:
24/03/01
BY:
C. TING

APPROVED

ORIGINAL APPROVED ON:
24/03/01
BY:
M. MIX

DISTRIBUTION
ENGINEERING
STANDARDS



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UNITS: MILLIMETRES

TOLERANCES: ± 5 mm

FRACTIONAL: $\pm 1/4"$

ANGULAR: $\pm 1^\circ$

DW/N: R. LAWRIE

DES: A. RAHMAN

CHK: —

APP: C. M. RECTO

COMMITTEE REVIEW:

2017-05-26

INITIAL ISSUE DATE:

N/A

INSTALLATION OF
PRECAST CONCRETE
BASE FOR THREE
PHASE TRANSFORMERS

SCALE: 1:30

PAGE: 4 OF 6

DRAWING NO.

65 00 07 00 27 133

REV.

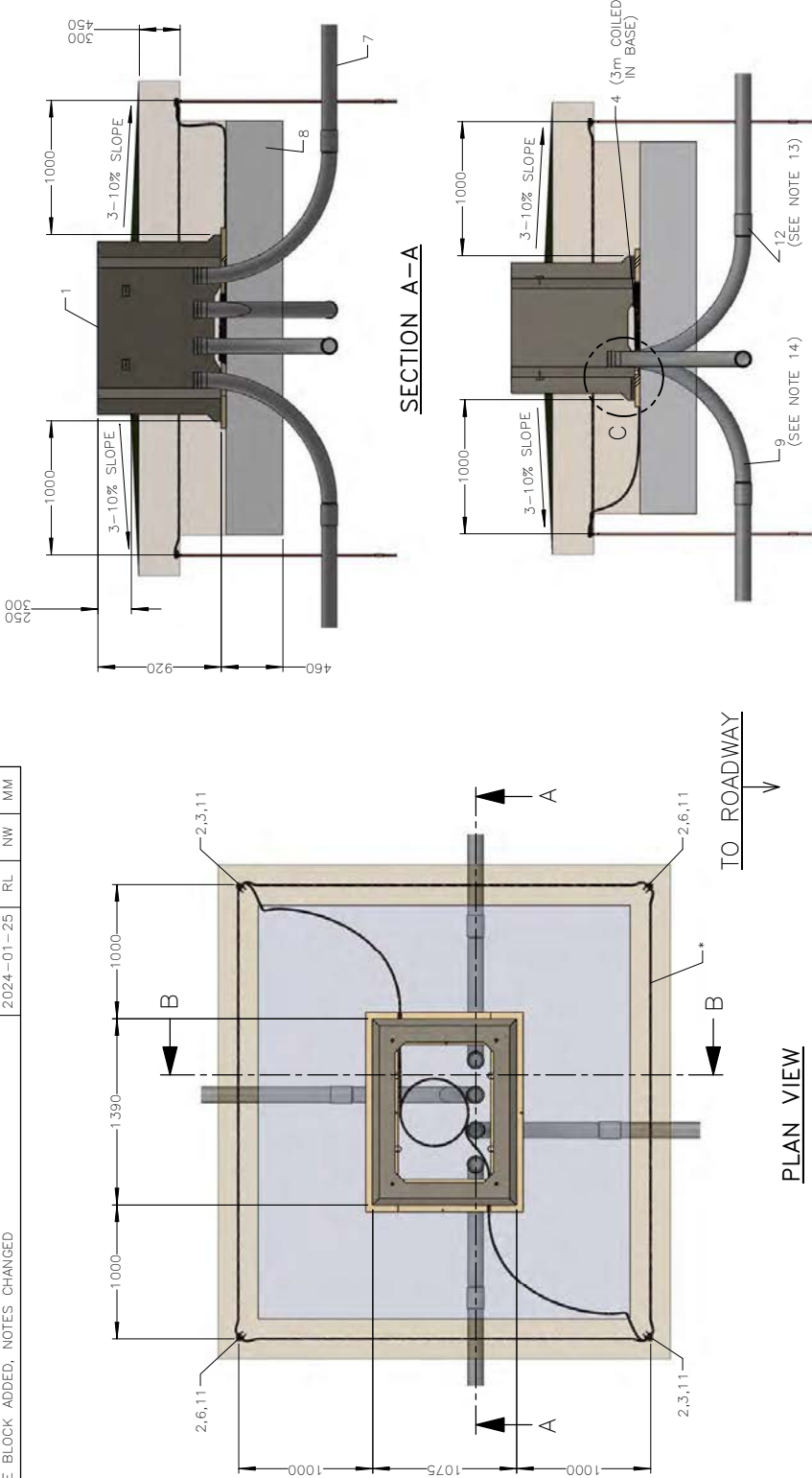
6

ITEM NO.	DESCRIPTION	STOCK NUMBER	QTY.
1	BASE PRECAST TRANSFORMER	AS REQ'D	1
	75 – 500 KVA CONCRETE	11794	
	750 – 2500 KVA CONCRETE	11636	
2	ROD GROUNDING 5/8" X 5'	17288	8
3	CONNECTOR GROUND ROD 5/8" 250 DOUBLE WIRE	31914	2
4	CONNECTOR GROUND ROD 5/8" – 250 1/C	31914	6
5	COUPLER – GROUND ROD – 5/8"	17289	4
6	WIRE #4/0 STRANDED COPPER BARE	45655	A/R
7	BEND PVC RIGID	AS REQ'D	A/R
	4" 90 DEGREE 24" RADIUS PLAIN ENDS	44327	
	4" 90 DEGREE 36" RADIUS PLAIN ENDS	22960	
	6" 90 DEGREE 36" RADIUS PLAIN ENDS	17787	
8	PIPE DUCT	AS REQ'D	A/R
	DB2 – 4"	53283	
	DB2 – 6"	42236	
	RIGID PVC – 4"	10083	
	RIGID PVC – 6"	10692	
9	COUPLINGS	AS REQ'D	A/R
	4" DB2 – 4" PVC/FRE	38916	
	4" PVC	26695	
	6" DB2 – 6" PVC/FRE	10284	
	6" PVC	34751	
10	ROAD CRUSH – 3/4"	N/A	A/R
11	SAND	N/A	A/R
12	BELL END COLLAR	AS REQ'D	A/R
	RIGID PVC – 4"	20574	
	RIGID PVC – 5"	20731	

PERMIT	
ORIGINAL PERMITTED ON: 24/03/01 BY: C. TING	
APPROVED	
ORIGINAL APPROVED ON: 24/03/01 BY: M. MIX	
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UNITS: MILLIMETRES TOLERANCES: ± 5 mm FRACTIONAL: ± 1/4" ANGULAR: ± 1° DWIN: R. LAWRIE	
DES: A. RAHMAN	COMMITTEE REVIEW: 2017-05-26
CHK: –	INITIAL ISSUE DATE: N/A
APP: C. M. RECTO	
INSTALLATION OF PRECAST CONCRETE BASE FOR THREE PHASE TRANSFORMERS	
SCALE: N.T.S.	PAGE: 5 OF 6
DRAWING NO.	REV.
65 00 07 00 27 133	6

REV.	DESCRIPTION	DATE	DWN	CHK	APP
6	NEW TITLE BLOCK ADDED, NOTES CHANGED	2024-01-25	RL	NW	MM

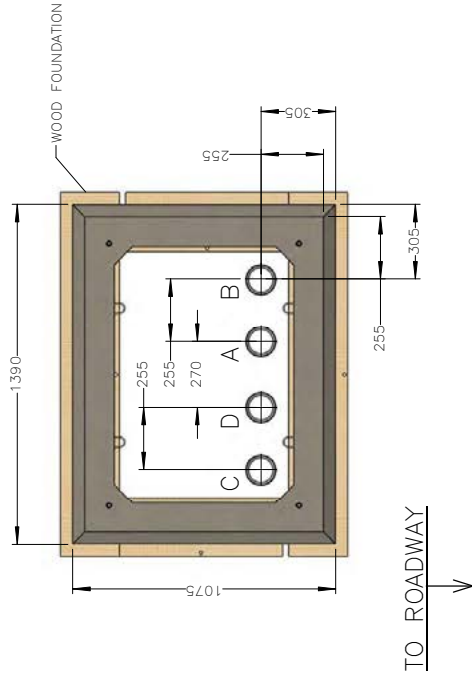
PERMIT					
ORIGINAL PERMITTED ON: 24/02/14 BY: G. BLOUIN					
APPROVED					
ORIGINAL APPROVED ON: 24/02/09 BY: M. MIX					
EPCOR		DISTRIBUTION ENGINEERING STANDARDS			
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UNITS: MILLIMETRES		COMMITTEE REVIEW: 2017-12-14			
TOLERANCES: ± 5 mm		INITIAL ISSUE DATE: N/A			
FRACTIONAL: ± 1/4"					
ANGULAR: ± 1°					
DWN: R. LAWRIE					
DES: A. RAHMAN					
CHK: -					
APP: C.M. RECTO					
INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 15 kV SINGLE PHASE 200 AMP DEADFRONT SWITCHING CUBICLE					
SCALE: 1:35		PAGE: 1 OF 4		REV.	
DRAWING NO.		66 00 07 15 23 114		6	



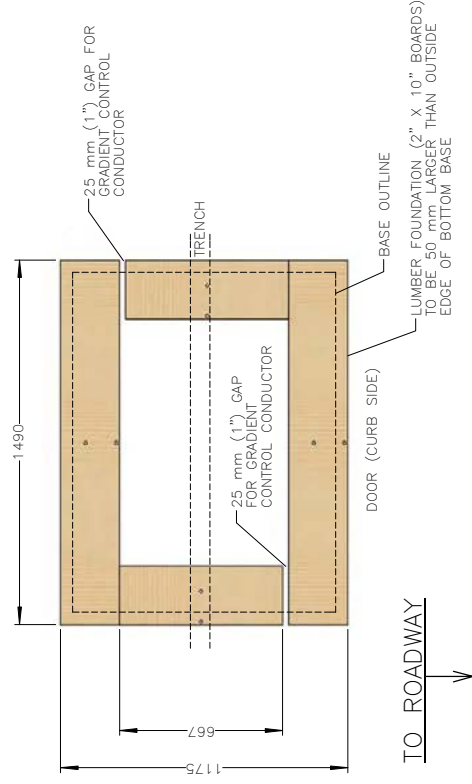
NOTES:

- INTERCONNECTING GRADIENT CONTROL CONDUCTORS SHALL BE INSTALLED A MINIMUM OF 300 mm BELOW FINAL FINISHED GRADE (NOT ROUGH GRADE) WITHOUT ENCLOSURES AROUND THE PERIMETER.
- USE 100% FILL IN BACKFILL AROUND THE PERIMETER.
- ANY DEVIATION IN GROUND GRID SPACING FROM THE ABOVE DIMENSIONS SHALL BE AT THE SOLE DISCRETION OF EDIT ENGINEERING BY WRITTEN APPROVAL ONLY.
- GRADE 250 mm MINIMUM AND 300 mm MAXIMUM REQUIREMENT FOR ELEVATION FROM TOP OF BASE TO FINAL FINISHED GRADE (NOT ROUGH GRADE).
- CABLES ARE TO BE INSTALLED THROUGH DUCTS ONLY.
- RETAIN 3.0 m OF COILED 4/0 Cu FOR CONNECTION TO GROUND BUS.
- THE DUCTING SHOULD BE INSTALLED SO THAT THE ENDS ARE POINTING DIRECTLY UPWARDS WITH THE TOP OF THE END BELL 200 mm ABOVE THE PLANKS/BASE BOTTOM. SPARE DUCTS TO BE CAPPED AND TAPED.
- ADDITIONAL GROUND ROD MAY BE REQUIRED TO ACHIEVE A RESISTANCE OF 6 OHMS OR LESS.
- FOR CABLE BYPASS THROUGH REQUIREMENTS AND INSTALLATION SEE DRAWING 66 00 07 00 46 005.
- MECHANICAL PROTECTORS FOR PLANKS OR 15 kV CABLE COILED IN THE BASE MEASURED FROM THE TOP OF THE BASE. THE BASE SHALL BE INSTALLED SUCH THAT THE TOP SURFACE IS LEVEL.
- THE BASE WEIGHT: 1175 kg (2590 lbs).
- ADAPTER COUPLING IS REQUIRED FOR DB2 CONDUIT.
- 36° RADIUS BENDS ARE PREFERRED FOR ALL DUCT BENDS.

