

\*\*\*\*\*  
USACE / NAVFAC / AFCEC / NASA UFGS-01 78 24.00 20 (May 2014)  
-----  
Preparing Activity: NAVFAC Superseding  
UFGS-01 78 24.00 20 (August 2012)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated April 2014

\*\*\*\*\*

### SECTION TABLE OF CONTENTS

#### DIVISION 01 - GENERAL REQUIREMENTS

##### SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)

05/14

#### PART 1 GENERAL

- 1.1 DEFINITIONS AND ABBREVIATIONS
  - 1.1.1 Systems
  - 1.1.2 Computer Assisted Design and Drafting (CADD)
  - 1.1.3 KTR
- 1.2 EOMSI MEETINGS
  - 1.2.1 [Pre-Construction Meeting] [Post-Award Kickoff Meeting]
  - 1.2.2 eOMSI Manual and Facility Data Workbook Development Meetings
  - 1.2.3 Field Validation Meetings of eOMSI Manual and eOMSI Facility Data Workbook
  - 1.2.4 Facility Turnover Meeting
- 1.3 SUBMITTAL SCHEDULING
  - 1.3.1 eOMSI, Preliminary Submittal
  - 1.3.2 eOMSI, Prefinal Submittal
  - 1.3.3 eOMSI, Final Submittal
  - 1.3.4 Final eOMSI Submittal Translation
- 1.4 UNITS OF MEASURE
- 1.5 SUBMITTALS

#### PART 2 PRODUCTS

- 2.1 eOMSI FILES FORMAT
  - 2.1.1 eOMSI Manual Organization
  - 2.1.2 eOMSI Manual Compact Disk Label and Disk Holder or Case
- 2.2 EOMSI MANUAL
  - 2.2.1 Product and Drawing Information
    - 2.2.1.1 O&M Data
    - 2.2.1.2 Shop Drawings
    - 2.2.1.3 Record Drawings
  - 2.2.2 Facility Information
    - 2.2.2.1 General Facility and System Description
    - 2.2.2.2 Basis of Design
    - 2.2.2.3 Safety Hazards
    - 2.2.2.4 Floor Plans
    - 2.2.2.5 Floor Coverings, Wall Surfaces, and Ceiling Surfaces

- 2.2.2.6 Windows
- 2.2.2.7 Roofing
- 2.2.2.8 HVAC Filters
- 2.2.2.9 Plumbing Fixtures
- 2.2.2.10 Lighting Fixtures
- 2.2.2.11 Equipment Listing
- 2.2.2.12 Supply Inventory Requirements
- 2.2.2.13 Extended Warranty Information
- 2.2.3 Primary Systems
  - 2.2.3.1 Primary Systems Information
  - 2.2.3.2 Preventive Maintenance
  - 2.2.3.3 Troubleshooting Guides and Diagnostic Techniques
  - 2.2.3.4 Repair
- 2.2.4 eOMSI FACILITY DATA WORKBOOK

## PART 3 EXECUTION

- 3.1 eOMSI TRAINING
  - 3.1.1 Training Plan
  - 3.1.2 Training Content
  - 3.1.3 Training Outline
  - 3.1.4 Training Video Recording
  - 3.1.5 Unresolved Questions from Trainees
  - 3.1.6 Validation of Training Completion
  - 3.1.7 Quality Control Coordination
- 3.2 FIELD VALIDATION
  - 3.2.1 eOMSI Manual Files Field Validation
  - 3.2.2 eOMSI Facility Data Workbook Field Validation

-- End of Section Table of Contents --

\*\*\*\*\*  
USACE / NAVFAC / AFCEC / NASA UFGS-01 78 24.00 20 (May 2014)  
-----  
Preparing Activity: NAVFAC Superseding  
UFGS-01 78 24.00 20 (August 2012)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated April 2014

\*\*\*\*\*

### SECTION 01 78 24.00 20

#### FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) 05/14

\*\*\*\*\*

NOTE: This guide specification covers the requirements for Electronic Operation and Maintenance Support Information (eOMSI).

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

This guide specification includes tailoring options for NAVFAC Design-Bid-Build (DBB), Design-Build (DB) Facility Data Workbook, and Commissioning Authority. Selection or deselection of a tailoring option will include or exclude that option in the section, but editing the resulting section to fit the project is still required.

