

ELECTRICAL GENERAL PROVISIONS

1 General

- .1 Provide all materials, labour, plant and equipment necessary to make a complete installation as described and shown. This installation shall be left complete and ready for operation.
- .2 The entire installation shall be guaranteed for one year from date of final acceptance by the City. Replace at no additional cost any Work or material which may fail or prove defective during the guarantee period.
- .3 The installation shall conform in every respect to the rules and regulations of the latest edition of the Canadian Electrical Code and all local codes. All Work shall be uniform and high quality. All equipment supplied under this contract shall be new and built in accordance with EEMAC standards and shall be CSA and locally approved. Provide inspection certificate upon completion of the Work.
- .4 Carefully examine all plans and specifications pertaining to this contract and visit Site to determine all factors affecting costs and include same in bid submission. Notify Contract Administrator of discrepancies or conflicts with any regulation before submitting price. Failing such notification, this Contractor shall meet all such requirements without extra cost to the City.
- .5 Obtain all necessary permits, pay all necessary fees, give all necessary notices and obtain approval of the electrical authorities having jurisdiction.

2 Shop Drawings

- .1 Submit six (6) copies of shop drawings for all equipment.
- .2 Equipment proposed shall meet the same standards of performance, quality and workmanship as that specified.

3 As-builts

- .1 Provide two copies of "as-built" drawings.

4 Operation And Maintenance Manuals

- .1 Provide data for incorporation into maintenance manual. Manual shall include instructions for all equipment supplied, copy of reviewed shop drawings and technical data such as parts lists, operating instructions, maintenance instructions, etc. Three (3) hard cover copies of maintenance manuals are to be submitted.

5 Removals

- .1 Remove all unnecessary existing electrical equipment, wiring and fixtures in those portions of the existing building which are being remodelled or demolished. The equipment may be reused on this project if, in the opinion of the Contract Administrator, such equipment is in satisfactory condition and meets the standards established. The City may select from the materials and/or equipment remaining which he wishes to retain and the remainder shall be removed from the Site.
- .2 Any electrical equipment in remodelled sections or in structures removed or altered, adjacent to new work, necessary for the operation of the existing building, shall be relocated as necessary.
- .3 All existing equipment reused shall be made good and guaranteed.
- .4 Power interruptions shall be kept to a minimum and shall be a time suitable to the building occupant(s).

6 Work in Existing Building

- .1 Co-ordination.
 - .1 The building shall remain open and in normal operation during the construction period.

- .2 Where existing services such as electrical power, fire alarm system, sound system, etc. are required to be disrupted and/or shut down, co-ordinate the shutdowns with the City and carry out the Work at a time and in a manner acceptable to them. Carefully schedule all disruption and/or shut-downs and ensure that the duration of same is kept to the absolute minimum. Submit for approval a written, concise schedule of each disruption at least 120 hours in advance of performing Work and obtain City's written consent prior to implementing.
 - .3 Should any temporary connections be required to maintain services during Work in the existing building, supply and install all necessary material and equipment and provide all labour at no extra cost. Should any existing system be damaged, make full repairs without extra cost, and to the satisfaction of the City and Contract Administrator.
 - .4 If existing equipment shown on drawings is defective it should be brought to the Contract Administrator and City's attention prior to Work completion.
- .2 Installation
- .1 Install boxes, conduit and wiring through existing areas as required for the new installation.
 - .2 Add modules, switches, etc. in existing control panels, as required, to extend existing systems to new or renovated areas.
 - .3 Patch and repair walls and ceilings in existing areas that have been damaged or cut open due to the new electrical installation.
 - .4 Where new cables or conduits have been installed through existing fire rated walls, seal opening around cables and conduit to maintain fire rating.
- .3 All existing equipment reused shall be made good and guaranteed.
- .4 Power interruptions shall be kept to a minimum and shall be a time suitable to the building occupant(s).

