

^{A16}**SECTION 01 78 23 – OPERATIONS DATA**

1.01 SUMMARY: This Section identifies the data to be provided by the Contractor to allow the Employer, after issuance of the Taking-Over Certificate, to operate the Atlantic Lock and the Pacific Lock complexes in an efficient, effective and safe manner.

1.02 REFERENCES:

A. Autoridad del Canal de Panamá (ACP) Publications:

Manual de Seguridad y Salud Ocupacional (2000)

Manual de Seguridad de la División de Esclusas (2004)

1.03 REQUIREMENTS:

A. Systems Operations Data: ^{A17}The data to be provided by the Contractor shall be for operating the following systems including subsystems, equipment, machinery, apparatus, components, and related accessories:^{A17}

1. Filling and emptying systems (including, trash screens, culverts, conduits, ports, and water-saving basins; culvert and conduit valves and their operating machinery, seals, dewatering bulkheads, and other ancillary equipment);
2. Lock systems (including lock chambers, headgates, lock gate trackways and bearings, and lock wall appurtenances);
3. Lock gate systems (including gates, rolling wagons, operating machinery, seals, and other ancillary equipment);
4. Control systems;
5. Electrical systems;
6. Lighting systems;
7. Foam/Water fire-fighting systems;
8. Bridgeways;
9. Lock gate recess closures;
10. Communication systems;
11. Culvert and chamber dewatering system including pumps and maintenance closures system;
12. Other systems designed and installed by the Contractor.

B. OPERATIONS DATA PACKAGE REQUIREMENTS: The Contractor shall submit an Operations data package for each system listed in Paragraph 1.03 A, as specified in this Section. The submittal of Operations data packages shall be in accordance with the requirements in this Section, Section 01 33 00 (*Submittal Procedures*), and Clause 5.7

(*Operation and Maintenance Manuals*) of the Conditions of Contract. The Operations data package shall include as a minimum:

1. **Systems Description:** Each data package shall include a complete and concise description of the system, including subsystems, equipment, apparatus, components, materials, and related accessories, explaining system interactions, and operation requirements. The Contractor shall organize and present the information in sufficient detail to clearly explain Operations requirements and system limitations.
2. **System Operations Manual:** The data package shall include for each system, an Operations manual including complete information that operators need to be familiar with, and specific operating instructions with illustrations for the operation of the system. The manual shall include as a minimum:
 - a. **Environmental Conditions:** Include a list of environmental conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component, or system. Describe conditions under which the item or equipment should not be allowed to run.
 - b. **Safety Precautions:** List personnel hazards and equipment or product safety precautions for all operating conditions.
 - c. **Operator Pre-Start Procedures:** Include procedures required to install, set up, and prepare each system for use.
 - d. **Startup, Shutdown, and Post-Shutdown Procedures:** Provide narrative description for startup, shutdown, and post-shutdown operating procedures including the control sequence for each procedure.
 - e. **Normal Operations:** Provide detailed normal operating procedures and a narrative explaining automatic actions that follow each step. Include control diagrams with data to explain operation and control of systems and specific equipment. Explain the interrelation between systems, the interlocks, and measures to prevent undesired accidental conditions.
 - f. **Emergency Operations:** Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including automatic and manual controls.
3. **Contractor and OEM Data:** The data package shall include Operations data obtained by the Contractor from Subcontractors and Original Equipment Manufacturers.
4. **Additional Operations Data:** The Contractor shall provide information identified below and all information pertinent to the operation of the systems:

- a. **Product Submittal Data:** The data package shall include a copy of all product-data submittals required in the applicable Sections of the Employer's Requirements.
- b. **Environmental Impact:** The Contractor shall include potential environmental and indoor air quality impact data for recommended operation procedures.
- c. **Record of Materials:** The Contractor shall furnish an as-built record of Materials. ^{A17}Where several manufacturers' brands, types, or classes of the item listed have been used in the Works, the Contractor shall designate specific areas where each item was used.^{A17} Designations shall be keyed to the areas and spaces depicted on the drawings. The Contractor shall submit the as-built record of Materials using the format presented in Table No. 1, included at the end of this Section.
- d. **Equipment List:** The data package shall include for each system and subsystem, a list of all equipment, apparatus, component and related accessories that are part of the system. The list shall be submitted using the format presented in Table No. 2, included at the end of this Section. The equipment designation shall be consistent with the designations used in the field and in the softwares.
- e. **Personnel Training Requirements:** The data package shall include information available from the original equipment manufacturers, for use in training designated Employer's Personnel to properly operate the equipment and systems. Training requirements are specified in the respective particular Sections.
- f. **Contractor Information:** The data package shall include for each system, subsystem, equipment, apparatus, component, materials and related accessories, provide a list that includes the name, address, email, and telephone number of the designer and the name, address, email, and telephone number of the Contractor or Subcontractor who installed the product, equipment, or system. For each item, also provide the name, address, email, and telephone number of the manufacturer's representative and service organization that can provide assistance to operators. Provide the name, address, email, and telephone number of product, equipment, and system manufacturers.

1.04 TABLES

TABLE NO. 1: AS-BUILT RECORD OF MATERIALS				
MATERIAL DESIGNATION (MANUFACTURER'S DESIGNATION)	EMPLOYER'S REQUIREMENTS SECTION	MANUFACTURER	MATERIALS USED	LOCATION

TABLE NO. 2: EQUIPMENT LIST					
EQUIPMENT (DESIGNATION)	MANUFACTURER	MODEL	SERIAL NO.	DESCRIPTION AND/OR CAPACITY	PRICE

END OF SECTION^{A16}

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