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.



PIPE LOCATIONS

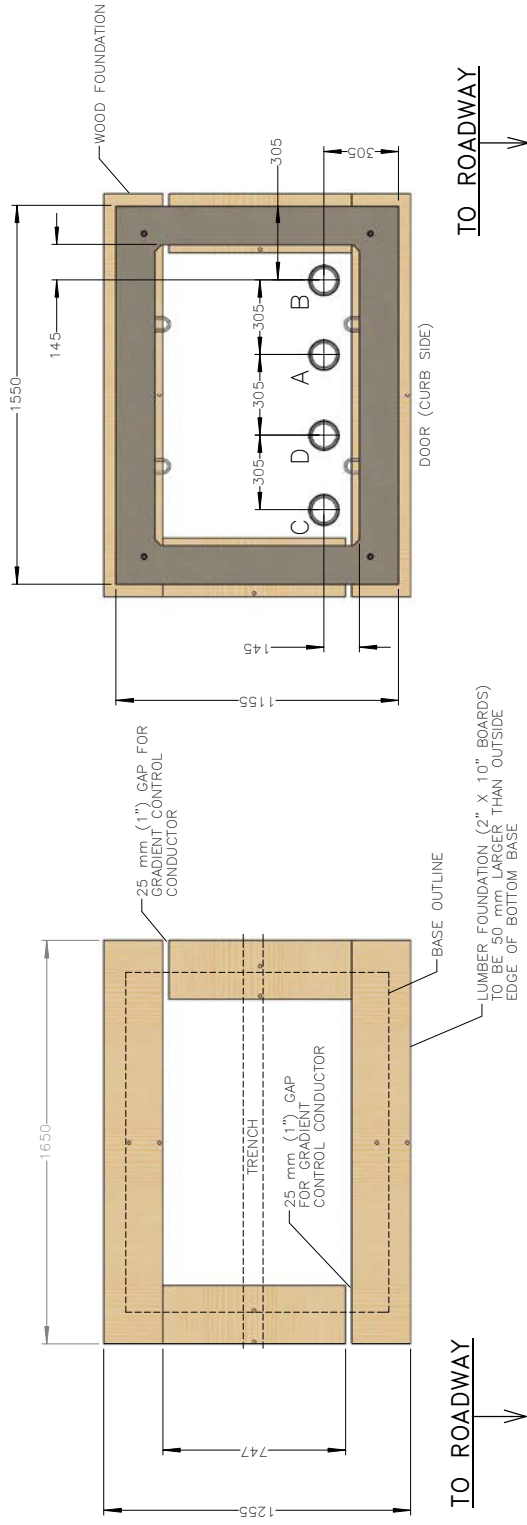
LUMBER FOUNDATION

NOTES (CONT'D):

16. LUMBER FOUNDATION TO BE 2" x 10" PRESSURE TREATED SPRUCE WITH 2 - 1490 mm AND 2 - 667 mm LENGTHS (50 mm MAXIMUM EDGE ON OUTSIDE).
17. RE-TREAT CUT ENDS OF LUMBER FOUNDATION BOARDS WITH COPPER NAPHTHATE WOOD PRESERVATIVE.
18. ALL PIPES SHOULD BE DB2 OR RIGID PVC, BENDS TO BE RIGID PVC.
19. DUCT SIZES AS PER STANDARD 63 00 07 00 37 001.
20. ALL MEASUREMENTS ARE TO THE OUTSIDE "TOP" OF THE BASE.

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.

[illegible]

LUMBER FOUNDATION

PIPE LOCATIONS

NOTES (CONT'D):

16. LUMBER FOUNDATION TO BE 2" X 10" PRESSURE TREATED SPRUCE WITH 2 - 1650 mm AND 2 - 747 mm LENGTHS (50 mm MAXIMUM LEDGE ON OUTSIDE).
17. RE-TREAT CUT ENDS OF LUMBER FOUNDATION BOARDS WITH COPPER NAPHTHATE WOOD PRESERVATIVE.
18. ALL PIPES SHOULD BE DB2 OR RIGID PVC, BENDS TO BE RIGID PVC.
19. DUCT SIZES AS PER STANDARD 63 00 07 00 37 001.
20. ALL MEASUREMENTS ARE TO THE OUTSIDE "TOP" OF THE BASE.

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.

PERMIT			
ORIGINAL PERMITTED ON: 24/02/14 BY: G. BLOUIN		APPROVED	
ORIGINAL APPROVED ON: 24/02/09 BY: M. MIX			
 DISTRIBUTION ENGINEERING STANDARDS		EXCEPT WHERE SHOWN OTHERWISE AND CONFIDENTIAL INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF EPCOR UTILITIES INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF EPCOR UTILITIES INC. IS PROHIBITED. UNITS: MILLIMETRES TOLERANCES: ± 5 mm FRACTIONAL: ± 1/4" ANGULAR: ± 1° DWN: R. LAWRIE DES: A. RAHMAN CHK: — APP: C.M. RECTO COMMITTEE REVIEW: 2017-12-14 INITIAL ISSUE DATE: N/A	
INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 25 kV SINGLE PHASE 200 AMP DEADFRONT SWITCHING CUBICLE			
SCALE: 1:20	PAGE: 2 OF 4	REV.	
DRAWING NO. 66 00 07 25 23 114		7	

ITEM NO.	DESCRIPTION	STOCK NUMBER	QTY.
1	BASE PRECAST 200 AMP 25 KV 4-WAY 1 PHASE DEADFRONT SWITCHING CUBICLE	56200	1
2	ROD GROUNDING 5/8" X 5'	17288	8
3	CONNECTOR GROUND ROD 3/4" - 250 DOUBLE WIRE	31914	2
4	WIRE #4/0 STRANDED COPPER BARE	45655	35
5	LUMBER SPRUCE PRESSURE-TREATED - 2" X 10" X 8' PWF (RE-TREAT ALL CUT ENDS)	13235	2
6	CONNECTOR GROUND ROD 5/8" - 250 1/C	31914	2
7	PIPE DUCT 4"	AS REQ'D	A/R
	DB2 - 4"	53283	
	RIGID PVC - 4"	10083	
8	ROAD CRUSH - 3/4"	N/A	A/R
9	BEND RIGID PVC	AS REQ'D	A/R
	4" 90 DEGREES 24" RADIUS PLAIN ENDS	44327	
	4" 90 DEGREES 36" RADIUS PLAIN ENDS	22960	
10	END BELL COLLAR - 4" PVC	20574	A/R
11	COUPLER - GROUND ROD - 5/8"	17289	4
12	ADAPTER COUPLING 4" DB2 - 4" PVC/FRE	38916	A/R

1

PERMIT

ORIGINAL PERMITTED ON:
24/02/14
BY:
G. BLOUIN

2

APPROVED

ORIGINAL APPROVED ON:
24/02/09
BY:
M. MIX

DISTRIBUTION
ENGINEERING
STANDARDS

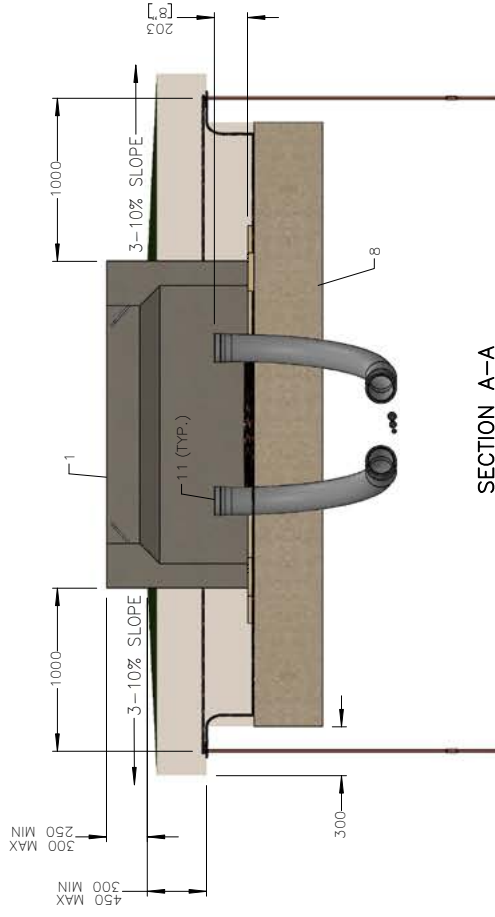


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UNITS: MILLIMETRES	
TOLERANCES: ± 5 mm	
FRACTIONAL: ± 1/4"	
ANGULAR: ± 1°	
DWN: R. LAWRIE	
DES: A. RAHMAN	COMMITTEE REVIEW: 2017-12-14
CHK: -	INITIAL ISSUE DATE: N/A
APP: C.M. RECTO	