\*\*\*\*\*

\*\*\*\*\*

NOTE: eOMSI is divided into two major types of information:

a. The eOMSI Manual: Required for both Navy and Marine Corps projects, and organized around three traditional Operation and Maintenance Support Information (OMSI) Headings:

- (1) Product and Drawing Information
- (2) Facility Information
- (3) Primary Systems

b. The eOMSI Facility Data Workbook: Required for Navy facilities only, which are operated and maintained under the MAXIMO system. Delete Workbook for Marine Corps, Army, and Air Force facilities. Tailor eOMSI Facility Data Workbook out of this section if it is not used.

\*\*\*\*\*

\*\*\*\*\*

NOTE: Collaborate with the NAVFAC Field Engineering Command's (FEC) Public Works (PW) Facility Management Specialist (FMS) to edit this section and to develop the preliminary eOMSI Facility Data Workbook to attach to this section for DBB or to develop for DB.

\*\*\*\*\*

\*\*\*\*\*

NOTE: The eOMSI Facility Data Workbook is available for download on the Whole Building Design Guide, under NAVFAC Specifications, and UFGS, NAVFAC Regional Specifications and PPV Graphics.

TO DOWNLOAD UFGS GRAPHICS, go to  
<http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>.

Select .ZIP file(s) under 01 78 24.00 20, and extract the workbook in Excel format.

\*\*\*\*\*

## PART 1 GENERAL

### 1.1 DEFINITIONS AND ABBREVIATIONS

#### 1.1.1 Systems

The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

#### 1.1.2 Computer Assisted Design and Drafting (CADD)

Electronic Computer Assisted Design and Drafting graphic software program that is used to create facility design contract documents and Record Drawings.

#### 1.1.3 KTR

An abbreviation for "Contractor."

### 1.2 EOMSI MEETINGS

Provide, organize, coordinate, and facilitate the meetings necessary to obtain the information to complete the eOMSI Manual and eOMSI Facility Data Workbook.

### 1.2.1 [Pre-Construction Meeting] [Post-Award Kickoff Meeting]

\*\*\*\*\*  
NOTE: For Design-Bid-Build, choose the  
Pre-Construction Meeting bracketed option. For  
Design-Build, choose the Post-Award Kickoff Meeting  
bracketed option.  
\*\*\*\*\*

\*\*\*\*\*  
NOTE: Items in paragraph below contain tailoring  
tags for FACILITY DATA WORKBOOK and DBB.  
\*\*\*\*\*

Use the last item below in brackets for DBB only and  
as applicable.  
\*\*\*\*\*

Discuss the following in this meeting:

- a. eOMSI Manual and eOMSI Facility Data Workbook Development Meetings
- b. Processes and methods of gathering eOMSI Manual and eOMSI Facility Data Workbook information during construction.
- c. The eOMSI Submittals schedule. Place the eOMSI submittal schedule on the construction schedule.
- [ d. Provision of electronic version of electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

### ]1.2.2 eOMSI Manual and Facility Data Workbook Development Meetings

\*\*\*\*\*  
NOTE: For DBB Projects, choose Pre-Construction  
Meeting. For DB projects, choose Post-Award Kickoff  
meeting.  
\*\*\*\*\*

Choose the Commissioning Authority bracketed option  
below where Third Party Sustainability Certification  
is required by another section.

Choose Designer of Record (DOR) for DB projects only.  
\*\*\*\*\*

\*\*\*\*\*  
NOTE: The paragraph below contains tailoring tags  
for DB, DBB, COMMISSIONING AUTHORITY, and FACILITY  
DATA WORKBOOK.  
\*\*\*\*\*

Meet with key personnel to discuss the eOMSI Manual and Facility DataWorkbook requirements, and the deliverables. Lead a series of meetings that begin after the [Pre-Construction Meeting] [Post-Award Kickoff Meeting] and conclude with the Contractor's final eOMSI Manual and Facility Data Workbook submittal. Include the Contractor's eOMSI Manual and Facility Data Workbook Preparer, [Designer of Record (DOR), ]and Quality Control Manager, [the Commissioning Authority (CA), ]and the Government's Design Manager (DM), Construction Manager (CM), and NAVFAC Public Works (PW) Facilities Management Specialist (FMS), to attend these meetings. Also include the Mechanical, Electrical, and Fire Protection

Sub-Contractors as required. As a minimum, perform the following tasks at these meetings:

- a. Familiarize the Contractor with the eOMSI Facility Data Workbook.
- b. Coordinate the Facility Operational and Maintenance training requirements.
- c. Review progress of eOMSI Manual and eOMSI Facility Data Workbook development, and discuss issues that need to be resolved.
- d. Review the electronic format of the eOMSI Manual and eOMSI Facility Data Workbook.

