

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 74 21 – Construction Demolition Waste Management.
- .2 Section 26 05 01 - Common Work Results - Electrical.

1.2 REFERENCES

- .1 Canadian Standards Association, (CSA International).
- .2 Insulated Cable Engineers Association, Inc. (ICEA).
- .3 Refer to attached Newfoundland Power Appendices.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction Demolition Waste Management, and with the Waste Reduction Workplan.
- .2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
- .3 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 MARKERS

- .1 Under Ground Cable Markers: as indicated, with words similar to: "Under Ground Electrical Cable(s)".

PART 3 - EXECUTION

3.1 DIRECT BURIAL OF CABLES

- .1 After sand bed specified in Section 31 23 33.01 - Excavating, Trenching and Backfilling or Newfoundland Power standard details, is in place, lay cables maintaining 153 mm clearance from each side of trench to nearest cable. Do not pull cable into trench.
- .2 Provide offsets for thermal action and minor earth movements. Offset cables 152 mm for each 60 m run, maintaining minimum cable separation and bending radius requirements.
- .3 Underground cable splices not acceptable.

- .4 Minimum permitted radius at cable bends for rubber, plastic or lead covered cables, 8 times diameter of cable; for metallic armoured cables, 12 times diameter of cables or in accordance with manufacturer's instructions.
- .5 Cable separation:
 - .1 Maintain 152 mm minimum separation between cables of different circuits.
 - .2 Maintain 300 mm horizontal separation between low and high voltage cables.
 - .3 Maintain 300 mm minimum vertical clearance when low voltage or high voltage cables cross communication cables.
 - .4 When low voltage cables cross high voltage cables maintain 300 mm vertical separation with low voltage cables in upper position.
 - .5 At crossover, maintain 152 mm minimum vertical separation between low voltage cables and 300 mm minimum vertical separation between high voltage cables.
 - .6 Maintain 300 mm minimum lateral and vertical separation for fire alarm and control cables when crossing other cables, with fire alarm and control cables in upper position.
 - .7 Install treated planks on lower cables 609 mm in each direction at crossings.
- .6 After sand protective cover specified in Section 31 23 33.01 - Excavating, Trenching and Backfilling, is in place, install continuous row of overlapping 50 mm x 152 mm pressure treated planks to cover length of run.

3.2 CABLE INSTALLATION IN DUCTS

- .1 Install cables as indicated in ducts.
 - .1 Do not pull spliced cables inside ducts.
- .2 Install multiple cables in duct simultaneously.
- .3 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.
- .4 To facilitate matching of colour coded multiconductor control cables reel off in same direction during installation.
- .5 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.
- .6 After installation of cables, seal duct ends with duct sealing compound.

3.3 MARKERS

- .1 Locate electrical identification marker midway (between grade and duct) below grade and directly above runs of direct buried cable, conduit, duct, and duct banks.
- .2 Where markers are removed to permit installation of additional cables, reinstall existing markers.

3.4 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.
- .2 Perform tests using qualified personnel. Provide necessary instruments and equipment.
- .3 Check phase rotation and identify each phase conductor of each feeder.
- .4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.
- .5 Pre-acceptance tests.
 - .1 After installing cable but before splicing and terminating, perform insulation resistance test with 1000 V megger on each phase conductor.
 - .2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.
- .6 Provide Departmental Representative with list of test results showing location at which each test was made, circuit tested and result of each test.
- .7 Remove and replace entire length of cable if cable fails to meet any of test criteria.

END OF SECTION