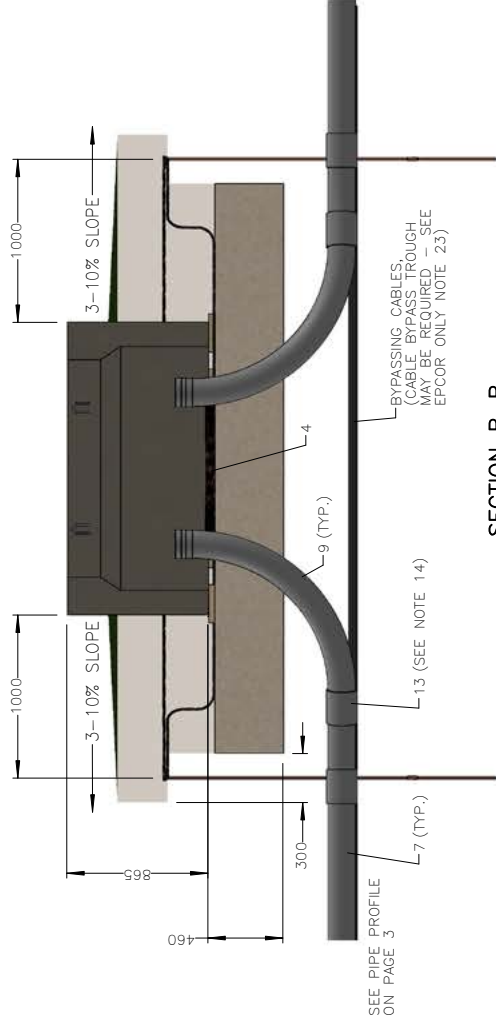
3

INSTALLATION OF
PRECAST CONCRETE
BASE FOR 4-WAY
25 KV SINGLE PHASE
200 AMP DEADFRONT
SWITCHING CUBICLE

SCALE: N.T.S.	PAGE: 3 OF 4
DRAWING NO.	REV.
66 00 07 25 23 114	7



SECTION A-A

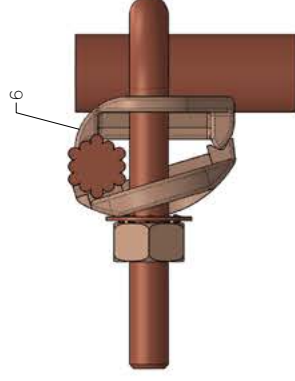


SECTION B-B

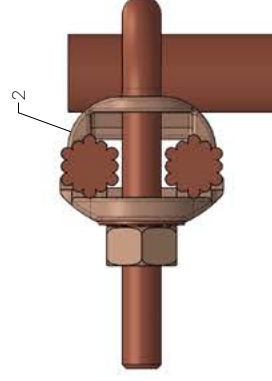
NOTES CONT'D:

14. ADAPTER COUPLING IS REQUIRED FOR DB2 CONDUIT.

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.

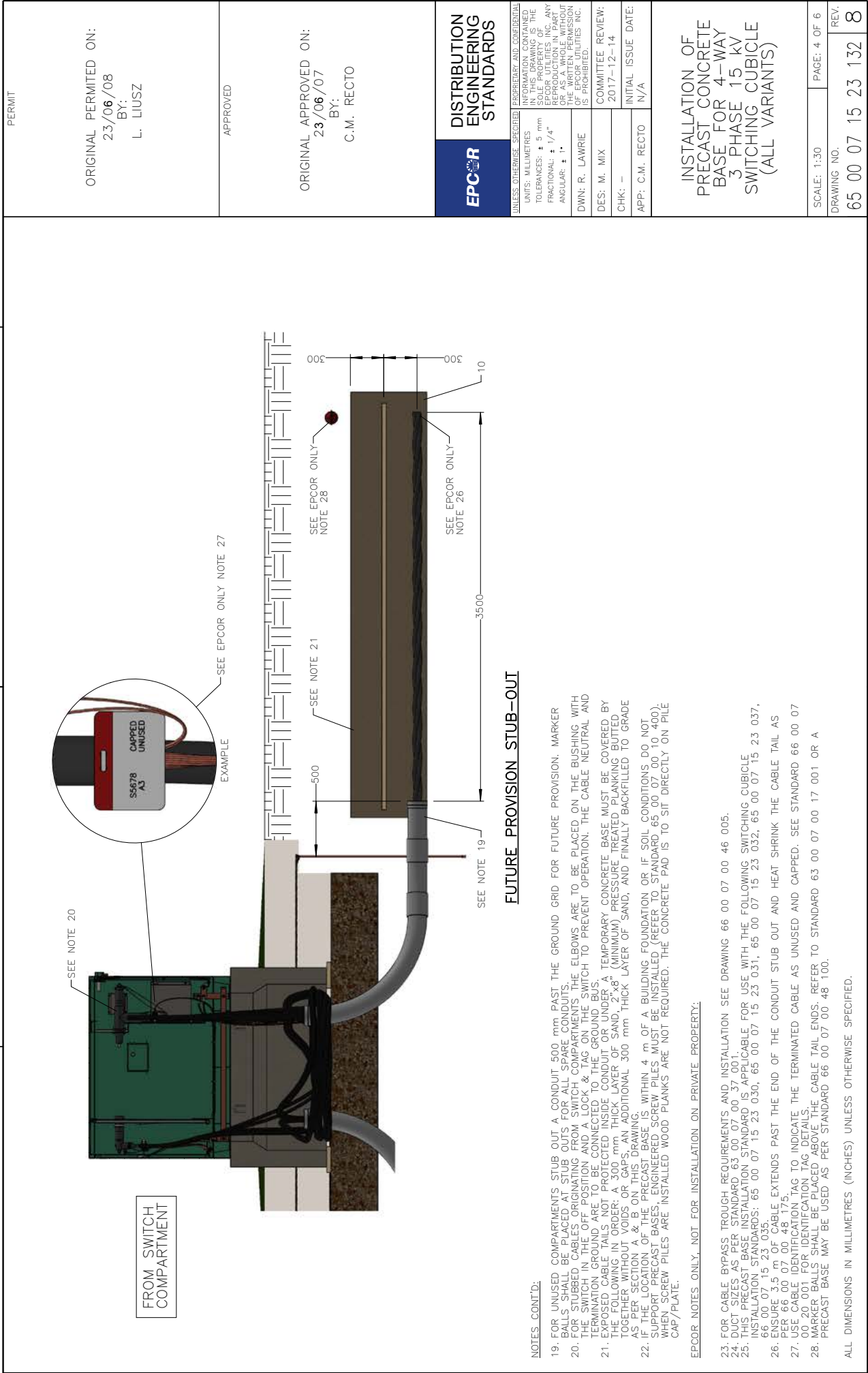


1/C CONNECTOR
SCALE 1:1



2/C CONNECTOR
SCALE 1:1

PERMIT	ORIGINAL PERMITTED ON: 23/06/08 BY: L. LIUSZ
APPROVED	ORIGINAL APPROVED ON: 23/06/07 BY: C.M. RECTO
 DISTRIBUTION ENGINEERING STANDARDS	UNLESS OTHERWISE SPECIFIED UNITS: MILLIMETRES TOLERANCES: $\pm$ 5 mm FRACTIONAL: $\pm$ 1/4" ANGULAR: $\pm$ 1° DWN: R. LAWRIE DES: M. MIX CHK: — APP: C.M. RECTO
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INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15 kV SWITCHING CUBICLE (ALL VARIANTS)	
SCALE: 1:30	PAGE: 2 OF 6
DRAWING NO.	REV.
65 00 07 15 23 132	8



4

2

3

1

ITEM NO.	DESCRIPTION		STOCK NUMBER	QTY.
1	BASE PRECAST 600 AMP 15 KV 4-WAY 3 PHASE DEADFRONT SWITCHING CUBICLE		17282	1
2	ROD GROUNDING 5/8" X 5'		17288	8
3	CONNECTOR GROUND ROD 5/8" – 250 DOUBLE WIRE		09136	2
4	WIRE #4/0 STRANDED COPPER BARE		45655	36m
5	LUMBER SPRUCE PRESSURE-TREATED – 2" X 10" X 8' PWF (RE-TREAT ALL CUT ENDS)		13235	3
6	CONNECTOR GROUND ROD 5/8" – 250 1/C		31914	2
7	PIPE DUCT 20 FT.		AS REQ'D	A/R
	DB2 – 4"		53283	
	DB2 – 6"		42236	
	RIGID PVC – 4"		10083	
	RIGID PVC – 6"		10692	
8	ROAD CRUSH – 3/4"		N/A	A/R
9	BEND RIGID PVC		AS REQ'D	A/R
	4" – 90° 36" RADIUS PLAIN ENDS		22960	
	6" – 90° 36" RADIUS PLAIN ENDS		17787	
10	SAND		N/A	A/R
11	END BELL COLLAR		AS REQ'D	A/R
	RIGID PVC – 4"		20574	
	RIGID PVC – 6"		20889	
12	COUPLER – GROUND ROD – 5/8"		17289	4
13	COUPLING ADAPTER		AS REQ'D	A/R
	4" DB2 TO 4" DB2		55583	
	4" DB2 TO 4" PVC		38916	
	4" PVC TO 4" PVC		26695	
	6" DB2 TO 6" DB2		10299	
	6" DB2 TO 6" PVC		10284	
	6" PVC TO 6" PVC		34751	

PERMIT	
ORIGINAL PERMITTED ON: 23/06/08 BY: L. LIUSZ	
APPROVED	
ORIGINAL APPROVED ON: 23/06/07 BY: C.M. RECTO	
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INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 15 KV SWITCHING CUBICLE (ALL VARIANTS)	
SCALE: 1:1	PAGE: 5 OF 6
DRAWING NO. 65 00 07 15 23 132	REV. 8

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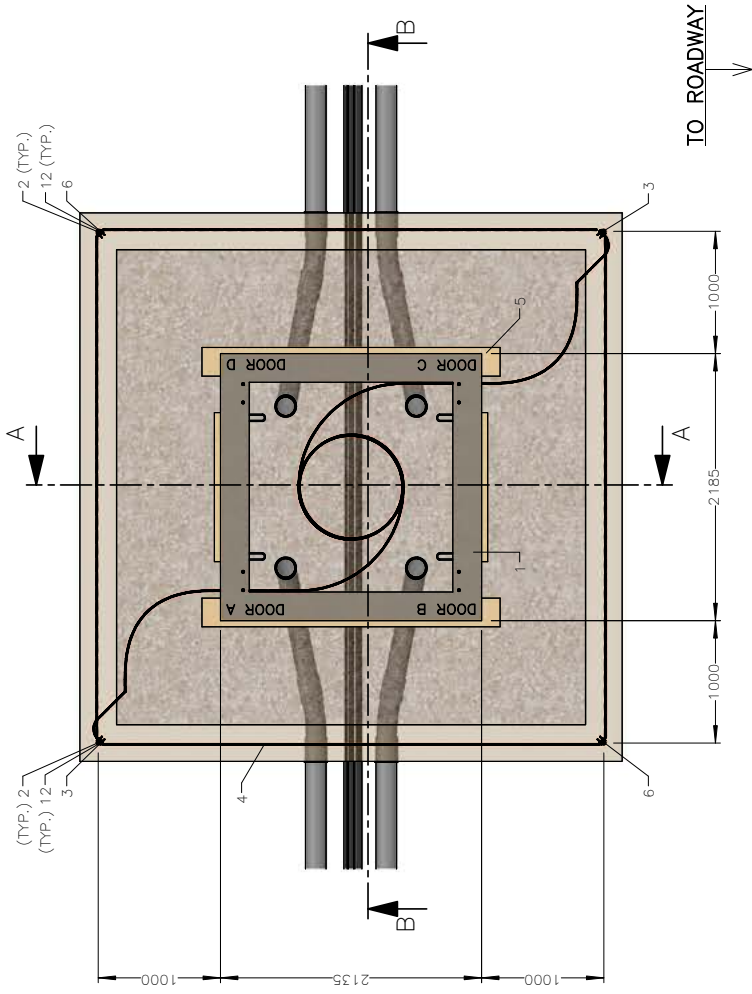
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REV.	DESCRIPTION	DATE	DWN	CHK	APP
8	NEW TITLE BLOCK ADDED	2023-05-25	RL	NW	OR