#### 1.2.3 Field Validation Meetings of eOMSI Manual and eOMSI Facility Data Workbook

\*\*\*\*\*  
NOTE: For DB projects, choose bracketed option for  
Design Quality Control Manager; otherwise, delete.

Choose Commissioning Authority if required by the  
project.

\*\*\*\*\*

\*\*\*\*\*

NOTE: This paragraph contains tailoring for DB,  
FACILITY DATA WORKBOOK, and COMMISSIONING AUTHORITY.

\*\*\*\*\*

Field validate the accuracy of the eOMSI Manual and eOMSI Facility Data Workbook submittal in accordance with paragraph FIELD VALIDATION. Include the following personnel in this validation: Contractor's eOMSI Manual and Facility Data Workbook Preparer, Superintendent, [and ]Quality Control Manager[, and ] [Design Quality Control Manager,] [Commissioning Authority (CA)]. Include the [DOR and] Sub-Contractors as required to verify as-built conditions. Coordinate Field Validation with the Contracting Officer to avoid conflict with Contract Schedule.

Perform the validation, document the results of the field validation, and correct the eOMSI, Final Submittal to reflect the changes identified.

#### 1.2.4 Facility Turnover Meeting

\*\*\*\*\*

NOTE: For DBB projects, choose Section 01 33 00  
SUBMITTAL PROCEDURES. For DB projects, choose  
Section 01 31 19.05 20 POST AWARD MEETINGS.

\*\*\*\*\*

[Refer to paragraph FACILITY TURNOVER PLANNING MEETINGS (NAVFAC Red Zone - NRZ) in Section 01 30 00, ADMINISTRATIVE REQUIREMENTS, for eOMSI facility turnover meeting requirements.] [Refer to paragraph FACILITY TURNOVER PLANNING MEETINGS in Section 01 31 19.05 20 POST AWARD MEETINGS for eOMSI facility turnover meeting requirements.]

### 1.3 SUBMITTAL SCHEDULING

#### 1.3.1 eOMSI, Preliminary Submittal

Submit the Preliminary submittal when construction is approximately 50 percent complete. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

Include all elements and portions of system construction completed up to this point. Provide [four] [\_\_\_\_\_] electronic copies to the Contracting Officer for approval.

#### 1.3.2 eOMSI, Prefinal Submittal

\*\*\*\*\*  
NOTE: Choose the bracketed option of submission of the Prefinal submittal 90 calendar days prior to BOD for MILCON and Special Projects. Choose 60 calendar days prior to BOD for renovations or repairs, or provide a timeframe practical to the project duration for smaller projects.  
\*\*\*\*\*

Submit [four] [\_\_\_\_\_] electronically formatted copies of the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval. The eOMSI, Prefinal Submittal is due [90][60][\_\_\_\_\_] calendar days prior to Beneficial Occupancy Date (BOD). This submittal must provide a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate requires the entire submittal to be returned for correction. Ensure all Government requested changes from the Preliminary submittal are incorporated into the Prefinal submission.

Submit the Prefinal submittal when construction is approximately 90 percent complete. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

#### 1.3.3 eOMSI, Final Submittal

Provide completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). The Final submittal is due at BOD. Ensure all Government requested changes from the Prefinal submittal are incorporated into the Final submission.

#### [1.3.4 Final eOMSI Submittal Translation

\*\*\*\*\*  
NOTE: For OCONUS locations, choose the appropriate foreign language that will be used based on the location of the project. If a foreign translation is not required, delete the following bracketed paragraph.  
\*\*\*\*\*

Provide a translation in [Italian][Spanish][Portuguese][Greek][Japanese][\_\_\_\_\_] of all items under Facility Information and Primary Systems Information in electronic format. Provide drawings, charts and tables in both English and the foreign language. If required by Contracting Officer, provide a split format showing the foreign language on the left and English

translation on the right.

#### ]1.4 UNITS OF MEASURE

\*\*\*\*\*  
NOTE: For DBB, choose the first bracketed option.  
For DB, choose the second bracketed option for  
Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.  
\*\*\*\*\*

Provide eOMSI utilizing the units of measure [used in the Government created contract documents.] [required by the RFP for the facility. Refer to Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.] [ Metric eOMSI must be in SI (System International) metric units exclusively.]

