

## **SECTION 01 70 00 – CLOSEOUT REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
  - 1. Systems Demonstration and Training
  - 2. Operation and Maintenance Manuals.
  - 3. As-Built Drawings.
  - 4. Attic Stock.
  - 5. Valve Charts and One-Line Diagrams.
  - 6. Guarantees and Warranties.

#### **1.2 SYSTEMS DEMONSTRATION AND TRAINING**

- A. Demonstrate operation and maintenance of all equipment and systems to the College's personnel two weeks prior to the date of substantial completion and one month after Substantial Completion. Allow for two (2) training and demonstration sessions at each time before/after Substantial Completion. There shall be no minimum time established for each training and demonstration session.
- B. Demonstrate start-up, operation, control, adjustment, trouble shooting, servicing, maintenance, and shutdown of each piece of equipment and system during the training and demonstration session.
- C. In addition to above, for equipment and systems requiring seasonal operation, provide an additional two training and demonstration sessions for each season change.
- D. All demonstration and training is to be provided by a manufacturer's representative of the equipment and system. Onsite superintendent's and/or foremen are not acceptable for this requirement.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with the College's personnel in detail to explain all aspects of operation and maintenance.
- F. The demonstration and maintenance instruction is to be digitally recorded by the Contractor with three DVD copies being provided to the College.

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### **1.3 OPERATION AND MAINTENANCE MANUALS**

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products. Final payment will not be processed until submitted and approved. A total of four (4) copies and an electronic version on CD are to be submitted.
- B. Prepare data in the form of an instructional manual.
- C. Binders are to be commercial quality, 8-1/2 x 11 inch three ring binders with durable plastic covers. When multiple binders are used, correlate data into related consistent groupings.
  - 1. Identify each binder with typed or printed title “Operation and Maintenance Instructions”, identify the project, identify subject matter of contents.
  - 2. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
  - 3. Arrange content by systems under section numbers and sequence table of contents of the project manuals.
  - 4. Manuals are to include the following information:
    - a) Subcontractor and suppliers names, addresses, and phone numbers
    - b) Significant design data
    - c) List of equipment
    - d) Parts list for each component
    - e) Operating instructions
    - f) Maintenance instructions for equipment and systems
    - g) Maintenance instructions for special finishes, included recommended cleaning methods and materials, and special precautions identifying detrimental agents
    - h) Shop drawings and product data
    - i) Warranties

### **1.4 AS-BUILT DRAWINGS**

- A. The Contractor shall maintain a clean, undamaged set of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  - 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
  - 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

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3. Note related Change Order numbers where applicable.
  4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
  5. All utilities outside the building shall be located by a survey performed by a licensed surveyor who shall certify as to its accuracy.
- B. The Contractor shall submit three (3) color copies of these documents to the Construction Manager, whether altered or not, with a certification as to the accuracy of the information thereon at the time of contract completion before final payment is made to the Contractor.

### **1.5 ATTIC STOCK**

- A. The Contractor shall provide and deliver all attic stock specified in the Contract Documents to a location designated by the College. The Contractor shall provide the following attic stock at a minimum if not specified elsewhere in the Contract Documents:
1. Unopened 5-gallon container of each paint color used
  2. Five (5) unopened boxes of each vinyl composition tile and resilient tile used
  3. Five (5) unopened boxes of each floor base used
  4. Five (5) unopened boxes of each carpet tile used
  5. One (1) complete roll of each resilient sheet flooring used
  6. Sprinkler box with additional heads and tools
  7. Two (2) faucets for each type installed
  8. Two (2) flushometer for each type installed
  9. One set of replacement belts for each piece of equipment
  10. One set of replacement seal kits for each pump
  11. Two (2) sets of replacement filters for each piece of equipment
- B. Should there be a conflict between the above and elsewhere in the Contract Documents, the largest quantity shall be supplied by the Contractor.

### **1.6 VALVE CHARTS AND ONE-LINE DIAGRAMS**

- A. The Contractor shall prepare a complete set of typewritten control valve and circuit location diagrams, charts, diagrams and lists under frame glass in appropriate designated equipment rooms. The Contractor

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shall also furnish one-line diagrams, as well as such color coding of piping and wiring and identifying charges as specified or required. This information to be framed under glass and installed where directed.

### **1.7 GUARANTEES AND WARRANTIES**

- A. All guarantees and warranties required by the Specifications shall be in writing in requisite legal form and delivered to the Construction Manager. All Subcontractor's guarantees and warranties shall be underwritten by the Contractor, who shall obtain and deliver same to the Construction Manager before the Work shall be deemed finished and accepted.

**- END OF SECTION 01 70 00 -**