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DWN: R. LAWRIE	INSTALLATION OF PRECAST CONCRETE BASE FOR 4-WAY 3 PHASE 25 kV SWITCHING CUBICLE (ALL VARIANTS)	
DES: M. MIX		
CHK: -		
APP: C.M. RECTO	SCALE: 1:40	PAGE: 1 OF 6
DRAWING NO.		REV.
65 00 07 25 23 132		8

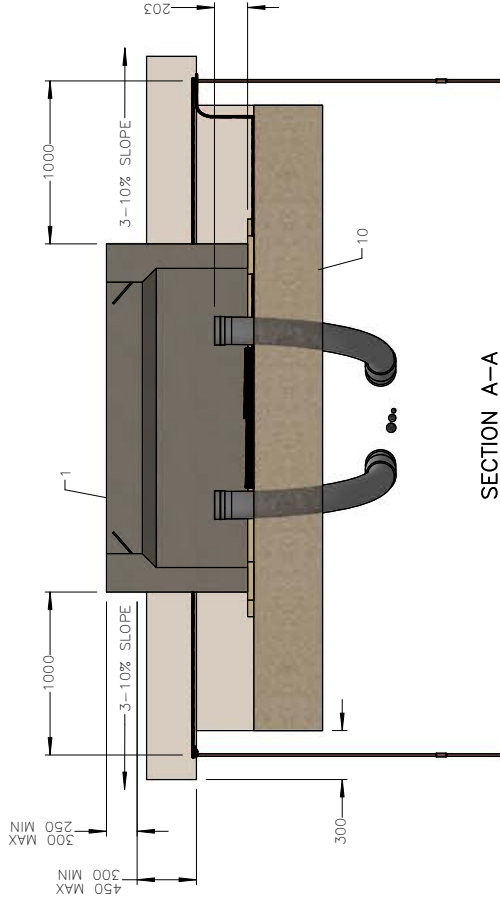


PLAN VIEW

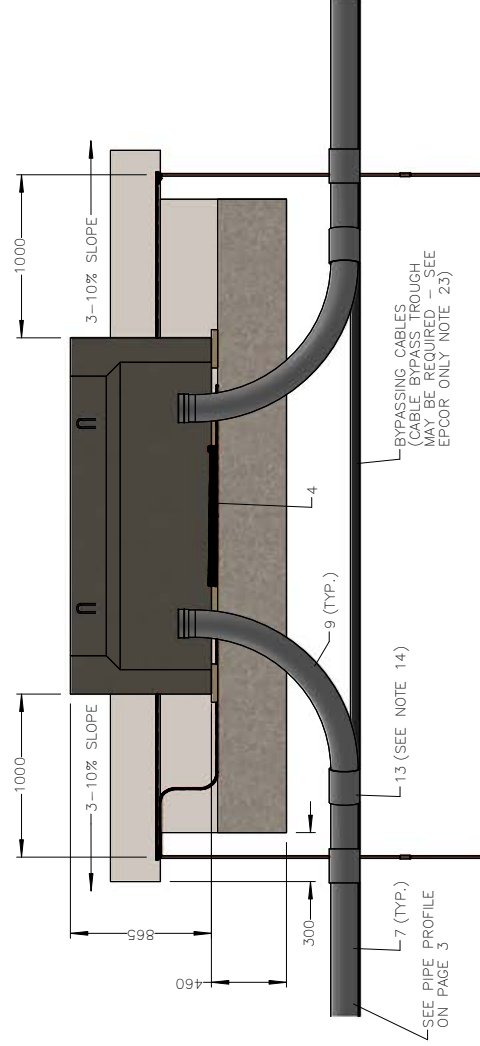
NOTES:

- INTERCONNECTING GRADIENT CONTROL CONDUCTORS SHALL BE INSTALLED A MINIMUM OF 300 mm BELOW FINAL FINISHED GRADE (NOT TAIL GRADE) WITH ONE LEG CONTINUOUS AROUND THE PERMETER AND INTO THE BASE WITH AN ADDITIONAL CONTINUOUS CONDUCTOR TAIL ATTACHED FROM THE OPPOSITE CORNER.
- ANY REDUCTION IN GROUND GRID SPACING SHALL BE AT THE SOLE DISCRETION OF EDI ENGINEERING BY WRITTEN APPROVAL ONLY.
- ENCLOSURE OF BASE SHALL BE INSTALLED WITHIN 300 mm FROM FINAL FINISHED GRADE (NOT ROUGH GRADE).
- ENCLOSURE OF BASE SHALL BE INSTALLED WITHIN 300 mm FROM FINAL FINISHED GRADE (NOT ROUGH GRADE).
- CABLES ARE TO BE INSTALLED THROUGH DUCTS ONLY.
- RETAIN 50 m OF COILED 4/0 Cu FOR CONNECTION TO GROUND BUS.
- PERMETER CABLES ARE TO BE INSTALLED WITH 8 m COILED IN BASE PRIOR TO TERMINATION AND A MINIMUM OF ONE COMPLETE PERMETER LOOP AFTER TERMINATION.
- THE DUCTING SHOULD BE INSTALLED SO THAT THE ENDS ARE POINTING DIRECTLY UPWARDS WITH THE TOP OF THE END BELL 200 mm ABOVE THE PLANKS/BASE BOTTOM. SPARE DUCTS TO BE CAPPED AND TAPED.
- ADDITIONAL GROUND ROD MAY BE REQUIRED TO ACHIEVE A RESISTANCE OF 6 OHMS OR LESS.
- STEEL REMOVABLE GUARDRAILS WITH CONCRETE STEEL BOLLARD POSTS ARE REQUIRED FOR ALL SWITCHING CUBICLES ON PRIVATE PROPERTY; REFER TO STANDARDS 65 00 07 12 500 AND 65 00 07 00 12 502 FOR BOLLARD AND GUARD RAIL CONSTRUCTION.
- FOR ALL PADMOUNTED EQUIPMENT INSTALLATIONS ON PUBLIC PROPERTY, MECHANICAL PROTECTION SHALL BE CONSIDERED.
- THE BASE SHALL BE INSTALLED SUCH THAT THE TOP SURFACE IS LEVEL.
- BASE WEIGHT: 2880 kg (6350 lbs).

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.



SECTION A-A

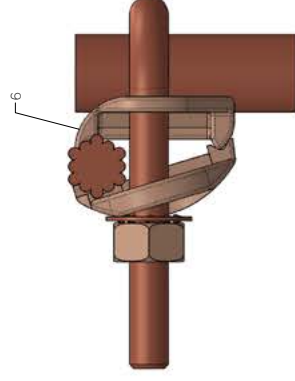


SECTION B-B

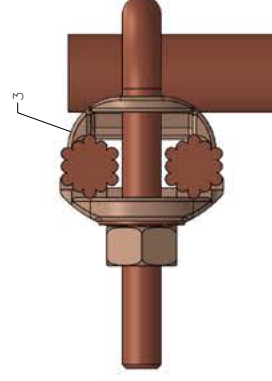
NOTES CONT'D:

14. ADAPTER COUPLING IS REQUIRED FOR DB2 CONDUIT.

ALL DIMENSIONS IN MILLIMETRES (INCHES) UNLESS OTHERWISE SPECIFIED.



1/C CONNECTOR
SCALE 1:1



2/C CONNECTOR
SCALE 1:1

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DWN: R. LAW

DEC. 11 AM '50

5

511

APF: C.M. R.

INSTALLATION OF
PRECAST CONCRETE
BASE FOR 4-WAY
3 PHASE 25 kV
SWITCHING CUBICLE
(ALL VARIANTS)

SCALE: 1-30

DRAWING NO.

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PAGE: 2 OF 6

05/30		

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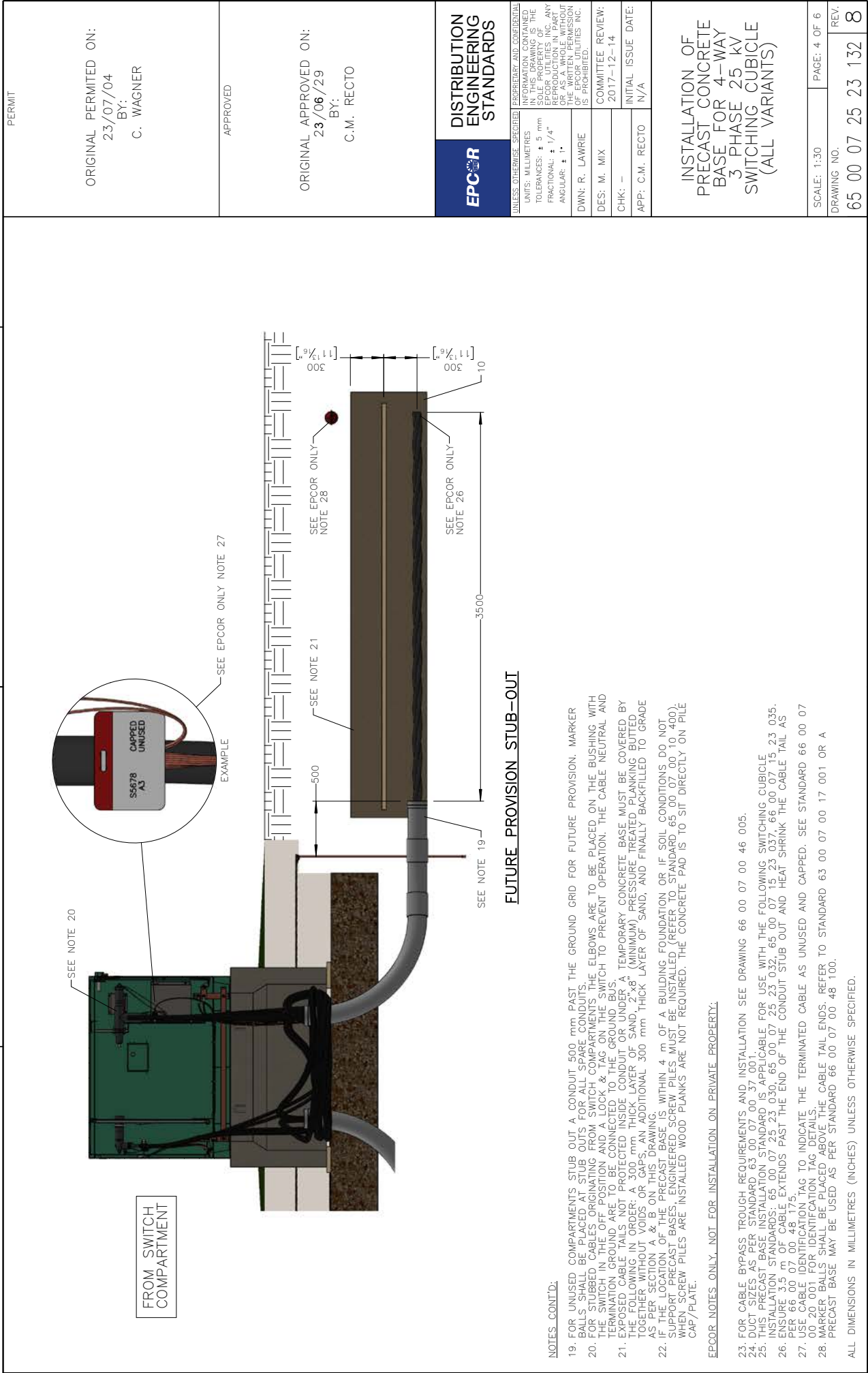
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ITEM	PART DESCRIPTION	STOCK No.	QTY.
1	POST CORNER STEEL 4" SCH 40 (C/W BRACKETS & CAP) FOR TX BARRICADES	21835	A/R
2	LUG 4/0 COMPRESSION 1 HOLE COPPER	29531	1
	1/2" x 6" HEX HEAD MACHINE BOLT W/ NUT	N/A	1
3	CONNECTOR GROUND 5/8" ROD - 250 1/C	31914	1
4	WIRE #4/0 STRANDED COPPER BARE	45655	A/R
5	ROD GROUNDING 5/8" x 5'	17288	1

