



Date Issued: June 15, 2009  
Subject : Aluminum Alloy Conductors for Distribution Feeder Applications with Recommendations for Connections  
Reference: Provincial Homelessness Initiative Design Guidelines & Construction Standards 2006  
Independent Living BC Non-Profit Housing Design and Construction Standards, 2003  
Page: 1 of 5

---

**SUBJECT:**

BC Housing Electrical General Provisions wiring methods for main distribution feeders. The same revisions apply to the Independent Living BC Non-Provincial Housing Design and Construction Standards, Revised October 2006, and the Provincial Homelessness Initiative Design Guidelines and Construction Standards, October 2006.

**PURPOSE:**

To revise the standard to permit the installation of aluminum conductors with a minimum ampacity of 60 Amps to facilitate the use of aluminum conductors for major feeders up to and including In-Suite Panelboards of Multi-Residential Unit facilities. BC housing has included a guideline for Aluminum Alloy Conductors for Distribution Feeder Applications and with Recommendations for Connections.

This revision will align the intent of the guideline permitting aluminum conductors to feed 60A Suite Panels.

**REFERENCE:**

Independent Living BC Non-Profit Housing Design and Construction Standards (ILBC Standards), Revised October 2006:

- Section 5 Electrical General Provisions.

Provincial Homelessness Initiative Design Guidelines and Construction Standards, (PHI Standards), October 2006:

- Section 5 Electrical General Provisions.

**DESCRIPTION:**

Replace paragraph 1 in its' entirety with the following:

**Wiring Methods**

- 1 All wiring must be copper, except for main distribution feeders 100 Amps or larger and Residential Suite Panel feeders sized 60 Amps or larger where aluminum conductors of the same ampacity may be utilized. Aluminum wiring alloys shall be AA8030 (or NUAL) also know as Aluminum Conductor Material (ACM). Aluminum conductor terminations shall be completed using appropriately approved plating, hardware and processes. The installation shall conform to the following specification:

Technical Bulletin No 21-2009

**Guideline for Aluminum Alloy  
Conductors for Distribution Feeder  
Applications with Recommendations  
for Connections**

For

BC Housing New Construction Projects



Date Issued: June 15, 2009  
Subject : Aluminum Alloy Conductors for Distribution Feeder Applications with Recommendations for Connections  
Reference: Provincial Homelessness Initiative Design Guidelines & Construction Standards 2006  
Independent Living BC Non-Profit Housing Design and Construction Standards, 2003  
Page: 3 of 5

---

## **A Distribution Feeder Installation**

- 1 Distribution feeder conductors in sizes #6 AWG to 1000 kcmil may be copper or aluminum conductor material (ACM).
  - i. Aluminum alloy conductors shall be compact stranded conductors of NUAL® (AA-8030) as manufactured by Alcan Cable or of a recognized 8000 Series aluminum alloy conductor material by the Aluminum Association.
  - ii. Manufacturer shall verify compliance with the elongation requirement per Table 10.1 of UL Standard 1581 for stranded AA-8000 series aluminum alloy conductors on wires taken from the conductor after stranding.

## **B Insulation**

- 1 For use in raceways: Sizes #6 AWG to 1000 kcmil Type RW90, temperature rating 90° C.

## **C Connections for Conductors**

### **1 Using Mechanical Screw Type Connectors:**

- i. Connectors shall be dual rated (AL7CU or AL9CU) and Listed by CSA for use with aluminum and copper conductors and sized to accept aluminum conductors of the ampacity specified.
- ii. Using a suitable stripping tool, to avoid damage to the conductor, remove insulation from the required length of the conductor.
- iii. Clean the conductor surface using a wire brush and apply a Listed joint compound.
- iv. Tighten the connection per the connector manufacturer's recommendation.
- v. Wipe off any excess joint compound.

### **2 Using Mechanical Compression Type Connectors:**

- i. Connectors shall be dual rated (AL7CU or AL9CU) and Listed by CSA for use with aluminum and copper conductors and sized to accept aluminum conductors of the ampacity specified.



Date Issued: June 15, 2009  
Subject : Aluminum Alloy Conductors for Distribution Feeder Applications with Recommendations for Connections  
Reference: Provincial Homelessness Initiative Design Guidelines & Construction Standards 2006  
Independent Living BC Non-Profit Housing Design and Construction Standards, 2003  
Page: 4 of 5

---

- ii. The lugs shall be marked with wire size, die index, number and location of crimps and shall be suitably color coded. Lug barrel shall be factory pre-filled with a joint compound Listed by CSA.
- iii. Using a suitable stripping tool, to avoid damage to the conductor, remove insulation from the required length of the conductor.
- iv. Clean conductor surface using a wire brush.
- v. Crimp the connection per the connector manufacturer's recommendation.
- vi. Wipe off any excess joint compound.

### **3 Termination of Aluminum Conductor to Aluminum Bus:**

- i. Prepare a mechanical connection conforming to 1 or 2.
- ii. Hardware:
  - a. Bolts: Anodized aluminum alloy 2024-T4 and conforming to ANSI B18.2.1 and to ASTM B211 or B221 chemical and mechanical property limits.
  - b. Nuts: Aluminum alloys 6061-T6 or 6262-T9 and conforming to ANSI B18.2.2.
  - c. Washers: Flat aluminum alloy 2024-T4, Type A plain, standard wide series conforming to ANSI B27.2.
  - d. Lubricate and tighten the hardware as per the manufacturer's recommendations.

### **4 Termination of Aluminum Conductor to Copper Bus:**

- i. Prepare a mechanical connection conforming to 1 or 2.
- ii. Hardware:
  - a. Bolts: Plated or galvanized medium carbon steel; heat treated, quenched and tempered equal to ASTM A-325 or SAE grade 5.
  - b. Nuts: Heavy semi-finished hexagon, conforming to ANSI B18.2.2, threads to be unified coarse series (UNC), class 2B.
  - c. Washers: Should be of steel; Type A plain standard wide series conforming to ANSI B27.2.
  - d. Belleville conical spring washers: shall be of hardened steel, cadmium plated or silicone bronze.
  - e. Lubricate and tighten the hardware as per the manufacturer's recommendations.



Date Issued: June 15, 2009  
Subject : Aluminum Alloy Conductors for Distribution Feeder  
Applications with Recommendations for Connections  
Reference: Provincial Homelessness Initiative Design Guidelines  
& Construction Standards 2006  
Independent Living BC Non-Profit Housing Design  
and Construction Standards, 2003  
Page: 5 of 5

---

**5 Termination of Aluminum Conductor to Equipment Not Equipped for Termination of Aluminum Conductor:**

- i. Prepare compression connection using an adapter listed by CSA for the purpose or by pigtailling a short length of suitable size of copper conductor to the aluminum conductor with a compression connector Listed by CSA.
- ii. Provide an insulating cover over adapter body or the compression connector.
- iii. Terminate the adapter or the pigtail on to the equipment per manufacturer's recommendation.

END