#### 1.5 SUBMITTALS

\*\*\*\*\*  
NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

\*\*\*\*\*  
NOTE: For DB, delete 01 33 00, SUBMITTAL PROCEDURES, and replace with 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20, DESIGN SUBMITTAL PROCEDURES.  
\*\*\*\*\*

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:



## SD-10 Operation and Maintenance Data

Training Plan[; G][; G, [\_\_\_\_\_]]

Training Outline[; G][; G [\_\_\_\_\_]]

Training Content[; G][; G [\_\_\_\_\_]]

## SD-11 Closeout Submittals

eOMSI, Preliminary Submittal[; G][; G, [\_\_\_\_\_]]

eOMSI, Prefinal Submittal[; G][; G [\_\_\_\_\_]]

eOMSI, Final Submittal[; G][; G [\_\_\_\_\_]]

Training Video Recording[; G][; G [\_\_\_\_\_]]

Validation of Training Completion[; G][ G [\_\_\_\_\_]]

## PART 2 PRODUCTS

### 2.1 eOMSI FILES FORMAT

Scan eOMSI Manual Files and eOMSI Facility Data Workbook for malicious viruses using a commercially available scanning program that is routinely updated to identify and remove current virus threats.

Provide [four] [\_\_\_\_\_] electronic copies to the Contracting Officer for approval. Provide eOMSI Manual files on CD or data DVD disks using the most current version of Adobe Acrobat or similar software capable of producing PDF files. Provide eOMSI Facility Data Workbook on compact disks (CD) or data digital versatile disk (DVD) disks in (EXCEL) format.

#### 2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into three parts: 1) Product and Drawing Information, 2) Facility Information, and 3) Primary Systems. Bookmark the PDF files for easy access to the information.

- a. Bookmark Facility Information and Primary Systems to at least one level lower than the major system.
- b. Bookmark Product and Drawing Information documents using the current version of CSI Masterformat numbering system, and arrange submittals using the specification sections as a structure. Use CSI Masterformat and UFGS numbers along with descriptive bookmarking titles that explain the content of the information that is being bookmarked.

#### 2.1.2 eOMSI Manual Compact Disk Label and Disk Holder or Case

Provide the following information on the compact disk label and disk holder or case:

- a. Building Number
- b. Project Title

- c. Activity and Location
- d. Construction Contract Number
- e. Prepared For: (Contracting Agency)
- f. Prepared By: (Name, title, phone number and email address)
- g. Include the compact disk content on the disk label
- h. Date
- i. Virus scanning program used

## 2.2 EOMSI MANUAL

### 2.2.1 Product and Drawing Information

Provide an organized record of the facility products, materials, equipment, and minimum information necessary to operate the facility. Provide Product and Drawing Information for all systems in the final constructed facility, including the anticipated critical systems identified in this specification section. Organize and bookmark the information for easy access and quick retrieval.

#### 2.2.1.1 O&M Data

As a minimum, include the O&M Data, submitted under SD-10 Data Packages in the technical specification sections, and in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Provide the following for each product, material, and system on the project:

- a. Materials
- b. Equipment
- c. Data Sheets
- d. Test Reports
- e. Warranties
- f. Certificates
- g. Shop Drawings

#### 2.2.1.2 Shop Drawings

Provide and edit original CADD drawings, or original facility design drawings, to eliminate unneeded information; annotate and highlight the eOMSI information. Provide in source file and PDF format. Provide the following drawings at a large enough scale to be clear, legible, and able to differentiate designated isolation units from surrounding valves and switches.

- a. Utility Schematic Diagrams - Provide a one line schematic diagram for each utility system such as power, water, wastewater, and gas/fuel. Schematic diagram must show from the point where the utility line is connected to the mainline up to the 1.5-meter five-foot connection point

to the facility. Indicate location or area designation for route of transmission or distribution lines; locations of duct banks, manholes/ handholes or poles; isolation units such as valves and switches; and utility facilities such as pump stations, lift stations, and substations.