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L. LIUSZ

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APP:

COMMITTEE REVIEW:

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INITIAL ISSUE DATE:

N/A

BOLLARDS AND GUARD
POST INSTALLATION
USING 4 INCHES
DIAMETER SCHEDULE
40 STEEL PIPE

SCALE: N.T.S. PAGE: 2 OF 2

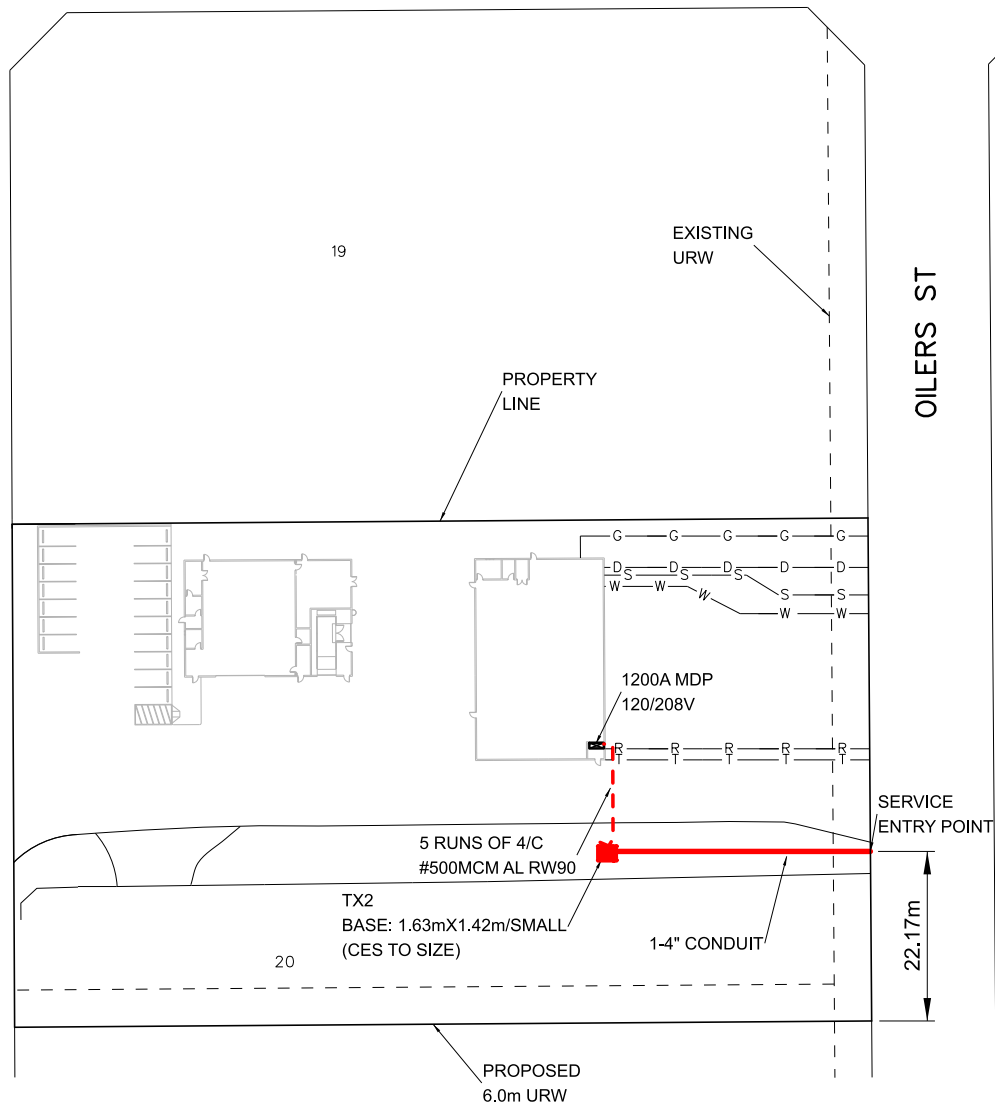
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65 00 07 00 12 500 3

EPCOR AVE

EDMONTON ST

OILERS ST



LEGEND

—U— UTILITIES
G - GAS
W - WATER
D - DRAINAGE
S - STORM

NOTES:

1. REFER TO CHECKLIST 3.1 "ELECTRICAL SITE PLAN" FOR
ADDITIONAL REQUIREMENTS NOT SHOWN.

FOR INFORMATION ONLY



**CUSTOMER CONNECTION
GUIDE**

**SAMPLE OF
COMMERCIAL/INDUSTRIAL
SITE PLAN**

DATE REVISED:

2024- 09- 11

DRAWING NO.:

6.14

REFERENCE NO.

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PAGE NO.

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23-11-20

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DES: C. M. RECTO

CHK: -

APP: C.M. RECTO

COMMITTEE REVIEW: YEAR-MM-DD

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CABLE TERMINATIONS IN CUSTOMER-OWNED SWITCHGEAR

SCALE: N.T.S.

PAGE: 1 OF 5

DRAWING NO. 63 00 07 15 48 238

REV. 2

GENERAL NOTES:

1. APPLICABLE FOR XLPE/EPR INSULATED CABLES ONLY. SEE STANDARD 63 00 07 00 48 002 FOR CABLE SELECTION.
2. THIS STANDARD SHALL ONLY BE USED FOR VERTICALLY ORIENTED TERMINATIONS WHERE THE CABLES ARE ENTERING/EXITING FROM THE BOTTOM OF THE SWITCHGEAR WITH TERMINATORS CONNECTED ON TOP.
3. THIS STANDARD EXCLUDES HORIZONTAL OR SIDE-FED CABLE ORIENTATION.
4. DESIGNER/ENGINEER ARE RESPONSIBLE FOR ENSURING THE STRUCTURAL CAPACITY OF INSTALLATION AND ADDING REINFORCEMENT MEANS AS REQUIRED.
5. REFERENCE TO THE FOLLOWING TABLE FOR MINIMUM CLEARANCES REQUIRED ON TYPICALLY STOCKED TERMINATOR KITS.
6. REFER TO THE BUS COVER REQUIREMENTS TABLE FOR SPECIFIC REQUIREMENTS ON ACCEPTABLE BUS INSULATION SCHEMES.

SITE SPECIFIC NOTES:

1. SUBSTATION TERMINATION
 - A. CONNECT EACH CABLE CONCENTRIC NEUTRAL TO THE SUBSTATION SWITCHGEAR GROUND BUS. (AS SHOWN ON FIGURE 1)
 - B. LUGS SHALL BE FILLED WITH FILLER PUTTY AND WRAPPED IN SILICONE TAPE IN HALF LAPPED LAYERS. (AS SHOWN ON FIGURE 1)
2. NEW PRIMARY SWITCHGEAR INSTALLATION
 - A. SWITCHGEAR REQUIREMENTS
 - i. SWITCHGEAR SHALL ADHERE TO CANADIAN ELECTRICAL CODE PART 1 SECTION 36.
 - ii. BUS BARS
 1. BUS BARS SHALL BE INSULATED
 2. BUS BARS SHALL BE FURNISHED WITH 20 mm (FOR NETWORK, S/N 1540) OR 25 mm (GENERAL USED GROUNDING BALLS) AS REQUIRED.
 - iii. SWITCHGEARS SHALL HAVE A MINIMUM 1m WIDTH AND 1m CLEARANCE TO THE DOOR FROM THE BUS.
 - iv. CONSULT WITH CUSTOMER ENGINEERING DEPARTMENT/CUSTOMER ENGINEERING DOCUMENT FOR THE LATEST ADDITIONAL SPECIFIC REQUIREMENTS.
 - B. INSPECTIONS
 - i. THIRD PARTY INSPECTION IS REQUIRED FOR CABLE TERMINATIONS.
 - ii. INSTALLATIONS SHALL BE SUBJECT TO BOTH ELECTRICAL INSPECTIONS AT CUSTOMER PREMISES (CANADIAN ELECTRICAL CODE PART 1 CONDUCTED BY ELECTRICAL SAFETY CODES OFFICER "A" OFFICER, A CITY OF EDMONTON INSPECTOR AND UTILITY INSTALLATION (CSA 22.3 NO. 7 CONDUCTED BY ELECTRICAL SAFETY CODES OFFICER "B"- EPCCOR ELECTRICITY DISTRIBUTION INSPECTOR)
3. MODIFICATIONS TO EXISTING PRIMARY SWITCHGEAR
 - A. INSTALLATIONS SHALL BE SUBJECT TO BOTH ELECTRICAL INSPECTIONS AT CUSTOMER PREMISES (CANADIAN ELECTRICAL CODE PART 1 CONDUCTED BY ELECTRICAL SAFETY CODES OFFICER "A"- CITY OF EDMONTON INSPECTOR) AND UTILITY INSTALLATION (CSA 22.3 NO. 7 CONDUCTED BY ELECTRICAL SAFETY CODES OFFICER "B"- EPCCOR ELECTRICITY DISTRIBUTION INSPECTOR)
 - B. CONSULT WITH EPCCOR LEGAL DEPARTMENT AND COMMUNICATIONS DEPARTMENT ON SPECIFIC REQUIREMENTS TO MITIGATE RISK ON MODIFICATION OF CUSTOMER OWNED SWITCHGEAR. CONSIDERATIONS INCLUDE (BUT ARE NOT LIMITED TO) THE FOLLOWING:
 - PERMITTING ALLOWING ACCESS AND MODIFYING EQUIPMENT OWNED BY OTHERS.
 - "GRANDFATHERING" VERSUS UPGRADING TO CURRENT STANDARDS
 - INSPECTIONS REQUIREMENTS
 - VALIDITY OF INSURANCE AFTER MODIFICATIONS
 - C. FACTORY MANUFACTURED SWITCHGEARS
 - CAUTION: AIR INSULATED PHASE-TO-PHASE AND PHASE-TO-GROUND CLEARANCES OF EXISTING CUSTOMER OWNED PRIMARY SWITCHGEAR MANUFACTURED TO CSA 22.3 NO. 7 CONDUCTED BY EPCCOR UTILITIES INC. WITH ACTUAL PARTS SEPARATED LESS THAN 20 MINIMUM REQUIRED SPACINGS REQUIRED FOR STOCKED TERMINATORS. THIS MAY VARY FROM SWITCHGEAR-TO-SWITCHGEAR. ACTUAL MEASUREMENTS SHALL BE TAKEN AND COMPARED TO THE TERMINATOR SPACING REQUIREMENTS TABLE.

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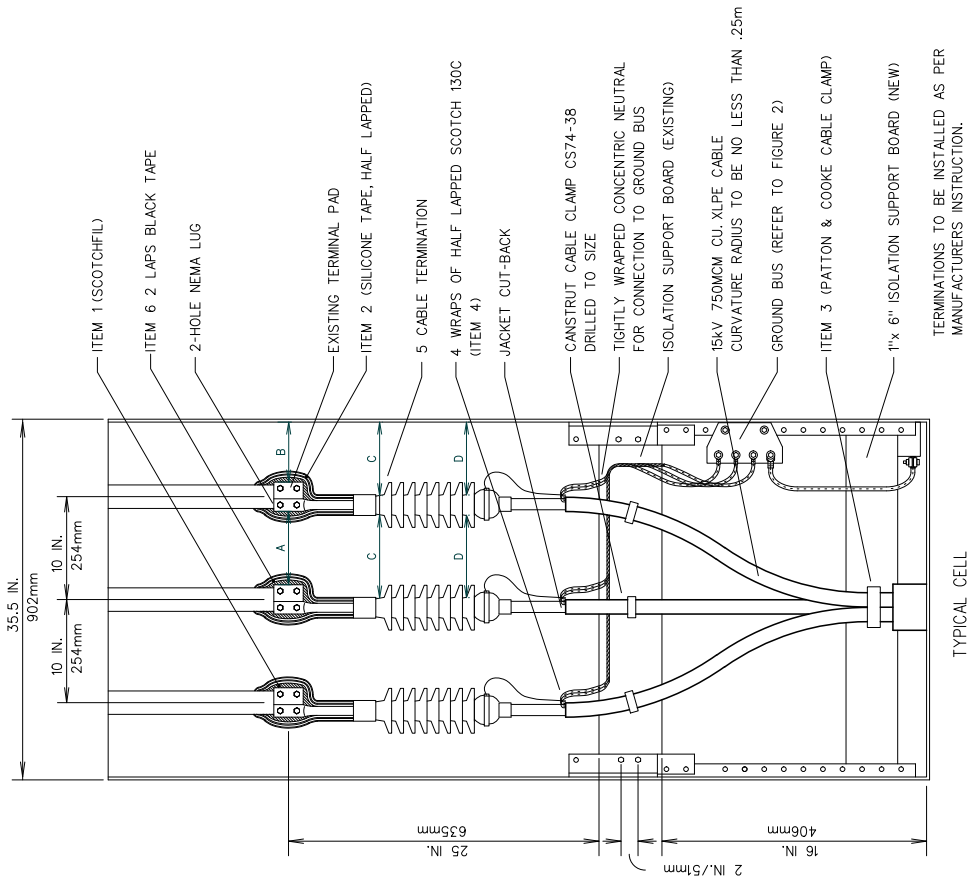
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CABLE TERMINATIONS
IN CUSTOMER-OWNED
SWITCHGEAR

SCALE: N.T.S.	PAGE: 2 OF 5
DRAWING NO. 63 00 07 15 48 238	REV. 2

FIGURE 1 - TYPICAL SUBSTATION SWITCHGEAR CELL



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ANGULAR: ± 90 AS A WHOLE

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CABLE TERMINATIONS
IN CUSTOMER-OWNED
SWITCHGEAR

SCALE: N.T.S.

PAGE: 3 OF 5

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REV. 2

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TERMINATOR SPACING REQUIREMENTS

SEE FIG. 1 FOR DIAGRAM REFERENCE

STOCK NUMBER	TYPE	INSULATION LEVEL	PHASE-TO-PHASE EXPOSED LIVE PARTS (A)	PHASE-TO-GROUND EXPOSED LIVE PARTS (B)	INSULATED TERMINATION HIGH STRESS SECOND PHASE-TO-GROUND (C)	INSULATED TERMINATION LOWER STRESS INITIAL (D)
74315	3M QT II/QT III TERMINATOR KIT	15KV	190 mm	127 mm	30 mm	20 mm
26617	RAYCHEM/TE TFT-151E-G	15KV	175 mm	100 mm	35 mm	23 mm
26616	RAYCHEM/TE TFT-153E-G	15KV	175 mm	100 mm	35 mm	23 mm
75212	3M QT II/QT III TERMINATOR KIT	25KV	267 mm	190 mm	35 mm	23 mm
NA	RAYCHEM/TE	25KV	225 mm	150 mm	40 mm	25 mm

BUS COVER REQUIREMENTS

1. PREFERRED INSULATION SCHEME FOR THE BUS AND LIVE PARTS IS CUSTOM BUS COVERS MANUFACTURED BY A THIRD PARTY FOR PROPER FIT.

2. TAPING THE BUS IS NOT PREFERRED BUT MAY BE ALLOWED AS AN ALTERNATIVE IN SOME CASES. THIS REQUIRES ENGINEERING APPROVAL.
SPECIFIC REQUIREMENTS:
A. FIRST INSTALLATION LAYER OF IRRATHENE TAPE (S/N 49716)
B. SECOND LAYER IS INSULATION PUTTY (S/N 35952) OVER THE IRRATHENE TAPE.
C. THIRD LAYER IS RUBBER TAPE (S/N 52125 OR S/N 56010).

3. EXCEPTIONS TO BUS COVER REQUIREMENTS MAY BE CONSIDERED ON A CASE-BY-CASE BASIS AND REQUIRES ENGINEERING APPROVAL.

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FRACTIONAL: $\pm 1/4$ "

ANGULAR: ± 90 AS A WHOLE

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DES: C. M. RECTO

CHK: -

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CABLE TERMINATIONS
IN CUSTOMER-OWNED
SWITCHGEAR

SCALE: N.T.S.

PAGE: 3 OF 5

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REV. 2

ITEM	PART DESCRIPTION	STOCK No.	QTY.
1	TAPE ELECTRICAL 1/2" x 60" INSULATION PUTTY 3M	35952	A/R
2	TAPE SILICONE NO. 70 RUBBER 3M	25115	A/R
3	CABLE CLAMP, PATTON & COOKE •5M10B-3-1670	NON-STOCK	A/R
4	TAPE SCOTCH 130C 3/4 IN. X 30 FT.	52125	A/R
5	TAPE SCOTCH 130C 1 1/2 IN. X 30 FT.	56010	A/R
6	TAPE IRRATHENE P/N VRI202 - 0.010	49716	A/R

LIST OF CUSTOMER SWITCHGEAR AND SWITCHGEAR CELL OBSOLETE STANDARDS FOR SPECIFIC REFERENCE

NOTE: OBSOLETE STANDARDS ARE FOR RECORDS ONLY. THESE STANDARDS ARE NO LONGER REVIEWED OR REVISED
PILC IN POTHEADS

- 6300071542255 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 kV PILC CABLE IN SWITCHGEAR CELL
- 6300071542256 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 kV PILC CABLE IN SWITCHGEAR CELL
- 6300071542257 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 kV PILC CABLE IN SWITCHGEAR CELL
- 6300071542260 - INSTALLATION AND TERMINATION OF 1-3/C 250 MCM 15 kV PILC CABLE IN CUSTOMER SWITCHGEAR
- 6300071542261 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 kV PILC CABLE IN CUSTOMER SWITCHGEAR
- 6300071542262 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 kV PILC CABLE IN CUSTOMER SWITCHGEAR
- 6300071542270 - INSTALLATION AND TERMINATION OF 1-3/C 500 MCM 15 kV PILC CABLE TO POTHEAD IN SWITCHGEAR
- 6300071542271 - INSTALLATION AND TERMINATION OF 1-3/C 750 MCM 15 kV PILC CABLE TO POTHEAD IN SWITCHING CUBICLE DEEP BASEMENT

SOLID DIELECTRIC CABLES

- 6300071542258 - INSTALLATION AND TERMINATION OF 3-1/C 500 MCM 15 kV XLPE CABLE IN SWITCHGEAR CELL
- 6300071542259 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 kV XLPE CABLE IN SWITCHGEAR CELL
- 6300071542265 - INSTALLATION AND TERMINATION OF 3-1/C •2 A15 kV XLPE CABLE IN CUSTOMER SWITCHGEAR
- 6300071542266 - INSTALLATION AND TERMINATION OF 3-1/C •1/0 A15 kV XLPE CABLE IN CUSTOMER SWITCHGEAR
- 6300071542267 - INSTALLATION AND TERMINATION OF 3-1/C 350 MCM A15 kV XLPE CABLE IN CUSTOMER SWITCHGEAR
- 6300071542286 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM 15 kV LC SHIELD CABLE IN CUSTOMER SWITCHGEAR OR CUBICLE
- 6300071582259 - INSTALLATION AND TERMINATION OF 3-1/C 750 MCM A15 kV XLPE CABLE IN SUBSTATION

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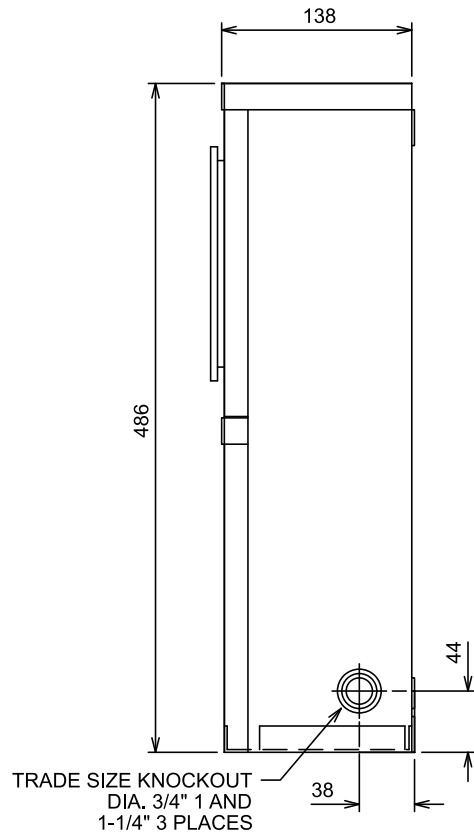
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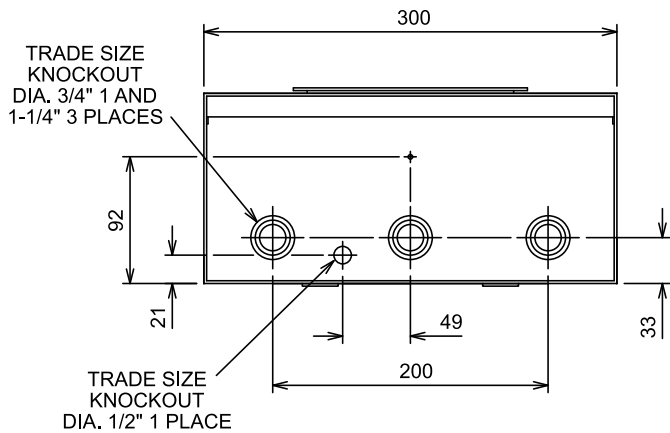
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CABLE TERMINATIONS
IN CUSTOMER-OWNED
SWITCHGEAR

SCALE: N.T.S.	PAGE: 5 OF 5
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63 00 07 15 48 238	2



METER ENCLOSURE (TRANSFORMER RATED)
SCALE: N.T.S.



