

## **PART 1 GENERAL**

### **1.1 RELATED WORK**

- .1 Section 01730 (*Spec Note: Co-ordinate with Architectural Specifications*)

### **1.2 SCOPE**

- .1 Electrical operations and maintenance manuals (hereinafter referred to as O&M manuals) shall be prepared by a firm specializing in this type of work.
- .2 Specialty firm to be responsible for:
  - .1 The supply and preparation of (*Spec Note: verify quantity of manuals with Owner*) [two] sets of O&M manual binders and tabs as specified in the index below and detailed in Sketches ESK-01 and ESK-02.
  - .2 The preparation of all written system descriptions and schematics (neatly drafted) as specified below. Format as directed by the Owner, utilizing proportional typewritten format, with schematics in appendices at the end of each section. System descriptions should include design philosophies, reason for component selection, brief component descriptions, system interconnections and interlocks, etc.
  - .3 Securing and assembling all necessary literature describing operational and maintenance procedures for all equipment into the O&M manual binders, including Preventative Maintenance data as described below. Preventative maintenance data and maintenance suggestions to be compiled in tabular format in applicable section to provide a comprehensive overview of maintenance procedures.
  - .4 Preparing in coordination with Division 16 and equipment manufacturer's technical specialist, scheduled maintenance sheets and check lists. Scheduled maintenance sheets shall include safety in maintenance data plus detailed daily, monthly and yearly scheduled maintenance information. Format as directed by the Owner.
  - .5 Preparation of safety in maintenance suggestions and procedures.
  - .6 Summarized daily, monthly and yearly maintenance charts.
  - .7 Prestonia No. 2047-10 plastic sheet protectors for all drawings larger than 210 mm × 275 mm. Locate drawing title block on lower right hand corner.
- .3 Division 16 shall be responsible for:

- .1 Supplying *(Spec Note: coordinate with item 1.2.2.1)* [xx] copies of all information as described below:
  - .1 Final shop drawings.
  - .2 All wiring diagrams.
  - .3 List of all major trades, sub-trades and suppliers including names of equipment supplied and by whom, addresses, phone numbers, facsimile numbers and contact persons.
  - .4 Obtaining all data necessary to compile a complete comprehensive Preventative Maintenance program. Data gathered shall be neatly handwritten on forms provided by the Owner. Data to be collected for all systems described in the index below.
  - .5 Spare/replacement parts lists for all of the above. Copies of the electrical contractor's data collection sheets available during tendering period when requested.
  - .6 Test results as outlined in other sections of this specification.

### 1.3      **OPERATIONS AND MAINTENANCE MANUAL FORMAT**

- .1 Electrical contractor to submit complete system description and schematics by 50% complete stage of construction. O&M manuals to be submitted to the Owner 90% complete three (3) months prior to substantial completion inspection.
- .2 Electrical O&M manuals to be assembled in 210 mm × 275 mm capacity, expanding spine catalogue binders complete with plated piano hinges, bound in heavy *(Spec Note: confirm color with owner)* [blue] fabric, hot stamped white lettering on front and spine. Electrical contractor to provide sufficient quantity to allow all binders to hold system data while in full closed position (not expanded).

Electrical contractor to provide sample of art work and fabric cover (before having binders constructed) to the Owner.

