

**SECTION 01730 - OPERATING AND MAINTENANCE DATA**

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## SECTION 01730 - OPERATING AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.01 WORK INCLUDED

- A. Compile product data and related information appropriate for City's maintenance and operation of products furnished under the Contract.
  - 1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- B. Instruct City's personnel in the maintenance of products and in the operation of equipment and systems.

#### 1.02 RELATED REQUIREMENTS

- A. Section 01340, "*Submittals*"
- B. Section 01720, "*Project Record Documents*"
- C. Section 01740, "*Warranties & Bonds*"

#### 1.03 REFERENCE STANDARDS

Not used

#### 1.04 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
  - 1. Trained and experienced in maintenance and operation of the described products.
  - 2. Completely familiar with requirements of this Section.
  - 3. Skilled as a technical writer to the extent required to communicate essential data.
  - 4. Skilled as a drafter competent to prepare required drawings.

#### 1.05 MEASUREMENT AND PAYMENT

Not used

## PART 2 - PRODUCTS

Not used

## PART 3 - EXECUTION

### 3.01 FORM OF SUBMITTAL

- A. Prepare data in the form of an instructional manual for use by City's personnel.
- B. Format:
  - 1. Size: 8-1/2 in. x 11 in.
  - 2. Paper: Twenty pound (20#) minimum, white, for typed pages
  - 3. Text: Manufacturer's printed data, or neatly typewritten
  - 4. Drawings:
    - a. Provide reinforced punched binder tab, bind in with text.
    - b. Fold larger drawing to the size of the text pages.
  - 5. Provide flyleaf for each separate product, or each piece of operating equipment.
    - a. Provide typed description of product, and major component parts of equipment.
    - b. Provide indexed tabs.
  - 6. Cover: Identify each volume with typed or printed Title "OPERATING AND MAINTENANCE INSTRUCTIONS".  
  
List:
    - a. Title of Project.
    - b. Identity of separate structure as applicable.
    - c. Identity of general subject matter covered in the manual.
- C. Binders:
  - 1. Commercial quality three-ring binders with durable and cleanable plastic covers.

### 3.02 CONTENT OF MANUAL

- A. Neatly typed or printed table of contents for each volume, arranged in a systematic order.

1. Contractor, name of responsible principal, address and telephone number.
  2. A list of each product required to be included, indexed to the content of the volume.
  3. List, with each product, the name, address and telephone number of:
    - a. Manufacturer and Supplier
    - b. SubContractor or installer.
    - c. Maintenance Contractor, as appropriate.
    - d. Identify the source of responsibility of each.
    - e. Local source of supply for parts and replacement.
  4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
- B. Product Data:
1. Include only those sheets that are pertinent to the specific product.
  2. Annotate each sheet to:
    - a. Clearly identify the specific product or part installed.
    - b. Clearly identify the data applicable to the installation.
    - c. Delete references to inapplicable information.
- C. Drawings:
1. Supplement product data with drawings as necessary to clearly illustrate:
    - a. Relations of component parts of equipment and systems.
    - b. Control and flow diagrams.
  2. Coordinate drawings with information on Project Record Documents to assure correct illustration of completed installation.
  3. Do not use Project Record Documents as maintenance drawings.
- D. Written text, as required to supplement product data for the particular installation:
1. Organize in a consistent format under separate headings for different procedures.
  2. Provide a logical sequence of instructions for each procedure.

- E. Copy of each warranty, bond and service contract issued.
  - 1. Provide information sheet for City's personnel, give:
    - a. Proper procedures in the event of failure.
    - b. Instances which might affect the validity of warranties or bonds.

### 3.03 MANUAL FOR MATERIALS AND FINISHES

- A. Contents, for architectural products, applied materials and finishes:
  - 1. Manufacturer's data, giving full information on products:
    - a. Catalog number, size, and composition.
    - b. Color and texture designations.
    - c. Information required for re-ordering special manufactured products
  - 2. Instruction for care and maintenance:
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods, which are detrimental to the product.
    - c. Recommended schedule for cleaning and maintenance.
- B. Contents, for moisture-protection and weather-exposed products:
  - 1. Manufacturer's data, giving full information on products.
    - a. Applicable standards.
    - b. Chemical composition.
    - c. Details of installation.
  - 2. Instructions for inspection, maintenance and repair.
- C. Additional requirements for maintenance data: The respective Sections of Specifications.
- D. Provide complete information for finished products or surfaces specified in each Section.

### 3.04 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Contents, for each unit of equipment and system, as appropriate:

1. Description of unit and component parts.
  - a. Function, normal operating characteristics, and limiting conditions.
  - b. Performance curves, engineering data and tests.
  - c. Complete nomenclature and commercial number of all replaceable parts.
2. Operating procedures:
  - a. Start-up, break-in, routine and normal operating instructions.
  - b. Regulation, control, stopping, shutdown and emergency instructions.
  - c. Summer and winter operating instructions.
  - d. Special operating instructions.
3. Maintenance procedures:
  - a. Routine operations.
  - b. Guide to "trouble-shooting".
  - c. Disassembly, repair and reassembly.
  - d. Alignment, adjusting and checking.
4. Servicing and lubricating schedule.
  - a. List of lubricants required.
5. Manufacturer's printed operating and maintenance instructions.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
  - a. Predicted life of parts subject to wear.
  - b. Items recommended to be stocked as spare parts, including recommended quantities to be maintained in storage.
8. As installed color-coded piping diagrams.
9. Each 's coordination drawings.
  - a. As-installed color-coded piping diagrams.
10. Charts of valve tag numbers, with the location and function of each valve.

11. Other data as required under pertinent Sections of Specifications.
- B. Contents, for each electric and electronic system, as appropriate:
1. Description of system and component parts.
    - a. Function, normal operating characteristics, and limiting conditions.
    - b. Performance curves, engineering data and test.
    - c. Complete nomenclature and commercial number of replaceable parts.
  2. Circuit directories of panel boards.
    - a. Electrical service
    - b. Controls
    - c. Communications
  3. As-installed color-coded wiring diagrams.
  4. Operating procedures:
    - a. Routine and normal operating instructions
    - b. Sequences required
    - c. Special operating instructions
  5. Maintenance Procedures:
    - a. Routine operations
    - b. Guide to "Trouble-Shooting"
    - c. Disassembly, repair and reassembly
    - d. Adjustment and checking
  6. Manufacturer's printed operating and maintenance instructions.
  7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
  8. Other data as required under pertinent Sections of Specifications.
- C. Prepare and include additional data when the need for such data becomes apparent during instruction of City's personnel.

- D. Additional requirements for operating and maintenance data under pertinent sections of Specifications.
- E. Provide complete information for operating products and equipment specified in each Section, including security hardware.

### 3.05 SUBMITTAL SCHEDULE

- A. Submit a minimum of three (3) copies of completed data in final form fifteen (15) working days prior to inspection for substantial completion.
- B. The City will review the final operating and maintenance manual and other required submittals for completeness. The City will return one (1) set of the submittals with comments. The Contractor shall make modifications and the required corrections and resubmit a minimum of five (5) copies of the acceptable data in final form within ten (10) working days after receipt of the City's comments. Once the manual has been approved the Contract Closeout proceedings can be completed.

### 3.06 INSTRUCTION OF CITY'S PERSONNEL

- A. Prior to the City's final inspection, provide one (1) full day of instruction (in addition to the number of days specified in other Sections of these Specifications) of the City's designated operating and maintenance personnel in the operation, adjustment and maintenance of all products, equipment and systems.
- B. Operating and maintenance manual shall constitute the basis
  - 1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

End of Section