

SECTION 01730

OPERATION AND MAINTENANCE DATA

PART I - GENERAL

1.01 DESCRIPTION OF WORK

- A. Work Included: Preparation of manuals to aid the operating and maintenance personnel and to provide a definitive source of information regarding the products incorporated into the Work. Two separate Manuals are to be furnished: Manual One will contain all design and warranty information. Manual Two will contain actual operational and maintenance information with manuals, etc. Furnish and deliver the data described in this Section and in pertinent other Sections of these Specifications.

1.02 RELATED REQUIREMENTS

- A. All General Conditions, Supplements to General Conditions, any Addenda issued by the Architects are a part of this Section in the same manner as if fully written herein, and shall govern the Work of this Section, except where more stringent articles or requirements are stipulated they shall govern this Section.
- B. The Contract Documents are complementary and what is required by any one shall be as binding as if required by all.
- C. Section 01740 – Warranties and Guarantees

1.03 QUALITY ASSURANCE

- A. In preparing data required by this Section, use only personnel who are thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with the requirements of this Section, and skilled in technical writing to the extent needed for communicating the essential data.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Submit two (2) copies of a preliminary draft, complete with suppliers, subcontractors, and indexes of the proposed Manual(s) to the Architect for review and comments at least 60 days prior to anticipated substantial completion date.

1. Architect will review draft and return one (1) copy with comments. Revise content of documents as required prior to final submittal.
- C. For equipment or component parts of equipment put into service during construction and operated by owner, submit documents within fifteen (15) days after acceptance.
- D. Submit two (2) copies of revised volumes of data in final form within ten (10) days after final inspection.

PART II - PRODUCTS

2.01 FORMAT: EACH MANUAL

- A. Where instruction Manuals are required to be submitted under other Sections of these Specifications, prepare in accordance with the provisions of this Section.

Format:

1. Size: 8-1/2" x 11", 3" thick (max) Binders
2. Paper: White bond, at least 20-lb. weight.
3. Text: Neatly written or printed.
4. Drawings: 11" in height preferable; bind in with text; foldout acceptable; larger drawings acceptable, but fold to fit within the Manual and provide a drawing pocket inside rear cover or bind in with text. Provide with reinforced punched binder tabs.
5. Flysheets: Separate each portion of the Manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets shall be in color.
6. Binding: Use White, 3-ring binders with plastic covers suitable for inserting covers and end pieces indentifying the manual. Binders are subject to the Architect's approval.
7. Measurements: Provide all measurements in U.S. standard units such as feet and inches, lbs. and cfm;

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where items may be expected to be measured within ten (10) years in accordance with metric formula, provide additional measurements in "International System of Units" (SI).

- B. Provide front and end covers for each Manual, using durable material approved by the Architect, and clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS
VOLUME NUMBER (XX)
()
(Name and Address of Work)
()
(Name of Contractor)
()
(General Subject of this Manual)
()

(Space for Approval Signature of the Architect and Approval Date)

2.02 CONTENTS: EACH MANUAL

- A. Provide a tabbed and indexed 3 ring binder with cover inserts on front and sides. Each volume shall consist of a cover page, Table of Contents, supplier index, and appropriate sections indexed by specification number.
- B. Cover Page: provide title of Project; names, addresses and telephone numbers of Architect, Engineers and Contractor with name of responsible parties.
- C. Table of Contents: Provide listing of supplied information by specification section; list section #; name; supplier or subcontractors name; address; phone numbers; and responsible individual.
- D. Supplier Index: Alphabetically list names, addresses and telephone numbers of Subcontractors and Suppliers including those specification sections applicable to their work.

- E. Products and Information: Mark each sheet to clearly identify specific products, component parts, and data applicable to installation; delete inapplicable information. Organize by tabbed specification number.
- F. Drawings: Supplement product information where necessary to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- G. Warranties and Bonds: Provide original documents in accordance with other specification sections.

2.03 MANUAL FOR DESIGN AND WARRANTY INFORMATION

- A. This manual contains information pertaining to the materials and finishes used in the building and the related warranties and guarantees. It will be used by the owner to help repair, restore, and/or maintain the facility.
- B. Provide a manual section noting all building areas or components and their related materials, colors, and/or finishes indexed by specification sections. Specification sections shall include product data with catalog numbers, size, composition and color and texture designations. Provide all necessary information for reordering or replacing manufactured products.
- C. Instructions for Care and Maintenance: The manual shall include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents, and methods and recommended schedule for cleaning, maintenance and repair.
- D. Additional Requirements: As specified in individual Specification Sections. Note that the requirements of Section 01740 are to be integrated into this manual, indexed by specification section.

.2.04 MANUAL FOR OPERATIONS AND MAINTENANCE

- A. This manual includes information pertaining to the operation of major components and systems. Include description of unit or system and component parts. Give function, normal operating characteristics and limiting conditions. Include performance curves with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
 - 1. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.

2. Include as-installed color-coded wiring diagrams.
- B. Operating Procedures: Include start-up, break-in and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown and emergency instructions. Include summer, winter and any special operating instructions.
- C. Maintenance Requirements: Include routine procedures and guide for troubleshooting; disassembly, repair and reassembly instructions; and alignment, adjusting, balancing and checking instructions.
1. Provide servicing and lubrication schedule and list of lubricants required.
 2. Include manufacturer's printed operation and maintenance instructions.
 3. Include sequence of operation by controls manufacturer.
 4. Provide original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
- D. Provide as-installed control diagrams by controls manufacturer.
- E. Provide Contractor's coordination drawings with as-installed color-coded piping or wiring diagrams.
- F. Provide charts of valve tag numbers with location and function of each valve clearly keyed to describe flow line and control diagrams.
- G. Provide list of original manufacturer's spare parts, current prices and recommended quantities to be maintained in storage.
- H. Include test and balancing reports.

PART III - EXECUTION

3.01 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment and maintenance of products, equipment and systems at agreed-upon times. For equipment requiring seasonal operation, perform instructions for other seasons within six (6) months.
1. Provide a minimum of four (4) hours of instruction for each system. This instruction shall be video taped and given to the owner in a

DVD format included in the O & M manual.

2. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
3. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
4. Prepare letter of completion to be signed by owner stating that instruction and review has been satisfactorily completed. Include this letter in Equipment Manual before submittal.

3.02 REVISIONS

- A. Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the Architect.

3.03 FINAL

- A. Complete the Manuals in strict accordance with the approved preliminary drafts and the Architect's review comments.
- B. Submit two (2) copies of revised volumes of data in final form within thirty (30) days after substantial completion.
- C. Approval of the Manuals is a prerequisite to Final Completion.

END OF SECTION