- b. Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the 1.5 meter five foot utility connection point and where utilities connect to facility distribution. Enlarge floor plans/ elevations of the rooms where the utility enters the building and indicate on these plans locations of the main interior and exterior connection and cutoff points for all utilities. Also enlarge floor plans / elevations of the rooms where equipment is located. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate designations such as room number, panel number, circuit breaker, or valve number, of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

#### 2.2.1.3 Record Drawings

\*\*\*\*\*  
NOTE: Use this paragraph if Contractor is providing the Record Drawings and for all Design-Build projects. Delete for Design-Bid-Build contracts if the designer is providing the Record Drawings as part of Post-Construction AE Services (PCAS). If used, coordinate with CADD Drawings paragraph in Section 01 78 00 CLOSEOUT SUBMITTALS.  
\*\*\*\*\*

Provide an electronic copy of the Record Drawings for the project in source format and PDF format, bookmarking all drawings using the sheet title and sheet number.

#### 2.2.2 Facility Information

\*\*\*\*\*  
NOTE: Edit Facility and Primary Systems Information paragraphs based on complexity, size and scope of the project.  
\*\*\*\*\*

Provide the following in Facility Information:

##### 2.2.2.1 General Facility and System Description

Describe the function of the facility. Detail the overall dimensions of the facility, number of floors, foundation type, expected number of occupants, and facility Category Code. List and generally describe all the facility systems listed in the Primary Systems Information and any special building features (for example, HVAC Controls, Sprinkler Systems, cranes, elevators, and generators). Include photographs marked up and labeled to show key operating components and the overall facility appearance.

##### [2.2.2.2 Basis of Design

\*\*\*\*\*  
NOTE: Use Basis of Design for DB only.

\*\*\*\*\*

Include the Basis of Design that shows the basic design scope of work, assumptions and the original intentions of the Designer of Record (DOR). Identify the site utility design goals, objectives, design load limits, assumptions, and system features that are critical to the operation and maintenance of the systems.

#### ]2.2.2.3 Safety Hazards

\*\*\*\*\*

**NOTE: Use bracketed item for DB projects only.**

\*\*\*\*\*

List all residual hazards identified in the Activity Hazard Analysis[ as prepared by the DOR]. Provide recommended safeguards for each identified hazard.

#### 2.2.2.4 Floor Plans

Provide uncluttered, legible 29.9 by 43.2 cm 11 by 17 inches floor plans. Include room numbers, type or function of spaces, and overall facility dimensions on the floor plans. Do not include items such as construction instructions, references, or frame numbers.

#### 2.2.2.5 Floor Coverings, Wall Surfaces, and Ceiling Surfaces

Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish. Include a facility summary of the total area for each type of space and floor, wall, or ceiling finish in the table.

#### 2.2.2.6 Windows

Provide a table that lists by room number (including hallways and common spaces), the type of window, window size, number of each size and type, and special features. The table will include a facility summary of the total number for each type and size of window.

#### 2.2.2.7 Roofing

Provide the total area of each type of roof surface and system. Provide the name of the roofing product and system; manufacturer's, supplier's, and installer's names, addresses, and phone numbers. For each type of roof, provide a recommended inspection, maintenance and repair schedule that details checkpoints, frequencies, and prohibited practices. List roof structural load limits.

#### 2.2.2.8 HVAC Filters

Provide a table that lists the quantity, type, size, and location of each HVAC filter.

#### 2.2.2.9 Plumbing Fixtures

Provide a table that lists by room number, the number and type of plumbing and bathroom plumbing fixtures (for example, sinks, water closets, urinals, showers and drinking fountains).

#### 2.2.2.10 Lighting Fixtures

Provide a table that lists by room number (including hallways and common spaces), the type of lighting fixture, number of lighting fixtures, type of bulbs or tubes, and number of bulbs and tubes. The table must include a facility summary of the total number of fixtures of each type and number of bulbs or tubes of each type.

#### 2.2.2.11 Equipment Listing

Provide a table that lists the major equipment shown on the design equipment schedules. Show the item descriptions, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractors, and subcontractors.

#### 2.2.2.12 Supply Inventory Requirements

Provide a list of maintenance and repair supplies (e.g., spare parts, fuels and lubricants) required to ensure continued operation without unreasonable delays. Identify and list parts and supplies that have long purchase lead times. Give special consideration to facilities at remote locations.

#### 2.2.2.13 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. Cross reference the list to the warranty copies provided in paragraph FACILITY INFORMATION or with the PRIMARY SYSTEMS. For each warranty listed, indicate the applicable specification section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference all specific operation and maintenance procedures that must be performed to keep the warranty valid.

