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UFGS-01 78 24.00 20 (August 2014)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated April 2015

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)

02/15

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DEFINITIONS AND ABBREVIATIONS
 - 1.2.1 eOMSI Manual
 - 1.2.2 eOMSI Facility Data Workbook (FDW)
 - 1.2.3 Systems
 - 1.2.4 Computer Assisted Design and Drafting (CADD)
 - 1.2.5 KTR
- 1.3 EOMSI MEETINGS
 - 1.3.1 [Pre-Construction Meeting] [Post-Award Kickoff Meeting]
 - 1.3.2 eOMSI Manual and Facility Data Workbook Coordination and Mutual Understanding Meeting
 - 1.3.3 Facility Turnover Meeting
- 1.4 SUBMITTAL SCHEDULING
 - 1.4.1 eOMSI, Progress Submittal
 - 1.4.2 eOMSI, Prefinal Submittal
 - 1.4.3 eOMSI, Final Submittal
 - 1.4.4 Final eOMSI Submittal Translation
- 1.5 UNITS OF MEASURE
- 1.6 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 Record Drawings
 - 2.2.1.3 Utility 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 Floor Plans

- 2.2.2.4 Floor Coverings, Wall Surfaces, and Ceiling Surfaces
- 2.2.2.5 Windows
- 2.2.2.6 Roofing
- 2.2.2.7 HVAC Filters
- 2.2.2.8 Plumbing Fixtures
- 2.2.2.9 Lighting Fixtures
- 2.2.2.10 Equipment Listing
- 2.2.2.11 System Flow Diagrams
- 2.2.2.12 Valve List
- 2.2.2.13 Riser Diagrams
- 2.3 eOMSI FACILITY DATA WORKBOOK

PART 3 EXECUTION

- 3.1 FIELD VERIFICATION
- 3.2 eOMSI TRAINING
 - 3.2.1 Training Plan
 - 3.2.2 Training Content
 - 3.2.3 Training Outline
 - 3.2.4 Training Video Recording
 - 3.2.5 Unresolved Questions from Trainees
 - 3.2.6 Validation of Training Completion
 - 3.2.7 Quality Control Coordination

ATTACHMENTS:

eOMSI Facility Data Workbook

-- End of Section Table of Contents --

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 two traditional Operation and Maintenance Support Information (OMSI) Headings:

- (1) Product and Drawing Information
- (2) Facility Information

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: Thoroughly edit this section throughout and coordinate with Defense Health Agency (DHA) for projects designed in accordance with UFC 4-510-01 DESIGN: MEDICAL MILITARY FACILITIES.

NOTE: Collaborate with the NAVFAC Field Engineering Command's (FEC) Public Works (PW) Facility Management Division (FMD) 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:

1. Go To:

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

2. Locate Section 01 78 24.00 20 in the UFGS Number column.

3. Select the eOMSIFacilityDataWorkbook.zip link in the Graphic Hyperlink column.

4. Save the .ZIP file to your desktop or network share.

5. Extract the eOMSI Facility Data Workbook from the .ZIP file in Excel format to your project folder.

PART 1 GENERAL

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N

(2014) Navy and Marine Corps Design Procedures

1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 eOMSI Manual

Manual (PDF file) provided by the Contractor that includes, but is not limited to, product information, a facility description with photos, and a list of primary facility systems.

1.2.2 eOMSI Facility Data Workbook (FDW)

NOTE: Use bracketed item for DB only

A Microsoft Excel spreadsheet containing 17 facility asset fields to be populated with the required information by the [Designer of Record and Construction]Contractor.

1.2.3 Systems

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

1.2.4 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.

1.2.5 KTR

An abbreviation for "Contractor."

1.3 EOMSI MEETINGS

1.3.1 [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.

Be prepared to discuss the following during 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. Include the eOMSI submittal schedule on the Baseline Construction Schedule in accordance with Section 01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULE (NAS).
- [d. Electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

]1.3.2 eOMSI Manual and Facility Data Workbook Coordination and Mutual Understanding Meeting

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.**

Facilitate a meeting after the [Pre-Construction Meeting] [Post-Award Kickoff Meeting] prior to the submission of the eOMSI Progress Submittal. Meeting attendance must 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), Contracting Officer's Representative, and NAVFAC Public Works (PW) Facilities Management Division (FMD). Also include the Mechanical, Electrical, and Fire Protection Sub-Contractors as required.