**(Spec Note: Edit for those systems applicable to a specific project.)**

<b>Tab Name/Description</b>	<b>Tab No.</b>
Incoming Electrical Services	1.0
<ul style="list-style-type: none"> <li>– Power</li> <li>– Telephone</li> <li>– RFTV</li> </ul>	
Secondary Power Distribution System	1.1
<ul style="list-style-type: none"> <li>– Primary Power Distribution System</li> <li>– Main Distribution Switchgear</li> <li>– Utility Metering</li> <li>– Energy Test Meter</li> <li>– Coordination Study</li> <li>– TVSS Units</li> </ul>	
Uninterruptable Power Supply	1.2
Transformers	1.3
<ul style="list-style-type: none"> <li>– Dry Type Transformers</li> <li>– Tap Adjustment Data</li> <li>– Connection Details</li> </ul>	
CDPs/Panelboards	1.4
<ul style="list-style-type: none"> <li>– 347/600 Volt Distribution Centres</li> <li>– Metering</li> <li>– 120/208 Volt Distribution Centres</li> <li>– Moulded Case Feeder Breakers</li> <li>– 347/600 Volt and 120/208 Volt Panelboards</li> <li>– Contactors</li> <li>– Ground Fault Breakers</li> <li>– Final Typewritten Panel Directories</li> <li>– Manual Bypass Transfer Switches</li> <li>– TVSS Units</li> </ul>	
Motor Controls	1.5
<ul style="list-style-type: none"> <li>– Manual Motor Protection Switches</li> <li>– Disconnect Switches</li> <li>– Motor Control Centres</li> <li>– Single Speed FVNR Starters</li> <li>– Overcurrent Protection</li> <li>– Single Phase Protection</li> </ul>	
<b>Tab Name/Description</b>	<b>Tab No.</b>

- Adjustable Overloads
- Fire Alarm System Interface
- Final MCC Schedules
- Isolated Ground Receptacles
- Safety Shutter Receptacles

Power Receptacle Systems 1.6

- Standard Receptacles
- Emergency Receptacles
- Ground Fault Interrupter Receptacles
- Surge Protection Receptacles
- Risk Classified Receptacles
- Isolated Ground Receptacles
- Safety Shutter Receptacles

Grounding System 1.8

- Building Ground Grid
- Auxiliary Bonding
- Waste Water Line
- Gas Piping
- Exterior Lights
- Low Tension Equipment Grounding

Miscellaneous Equipment 1.9

- Overhead Doors
- Dock Leveller
- Motorized Shutters
- Automatic Doors
- Cable Trays/Wireways
- Modular Furniture
- Multi System Outlet Boxes

Interior Lighting Control 2.1

- Line Voltage Switches
- Dimmer Switches
- Low Voltage Switches

<b>Tab Name/Description</b>	<b>Tab No.</b>
Emergency Lighting	2.2
<ul style="list-style-type: none"> <li>– Fluorescent</li> <li>– Exit Luminaires</li> <li>– Emergency Battery Packs</li> <li>– Surgical Battery Packs</li> </ul>	
Interior Lighting	2.3
<ul style="list-style-type: none"> <li>– Incandescent</li> <li>– Fluorescent</li> <li>– High Intensity Discharge (HID) Luminaires</li> </ul>	
Exterior Lighting	2.4
<ul style="list-style-type: none"> <li>– High Intensity Discharge (HID) Luminaires</li> <li>– Controls</li> </ul>	
Fire Alarm System	3.1
<ul style="list-style-type: none"> <li>– Main Control Panel</li> <li>– Annunciators</li> <li>– Ancillary Devices</li> <li>– Battery Backup</li> <li>– Devices</li> <li>– Sequence of Operation</li> <li>– Interface with Other Systems</li> <li>– Block Diagrams</li> <li>– Riser Diagram</li> </ul>	
Door Video Intercom Systems	4.1
<ul style="list-style-type: none"> <li>– Main Stations</li> <li>– Secondary Stations</li> <li>– Block Diagrams</li> <li>– Schematic Diagram</li> <li>– Operation</li> <li>– Maintenance</li> </ul>	

<b>Tab Name/Description</b>	<b>Tab No.</b>
Nurse Call System	4.2
– All Component Data	
– Block Diagrams	
– Schematic Diagrams	
– Operation	
– Maintenance	
– Riser Diagram	
Door Monitor and Access Control System	4.3
– All Component Data	
– Block Diagrams	
– Schematic Diagrams	
– Operation	
– Maintenance	
– Riser Diagram	
Public Address System	4.4
– Components	
– Sequence of Operation	
– Block Diagrams	
RF Television System	4.5
– Cabling	
– Amplifiers	
– Devices	
– Block Diagrams	
Voice / Data Cabling Systems	4.6
– All Component Data	
– Block Diagrams	
– Schematic Diagrams	
– Operation	
– Maintenance	
– Riser Diagram	

## **1.4 OVERVIEW TO OPERATION AND MAINTENANCE MANUALS**

- .1 Refer to Section 16032, Electrical Equipment and Systems Demonstration and Instruction.

**END OF SECTION**