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USACE / CESAJ

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DEPARTMENT OF THE ARMY
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JACKSONVILLE DISTRICT LOCAL MASTER GUIDE SPECIFICATION

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SECTION 01781

OPERATION AND MAINTENANCE DATA
05/02

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NOTE: This guide specification covers submittal requirements for Data Packages necessary to form the basis for preparation of facility Operating and Maintenance Support Information (OMSI) Manual. The prefinal OMSI Manuals should be complete 30 to 60 days before construction acceptance/beneficial occupancy and will be used for operation and maintenance of the facility pending final OMSI completion (approximately 6 months after beneficial occupancy).

Comments and suggestions are welcome. Using e-mail for feedback is encouraged. Comments should be directed to:

Engineering Division, Design Branch, Specifications Section.

ALL COMMENTS RECEIVED WILL BE DISSEMINATED TO THE PROPER OFFICE FOR RESPONSE.
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PART 1 GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

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NOTE: The provisions of this Section apply only to those items requiring operation and maintenance by the Technical Sections. The Technical Sections should include a paragraph entitled "SD-10 Operation and Maintenance Data", stating: "Submit Operation and Maintenance Data in accordance with Section 01781 OPERATION AND MAINTENANCE DATA, Data Package (1) (2) (3) (4) (5)." Operation, maintenance, and repair requirements peculiar to certain equipment

shall also be specified in the pertinent Technical Sections.
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Submit Operation and Maintenance (O&M) Data/Manuals specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this Section and Section 01330 SUBMITTAL PROCEDURES.

1.1.1 Quantity

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NOTE: Select appropriate reference.
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Submit [nine] [ ] copies and [one] [ ] reproducible original[s] for total of [ten] [ ] copies of the supplier/manufacturers' O&M information specified herein for the components, assemblies, subassemblies, attachments, and accessories. The items for which O&M Data/Manuals are required are listed in the Technical Sections which specifies those particular items.

1.1.2 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.3 Package Content

Data package content shall be as shown in the paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES below. Comply with the data package requirements specified in the individual Technical Sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

1.1.4 Delivery

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NOTE: Select appropriate choice in subparagraph below. REMEMBER TO DELETE BRACKETS.
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Submit O&M Data Manuals to the Contracting Officer for review and acceptance; submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.

a. In the event the Contractor fails to deliver O&M Data/Manuals within the time limits set forth above, the Contracting Officer may withhold from progress payments [the retained percentage for the contract in accordance with Clause PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of Section 00700 CONTRACT CLAUSES.] [50 percent of the price of the item with which such O&M Data/Manuals are associated.]

1.1.5 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

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NOTE: O&M Data needed for any product, system, or piece of equipment depends upon the complexity of that item. The types of O&M Data, defined below, are grouped into Data Packages in the paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES below. The Data Package numbers, in turn, appear in the Technical Guide Specifications.

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1.2.1 Operating Instructions

Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 Operator Prestart

Include procedures required to set up and prepare each system for use.

1.2.1.3 Startup, Shutdown, and Postshutdown Procedures

Provide narrative description for startup, shutdown, and postshutdown operating procedures including the control sequence for each.

1.2.1.4 Normal Operations

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 Emergency Operations

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shutdown the equipment to prevent further damage to system 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 required valve positions, valve locations and zones or portions of systems controlled.

1.2.1.6 Operator Service Requirements

Include instructions for services to be performed by the operator such as

lubrication, adjustment, inspection, and recording gage readings.

1.2.1.7 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 of equipment should not be allowed to run.

1.2.2 Preventive Maintenance

Include the following information for preventative and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 Lubrication Data

Include preventative maintenance lubrication data, in addition to instructions for lubrication in accordance with subparagraph "Operator Service Requirements" above:

a. A table showing recommended lubricants for specific temperature ranges and applications.

b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.

c. A Lubrication Schedule showing service interval frequency.

1.2.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 Corrective Maintenance (Repair)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.2.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to

actual installation numbering.

1.2.3.3 Maintenance and Repair Procedures

Include instructions and a list tools required to repair or restore the product or equipment to proper condition or operating standards.

