SECTION 017823 - OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 SUMMARY
A. This Section includes requirements for preparing Operation and Maintenance manuals.
B. See all Sections in Divisions 02 through 33 for specific operation and maintenance manual requirements for the Work.

1.2 SUBMITTALS
A. Manual: Submit [1] one of each manual in final form prior to desired date of Substantial Completion. The O&M Manual shall not contain the actual warranty letters since date of Substantial Completion has not been determined. SRP and the CxA will return comments within [15] fifteen workdays of submission.
B. Correct or modify the manual to comply with Architect and SRP comments. Submit [4] four copies of each final manual with warranty letters and one CD prior to final application for payment.

PART 2 - PRODUCTS

2.1 MANUALS
A. Organization: Unless otherwise indicated, organize each manual into a separate section or tab for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, warranty directory, table of contents (and tabs), and manual contents.
B. Title Page: Include the following information:
2. Name and address of Project.
3. Date of final submittal.
4. Name, address, and telephone number of Contractor.
C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and referenced to Specification Section number.
D. Warranty Directory: In Table format, list category, warranty duration, warranty expiration date, name of responsible company, contact name, and phone, and fax numbers. See Appendix A for example.
E. Manual Contents: Organize into sets of manageable size. Arrange contents numerically by Division or alphabetically by Category (electrical, HVAC, plumbing). If possible, assemble instructions for subsystems, equipment, and components of one system into the same binder.
1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2 x 11 inch paper; with clear plastic sleeve on spine to hold label describing contents.
   a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy duty dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY INFORMATION
A. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner’s operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
B. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

2.3 OPERATION INFORMATION
A. Basic Content: Include operation data required in individual Specification Sections to include equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
B. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
C. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
D. Piped Systems: Diagram piping as installed.

2.4 PRODUCT MAINTENANCE INFORMATION
A. Maintenance Documentation: Manufacturers’ maintenance documentation including maintenance instructions, drawings, and diagrams for maintenance, nomenclature of parts and components. Include manufacturer's written recommendations and inspection procedures,
types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.

B. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions that detail essential maintenance procedures.

C. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

D. Spare and Repair Parts: Include manufacturer’s recommendations of spare and repair parts. Include a list of spare and repair parts turned over to SRP.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

F. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

2.5 WARRANTY INFORMATION

A. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Provide warranty certificates and other warranty information from manufacturers.
   2. Provide warranty letter from each subcontractor containing the following:
      a. Warranty coverage and contacts.
      b. Warranty start date (not earlier than date of substantial completion) and end date.

2.6 REQUIRED NUMBERS


PART 3 - EXECUTION

3.1 COMPLETION OF O&M MANUALS

A. Schedule: Incorporate the submission of the single draft manual and the four final manuals as activities or milestones on the project schedule. Submission of the draft manual is a prerequisite for Substantial Completion.

B. Payment: Final payment is conditioned upon the acceptance by SRP of the [4] four sets of final O&M Manuals
**APPENDIX A: Example of Warranty Directory**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>WARRANTY</th>
<th>CONTRACTOR/MFG.</th>
<th>PHONE/FAX</th>
<th>CONTACT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>2 yr</td>
<td>Mechanical Solutions 123 Center Street Mesa, Arizona 85215</td>
<td>480-236-2852 480-236-2200</td>
<td>Contact Person</td>
</tr>
<tr>
<td>Air Handling Unit</td>
<td>2 yr</td>
<td>Carrier, Inc. Address City, State</td>
<td>650-236-5500</td>
<td>Contact Person</td>
</tr>
<tr>
<td>Electrical</td>
<td>2 yr</td>
<td>Delta Diversified 123 Center Street Mesa, Arizona 85215</td>
<td>480-236-2852 480-236-2200</td>
<td>Contact Person</td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>2 yr</td>
<td>KPML 123 Center Street Mesa, Arizona 85215</td>
<td>480-236-2852 480-236-2200</td>
<td>Contact Person</td>
</tr>
</tbody>
</table>

END OF SECTION