The purpose of this meeting is to reach a mutual understanding of the scope of work concerning the contract requirements for eOMSI and coordinate the efforts necessary by both the Government and Contractor to ensure an accurate collection, preparation and timely Government review of eOMSI.

1.3.3 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.**

Include eOMSI in Red Zone (NRZ) facility turnover meetings as specified in [Section 01 30 00, ADMINISTRATIVE REQUIREMENTS.][Section 01 31 19.05 20, POST AWARD MEETINGS.]

1.4 SUBMITTAL SCHEDULING

1.4.1 eOMSI, Progress Submittal

Submit the Progress submittal when construction is approximately 50 percent complete, to the Contracting Officer for approval. 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.

The purpose of this submittal is to verify progress is in accordance with contract requirements as discussed during the eOMSI Coordination and Mutual Understanding Meeting. Field verify a portion of the eOMSI information in accordance with paragraph FIELD VERIFICATION.

1.4.2 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 the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval within [90][60][_____] calendar days of the 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. Any discrepancies discovered during the Government's review of eOMSI Progress submittal must be corrected prior to the Prefinal submission.

The eOMSI Prefinal Submittal must include eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

1.4.3 eOMSI, Final Submittal

Submit completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). The Final submittal is due at BOD. Any discrepancies discovered during the Government's review of the Prefinal eOMSI submittal, including the Field Verification, must be corrected prior to the Final eOMSI submission.

[1.4.4 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.

]1.5 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 generated 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.]

1.6 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item

should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's QC system. Only add a "G" 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.

An "S" following a submittal item indicates that the submittal is required for the Sustainability Notebook to fulfill federally mandated sustainable requirements in accordance with 01 33 29 SUSTAINABILITY REPORTING.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

NOTE: For DB, delete Section 01 33 00, SUBMITTAL PROCEDURES, and replace with Section 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES and Section 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.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data

Training Plan; G[, [_____]]

Training Outline; G[, [_____]]

Training Content; G[, [_____]]

SD-11 Closeout Submittals

eOMSI, Progress Submittal; G[, [_____]]

eOMSI, Prefinal Submittal; G[, [_____]]

eOMSI, Final Submittal; G[, [_____]]

Training Video Recording; G[, [_____]]

Validation of Training Completion; G[, [_____]]

PART 2 PRODUCTS

2.1 eOMSI FILES FORMAT

Assemble each manual into a composite electronically indexed file using the most current version of Adobe Acrobat or similar software capable of producing PDF file format. Provide compact disks (CD) or data digital versatile disk (DVD) as appropriate, so that each one contains all maintenance and record files, and Project Record Documents and Training Videos. Include a complete electronically linked operation and maintenance directory. Provide [four] [_____] electronic copies of the eOMSI Manuals to the Contracting Officer for approval.

Provide eOMSI Facility Data Workbook on compact disks (CD) or data digital versatile disk (DVD) disks in (EXCEL) 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.

2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into two parts: 1) Product and Drawing Information, and 2) Facility Information. 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 bookmarked 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. Organize and bookmark the information for easy access and quick retrieval.

2.2.1.1 O&M Data

**NOTE: Edit and coordinate Section 01 78 23
OPERATION AND MAINTENANCE DATA, paragraph TYPES OF
INFORMATION REQUIRED IN O&M DATA PACKAGES for the
project.**

As a minimum, include the O&M Data, submitted in the technical specification sections, and in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2.1.2 Record Drawings

NOTE: For DB projects, always use this paragraph.

**For DBB projects, use this paragraph if
Contractor is providing the Record Drawings as
specified in Section 01 78 00 CLOSEOUT SUBMITTALS.
Edit Section 01 78 00 to coordinate with FC
1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES to
avoid duplicating requirements.**

**Delete this paragraph for DBB projects if the
Designer is providing the Record Drawings as part of
Post-Construction AE Services (PCAS).**

Provide an electronic, PDF copy of the Record Drawings, prepared in accordance with FC 1-300-09N and Section 01 78 00 CLOSEOUT SUBMITTALS. Bookmark all drawings using the sheet title and sheet number.

Include Record Drawings as part of the Red-Zone in accordance with Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.

