

COMMON WORK RESULTS FOR ELECTRICAL - DESIGN

1. GENERAL

1.1 Purpose and Scope

- .1 This document serves as a basis of supply only of the electrical supply, distribution and power utilization.

1.2 Language

- .1 All correspondence, labelling and documentation shall be in English.

1.3 Units of Measure

- .1 SI units shall be used except for motors which are in hp, and wire size in AWG.

1.4 References

- .1 CSA C22.1-2012, Canadian Electrical Code, including provincial amendments (latest edition)
- .2 National Building Code of Canada (2010), including provincial amendments (latest edition)
- .3 City of Winnipeg Water & Waste Department Electrical Design Guide.

1.5 Design Requirements

- .1 Comply with all laws, ordinances, rules, regulations, codes, and orders of all authorities having jurisdiction relating to this Work.
- .2 Comply with all rules of the Manitoba Electrical Code, CSA Standard C22.1 and the applicable building codes.
- .3 Operating voltages: to CAN3-C235;
- .4 The voltage of equipment in this facility shall be 600 V, 3-phase, 3-wire unless otherwise specified
- .5 Equipment to operate in maximum capabilities operating conditions established in above standard without damage to equipment
- .6 Convenience Receptacles will be 120 V single phase unless otherwise specified
- .7 Lighting will be 120 V unless otherwise specified
- .8 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by CAN3-C235.
- .9 All equipment must match categories and classifications to match shop drawings in Section 26 05 00 – “Submittals”

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1.6 Submittals

- .1 Coordinate supply of all equipment with Installation Contractor.
- .2 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 In addition to the requirements outlined in Section 01 33 00, Shop Drawings to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
- .4 Shop Drawings and product data to be accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Provide shop drawings showing floor plan with area classifications identified by hatching and legends and use classifications as defined in CEC Section 18.
 - .3 Provide shop drawings showing floor plan with area categories identified by hatching and legends and use categories as defined in CEC Section 22.
 - .4 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure coordinated installation.
- .5 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
 - .2 Typical drawings are not acceptable unless they are revised to show only the equipment being furnished.
 - .3 Provide drawings with ANSI symbols, IES symbols are not acceptable.
 - .4 Submit Drawings stamped and signed by Professional Engineer registered or licensed in Province of Manitoba.
 - .5 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .6 Indicate on Drawings, clearances for operation, maintenance, and replacement of operating equipment devices.
 - .7 Operation data to include:
 - .1 Control schematics for systems including environmental controls.
 - .2 Description of systems and their controls.

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- .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
- .4 Operation instruction for systems and components.
- .5 Description of actions to be taken in event of equipment failure.
- .6 Valves schedule and flow diagram.
- .7 Colour coding chart.
- .8 Quality Control:
 - .1 All products used must be certified to CE Code Part II standards by a Standards Council of Canada (SCC) accredited Certification Organization (CO), and be marked with that Certification Organization's certification mark.
 - .2 Submit test results of installed electrical systems and instrumentation to Contract Administrator.
 - .3 Submit certificate of acceptance from Authority Having Jurisdiction upon completion of Work to Contract Administrator.
- .9 Maintenance data to include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.
- .10 Performance data to include:
 - .1 Equipment Manufacturer's performance datasheets with point of operation as left after commissioning is complete.
- .11 Approvals:
 - .1 Submit two (2) copies of draft Operation and Maintenance Manual to the Contract Administrator for approval. Submission of individual data will not be accepted unless directed by the Contract Administrator.
 - .2 Make changes as required and re-submit as directed by Contract Administrator.
- .12 Additional data:
 - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.

1.7 Operating Instructions

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

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- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by Manufacturer of each system or item of equipment.

1.8 Maintenance

- .1 Provide one (1) set of special tools required to service equipment as recommended by Manufacturers and in accordance with Section 01 78 00 - Closeout Submittals.

2. PRODUCTS

2.1 General Requirements

- .1 Quality Control: in accordance with Section 01 45 00 - Quality Control.
 - .1 All Products provided shall be CSA approved.
 - .2 Provide certified to CE Code Part II standards by a Standards Council of Canada (SCC) accredited Certification Organization (CO), and marked with that Certification Organization's certification mark.
 - .3 Where certified to CE Code Part II standards by a Standards Council of Canada (SCC) accredited Certification Organization (CO), is not available, submit such equipment and material to authority having jurisdiction for approval and submit copies of approval documents before delivery to site.
- .2 Factory assemble equipment, control panels and component assemblies to maximum extent possible.

END OF SECTION