NOTE:

1. THOMAS & BETTS CT113-SWL WEATHERPROOF TYPE 3R ENCLOSURE OR CSA EQUIVALENT APPROVED BY EDTI (REQUIRED IN ALL CASES). FOR 200A OR GREATER RESIDENTIAL SERVICES USE THOMAS & BETTS CT108-SWL.

ALL DIMENSIONS IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.



CUSTOMER CONNECTION
GUIDE

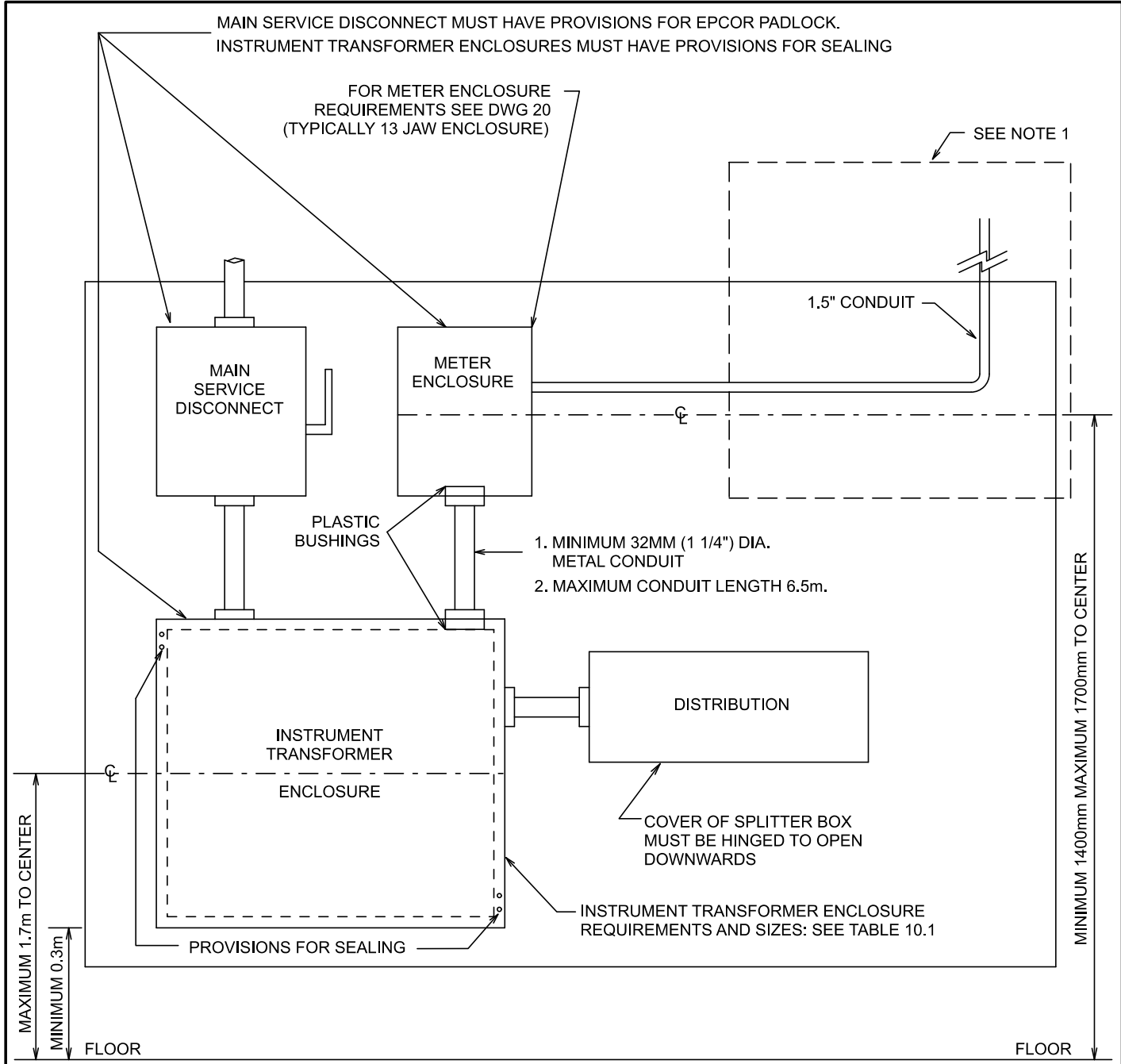
METER AND TEST BLOCK ENCLOSURE
CURRENT TRANSFORMER RATED METER SOCKET

DATE REVISED:
2024-10-02

DRAWING NO.:
020

REFERENCE NO.
66 CC 07 02 90 101

PAGE NO.
1 / 1



- NOTES:
- 1. FOR METERS INSTALLED BELOW GRADE, A 1.5" CONDUIT SHALL BE INSTALLED FROM THE BELOW GRADE ELECTRICAL ROOM UP TO AN EXTERIOR BUILDING WALL AT A HEIGHT OF (1.4m - 1.7m) ABOVE FINAL GRADE.
 - 2. METERS INSTALLED BELOW GRADE LEVEL REQUIRE METERING VARIANCE PRIOR TO INSPECTION.
 - 3. CONTACT AMISYSTEM ENGINEERING FOR ALL BELOW GRADE METER INSTALLS (DL_AMIHESUPPORT@EPCOR.COM)
 - 4. ADDITIONAL DEVICES SUCH AS INTEGRATED WANGATE RADIOS (IWRs) MAY BE REQUIRED AS PER THE RADIO FREQUENCY ANALYSIS CONDUCTED BY AMIENGINEERING.
 - 5. ANTENNA MOUNTING HEIGHT AND ORIENTATION ARE DEPENDENT ON COMMUNICATION REQUIREMENTS SET OUT BY AMI
 - 6. CABINETS SHALL HAVE HINGES. INSTRUMENT TRANSFORMER ENCLOSURE SHALL HAVE BONDING TERMINALS FOR #10 COPPER WIRE
 - 7. ALL MAINS SHALL BE VISUALLY LOCKABLE
 - 8. INSTRUMENT TRANSFORMER ENCLOSURE SHALL HAVE BINDING TERMINALS FOR #10 COPPER WIRE.
- FOR INFORMATION ONLY**

REV.

0

REVISION 0

DESCRIPTION

DATE

24/09/17

DWN

AP

APP

EB

APP

PP

REVISION HISTORY (LAST THREE)

APPROVED (AMT NETWORK COMMUNICATION)

PROFESSIONAL ENGINEER AMTAL PATEL

ID 160153

2024-09-17

APPROVED (CONSTRUCTION STANDARD)

PROFESSIONAL LICENSEE (ENGINEERING) ALBERTA

ERIC BABU

ID 244749

2024-09-19

RAIN GUARD / AMTROUTER

TOP VIEW

205

82

123

500

8.06"

3.23"

4.83"

11.82"

FRONT VIEW

558

21.97"

SIDE VIEW

10.3"

4.38"

ROUTER MOUNT C/W RAIN GUARD

TOP VIEW

261

965

438

17.2"

10.3"

37.99"

17.2"

FRONT VIEW

261

10.3"

SIDE VIEW

438

17.2"

NOTES:

1. CUSTOMER TO BUILD CONDUIT AND PROVIDE UN-INTERRUPTED 120V POWER SUPPLY TO THE ROUTER AND TO ADDITIONAL DEVICES SUCH AS INTEGRATED WAN GATE RADIOS (IGR) AS PER THE RADIO FREQUENCY ANALYSIS CONDUCTED BY THE AMT SYSTEM ENGINEERING TEAM.

2. MOUNTING HEIGHT AND ANTENNA DIRECTION ARE DEPENDANT ON COMMUNICATION REQUIREMENTS; CONTACT AMT SYSTEM ENGINEERING IF STANDARD CANNOT BE MET (DL_AMTSupport@epcor.com).

3. AMTROUTER TO BE INSTALLED A MINIMUM OF 3.0m (10FT) AWAY FROM THE EDGE OF THE NEAREST ROADWAY.

4. AMTROUTER MUST BE ACCESSIBLE BY BUCKET TRUCK.

5. CONTACT AMT SYSTEM ENGINEERING FOR MATERIAL PROCUREMENT OF ROUTER/RAINGUARD/BACKET (DL_AMTSupport@epcor.com).

6. TAG LETTERING PROVIDED BY MANUFACTURER

ALL DIMENSIONS IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.

DISTRIBUTION ENGINEERING STANDARDS

UNLESS OTHERWISE SPECIFIED

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UNITS: MILLIMETRES

TOLERANCES: ± 5 mm

FRACTIONAL: ± 1/4"

ANGULAR: ± 1°

DWN: A. PERLYNN

DES: B. O'SULLIVAN

APP: E.BABU

APP: P.PATEL

COMMITTEE REVIEW:

N/A

INITIAL ISSUE DATE:

N/A

AMI ROUTER INSTALLATION

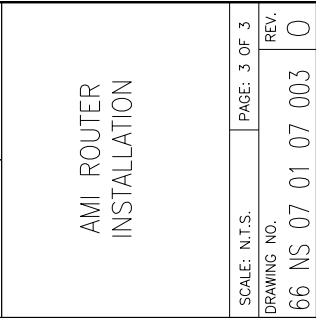
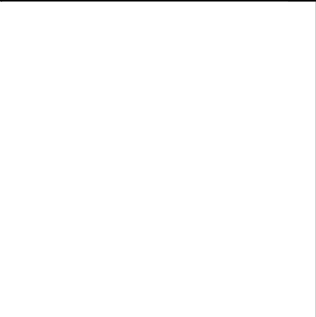
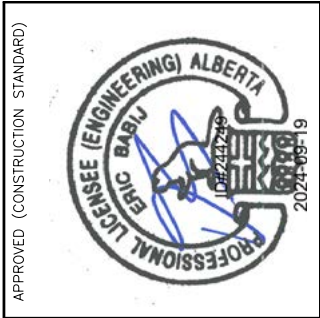
SCALE: N.T.S.