#### 2.2.3 Primary Systems

The project is anticipated to include the following primary systems. Provide training and Operation and Maintenance data for all products, materials, and equipment that make up these systems in the final constructed facility.

\*\*\*\*\*

**NOTE: Select bracketed items below that are within  
the scope of the project. Add other primary systems  
as applicable.**

\*\*\*\*\*

- [ a. HVAC facility systems (including chillers, boilers, heat pumps, air handling equipment, exhaust fans, fan coil units, VAV boxes, heat recovery wheels, hot and chilled water hydronic systems, control valves, and backflow preventers)
- ] [b. Direct Digital Controls/Space Temperature Controls.
- ] [c. Steam condensate pumps, Steam pressure relief valves.
- ] [d. Electrical systems (including transformers, diesel electric generator sets, automatic transfer switches, primary switchgear, secondary switchgear, high voltage switches, variable frequency drives, and frequency converters).

- ] [e. Fire protection systems and fire alarm detection systems.
- ] [f. Cathodic protection.
- ] [g. Site civil water utilities (including water, storm water collection, and treatment systems).
- ] [h. Site civil wastewater utilities (including pumping station, tanks, treatment and filters).
- ] [i. Potable water systems (including wells, tanks, pumps, back-flow preventers, filters, disinfection, and controllers).
- ] [j. Site electrical utilities (including substations, transformers, and pad-mounted switchgear).

#### ] 2.2.3.1 Primary Systems Information

Primary Systems Information requires using a systems approach. This approach requires that consideration be given to the entire system (that is, the interfaces of equipment, connections and material flow within the system). Use Notes, Cautions and Warnings throughout the Primary Systems Information to emphasize important and critical instructions and procedures. Provide the following information for each system:

##### a. Operation

- (1) System Description - Provide a detailed discussion of the system composition and operation. Include technical details that are essential for an understanding of the system.
- (2) Start-Up and Shutdown Procedures - Provide step by step instructions to bring systems from static to operational configurations and from operating to shutdown status.
- (3) Normal and Emergency Operating Instructions - Provide a discussion of the normal and emergency operation and control of the system. Address operating norms (for example, temperatures, pressures, and flow rates) expected at each zone or phase of the system. Supplement the discussion with control and wiring diagrams and data. Include shutdown instruction for fires, explosions, spill, or other contingencies.
- (4) System Flow Diagrams - Provide a flow diagram indicating system liquid, air or gas flow during normal operations. Integrate all system components into the diagram. A compilation of non-integrated, flow diagrams for the individual system components are not acceptable.
- (5) Field Test Reports - Provide Field Test Reports (SD-06) that apply to equipment associated with the system. The eOMSI Manual Submittal does not require the second season HVAC testing.
- (6) Operator Servicing Requirements - Provide instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.
- (7) Valve List - Provide a list of all valves associated with the

system. Show valve type, identification number, function, location and normal operating position.

- (8) Operating Log - Provide forms, samples, and instructions for keeping necessary operating records.

#### 2.2.3.2 Preventive Maintenance

Provide information in accordance with paragraph PREVENTIVE MAINTENANCE in Section 01 78 23, OPERATION AND MAINTENANCE DATA.

#### 2.2.3.3 Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures for isolating the cause of system malfunctions. Clearly state indications or symptoms of trouble; the sequential instructions, including checks and tests to be performed and conditions to be sought, to determine the cause; and remedial measures to bring the equipment and system to operating condition. Identify special test equipment required to perform the procedures. Start the troubleshooting guide at the system level and proceed to a level where detailed manufacturer's troubleshooting procedures for equipment and components can be referenced. Provide clear references to repair procedures included in the manufacturer's Product Data.

#### 2.2.3.4 Repair

Provide in accordance with paragraph CORRECTIVE MAINTENANCE (REPAIR) and its subparagraphs in Section 01 78 23 OPERATION AND MAINTENANCE DATA. Provide repair procedures and instructions required for restoring equipment to proper operating condition and standards. References must be specific as to location within the eOMSI Manual.

#### 2.2.4 eOMSI FACILITY DATA WORKBOOK

\*\*\*\*\*

NOTE: For DBB, attach edited eOMSI Facility Data Workbook to this section. Edit Model & Facility Data Matrix tabs to define SYSTEMS and SUBSYSTEMS within the project scope. Provide electronically to the Contractor after award.