SECTION 16100 ELECTRICAL MATERIALS AND INSTALLATION

- 1 Wiring Method
- .1 For general purpose wiring: RW90 conductors in EMT conduit. Use AC90 for fixture drops and in metal stud walls.
 - .2 For connection to motors and miscellaneous mechanical equipment use liquidtight flexible conduit.
 - .3 Run all conduit and cable concealed, parallel and perpendicular to building lines, stapled and/or clipped in a neat workmanlike manner.
 - .4 All conductors shall be copper. Minimum conductor size shall be #12 AWG except as noted.
- 2 Grounding
- .1 The entire installation shall be grounded in conformance to the latest edition of the Canadian Electrical Code.
 - .2 All conduit to have a separate insulated ground conductor.
- 3 Boxes
- .1 Outlet, junction and switch boxes shall be galvanized steel and sized according to the electrical code and to suit each application.
 - .2 Provide moulded box vapour barrier: factory moulded polyethylene box for use with recessed electric boxes in exterior walls.
- 4 Wiring Devices
- .1 Provide wiring devices for all outlets as required and indicated. Colour and mounting to match existing.
 - .2 Standard of acceptance for devices shall be as follows:

- .1 Single pole, 2-pole, 3-way and 4-way wall mounted general purpose switches shall be premium specification toggle type 15A 125VAC. To be series Hubbell #1201, Arrow Hart #1891, Bryant #4801 or Leviton #1201.
 - .2 Nema 5-15R 15A 125VAC receptacles shall be u-ground parallel slot side wired as follows:
 - .1 General purpose duplex and simplex to be series Hubbell #5262, Arrow Hart #5262, Bryant #5262, CGE #4065 or Leviton #5262.
 - .2 Patient care areas to be hospital grade receptacles.
 - .3 Coverplates for devices shall be stainless steel.
- 5 Power Distribution System
- .1 Provide all breakers, conduit, disconnects, conductors and accessories required for the installation of panelboards as indicated on the drawing and in this specification.
 - .2 Multi-pole breakers shall be of one piece construction with common trip.
 - .3 Provide breakers as indicated in the panel schedule and as indicated on the drawing.
 - .4 All new breakers shall match panel voltage unless indicated otherwise. Circuit breakers shall be thermal magnetic type.
 - .5 Complete circuit directory with typewritten legend showing location and load of each circuit.
 - .6 Acceptable Manufacturers: to match existing
 - .7 Interrupting capacity of new breakers in existing panels shall match existing.
- 6 Mechanical Equipment Connections
- .1 Refer to mechanical drawings for the exact location of motor control devices, and other mechanical equipment requiring an electrical connection.
 - .2 Obtain full information from Div. 15, regarding wiring, controls, overload heaters, equipment ratings and overcurrent protection. Notify the Div. 15 subcontractor, at once, if any information provided is incorrect or unsatisfactory.
 - .3 Co-ordinate control wiring requirements with Div. 15 and provide all control wiring and connections as required to make the control systems operate as specified.
- 7 Conduits and Cable
- .1 Drawings do not indicate all conduit and cable runs. Those indicated are in diagrammatic form only.
 - .2 Minimum conduit size shall be 3/4" unless indicated otherwise.
 - .3 All conduits shall have a separate insulated green ground conductor.
- 8 Conduits, Fastenings and Fittings
- .1 One hole steel straps to secure surface conduits 50mm and smaller.
 - .2 Fittings for raceways: to CSA C22.2 No. 18
 - .3 Fittings: Manufactured for use with conduit specified coating same as conduit.
 - .4 Factory "ELLS" where 90° bends are required for 25mm and larger conduits.
 - .5 Steel set screw connectors and couplings. Insulated throat liners on connectors.
- 9 Disconnect Switches
- .1 Fusible and non-fusible disconnect switch in CSA enclosure.
 - .2 Provision for padlocking "ON-OFF" switch position by three locks.
 - .3 Mechanical interlocked door to prevent opening when handle is in "ON" position.
 - .4 Quick-make, quick-break action.
 - .5 "ON-OFF" switch position indication on switch enclosure cover.
 - .6 Install disconnect switches as indicated on drawings.
 - .7 Weatherproof where required.