PAGE: 2 OF 3

DRAWING NO. 66 NS 07 01 07 003

REV. 0

ITEM NO.	DESCRIPTION	STOCK NUMBER	QTY.
1	MOUNTING BRACKET -- DISTRIBUTION AUTOMATION	10353	1
2	LEGACY ROUTER	VMI	A/R
3	SERIES SIX ROUTER	VMI	A/R
4	RF ANTENNA -- AMI	VMI	1
5	RAIN GUARD	VMI	1
6	POWER ROUTER CABLE	VMI	1
7	POLE WOOD/FIBERGLASS -- SEE STANDARD 6100070005100 FOR DETAILS	AS REQ'D	1
8	BOLT MACHINE GALV 5/8" X 14"	29852	2
9	WASHER SQUARE GALV 2" X 2" -- 5/8" BOLT SIZE	34874	4
10	WASHER LOCK THACKERAY 5/8" BOLT SIZE	8150	2
11	CABLE SECONDARY #4 AWG 600 VOLT 2/C XLPE ALUMINUM	30216	A/R
12	STRAP PIPE 2" -- 2 HOLE	33690	A/R
13	ROAD CRUSH -- 3/4"	N/A	A/R
14	ELECTRICAL JUNCTION BOX WITH CONNECTOR	14604	1
15	PIPE PVC RIGID 3/4" X 10'	67303	A/R
16	SCREW LAG GALV 1/4" X 2"	34160	A/R
17	WEATHERHEAD SERVICE 3/4" -- METAL	44779	1
18	GROUND ROD ASSEMBLY	47010	1
19	BEND PVC 90° -- 2"	47130	1
20	WIRE #6 COPPER SOLID 1/C POLY COVERED	15981	A/R
21	STAPLE GROUND 1 1/2"	VMI	A/R
22	ADAPTER COUPLING 2" DB2 -- 2" PVC/FRE	10220	2
23	PIPE DUCT FRE 2" RISER 3m LENGTH X 0.235" WALL THICKNESS	93081	1
24	COUPLING PVC 3/4"	58213	A/R
25	ADAPTER ELECTRICAL PVC TERMINALS 3/4"	58779	1
26	STRAP POLE BAND 3/4" X 60"	17703	A/R
27	CLAMP TUBE RUBBER CUSHION 1/2"	14752	A/R
28	CONNECTOR TERMINAL #6 X 3/8" HOLE	25125	4
29	PADLOCK SHORT SHACKLE KEYED ALIKE	VMI	A/R
30	STRAP PIPE 3/4" -- 2 HOLE	46369	A/R
31	PIPE DUCT DB2 -- 2" X 20'	61508	1



SCALE: N.T.S.	PAGE: 3 OF 3
DRAWING NO.	REV.
66 NS 07 01 07 003	0

APPENDIX IV

Δ ERRATA - APRIL 29, 2025



Customer Connection Guide ERRATA

DATE: April 29, 2025

VERSION: 2.0

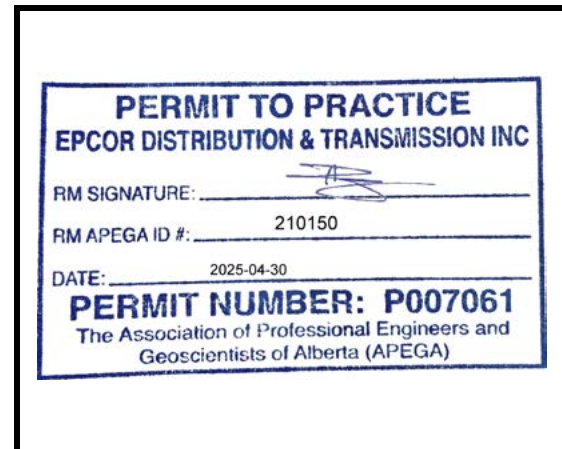
SUBJECT: 2025 Customer Connection Guide Errata – Spring Update

SECTIONS: 5.7c, 5.9a, 10.1, 10.2

DRAWINGS: 4.4, 5.2, 5.3, 10.4

TABLE: 5.1

Errata are applied retroactively for the version of the Customer Connection Guide for which the errata was issued for above. Designs or construction in progress that are designed to the Customer Connection Guide version above must comply with the errata, unless a written variance has been granted by EPCOR – Customer Engineering Services



Responsible Member's Permit to Practice
stamp

Revision #	Scope	Engineer Approval	Responsible Member Permit
1	SECTIONS:5.7c, 5.9a, 10.1, 10.2 DRAWINGS: 4.4, 5.2, 5.3, 10.4 TABLE:5.1		

The following drawings shall be **updated**

- Drawings, Forms Updated list. pdf

The following requirement shall be **removed** from the (Section Underlined)

- Clause/Section, ~~Removed struck out in red~~

The following requirement shall be **added** from the (Section Underlined)

- Clause/Section , **added bold in green**

The following drawings shall be **updated**

- Drawing 4.4 - TYPICAL OVERHEAD AERIAL SERVICE UP TO 200A INSTALLATION
- Drawing 4.5 - TYPICAL OVERHEAD AERIAL SERVICE UP TO 200A INSTALLATION
- Drawing 5.2 – Typical Shared Trench - to Standard 66 00 07 00 46 001
- Drawing 5.3 – Typical Underground Residential Service Installation on Property
- Drawing 10.4 - INSTRUMENT TRANSFORMER METERING LAYOUT

The following requirement shall be **removed** from the (Section 5.7.c)

- Section 5.7.c, The maximum size of secondary conductor allowed for ~~commercial~~ underground secondary services in an aerial area (secondary lateral) is 500MCM copper. (750MCM aluminum conductor is not permitted.)

The following requirement shall be **removed** from the (Section 5.9.a)

- Section 5.9.a, ~~Remove “The cable size installed does not necessarily indicate the size of the service that is available. Contact us for more information.”~~

The following requirement shall be **added** from the (Table 5.1)

- Table 5.1, **Add “Home Builder to confirm secondary cable size on site or through Developer. Reference Table 5.1 for EPCOR's approved secondary service cable sizing for line side connection and the corresponding approved service size. Load side shall follow CEC ruling.”**

The following requirement shall be **removed** and **replaced** in (Section 10.1 and 10.2)

Replace old email for ~~customercare@epcor.com~~ with powermetering@epcor.com

APPENDIX V

Δ UPDATES - JUNE 26, 2025



Customer Connection Guide UPDATE

DATE:

VERSION: 4.0

SUBJECT: 2025 Customer Connection Guide Update - July

SECTION: 5.3

DRAWING: 5.1

TABLE: 3.2

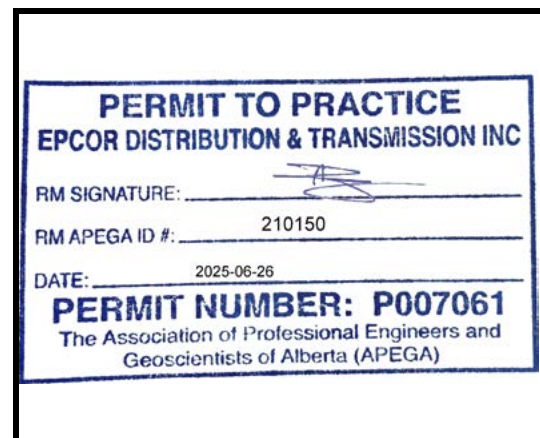
FORM: 1.2

APPENDIX: I

Updates are applied retroactively for the version of the Customer Connection Guide for which the update was issued for above. Designs or construction in progress that are designed to the Customer Connection Guide version above must comply with the update, unless a written variance has been granted by EPCOR – Customer Engineering Services



2025-06-26
Engineer's stamp



Responsible Member's Permit to Practice
stamp

Revision #	Scope	Engineer Approval	Responsible Member Permit
4	SECTIONS: 5.3 DRAWINGS: 5.1 TABLE: 3.2 FORM: 1.2 APPENDIX: I	Eric Babij	Philipp Ramos

The following drawings shall be **updated**

- Drawings, Forms Updated list. pdf

The following requirement shall be **removed** from the (Section Underlined)

- Clause/Section, ~~**Removed**~~ ~~**striked out in red**~~

The following requirement shall be **added** from the (Section Underlined)

- Clause/Section , **added bold in green**

The following tables shall be **added** to Table 3.2 – Service Types:

- Pad-mount Transformers, under the Residential Service Limits column include:
 - **120/208V, 3-Ph, 4-W – 2,800A**
 - **347/600V, 3-Ph, 4-W – 2,400A**

Δ PADMOUNT TRANSFORMER A ground-mounted transformer located on private property. Typical installations include medium to large commercial applications, large houses, and multi-family sites.	• 120/240V, 1-Ph, 3-W – 600A • 120/208V, 3-Ph, 4-W – 2,800A • 277/480V, 3-Ph, 4-W – 2,200A (Temporary Services and Level 3 EV Charging Services Only) • 347/600V, 3-Ph, 4-W – 2,400A	• 120/240V, 1-Ph, 3-W – 600A • Typical services sizes include: 100A, 125A, 150A, 200A

The following drawings shall be **updated**:

- Drawing 5.1 – Sample Submission for Multi-Family Developments

The following requirement shall be **added** to Section 5.3 - Multi-Family Developments and Mobile Home Parks:

5.3 I Single Phase Multi-Family Developments and Mobile Homes

This section applies to multiple-metered residential service connections (**multi-unit residential, row-housing type buildings**) where single phase pad mount transformers and service pedestals are installed on the Customer's property. While other information on secondary services found elsewhere in this guide also applies, the following information is specific to multi-family developments and mobile home parks.

- e) For emergency purposes, each pedestal must be identified with the name and phone number of an on-site representative who is available 24 hours a day **and done on red lamacoid as per Drawing 7.2.**

5.3 II 3 Phase Multi-Family Developments

This section applies to multiple-metered residential service connections where three phase padmount transformers and service pedestals are installed on the Customer's property. While other information on secondary services found elsewhere in this guide also applies, the following information is specific to multi-family developments and mobile home parks.

- a) Drawing 5.1 – Sample Submissions for Multi-Family Developments provide guidance on the format requirements for multi-family development drawings
- b) The customer must ensure loading is balanced across all phases of the service. A loading calculation table/schedule shall be shown on the multi-family development drawing submission.
- c) All service conductors shall come to a 3 phase main disconnect that is readily accessible by customer. This main disconnect switch shall be shown on the single line diagram and site plan.
- d) The 3 phase main disconnect may be a main metered pedestal. Every other meter downstream of this main-metered is owned and maintained by customer (check-metering similar to apartments).

- e) All service conductors from transformer pad to main disconnect shall be in duct and follow Section 5.5 and 5.6.
- f) The maximum size of secondary conductor allowed is 500 MCM Copper or 750 MCM Aluminum. (750 MCM Copper is not permitted).
- g) The customer must identify service conductors at the padmount transformer. The identifier must be by building, main disconnect identifiers and/or by pedestal number and at the pedestal by meter address, which is the address of the building the meter serves.
- h) Meter sockets must be identified by service addresses and pedestal number. Use a long-life ink on a tie-wrap attached to the conductors for this identification. This is mandatory if customer-owned distribution facilities, such as a pedestal, are used.
- i) For emergency purposes, each pedestal/main disconnect must be identified with the name and phone number of an on-site representative who is available 24 hours a day and done on red lamacoid as per Drawing 7.2.

The following shall be **removed** and **updated** with new Form 1.2 - Exception Approval Form

The following shall be **removed** from Appendix I – Distribution Asset Ownership Guide:

~~**Distribution Asset Ownership Guide is under review.**~~

The following Appendix shall be **updated**

- **Appendix I – Distribution Asset Ownership Guide**