The eOMSI Facility Data Workbook.xlsx is located inside the zip file at the following location:

<http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>

For DB, complete the worksheet and coordinate with Government's Facility Maintenance Specialist (FMS).

\*\*\*\*\*

\*\*\*\*\*

NOTE: Coordinate with NAVFAC FEC's PW FMS lead to help identify the Master Systems, Systems, and Subsystems based on project scope.

\*\*\*\*\*

\*\*\*\*\*

NOTE: Choose the first bracketed item below for DBB projects, or choose the second bracketed item for DB

projects.

\*\*\*\*\*

[A pre-edited draft of the Model & Facility Data Matrix tab within the eOMSI Facility Data Workbook is attached to this section. The Government will provide this eOMSI Facility Data Workbook electronically to the Contractor upon award. Complete the KTR Facility Data File tab based on the selection of master systems, systems, and subsystems installed. ] [Download the eOMSI Facility Data Workbook at the following location: <http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>. Complete the KTR Facility Data File tab based on the selection of master systems, systems, and subsystems installed.] The following tabs are included in the eOMSI Facility Data File Workbook and serve the purpose stated:

- a. Instructions Tab: Instructions for completing Model & Facility Data Matrix Tab and KTR Facility Data File.
- b. Model & Facility Data Matrix Tab: - The Matrix lists Required Asset Fields for each SYSTEM and SUBSYSTEM defined within the project scope of work. In column "In Scope," choose "Yes" or "No" to define SYSTEMS and SUBSYSTEMS that are within the project scope, and that Contractor needs to include and populate in KTR Facility Data File tab. Check Box on if BIM is required for the project. For BIM projects, Columns for "DISCIPLINE," LOD," "DESIGN MODEL GRADE," and "RECORD MODEL GRADE," are pre-populated and indicate the level of detail required in the design model. These columns disappear for projects that are not BIM. The "Required Facility Asset Field Position Numbers," one through eighteen, are pre-populated, and are not editable.
- c. Required Asset Fields Tab: Defines the 18 Required Facility Asset Field Position Numbers used in Model and Facility Data Matrix and KTR Facility Data File tabs.
- d. KTR Sample Facility Data File Tab: Sample KTR eOMSI facility data file. This spreadsheet shows an example of the mandatory fields of all equipment to be included in the KTR eOMSI Facility Data File, along with their descriptions.
- e. KTR Facility Data File Tab: Required eOMSI facility data file deliverable provided to the Government. Provide a separated and unique new row for each facility component or piece of equipment installed.

## PART 3 EXECUTION

### 3.1 eOMSI TRAINING

\*\*\*\*\*

**NOTE: The paragraph below contains tailoring for  
Facility Data Workbook.**

\*\*\*\*\*

Prior to acceptance of the facility by the Contracting Officer for Beneficial Occupancy, the eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel) preparer must provide comprehensive training for the systems and equipment of the facility specified in the technical specifications. The trainees must include the Facilities Management Specialist, maintenance staff, and applicable building occupants. Coordinate, schedule, and ensure that training is completed. Instructors must be well-versed in the particular systems that they are presenting.



Address all aspects of the eOMSI Manual and Facility Data Workbook submittal. The training team must include at least a mechanical engineer and an electrical engineer. Provide instruction on site at a location approved by the Contracting Officer.

### 3.1.1 Training Plan

\*\*\*\*\*  
NOTE: Choose the Commissioning Authority (CA) to oversee and approve the training plan if the project is a Third Party Sustainable Certified project or the project requires a CA. If a CA is not required, choose the bracketed option for the QC to oversee and approve the training plan and schedule.

This paragraph contains tailoring for Commissioning Authority

\*\*\*\*\*

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. Indicate prior approval of the training plan by the [Quality Control Manager (QC)] [Commissioning Authority (CA)] on the submittal forwarded to the Contracting Officer. Also, coordinate the training schedule with the Contracting Officer and [QC] [CA]. Include within the plan the following elements:

- a. Equipment included in training
- b. Intended audience
- c. Location of training
- d. Dates of training
- e. Objectives
- f. Outline of the information to be presented and subjects covered including description
- g. Start and finish times and duration of training on each subject
- h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)
- i. Instructor names and instructor qualifications for each subject
- j. List of texts and other materials required to support training

### 3.1.2 Training Content

\*\*\*\*\*  
NOTE: Choose the Commissioning Authority (CA) to oversee and approve the training content if the project is a Third Party Sustainable certified project or the project requires a CA. If a CA is not required, choose the bracketed option for the QC to oversee and approve the training content.