1.2.3.4 Removal and Replacement Instructions

Include step-by-step procedures and a list of required tools and supplies for removal, replacement, disassembly and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.2.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Parts lists shall include the identifications, nomenclature, part numbers, required number of parts, recommended list of spare parts to be stocked at the project, and actual spare parts supplied. All data shall match the actual equipment furnished, and standard catalog sheets, cuts, and diagrams will not be acceptable unless all irrelevant parts are marked out and relevant parts are identified by heavy arrows at each side of the applicable data. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.

1.2.3.6 Corrective Maintenance Work-Hours

Include manufacturer's projection of corrective maintenance work-hours including requirements by type of craft. Corrective maintenance that requires completion or participation of the equipment manufacturer shall be identified and tabulated separately.

1.2.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.2.4.1 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog.

1.2.4.2 Warranty Information

List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

1.2.4.3 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.2.4.4 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.2.4.5 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name, address, and telephone number of the manufacturer's representatives and service organization most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.3 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

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NOTE: The type of O&M data needed for any product, system, or piece of equipment depends upon the complexity of that item. Normally the "Data Package" number will appear in the Technical Guide Specification. If not, the specifier shall include the appropriate Data Package number in the Technical Section; the Data Package Number shall be selected from the choices 1 through 5 below. Custom or other non-SpecsIntact-based technical specifications may be missing the Data Package numbers.

Data Package 1 would typically be used for architectural items requiring simple but specific maintenance and replacement; for example, acoustical ceiling, floor tile or carpeting system.

Data Package 2 would be used for an item that is less simple; for example, an item having a motor and some sequence of operation such as a refrigerated drinking fountain.

Data Package 3 would be used for a complex piece of equipment, having a specific troubleshooting sequence, but one which does not require an operator on watch; for example, HVAC temperature controls.

Data Package 4 would be used for an extremely complex piece of equipment, having an extensive sequence of operation, a complex troubleshooting sequence and one requiring frequent operator attention; at least for startup and shutdown. Examples of this case would be small boilers and small diesel generator sets.

Finally, Data Package 5 would be used for electrical equipment, components or systems on which, wiring and control diagrams are needed for operation, maintenance or repair. Examples of this case are 400 Hz frequency converters, annunciator panels and cathodic protection systems.

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Furnish the O&M Data Package specified in individual Technical Sections. The required information for each O&M Data Package is as follows:

1.3.1 Data Package 1

a. Safety precautions

b. Maintenance and repair procedures

c. Warranty information

d. Contractor information

e. Spare parts and supply list

1.3.2 Data Package 2

a. Safety precautions

b. Normal operations

c. Environmental conditions

d. Lubrication data

e. Preventive maintenance plan and schedule

f. Maintenance and repair procedures

g. Removal and replacement instructions

h. Spare parts and supply list

i. Parts identification

j. Warranty information

k. Contractor information

1.3.3 Data Package 3

a. Safety precautions

b. Normal operations

c. Emergency operations

d. Environmental conditions

e. Lubrication data

f. Preventive maintenance plan and schedule

g. Troubleshooting guides and diagnostic techniques

h. Wiring diagrams and control diagrams

i. Maintenance and repair procedures

j. Removal and replacement instructions

k. Spare parts and supply list

l. Parts identification

m. Warranty information

n. Testing equipment and special tool information

o. Contractor information

1.3.4 Data Package 4

a. Safety precautions

b. Operator prestart

c. Startup, shutdown, and postshutdown procedure

d. Normal operations

e. Emergency operations

f. Operator service requirements

g. Environmental conditions

h. Lubrication data

i. Preventive maintenance plan and schedule

j. Troubleshooting guides and diagnostic techniques

k. Wiring diagrams and control diagrams

l. Maintenance and repair procedures

m. Removal and replacement instructions

n. Spare parts and supply list

o. Corrective maintenance man-hours

p. Parts identification

q. Warranty information

r. Personnel training requirements

s. Testing equipment and special tool information

t. Contractor information

1.3.5 Data Package 5

a. Safety precautions

b. Operator prestart

c. Startup, shutdown, and postshutdown procedures

d. Normal operations

e. Environmental conditions

f. Preventive maintenance plan and schedule

g. Troubleshooting guides and diagnostic techniques

h. Wiring and control diagrams

i. Maintenance and repair procedures

j. Spare parts and supply list

k. Testing equipments and special tools

l. Warranty information

m. Contractor information

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 DATA PACKAGE SUBMITTALS

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NOTE: The items below are typical and shown FOR INFORMATION ONLY as to content needed and applicable Technical Section used; edit accordingly.
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The following O&M Manuals shall be furnished for the identified Data Packages, in addition to the requirements specified in Technical Section of the specifications. The O&M Manuals not listed here shall be furnished as required under each Technical Section of the specifications.

