Customer Connection Guide Updates

Effective May 2017

This document provides a list of the updates to the EPCOR Distribution and Transmission Inc. (EDTI) Customer Connection Guide. If you have any questions, please contact EDTI Customer Engineering Services at ces@epcor.com.

Note: Additions are indicated in **bold**, deletions are indicated with a ~~strikethrough~~.

Ref #	Details of update or addition
1.	**Update to Service Type:** • **EDTI will no longer offer 277/480 V, 3-Ph, 4-W permanent service**
2.	**Addition to Sections 2.1, 3.1, 5.1, and 7.1** **General Introduction:** • **For the safety of public, City of Edmonton bylaws require residents or property owners to always keep power assets clear of trees, shrubs, rocks, debris and other items.**
3.	**Addition to Sections 2.1, 4.1, 5.1 and 6.1** **General Introduction:** • **The customer must comply with the clearances set out in the Canadian Electrical code for required vertical clearances when crossing other utilities.**
4.	**Addition to Sections 2.5, 3.5, 4.5, 5.6, 6.5 and 7.6** • Engineer approved electrical site plan **authenticated by a duly registered professional member of APEGA or ASET**
5.	**Addition to Sections 2.6, 3.6, 4.6, 5.8, 6.7, and 7.8** **Horizontal Clearance to other Utilities** • **2.0 m** to all valves, hydrants, catch basins, manholes, vaults, sanitary and storm sewer lines, septic tanks, fields, and Minnesota Mounds. *(previously 3.0 m).*
6.	**Addition to Sections: 2.8, 3.8, 4.8, 5.10, and 6.9** **Electrical Room** • **All electrical rooms must have four walls and a ceiling.**
7.	**Addition to Sections: 2.11, 3.11, and 4.11** **General Service Requirements** • **Customers are not allowed to take single phase 120V service off the three phase 240V service.**

Ref #	Details of update or addition
8.	**Addition to Section 2.12** **Trenching and Backhoe** • The customer's contractor must not trench within 1.0 m of any EDTI wood pole, anchor, transformer, switching cubicle ground grid (2.0 m from the edge of the concrete base **and from 300 mm of the guard rail**), power pedestal, or energized cable **without prior consultation with EDTI approval the supervision of an EPCOR representa**tive. The facilities must be located first using hydro excavating or hand digging before determining where the mechanical excavation limits end.
9.	**Update to Sections 2.12, 4.12, 5.14, and 6.13** **Trenching and Backhoe** • Ensure that the **trench top of duct** is a minimum of **1,000 mm** to a maximum of **1,300 mm** below finished grade. *(previously* a minimum of *1,100 mm to* a maximum of *1,500 mm).*
10.	**Addition to Sections: 2.13, 4.14, and 5.15** **Service Ducts** • Duct must be installed where primary cable is deemed inaccessible by EDTI. **All ducts must be equipped with bell collars to avoid damaging the cable.** • **The installation of primary service cable under buildings is not permitted. Without first receiving special permission for an exception from EDTI. A spare conduit must be installed from the Service Entry Point (SEP) to the padmount transformer. On the building, mark where the cable and conduit ends enter and exit under the building.**
11.	**Addition to Sections 2.14, 4.15 and 5.16** **Duct Bends** • **Precast concrete pads must be removed before inserting additional ducts into existing pads.**
12.	**Addition to Section 2.18** **Padmount Transformers and Switching Cubicles** • **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 or concrete piles must be installed. Engineered drawings stamped by a civil/geotechnical engineer must be supplied to EDTI Customer Engineering Services before EDTI will grant approval.**

Ref #	Details of update or addition
13.	**Addition to Sections 2.18 and 5.21** **Padmount Transformers and Switching Cubicles** • EDTI reserves the right to request compaction tests from the customer. **Became** • Customer shall submit compaction test reports for all pad installations on site. If adequate compaction cannot be achieved piles are required.
14.	**Update to Section 2.18** **Padmount Transformers and Switching Cubicles** • Within 3.0 m of padmounted equipment, landscaping must slope away from the base at a grade **between 3% and 10%** to allow for proper drainage and safe operational switching. *(previously at 2% grade).*
15.	**Addition to Section 2.18** **Padmount Transformers and Switching Cubicles** • **The minimum distance from a temporary panel or temporary shack to the ground grid of a transformer is 3.0 m.**
16.	**Addition to Section 2.21** **Conductors** • **For commercial services connected to a 3-phase padmount transformer, EDTI recommends colour-coded secondary conductors. (RECOMMENDATION ONLY).**
17.	**Update to Sections 2.22** **Cable Installation** • The customer will supply and install secondary conductors from the customer's switchgear to the transformer location, leaving **5.0 m** of conductors above the top of the precast transformer base. **After inspection,** the conductors must be coiled in a clockwise direction and left in **a clean and** organized manner around the inside perimeter of the base to allow for easy removal and shaping. *(previously 3.0 m)* • The phasing of secondary conductors coiled in a transformer must be identified with marking tape at intervals not exceeding 1.0 m **or colour-coded cable installed**.

