

COMMISSIONING GUIDE SPECIFICATIONS

SECTION 01730 OPERATIONS AND MAINTENANCE DATA

Spec writer:

The following guide specifications are intended to be reviewed, modified and inserted into the noted specification section to meet the specific commissioning needs and requirements for the current project. Any modifications to these specifications shall only be made after consultation with the Owner's representative and with approval of the engineer of record. Where there are check boxes or fill-in blanks, fill in as appropriate and delete all but the choice(s) that apply. Delete all direction boxes.

In an appropriate Section, alert Division 1 that they will be responsible for additional O&M documentation according to Section 17100.

- A. The commissioning process requires detailed O&M documentation. Division 1 is alerted to the O&M documentation requirements identified in this section, in Section 17100 and other referenced sections.
- B. The commissioning agent's contribution to the O&M manuals is found in Section 17100.

Following are minimum requirements for O&M manuals. This wording or other wording requiring equal or greater detail should be included and merged with the other O&M manual requirements in Division 1. Using the ASHRAE guideline: *Preparation of O&M Documentation for Building Systems*, 1993 is highly recommended.

This is not intended to be the full text for the specification section on O&M manual preparation. Additional parts dealing with submittal and review of the manuals and sections on materials and finishes manuals, etc. must still be covered.

Wording about reviews should take into account the review by the commissioning agent as described in Section 17100.

- C. The ___ GC, ___ A/E shall compile O&M manuals for every piece of equipment and building operating or electrical system with the following format.
 - 1. Quantity: _____
 - 2. Format: 8 ½" x 11" loose leaf binders. Each binder shall be clearly labeled on the spine. Use as many as required. Do not overload binders. There shall be dividers with permanently marked tabs of card stock separating each section and sub section. Tab labels shall not be handwritten.
 - 3. There shall be a title page and table of contents in the front of each binder for each binder's contents. In each binder, there shall be a main tab for each specification section. Behind the section number tab there shall be the equipment ID tag sub-tab for each piece of major

equipment (or group, if small or numerous). These sub-tabs shall be similar to the specification number tabs but of a different color. Behind each equipment name tab shall be the following sections, in the given order, divided by a double weight colored sheet labeled with the title of the section.

- a. Contractor. The first page behind the equipment tab shall contain the name, address and telephone number of the manufacturer and installing contractor and the 24-hour number for emergency service for all equipment in this section, identified by equipment.
- b. Submittal and Product Data. This section shall include all approved submittal data, cut sheets and appropriate shop drawings. If submittal was not required for approval, descriptive product data shall be included.
- c. Operation and Maintenance Instructions. These shall be the written manufacturer's data with the model and features of this installation clearly marked and edited to omit reference to products or data not applicable to this installation. This section shall include data on the following:
 1. Installation, startup and break-in instructions
 2. All starting, normal shutdown, emergency shutdown, manual operation, seasonal changeover and normal operating procedures and data, including any special limitations.
 3. O&M and installation instructions that were shipped with the unit.
 4. Preventative maintenance and service procedures and schedules.
 5. Troubleshooting procedures.
 6. A parts list, edited to omit reference to items which do not apply to this installation.
 7. A list of any special tools required to service or maintain the equipment.
 8. Performance data, ratings and curves.
 9. Warranty, which clearly lists conditions to be maintained to keep warranty in effect and conditions that would affect the validity of the warranty.
 10. Any service contracts issued.
- d. Supplemental Data. Prepare written text and/or special drawings to provide necessary information, where manufacturer's standard printed data is not available and information is necessary for a proper understanding and operation and maintenance of equipment or systems, or where it is necessary to provide additional information to supplement data included in the manual or project documents.
- e. Control Drawings. Include the control drawings for the piece of equipment and its components, including the sequence of operation. This section will be provided by the controls contractor. The drawings will be repeated in the control contractor's O&M submittals.

The above are considered a minimum standard. Items f-i should also be considered.

- f. Specifications. This section is comprised of the component or system specification section copied and inserted complete with all addenda.
- g. System Description. This section shall include the individual equipment portion of the overall system Design Documentation Narrative, if available. It will contain simplified

professionally drawn single line system diagrams on 8 ½ x 11 or 11 x 17 sheets, if the system's control drawing is not adequate.

- h. Preventive Maintenance Instructions. This section shall include condensed typewritten excerpts from the manufacturer's written instructions for weekly, monthly, quarterly, annual, etc. maintenance. This summary shall be prepared by the HVAC mechanical contractor with help from the equipment supplier. It shall be prepared for all items listed under condensed operating instructions (below), plus package, window or through the wall AC units and electric unitary heating equipment.

Below is an Option for (h.)

- h. Preventive Maintenance Instructions. This section shall include a list of the location by O&M document name and page number of the any preventative maintenance instructions applicable to this piece of equipment.

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The following requirement of condensed operating instructions is rarely implemented. Don't include it, unless you really want it, as the commissioning agent will not let it slip by and not be done, if it is specified. If condensed instructions are used, they should be inserted just after the Contractors' listing.

- i. Condensed Operating Instructions. This section shall include condensed instructions for start-up, shut-down, emergency operation, safety precautions, unusual features and troubleshooting suggestions. Where control is clearly covered in controls description, it is not to be duplicated here.
In addition, a copy of these instructions shall be clearly laminated and secured adjacent to the equipment where it can be easily read by operating personnel. These instructions shall be provided for boilers, furnaces, chillers, pumps, heat rejection equipment, large air handling units (greater than 10 tons), heat pump systems, control system, air compressors and dryers.
4. Controls and Test and Balance (TAB) O&M Manuals. The controls contractor and TAB contractor have special O&M manual preparation requirements in Section 15995 that shall be merged with those of this section.
5. Architect and Design Engineers' Contributions. The architect and design engineers have special contributions to the O&M manuals as described in Section 17100.
6. Commissioning Record and Testing Data. There will be a separate manual dedicated to documenting the commissioning process which will include all certifications and testing data and some repeating of O&M data. Description of this manual is found in Section 17100 and shall be prepared by the commissioning agent.

END OF GUIDE SPECIFICATION SECTION