Item	Data Package

Overhead Rolling Service Door (Per Section 08330A OVERHEAD ROLLING DOORS)	3
Diesel-Generator Set (Per Section 16263A DIESEL-GENERATOR SET STATIONARY 100-2500 KW, WITH AUXILIARIES)	4
30-Ton Bridge Crane (Per Section 14601A CRANES, BRIDGE AND GANTRY, TOP RUNNING 30-TON MAXIMUM CAPACITY)	4
Automatic Trash Raking System (Per Section 14620 TRASH RAKE)	4
Air Exhaust System (Per Section 15210 MISCELLANEOUS MECHANICAL)	3
Station Annunciator (Per Section 16050 ELECTRICAL EQUIPMENT AND WORK)	3
Water Level Sensors (Per Section 16050 ELECTRICAL EQUIPMENT AND WORK)	3
DOC1 Battery and Charger (Per Section 16050 ELECTRICAL EQUIPMENT AND WORK)	3
Closed Circuit Television System (Per Section 16751A CLOSED CIRCUIT TELEVISION SYSTEMS)	4
Vertical Wheelchair Lift (Per Section 15210 MISCELLANEOUS MECHANICAL)	3
Compressed Air System (Per Section 15210 MISCELLANEOUS MECHANICAL)	4
Septic Tank System (Per Section 02531A SANITARY SEWERS)	2
Water Well, Water Distribution and Plumbing Systems (Per Sections 02521A WATER WELLS; and, 15400A PLUMBING, GENERAL PURPOSE)	3
Fuel Storage Systems (Per Section 13202A FUEL STORAGE SYSTEMS)	4
Through-the-Wall Air Conditioning Unit (Per Section 15210 MISCELLANEOUS MECHANICAL)	3
Electric Motors (Per Section 16050 ELECTRICAL EQUIPMENT AND WORK)	4
Automatic Transfer Switch (Per Section 16410A AUTOMATIC TRANSFER SWITCH AND BY-PASS/ISOLATION SWITCH)	4
Electrical Systems (Per Sections 16050 ELECTRICAL EQUIPMENT AND WORK; 16403A MOTOR CONTROL CENTERS, SWITCHBOARDS AND PANELBOARDS; and, 16404 480-VOLT STATION SERVICE SWITCHGEAR) for the following items:	4

- Motor Control Center
- Engine Control Center
- Lighting System

- Wire and Cable
- Underground Cable System
- Grounding
- Miscellaneous Electrical
- Lightning Protection System

Vacuum System (Per Section 15210 MISCELLANEOUS MECHANICAL) 4

3.2 PACKAGE FORMAT REQUIREMENTS

In addition to the above requirements, the above data for each group or type of equipment shall be assembled in a durable plastic or leatherette binder. Binders shall be for 8-1/2 by 11-inch sheets with slide binding or fastening with screwposts (with sufficient length for future expansion to add additional sheets) enabling ready replacement of sheets. An identifying title shall be provided, which shall be visible from the front cover, giving the name of project, equipment or system title, contract number and bid item number. Ring-type loose lead binders will not be acceptable. Shop drawings, assembly drawings or specially prepared drawings for these manuals or parts catalogs shall be of a size that requires folding only in left-to-right coordinates as the manual or catalog is opened. A permanent film or cloth reproducible shall be furnished for all drawings specially prepared and of special sizes as specified in the preceding sentences. This permanent reproducible shall be in addition to the drawings required to provide the five complete copies specified above. Each sheet in the binder shall be numbered and an index provided for ready reference to the data. All standard catalog cuts, manufacturer's printed data or descriptive literature parts sheets, or illustrations, shall be either original manufacturer sheet or reproduced copies equal in clarity and durability to the original copies. At least one copy of such manual shall contain all original copies of such data. Thermofax and similar nonpermanent copies are not acceptable. All non-applicable data, such as descriptive literature for other drawings, sketches, or data, that data shall be included or the referenced marked out. The final section of each manual shall consist of a list of equipment covered by the manual, the equipment manufacturer and the name, address and telephone number of the local manufacturer's representative or equipment supplier. The procurement order number of the equipment for this contract shall also be listed.

-- End of Section --