Ref #	Details of update or addition
	Update to Sections 2.22 (cont.) **Cable Installation** • In general, a maximum of eight runs of secondary conductors, **including permanent and temporary services**, are permitted for 1,500 KVA and 2,500 KVA 3-phase padmount transformers. In some circumstances, additional runs may be permitted. Contact us to discuss your specific installation. • In general, a maximum of six runs of secondary conductors, **including permanent and temporary services**, are permitted for 3-phase padmount transformers up to 1,000 kVA. In some circumstances, additional runs may be permitted. Contact us to discuss your specific installation.
18.	**Addition to Sections 2.23** **Multi-Family Development and Mobile Home Parks** • All cables used must strictly conform to EDTI's specifications. **The size and type of primary cable accepted by EDTI is either 15 kV or 25 kV 1/C #1/0 AL XLPE CN –J stranded conductor. Solid conductor is not permitted.**
19.	**Update to Sections 2.23** **Multi-Family Development and Mobile Home Parks** • We recommend that all primary cables be installed in duct on private property. **Became** • All primary cables must be installed in duct on private property.
20.	**Update to Sections 3.12, 5.19, 6.18, and 7.15** **Equipment Access** • Equipment must be placed beside a 4.6 m wide access roadway, centred in an unimpeded 6.5 m area. The area must be capable of supporting an 18,000 kg truck, plus a transformer weighing up to 6,900 kg (transformers must be unloaded from the side of the vehicle). **Road allowance must account for outriggers on the truck also to extend to a width of 7.0 m.** *(previously 6.07 m).*
21.	**Update to Section 5.1** **General Introduction** • A primary metered service is a service above 750 volts phase to phase. **Became** • A primary metered service is available in a 15 kV or 25 kV area only.

Ref #	Details of update or addition
22.	**Updates to Section 5.3** **Standard Supply Voltage** • **15 kV primary metered services are not permitted within EPCOR's 25 kV area, and 25 kV primary services are not permitted within EPCOR's 15 kV area.** If you're in a 5 kV area, please contact us for information on conversion to 15 kV. Refer to **Drawing 29** for the primary voltage in your area, and contact us for confirmation.
23.	**Update to Section 5.21** **Switching Cubicles** • When the customer is required to install a cubicle base, we will provide a detailed drawing showing how the base must be constructed. We will also tell you the type of cubicle base to install to ensure the correct base is selected. As an example, for a 200 Amp cubicle with three-fused compartments, a 600 Amp cubicle base is required. Please see Drawings 4 and 5. **Became** • When the customer is required to install a cubicle base, EDTI will advise on the type of cubicle base required, and provide a detailed drawing showing how the base must be constructed. Please see Drawings 4, 5, 6 and 7.
24.	**Update to Section 5.21** **Switching Cubicles** • Within 3.0 m of padmounted equipment, landscaping must slope away from the base at a **3%-10% grade** to allow for proper drainage and safe operational switching. *(previously at a 2% grade).*
25.	**Addition to Section 6.22** **Termination** • 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).**
26.	**Additions to Sections 8.1, 8.2, 8.5, 8.6, and 8.7** **Metering** • **For any electrical room located below grade, a 1 inch conduit must be installed from the electrical room to the nearest above-grade outside wall, in a location not subject to mechanical damage.**

Ref #	Details of update or addition
	Additions to Sections 8.1, 8.2, 8.5, 8.6, and 8.7 (cont.) **Metering** • **One end of the conduit must be stubbed out and installed within 1 m of the revenue meter in the basement electrical room. The other end of the conduit must enter a 150 mm × 150 mm × 100 mm (6 in. × 6 in. × 4 in.) outlet box mounted on the nearest exterior wall of the building. The complete run of conduit must be installed without fittings or junction boxes.** • **If the conduit run cannot be carried out without fittings or junction boxes, the electrical contractor must install LMR-400 or equivalent cable within the conduit. A 120 V receptacle must be installed within 1 m of the conduit stub-out in the basement utility room. See Drawing 22**
27.	**Addition to Section: 8.2** **Metering** • Rigid bus and suitable insulators must be used on all services over 600 Amp. The bus must be continuous from the main switch to the current transformers and from the transformers to sub-switching or splitter bars. When service conductors can be used **(e.g., for services 600 Amp or less and sub-service applications),** a short piece of rigid bus and suitable insulators are to be connected to either side of the current transformers**, as per Drawing 21**. This would require a custom metering transformer enclosure. A drawing of the enclosure must be submitted to EDTI Customer Engineering Services before EDTI will grant construction approval.
28.	**Addition to Section 8.2** **Metering** • When contractors are installing a combination main breaker and meter socket, Typical Photo 1 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 100 Amp and Model #C02-200G for 200 Amp. Other manufacturers may have similar equipment.
29.	**Deletion from Sections 8.2 and 8.6** **Commercial and Network Metering** • ~~A 14mm (0.5-inch) conduit wired with a single-pair telephone line must be provided between the 13-jaw meter socket and main telephone panel, with provisions for telephone connection.~~

