

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 26 05 00 - Common Work Results - Electrical.
- .2 Section 26 05 20 - Wire and Box Connectors (0-1000V).
- .3 Section 26 05 29 - Hangers and Supports for Electrical Systems.
- .4 Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
- .5 Section 26 05 43.01 - Installation of Cables in Trenches and in Ducts.

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA)
  - .1 CSA C22.2 No. 03-96, Test Methods for Electrical Wires and Cables.
  - .2 CAN/CSA C22.2 No. 131, Type TECK 90 Cable.

## **2 Products**

### **2.1 BUILDING WIRES**

- .1 Conductors: stranded for #8 AWG and larger, solid for #10 AWG and smaller.
- .2 Minimum size to be #12 AWG for lighting and power, #14 AWG for controls, #16 AWG for low voltage and lighting relay/controls.
- .3 Conductors to be sized as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE and RWU90 XLPE as indicated. Provide RWU90 XLPE rated cable for underground wiring related to new underground solar array feeders. RWU90 XLPE not required under interior floor slabs.
- .4 Single conductor metal sheathed cables are not permitted.
- .5 Conductor sizes on drawings are based on copper conductors.
- .6 Aluminum Composite Material (ACM) conductors will not be permitted as an acceptable alternative to copper conductors.

### **2.2 TECK CABLE**

- .1 Cable: to CAN/CSA C22.2 No. 131.
- .2 Conductors:
  - .1 Grounding conductor: copper.
  - .2 Circuit conductors: copper size as indicated.
- .3 Insulation:
  - .1 Chemically cross-linked polyethylene (XLPE), rated RW90, 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: interlocking aluminum.
- .6 Overall covering: thermoplastic polyvinyl chloride material.
- .7 Fastenings:
  - .1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.
  - .2 Channel type supports for two or more cables at 1500 mm centers.
  - .3 Threaded rods: 6 mm dia. to support suspended channels.
- .8 Connectors:
  - .1 Watertight spin-on style connectors or type approved for TECK cable.

### **2.3 ARMoured CABLES**

- .1 Conductors: insulated, copper, size as indicated.
  - .2 Type: AC90.
  - .3 Armour: interlocking type fabricated from aluminum strip.
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- .4 Connectors: standard as required, complete with double split rings in accordance with Section 26 05 20 - Wire and Box Connectors (0 - 1000 V).

## **2.4 CONTROL CABLES**

- .1 Type LVT: 2 soft annealed copper conductors, sized as indicated, with thermoplastic insulation, outer covering of thermoplastic jacket.
- .2 Low energy 300 V control cable: stranded annealed copper conductors sized as indicated, with PVC insulation type TW -40°C polyethylene insulation with shielding of tape coated with paramagnetic material wire braid over each conductor and overall covering of PVC jacket.

## **2.5 NON-METALLIC SHEATHED CABLE**

- .1 Non-metallic sheathed copper cable type: NMD90 nylon, size as indicated.

## **3 Execution**

### **3.1 WIRING METHODS**

- .1 All work to be concealed in finished areas where possible, wire in black painted conduit where exposed in finished areas.
- .2 All work in or through fire rated or acoustic structures to be in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .3 Panelboard feeders: building wire in conduit.
- .4 Branch circuit work:
  - .1 Concealed work in wall partitions: building wire in conduit, armoured cable or NMD cable.
  - .2 Horizontal work above accessible ceilings: building wire in conduit, armoured cable or NMD cable.
  - .3 Surface work in unfinished areas: building wire in conduit.
  - .4 Armoured cable or NMD cable may be used where permitted by the Canadian Electrical Code for drops to new equipment in existing gypsum board walls and ceilings.
- .5 Drops to light fixtures to be building wire in flexible conduit or armoured cable, maximum length 1.5 m.

### **3.2 GENERAL CABLE INSTALLATION**

- .1 Support cables in accordance with Section 26 05 29 - Hangers and Supports for Electrical Systems.
- .2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors (0-1000 V).
- .3 Cable Colour Coding: to Section 26 05 00 - Common Work Results - Electrical.
- .4 Conductor length for parallel feeders to be identical.
- .5 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .6 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .7 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

### **3.3 INSTALLATION OF TECK CABLE**

- .1 Install Teck cables where indicated.
    - .1 Group cables wherever possible on channels.
  - .2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors (0 -
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1000 V).

### **3.4 INSTALLATION OF ARMoured CABLES**

- .1 Group cables wherever possible.
- .2 Use permitted only for work in movable partitions and vertical power supply drops to lighting fixtures.
- .3 Install anti-shorts as required.
- .4 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors (0 - 1000 V).

### **3.5 INSTALLATION OF CONTROL CABLES**

- .1 Controls wiring for mechanical systems to be completed by the Controls Contractor. All other controls wiring to be completed by the Electrical Contractor.
- .2 Install control cables in conduit as indicated.
- .3 Ground control cable shield.
- .4 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors (0 - 1000 V).

### **3.6 INSTALLATION OF NON-METALLIC SHEATHED CABLE**

- .1 Install cables.
- .2 Install straps and box connectors to cables as required.
- .3 Use permitted in wood stud construction only.

### **3.7 RESTRICTIONS**

- .1 Splices in wire and cable #6 AWG and larger are not permitted.
- .2 Flexible conduit or armoured cable drops to luminaires are to be installed from junction box to luminaires, loops between luminaires is not permitted.
- .3 Wiring and cabling, both concealed and exposed, is to be installed parallel and/or perpendicular to building lines in a clean, organized and professional fashion. Where possible, wiring and cabling is to follow a common pathway.

### **3.8 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

**END OF SECTION**

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