

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 34 43 14 - Elevated Edge Lighting.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.2 No.179- 09 , Airport Series Lighting Cables.
 - .2 CSA C22.2 No.180- M1983 (R2008), Series Isolating Transformers for Airport Lighting.
 - .3 Quebec electrical code section 74.
- .2 Transport Canada Aviation Safety Direction
 - .1 TP 312E 1993 (R2005) Aerodromes disposal standards and recommended practices.

1.3 SYSTEM DESCRIPTION

- .1 Medium intensity lighting on:
 - .1 Taxiways
 - .2 Apron.

1.4 SUBMITTALS

- .1 Provide written confirmation of compliance with CSA standard.
- .2 Operation and maintenance data
 - .1 Submit operation and maintenance data for incorporation into manual.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.

Part 2 Products**2.1 PRIMARY CABLE**

- .1 Single conductor stranded soft drawn copper, #8 AWG, 5000 volt, combined cross linked polyethylene insulation and jacket: CSA C22.2 No.179 (R 2014).

2.2 BREAKABLE COUPLING, TYPE II

- .1 Use for mounting of light fixtures 53 X 190,5 mm.

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2.3 PRIMARY PLUG RECEPTACLE CONNECTORS

- .1 Primary plug and receptacle connector kit, straight type, one male plug, one female plug, for use with isolating transformer or use for separable straight splice of #8 AWG primary cable, type 54.

2.4 HEAT SHRINKABLE SLEEVE KIT

- .1 Heat shrinkable sleeve kit for primary connector L-823 for Airport series lighting cables, length 380 mm.

2.5 SECONDARY PLUG AND RECEPTACLE CONNECTORS

- .1 Secondary male plug connector kit; to field assemble secondary extension or terminate fixture lead, using 2 - #12 AWG type SOW secondary cable.
- .2 Secondary female receptacle connector kit; to field assemble secondary extension or repair transformer lead, using 2 - #12 AWG type SOW secondary cable.

2.6 SECONDARY EXTENSION CABLES

- .1 Copper cables type SOW. 2 conductors size 12, with molded male and female connectors rubber insulation, length as required.

2.7 ISOLATING TRANSFORMER

- .1 Transformer 6.6 A/ 6.6A CSA C22.2 No180, rated as following..
 - .1 30/45 watts for taxiways lighting
 - .2 Use for 5000 volt series circuits

2.8 TRANSFORMER PULLPIT

- .1 Construction in polyethylene, galvanized metal cover, locking type.
 - .1 450 mm diameter, 450 mm depth for a single transformer, or for cables splicing
 - .2 450 mm diameter, 610 mm depth, for 2 or more transformers.

2.9 LIGHT UNIT GROUND ANCHOR

- .1 Conduit anchor 53 mm diameter conduit, 1.5 m long, galvanized steel, threaded one end, with conduit coupling and ground clamp connector.

2.10 GROUND COUNTERPOISE WIRE

- .1 Single conductor #8 AWG, soft drawn copper wire:
 - .1 Solid bare for direct burial as counterpoise for airfield lighting circuits.
 - .2 Stranded with green THHN insulation for placing in duct or conduit, as counterpoise for airfield lighting circuits buried beneath hard surfaces, and for power circuit insulated bonding conductors.

2.11 OTHER MATERIAL

- .1 Cable, secondary:

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- .1 Two conductor #12, copper, type SOW, Cab Tire complete with male and female connectors molded on the cable..
- .2 Cable ties: nylon black long as required.
- .3 Numbered inox marker (Thomas and Betts, serial Ty-Rap, cat. ERO or equal.
- .4 Lamicoid plate as described in section 26 05 00 for identification of transformers housing.
- .5 Conduit, rigid:
 - .1 Steel, galvanized, diameter as specified on drawings.
 - .2 PVC: diameter as indicated on drawings
- .6 Breakable coupling

2.12 TECK Cables

- .1 As per section 26 05 21 – Wires and cables 0-1000v.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for illuminated guidance signs installation in accordance with manufacturer's written instructions.
 - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 GENERAL

- .1 Install Airport Lighting underground circuitry in accordance with Canadian Electrical Code section 74.

3.3 REMOVALS AND SALVAGE

- .1 Remove and salvage existing edge lighting fixtures from runway, taxiway and from areas indicated.

3.4 INSTALLATION OF LIGHT ANCHOR

- .1 Install 53 mm diameter galvanised conduit, light unit, at locations indicated. Set plumb and vertical with top of conduit coupling at same elevation as adjacent ground surface:
 - .1 In common soil:
 - .1 Drive in conduit.

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- .2 Screw coupling on.
- .3 Install the ground clamp Burndy model 21. P.S. GAR 1826 or equivalent.
- .2 In solid rock:
 - .1 Remove surface dirt.
 - .2 Drill hole 60 cm deep.
 - .3 Cut conduit to proper length.
 - .4 Cement grout in position.
 - .5 Screw coupling on.
 - .6 Backfill and compact to same level and density as adjacent ground.

3.5 INSTALLATION ISOLATING TRANSFORMERS

- .1 Install isolating transformers adjacent to primary cable trench, at locations indicated:
 - .1 In transformer pullpits
 - .1 Place suitable transformer(s) in pullpits.
 - .2 Make connections to:
 - .1 Primary cable.
 - .2 Edge light secondary cable.
 - .3 Ground counterpoise.
 - .3 Place back cover.