Ref #	Details of update or addition
30.	**Deletion from Table: 7** **Aerial services – Acceptable wire and spans** ~~600 # 556.5 MCM 10 m~~
31.	**DRAWING 1** Installation of precast concrete 4-way pull box
32.	**DRAWING 2** Typical underground residential service installation on property
33.	**DRAWING 3** Typical transformer alcove layout
34.	**DRAWING 4** Installation of precast concrete base for 4-way 3-phase 15 kV switching cubicle (all variants)
35.	**DRAWING 5** Installation of precast concrete base for 4-way 3-phase 25 kV switching cubicle (all variants)
36.	**DRAWING 6** Installation of precast concrete base for 4-way 15 kV single-phase 200 Amp dead front switching cubicle
37.	**DRAWING 7** Installation of precast concrete base for 4-way 25 kV single-phase 200 Amp dead front switching cubicle
38.	**DRAWING 8** Installation of precast concrete base for single phase transformers
39.	**DRAWING 9** Installation of precast concrete base for three phase transformers
40.	**DRAWING 10** Ground grid requirements for 15 kV & 25 kV switching cubicles and three phase transformers next to each other
41.	**DRAWING 11** Guard rail construction details

Ref #	Details of update or addition
42.	**DRAWING 12** Sample of submission for multi-family developments (For example purpose only)
43.	**DRAWING 13** Customer owned pole installation on private property – Dead end pole
44.	**DRAWING 14** Customer owned pole installation on private property – Straight line
45.	**DRAWING 15** Heavy duty attachment devices
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48.	**DRAWING 18** Typical underground residential service installation four party trench (Power, Gas, Phone, and CATV)
49.	**DRAWING 19** Multi-meter installation
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51.	**DRAWING 21** Three phase instrument transformers for installation over 200 Amp enclosure layout diagram
52.	**DRAWING 22** Instrument transformer metering layout
53.	**DRAWING 23** Instrument transformer wiring diagram
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Ref #	Details of update or addition
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58.	**DRAWING 28** Right-of way requirement for 3 phase switching cubicle with 2.0 m gas right-of-way
59.	**DRAWING 29** EPCOR 5kV, 15kV, 25kV and downtown engineering distribution areas
60.	**TABLE 1** Customer's / EDTI's Responsibilities
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63.	**TABLE 1C** Underground secondary service
64.	**TABLE 1D** Primary metered service (underground),
65.	**TABLE 1E** Primary metered service (aerial)
66.	**TABLE 1F** Network service
67.	**TABLE 1G** Unmetered service
68.	**TABLE 2** Maximum horsepower of motors permitted

Ref #	Details of update or addition
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70.	**TABLE 4** Part 1: Primary cable, duct, and pull box standards, Part 2: Primary cable, duct, and pull box standards examples
71.	**TABLE 4, Part 1** Primary duct size in 25 kV area has been changed from 5” to **4 inch (min)**.
72.	**TABLE 5** Padmount equipment – Maximum setback distances
73.	**TABLE 5B** Padmount equipment (switching cubicle) – Maximum setback distances
74.	**TABLE 6** Residential and multi-family underground services – Acceptable conductors
75.	**TABLE 7** Aerial services – Acceptable wire and spans
76.	**TABLE 8** Aerial services attachment methods
77.	**TABLE 9** Main switch or breaker minimum interrupting capacity – Downtown secondary network services
78.	**TABLE 10** Network services – Acceptable conductor and conduit size
79.	**TABLE 11** Meter socket and instrument enclosures
80.	**Addition to Section 2.12** **Trenching and backhoe** • **Customer cannot install ducts in to an energized manhole or handhole.**
81.	**Addition to Section 2.14** **Duct Bends** • **Contact EDTI for pre-approval for shorter radius bends if proper depths at service entry cannot be achieved.**