\*\*\*\*\*

The core of this training must be based on manufacturer's recommendations and the operation and maintenance information defined in Section 01 78 23 OPERATIONS AND MAINTENANCE DATA. The [QC] [CA] is responsible for overseeing and approving the content and adequacy of the training. Provide a brief summary of "Facility Information" and a more detailed presentation of, "Primary Systems Information". Spend 95 percent of the instruction time during the presentation on the "Primary Systems Information". Include the following for each Primary system training presentation:

- a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.
- b. Relevant health and safety issues.
- c. Discussion of how the feature or system is environmentally responsive. Advise adjustments and optimizing methods for energy conservation.
- d. Design intent.
- e. Use of O&M Manual Files.
- f. Review of control drawings and schematics.
- g. Interactions with other systems.
- h. Special maintenance and replacement sources.
- i. Tenant interaction issues.

#### 3.1.1.3 Training Outline

Provide the eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

#### 3.1.1.4 Training Video Recording

Provide to the Contracting Officer two copies of the training course in DVD video recording format. Capture within the recording, in video and audio, all instructors' training presentations including question and answer periods with the trainees. Confirm proposed software used to create the training is compatible with the using activity resources to play the training materials. The recording camera(s) must be attended by a person during the recording sessions to assure proper size of exhibits and projections during the recording are visible and readable when viewed as training.

#### 3.1.1.5 Unresolved Questions from Trainees

If, at the end of the training course, there are questions from trainees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the trainees, and the training video must be modified to include the appropriate clarifications.

### 3.1.6 Validation of Training Completion

Ensure that each attendee at each training session signs a class roster daily to confirm Government participation in the training. At the completion of all training, submit a signed validation letter that includes a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed, and copies of the signed class rosters. Provide two copies of the validation to the Contracting Officer, and one copy to the eOMSI Preparer for inclusion into the eOMSI documentation.

### 3.1.7 Quality Control Coordination

\*\*\*\*\*

NOTE: Choose the Commissioning Authority (CA) for QC coordination if the project is a Third Party Sustainable Certified project or the project requires a CA. If a CA is not required, choose the bracketed option for the QC to approve the training content.

Choose Section 01 45 00.00 20 QUALITY CONTROL for Design-Bid-Build or Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL for Design-Build.

\*\*\*\*\*

Coordinate the eOMSI training with the [QC] [CA] in [Section 01 45 00.00 20 QUALITY CONTROL] [Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL FOR DESIGN-BUILD].

## 3.2 FIELD VALIDATION

Perform the field validation at the intervals indicated below. Establish the field validation date, to ensure the availability of Government representatives.

The purpose of the validation is to discuss final requirements needed to complete the eOMSI submittals and to conduct field verification. Field validation is used to verify the accuracy and completeness of the eOMSI Submittals.

### 3.2.1 eOMSI Manual Files Field Validation

Perform the eOMSI Manual field validation when construction is 90 percent complete. This includes verifying that the systems and equipment in the eOMSI submittal accurately reflect the as-built conditions; verifying that O&M procedures are appropriate for the systems and equipment that they support; and verifying that equipment nomenclature and system configurations are accurate.

### 3.2.2 eOMSI Facility Data Workbook Field Validation

Perform the eOMSI Facility Data Workbook Field Validation at 50 percent and 90 percent construction complete. Provide Field verification of KTR Facility Data File tab for equipment that is easily accessible and does not require deconstruction of installed systems.

\*\*\*\*\*

NOTE: Edit, choose, and add at least 5 Master

**Systems below based on project scope.**

\*\*\*\*\*

For each of the 5 Master Systems below, provide and verify at least 5 (dissimilar if possible) SubSystems or Subitems for a total of 25 line items. For each item, verify that each Required Facility Asset Field, as defined in the Model & Facility Data Matrix tab, is populated and that each Asset Field contains the specified data per the Required Asset Fields tab. Field verify that the data for each item is correct.

- a. D10 - CONVEYING
- b. D20 - PLUMBING
- c. D30 - HVAC
- d. D40 - FIRE PROTECTION
- e. D50 - ELECTRICAL

100 percent accuracy of all required asset fields is mandatory for successful Field Validation of eOMSI Facility Data Workbook. If errors are discovered during Field Validation, provide and reschedule a follow-on field verification meeting.

-- End of Section --