2.2.1.3 Utility Record Drawings

**NOTE: Delete this paragraph if project does not
include Utility work.**

Using Record Source Drawings, show and document details of the actual installation of the utility systems; annotate and highlight the eOMSI information. Provide Utility Record Drawings in PDF format. Provide the following drawings at a large enough scale 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 5 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 5 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.

2.2.2 Facility Information

**NOTE: Edit Facility 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.

12.2.2.3 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.

2.2.2.4 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, manufacturer's product name, identifying number, and color. Include a facility summary of the total area for each type of space and floor, wall, or ceiling finish in the table.

2.2.2.5 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, special features, manufacturer's product name, identifying number, and color. The table must include a facility summary of the total number for each type and size of window.

2.2.2.6 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; manufacturer's product name, identifying number, and color. 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.

2.2.2.7 HVAC Filters

Provide a table that lists the quantity, type, size, and location of each HVAC filter, manufacturer's product name, and identifying number.

2.2.2.8 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).

2.2.2.9 Lighting Fixtures

Provide a table that lists by room number (including hallways and common spaces), the type of lighting fixture, ballast, number of lighting fixtures, type of lamps and number of lamps, and the manufacturer's product name and the identifying number. The table must include a facility summary of the total number of fixtures of each type and number of lamps of each type.

2.2.2.10 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.

2.2.2.11 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.

2.2.2.12 Valve List

Provide a list of all valves associated with the system. Show valve type, identification number, function, location and normal operating position.

2.2.2.13 Riser Diagrams

Provide riser diagrams and settings of equipment.

2.3 eOMSI FACILITY DATA WORKBOOK

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

NOTE: The eOMSI Facility Data Workbook.xlsx is
located inside the zip file at the following
location:
<http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>

NOTE: For DBB, attach PDF of edited, Model &
Facility Data Matrix tab spreadsheet, from the 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.

For DB, the DOR provides the Facility Data Workbook,
complete.

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. If a discrepancy exists between what is required in this section and the Workbook, the instructions within the workbook take precedence.
- b. Model & Facility Data Matrix Tab: The Matrix lists Required Asset Fields for each SYSTEM and SUBSYSTEM. The Designer of Record selects SYSTEMS and SUBSYSTEMS that are within the project scope, which the Contractor needs to include and populate in KTR Facility Data File tab. The "Required Facility Asset Field Position Numbers," one through seventeen, are pre-populated, and are not editable.
- c. Required Asset Fields Tab: Defines the 17 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. Asset number will be provided at final by the Government.

PART 3 EXECUTION

3.1 FIELD VERIFICATION

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. Only use this paragraph if project requires Facility Data Workbook.

Field verify eOMSI Facility Data Workbook information with Contractor and Government personnel. Include the following personnel in this meeting: Contractor's eOMSI Manual and Facility Data Workbook Preparer and Quality Control Manager, [Commissioning Authority,]and the Government's Contracting Officer's Representative and NAVFAC PW FMD. Request, and provide, an eOMSI Field Verification Meeting no sooner than 14 calendar

days after submission of the Progress eOMSI submittal, and another, no sooner than 14 calendar days after submission of the Prefinal eOMSI submittal. During this meeting, the Government and Contractor will verify that the eOMSI Facility Data Workbook is complete and accurate.

Field verify that at least 5 Subsystems under each of the Master Systems are accurate, for a total of 25 Subsystems. For each of these items, verify that the required facility asset field, as defined in the "Model & Facility Data Matrix" tab, contains the specified data and it is accurate (i.e. item description, manufacturer, model no., serial no.). 100 percent accuracy of eOMSI information is required for successful field verification. Any discrepancies discovered must be corrected prior to next eOMSI Facility Data Workbook Submittal.

NOTE: Edit and modify the following Master Systems, to specify a total of 5 that correspond with the project scope.

- (1) D10 - CONVEYING
- (2) D20 - PLUMBING
- (3) D30 - HVAC
- (4) D40 - FIRE PROTECTION
- (5) D50 - ELECTRICAL

3.2 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, provide comprehensive training for the systems and equipment specified in the technical specifications. The trainees must include the Facilities Management Specialist, building maintenance personnel, and applicable building occupants. 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. Training must include classroom and field lectures as applicable. The location of classroom training requires approval by the Contracting Officer.

3.2.1 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

3.2.2 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.

3.2.3 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.

3.2.4 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.

3.2.5 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.

3.2.6 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.

3.2.7 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].

-- End of Section --