3.6 INSTALLATION OF TRANSFORMER PULLPITS

- .1 Install transformer pullpits at locations indicated.
 - .1 Excavate to size and depth indicated.
 - .2 Cover bottom of excavation with layer of bedding material.
 - .3 Place pullpit so that cover is 75 mm below adjacent ground surface.
 - .4 Make holes in pullpit wall suitable for tubing used.
 - .5 Install incoming and outgoing tubing and/or conduit.
 - .6 Backfill with sand and common backfill material around pullpit and compact to same level and density as adjacent ground as indicated.
 - .7 Install identification plate on top of cover
 - .8 Place cover on pullpit and lock.

3.7 INSTALLATION OF AIRPORT LIGHTING PRIMARY U/G CABLES

- .1 Install airport lighting primary underground cables, as indicated.
- .2 Place in PVC conduit in common soil or,
 - .1 In duct.
- .3 Make connections using approved connectors as indicated.
 - .1 Leave 600 mm loop of loose cable at each connection and a 1200mm loop for cable going through, avoid mechanical tension on connector.
 - .2 Install connector in accordance with manufacturer's instructions.
 - .3 Install Heat shrink with a heating blower.

- .4 Install markers on cable identifying circuit numbers in each pullpit.

3.8 INSTALLATION OF GROUND COUNTERPOISE

- .1 Install with runs of series lighting primary cables, in trench, duct and/or tubing at locations as indicated:
 - .1 Use 1 conductor #8 wire with cables directly buried in trench or in protective tubing:
 - .1 Place counterpoise wire on top of additional 75 mm layer of bedding material above cables or tubing.
 - .2 Run counterpoise wire in straight line or in zig-zag pattern as indicated as indicated in article 74-010 of the Quebec electrical code.
 - .2 Use 1 conductor #8 stranded with TW green insulation, with cables pulled in ducts and/or tubing under pavement.
 - .3 Use appropriate ground connector and connect counterpoise wire to:
 - .1 Power supply system common ground.
 - .2 Each light unit anchor and isolating transformer.
 - .3 Each ground rod.
 - .4 Other ground wires in same trench.
 - .5 Pullpit cover.

3.9 INSTALLATION OF SECONDARY CABLES

- .1 Install as indicated:
 - .1 Run in conduits.
- .2 Make connections using approved connectors as indicated.
 - .1 In series lighting circuits, connect to isolating transformer secondary outlet.
 - .2 Leave 600 mm loop of loose cable at connection to transformer.
 - .3 Run loose cable end above ground to light unit location.
 - .4 Backfill as indicated and compact to same level and density as adjacent ground.

3.10 TESTING

- .1 Testing requirements:
- .2 Conduct before commencing works, the following tests:
 - .1 Taxiway and apron existing lighting circuit.
- .3 Test all new sections, the reading of the new section shall be at least 1 Gigaohms.
- .4 The reading of the circuit including the new section shall be at least equivalent or higher.
 - .1 Provide necessary instruments and equipment to demonstrate that:
 - .1 Circuits are continuous, free of short circuits and unspecified grounds.
 - .2 Circuits are connected according to applicable wiring diagrams.
 - .3 Circuits perform designated functions in sequence and manner intended.

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- .4 Resistance to ground of circuits, measured with 5 kV Megger is not less than 1000 megohms.
- .5 Circuits are operable by:
 - .1 Energizing and operating each circuit at each brightness not less than 10times.
 - .2 Energizing and operating each circuit at full load for continuous period of not less than eight hours.
- .5 Provide Ministry Representative with list of test results indicating:
 - .1 Location at which test was made.
 - .2 Circuit number or designator of circuit tested.
 - .3 Individual test results.

END OF SECTION

Part 1 General

1.1 RELATED WORK

- .1 Section 34 43 10 Airport Lighting General Products
- .2 Electrical-General Provisions: Section 26 05 00 Electrical - General Requirements

Part 2 Products

2.1 MEDIUM INTENSITY ELEVATED LIGHT - SERIES CIRCUIT,

- .1 Light unit – taxiway and apron edge, (supplied by airport):
 - .1 45 watts type incandescent lamp as indicated.
 - .2 Breakable coupling;
 - .3 Suitable for mounting on 53 mm diameter threaded anchor stake coupling;
 - .4 Isolating transformer 6.6A/6.6A – 30/45 W.

Part 3 Execution

3.1 LIGHT UNIT INSTALLATION

- .1 Install to Section 34 43 10 - Airfield Lighting - General and as indicated:
 - .1 On 53 mm conduit anchors.
- .2 Assemble in accordance with manufacturer's installation instructions. Connect isolating transformer secondary lead to light unit cord assembly by means of disconnecting plug and receptacle. Cover with a heat shrink.. Fix cables to breakable coupling with a black tie-rop.
- .3 Screw breakable coupling on conduit. Put low temp. anti-seize grease on filets.
- .4 Level as recommended by manufacturer.
- .5 Install lamp of proper rating as indicated.
- .6 Install coloured filters as indicated.
- .7 Install lens as indicated.

END OF SECTION