

1 GENERAL

1.01 GENERAL

- .1 This Section covers items common to Sections of Division 26. This section supplements requirements of Division 01.
- .2 Additional sections of Division 26 may be issued separately under the terms of the Standing Offer. These additional sections are to be coordinated with sections 26 05 01 and shall form part of the contract.

1.02 SCOPE OF WORK

- .1 Scope of work under this Contract generally includes, but not limited to the following:
 - .1 Modifications of existing panels as indicated.
 - .2 Supply and installation of breakers and wiring as indicated
 - .3 Modifications to existing fire alarm system as required.
 - .4 Relocation of electrical equipment as indicated; supply and installation of new electrical items as indicated; supply and installation of new switches and receptacles as indicated.
 - .5 Supply and installation of communication wiring as indicated.
 - .6 Supply and installation of telephone and data outlets as indicated and connection to existing or new racks.

1.03 CODES AND STANDARDS

- .1 Do complete installation in accordance with CSA C22.1-1998 except where specified otherwise.
- .2 Do overhead and underground systems in accordance with CSA C22.3 No.1-M1987 except where specified otherwise.
- .3 Abbreviations for electrical terms: to CSA Z-85-1983.

1.04 CARE, OPERATION AND START-UP

- .1 Instruct Departmental Representative and operating personnel in the operation, care and maintenance of systems, system equipment and components. Provide five (5) days written notice to Departmental Representative prior to providing instruction.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.05 VOLTAGE RATINGS

- .1 Operating voltages: to CAN3-C235-83.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.06 PERMITS, FEES AND INSPECTION

- .1 Submit to local Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
- .2 Pay associated fees.
- .3 Owner will provide drawings and specifications required by local Electrical Inspection Department and Supply Authority at no cost.
- .4 Notify Departmental Representative of changes required by local Electrical Inspection Department prior to making changes.
- .5 Furnish Certificates of Acceptance from local Electrical Inspection Department authorities having jurisdiction on completion of work to Departmental Representative.

1.07 MATERIALS AND EQUIPMENT

- .1 Provide materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from local Electrical Inspection Department.
- .3 Factory assemble control panels and component assemblies.

1.08 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Supplier and installer responsibility will indicated in Motor, Control and Equipment Schedule on electrical drawings and related mechanical responsibility is indicated on Mechanical Equipment Schedule on mechanical drawings.
- .2 Control wiring and conduit is specified in Division 26 and is incorporated in the work of Division 26 Contractor.

1.09 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two (2) coats of finish enamel.
 - .1 Paint outdoor electrical equipment "equipment green" finish to EEMAC Y1-1-1955.
 - .2 Paint indoor switchgear and distribution enclosures light grey to EEMAC

2Y-1-1958.

- .2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .3 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

1.10 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates and labels as follows:
- .2 Nameplates:
 - .1 Lamicoid 3 mm thick plastic engraving sheet, black or white face, black or white core to match existing nameplates, mechanically attached with self tapping screws.

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .3 Labels:
 - .1 Embossed plastic labels with 6 mm high letters unless specified otherwise.
- .4 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.
- .5 Allow for average of 25 letters per nameplate and label.
- .6 Identification to be English and French.
- .7 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .8 Disconnects, starters and contactors: indicate equipment being controlled voltage phase and power source designation.
- .9 Terminal cabinets and pull boxes: indicate system and voltage.

1.11 WIRING

- .1 Concealed wiring shall be in conduit. Surface mounted wiring shall be in wirehold. All cable shall be neatly installed parallel to building lines. Support cable in accordance with the Canadian Electrical Code.

- .2 All wiring to be copper R-90 unless noted otherwise. Branch wiring shall be No. 12 AWG up to 70 feet (21.4m) and No. 10 AWG from 71 feet (21.6m) to 120 feet (36.6m). The voltage drop shall be calculated at 3 percent.

1.12 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour code: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

1.13 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	<u>Prime</u>	<u>Auxiliary</u>
up to 250 V	Yellow	
up to 600 V	Yellow	Green
up to 5 kV	Yellow	Blue
up to 15 kV	Yellow	Red
Telephone	Green	
Other	Green	Blue
Communication Systems		
Fire Alarm	Red	
Emergency	Red	Blue
Voice		
Other	Red	Yellow
Security Systems		

1.14 WIRING TERMINATIONS

- .1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

1.15 MANUFACTURERS AND CSA LABELS

- .1 Visible and legible, after equipment is installed.

1.16 WARNING SIGNS

- .1 As specified and to meet requirements of Electrical Inspection Department and Departmental Representative.

- .2 Porcelain enamel decal signs, minimum size 175 x 250 mm.

1.17 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Install electrical equipment at following heights unless indicated otherwise.
 - .1 Local switches: 1400 mm.
 - .2 Wall receptacles:
 - .1 General: 300 mm.
 - .2 Above top of continuous baseboard heater: 200 mm.
 - .3 Above top of counters or counter splash backs: 175 mm.
 - .4 In mechanical rooms: 1400 mm.
 - .3 Panelboards: as required by Code or as indicated.
 - .4 Telephone and interphone outlets: 300 mm.
 - .5 Wall mounted telephone and interphone outlets: 1500 mm.
 - .6 Fire alarm stations: 1500 mm.
 - .7 Fire alarm bells: 2100 mm.
 - .8 Television outlets: 300 mm.
 - .9 Wall mounted speakers: 2100 mm.
 - .10 Clocks: 2100 mm.
 - .11 Door bell pushbuttons: 1500 mm.

1.18 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete. Sleeves through concrete: schedule 40 steel pipe plastic or sheet metal, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.
- .4 Cabling installation shall be done under a communication cabling permit issued by the local electrical inspection department and by holding a communications cabling specialist certificate recognized by the New Brunswick Department of Labour.

1.19 TEMPORARY SERVICES

- .1 The Electrical Contractor will be held responsible for maintaining all electrical services in a safe operating condition at all times.
- .2 Any temporary wiring and services must comply with the requirements of the Canadian Electrical Code and all jurisdictional authorities.

1.20 FIELD QUALITY CONTROL

- .1 All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentices program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks - the activities permitted shall be determined based on the level of training attained and the demonstration of ability to perform specific duties.
- .2 The work of this division to be carried out by a contractor who holds a valid Master Electrical contractor license as issued by the Province that the work is being constructed.
- .3 Conduct and pay for following tests:
 - .1 Power generation and distribution system including phasing, voltage, grounding and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and its control.
 - .4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
 - .5 Systems: fire alarm system, communications.
 - .6 Panels shall be balanced within 5% of load per phase. Grounding shall be as required by the Canadian Electrical Code.
 - .7 Test all system grounding conductors to detect phase to ground loads. Meter shall read less than one ampere
- .4 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.
- .5 Carry out tests in presence of Departmental Representative. Provide five (5) days written notice to Departmental Representative prior to performing tests.
- .6 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .7 Submit test results for Departmental Representative's review and approval.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION