ARTICLE 18 – OPERATIONS AND MAINTENANCE DATA

Section 18.01. Qualified Personnel.
The Contractor shall insure that personnel experienced in maintenance and operation of described products prepare instructions and data.

Section 18.02. Format and Required Information for Instructions and Data.
Unless otherwise provided in the Special Provisions, the Contractor shall prepare data in the form of an instructional manual (Operations and Maintenance Manual) including, at a minimum, the following information:

- Drawings
- Illustrations
- Parts lists
- Wiring diagrams of systems
- Internal wiring diagrams and circuit board schematics and layout drawings
- Manufacturer's recommended spare parts lists
- Name, address and phone number of nearest parts and service agency
- Systems balance data
- Maintenance and service instructions
- Operation instructions
- Software including annotated source lists and programs

The date shall be presented to the following standards:

A. Binders: Commercial quality, 8 and one-half inch by eleven inch (8.5" x 11") three-ring binders with hardback, cleanable, plastic covers; four inch (4") maximum rings size; when multiple binders are used, correlate data into related construction groupings.

B. Cover: Identify each binder with typed or printed title "OPERATION AND MAINTENANCE INSTRUCTIONS"; list title of Project; identify subject matter of contents.

C. Arrangement: Arrange content by systems, under specification section numbers; provide tabbed section divider for each separate product and system, with typed description of product and major component parts of equipment.

D. Text: Manufacturer's printed data, or typewritten data on 20-pound paper as required to supplement product data. Provide logical sequence of instruction for each procedure, incorporating manufacturer's instructions.

E. Drawings:

1. Provide with reinforced punched binder tab.

2. Bind in with text; fold larger drawings to size of text pages.

3. Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

4. DO NOT use Project Record Documents as maintenance drawings.

F. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of design consultants and Contractor with name(s) of responsible parties; schedule of products and systems, indexed to content of volume.

G. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

H. Product Data: Mark each sheet to clearly identify specific products, component parts and data applicable to installation; delete inapplicable information.

I. Warranties: Bind in copy of each.

Section 18.03. Additional Information.
In addition to the requirement to submit additional information as set forth in Section 18.04, the Contractor shall provide the following additional information:

A. Instructions for Care and Maintenance to include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

B. Operating procedures for equipment and systems to include start-up, break-in, routing and normal operating instructions and sequences; include regulation, control, stopping, shut-down, and emergency instructions; include summer, winter, and any special operating instructions.

C. Maintenance requirements to include routing procedures and guide for trouble-shooting; disassembly, repair and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

Section 18.04. Training.
Before final inspection, the Contractor shall instruct the City'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.

The Contractor shall instruct City personnel using the Operations and Maintenance Manuals as the basis for instruction and shall review the contents of the Manuals with City personnel in detail to explain all aspects of operation and maintenance.

The Contractor shall prepare and insert additional data in Operations and Maintenance Manuals when the need for such data becomes apparent during instruction.

Section 18.05. Submission of the Operations and Maintenance Manuals.

The Contractor shall submit two copies of preliminary draft Operations and Maintenance Manuals for review by the City as soon as possible.

The Contractor shall submit one copy of completed Operations and Maintenance Manuals in final form fifteen (15) Calendar Days prior to final inspection. The copy will be returned after final inspection with the City's comments. The Contractor shall review the content of the Operations and Maintenance Manuals as required prior to final submittal to the City.

The Contractor shall submit two copies of revised Operations and Maintenance Manuals in final form within ten (10) Calendar Days after final inspection.