

SECTION 01730**OPERATIONS AND MAINTENANCE DATA****PART 1 GENERAL****1.01 SUMMARY**

- A. This Section includes requirements for operation and maintenance data and manuals.

1.02 RELATED SECTIONS

- A. Section 01300 – Submittals
- B. Section 01400 – Quality Control Testing

1.03 CODES AND STANDARDS

- A. Conform to reference standards listed in the Contract Documents current on the bid opening date.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300 – Submittals:

- 1. Draft Submittals For Comments:

- a. Provide for review and comment seven (7) sets of Vendor Operations and Maintenance Manuals covering all equipment.
- b. Provide draft submittals at least ninety (90) days prior to the scheduled commencement of Functional Testing.
- c. Along with the draft copy, the Vendor shall submit a completed MWRA Operations and Maintenance Manual Review Checklist Sheet (Form 01730A-1 in Attachment A of this Section).

- 2. Final Submittal:

- a. Once all comments have been addressed, combine and consolidate the individual Vendor Operations & Maintenance Manuals into the Final Operations and Maintenance Manual for the Work of this Contract.
- b. Provide seven (7) Final Operations and Maintenance Manuals. Once consolidated, submit as volumes.

- c. Include one (1) set of Redline Drawings at the end of each of the seven (7) Final Operations and Maintenance Manuals.

1.05 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 – Quality Control Testing.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

1.11 OPERATIONS AND MAINTENANCE MANUAL FORMAT

- A. Divide each manual into Sections separated by a tabbed flyleaf. Identify each Section by a tab stating the tab number and name. If a certain Section is not applicable to the piece of equipment, still provide a tab and an insert which states, "THIS PAGE INTENTIONALLY LEFT BLANK".
 1. PROJECT COVER SHEET: List the following information on the Project cover sheet: Contract name, Contract number, name of document, the names, addresses, telephone and fax numbers, and internet web addresses for the Design Engineer, Manufacturer, the Contractor, and Local Representative or Supplier.
 2. TAB 1: TABLE OF CONTENTS
 3. TAB 2: PROJECT-SPECIFIC SHEET(S): For each piece of equipment, provide a list which outlines the following: equipment name, quantity provided, Manufacturer, model number, size or capacity. In addition, include a paragraph that describes the system or unit and its function as it relates to the project specifically.
 4. TAB 3: PRODUCT DATA: Provide specification sheets for each product or component. Delete (cross-out) inapplicable information. This Section shall discuss the following information (when applicable):
 - a. Routine normal operating procedures.
 - b. Normal operating characteristics and ranges.
 - c. Trouble-shooting guide.

- d. Shutdown, disassembly, repair, reassembly, and startup instructions.
 - e. Alignment, adjusting, balancing and checking instructions.
 - f. Inspection and maintenance frequency table.
 - g. Special operating instructions (i.e., under certain flows, temperatures, seasons).
 - h. Cleaning, including recommendations for cleaning agents and methods, precautions against detrimental agents, and schedule for cleaning.
 - i. Care instructions for moisture protection and weather exposed products.
 - j. Product illustrations and diagrams with text boxes.
 - k. Calibration procedures.
 - l. Lubrication schedule and list of lubricants required.
 - m. Safety Data Sheets.
 - n. Valve turn count information.
 - o. Charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - p. The Contractor's coordination drawings, with color-coded piping diagrams as installed.
5. TAB 4: PARTS LIST: Provide a list of all parts associated with the piece of equipment or unit. Include a catalog or reorder number for each piece of equipment.
6. TAB 5: SPARE PARTS LIST: Provide a list of spare parts that have been delivered to the Authority. In addition, provide a second list that highlights the recommended quantities to be maintained in storage. Include current prices.

1.12 MATERIAL

A. Draft Submittals:

- 1. Binders are not required for draft submittals.
- 2. Page size, 8 1/2-inch by 11-inch.
- 3. Diagrams, illustrations, and attached foldouts of original quality, reproduced by dry copy method.

B. Final Submittals:

1. Place each volume into a binder. The binders shall be commercial quality for 8 1/2-inch by 11-inch sheet size, three-ring binders with hardback, cleanable, plastic overlay on front, spine and back cover, 2-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
 - a. The Final Operations and Maintenance Manual shall contain appendices and testing reports from startup.
2. Cover and spine: Identify each binder cover and spine with typed or printed title: Massachusetts Water Resources Authority; Contract Number; Contract Title; Operations and Maintenance Manual; facility (as applicable); and identify subject matter of contents. Situate the spine text vertically, read top to bottom, not left to right.
3. Provide a tabbed flyleaf for each Specification Section number. Include the tabbed flyleaves from the draft manuals.
4. Provide a Table of Contents at the beginning of each binder or volume.
5. Each Final Operations and Maintenance Manual shall have text, drawings, and illustrations that are of original quality (first print).
6. Provide a copy of the Final Operations & Maintenance Manual on a CD or DVD.

PART 2 PRODUCTS (NOT USED)**PART 3 EXECUTION (NOT USED)****PART 4 ATTACHMENTS****4.01 ATTACHMENT 01730 – A – OPERATIONS AND MAINTENANCE MANUAL REVIEW CHECKLIST**

Attachment 01730 – A**OPERATIONS AND MAINTENANCE MANUAL REVIEW CHECKLIST**

MASSACHUSETTS WATER RESOURCES AUTHORITY		CONTRACT NO.:
PROJECT:		
Equipment:		
Specification Section:		
Equipment Transmittal No.:		
O&M Manual Transmittal No.:		
1.	Correct number of copies of Operations and Maintenance Manual supplied	
2.	General	
	a. Manual customized	
	b. Manual contains information on complete system (design, installation, operation and maintenance instructions)	
	c. All material contained in manual is legible	
	d. Permanent binder and labeled	
	e. Index	
3.	Contact Information	
	a. Name, address, and telephone number of manufacturer	
	b. Name, address, and telephone number of nearest source of replacement parts and service	
4.	Equipment Information	
	a. Equipment drawings, schematics, plates, and layouts	
	b. Equipment performance curves	
	c. Lubrication schedule	
	d. Maintenance schedule	
	e. Trouble shooting guide	
	f. Parts list (part manufacturer, catalog number, etc.)	
	g. Current parts costs	
	h. Recommended spare parts	
	i. Special tools required	
Remarks:		

**** END OF SECTION ****