
USACE / NAVFAC / AFCESA / NASA UFGS-01 78 24.00 20 (August 2012)

Preparing Activity: NAVFAC Superseding
 UFGS-01 78 24.00 20 (November 2011)
 UFGS-01 78 24.05 20 (November 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2012

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SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) 08/12

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-Build and Design-Bid-Build. 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: Use this section for Navy and Marine Corps projects and edit as noted for Design-Bid-Build or Design-Build.

This section includes the facility maintenance training previously located in Section [01 45 00.00 20](#)
QUALITY CONTROL.

NOTE: Modify this specification section for facilities built on Marine Corp (MC) Bases. The Marine Corps uses a different version of the Computerized Maintenance Management System (CMMS) than Navy and may require different eOMSI Equipment and Non-Equipment Data than is listed in this specification. Marine Corps also has a different Public Works (PW) structure and may involve different Public Works (PW) structure and may involve different personnel in the review and quality assurance of the eOMSI Data and Documents.

NOTE: The construction requirements of this specification section require process changes for NAVFAC Capital Improvements and NAVFAC Public Works Business Lines. Contact the Product Line Manager Facilities Management and Sustainment Public Works Business Line at NAVFAC LANT for training on these modified roles and responsibilities.

NOTE: Before beginning to edit this section make the decision whether the project is complex and requires a full electronic operation and maintenance support information (eOMSI) submittal or is simple and requires an abbreviated eOMSI submittal. The full eOMSI for complex projects contains the following eOMSI components:

- a. eOMSI Data
- b. eOMSI Document
 - (1) Facility Information.
 - (2) Primary System Information.
 - (3) Product and Drawing Information (including shop drawings, utility schematics and cutoff locations, equipment tagging and valve locations, and as-built drawings).

The abbreviated eOMSI for simple projects contains the following eOMSI components:

- a. eOMSI Data
- b. eOMSI Documents
 - (1) Product and Drawing Information (including shop drawings, utility schematics and cutoff locations, equipment tagging and valve locations).

The majority of NAVFAC projects will be classified as simple, requiring the abbreviated eOMSI submittal.

NOTE: Determine the need for a full eOMSI for

complex projects or an abbreviated eOMSI for simple projects by considering the complexity of the systems that make up the facility. Full eOMSI requires facility information and systems level information such as operation instructions and troubleshooting procedures because of the complexities of the HVAC, fire protection, and electrical systems. Complex projects are building types such as Operations buildings, Hangars, Maintenance facilities, Hospitals/ large Medical Facilities, Laboratories, Process buildings/ Industrial facilities (Manufacturing/ Assembly facilities, Power Plants, Water and Wastewater Treatment plants, Fuel facilities), and multi-building complexes with central heating/cooling.

Simple projects have more routine operations and do not have the building systems complexity that requires the operation instructions and troubleshooting procedures for the eOMSI submittals. Confirm the need for operation instruction and troubleshooting procedures with the Project Manager and the Public Works Facility Management Division Director. Simple projects are building types such as BEQ facilities, Administration Buildings, Warehouses, Community/ Morale/ Recreation Facilities (Child Development Centers, Fire Stations, Fitness Centers with/out indoor pool, etc.), Piers and Wharves, and other facilities types with similar complexity of HVAC, fire protection, and electrical building systems. These simple projects use the abbreviated eOMSI submittal requirements below.

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

This section provides the requirements for electronic operation and maintenance support information (eOMSI). eOMSI contains detailed as-built information describing the efficient, economical, safe operation, maintenance, and repair of the facility. eOMSI is required to be in electronic format divided into the eOMSI Data and eOMSI Document files.

NOTE: Typically the eOMSI Data Information will be loaded into Maximo. If it is a BUMED project choose the DMLSS bracketed option in the following paragraph. Coordinate with the Construction Manager or Project Manager for guidance on the CMMS software used if client is the U.S. Air Force or other agencies. If this section is used for other agencies, edit to align with their data and document requirements.

- a. Provide eOMSI Data files in the eOMSI Spreadsheet Workbook format that

are uploaded by the Government into a Government computerized maintenance management system (CMMS). [Maximo] [Defense Medical Logistics Standard Support (DMLSS)] [_____] is the CMMS that will be used on this project.

- b. Provide eOMSI Document files in Portable Document Format (PDF), Computer Assisted Design and Drafting (CADD), and MS Word formats that can be uploaded into a document management system. The eOMSI document information is to be factual, concise, comprehensive, and written to be easily used by maintenance personnel. Descriptive matter and theory must include technical details that are essential for a comprehensive understanding of the operation, maintenance and repair of the system. The eOMSI Preparer shall ensure that the eOMSI reflect changes to systems and equipment, made during construction.

1.2 DEFINITIONS

1.2.1 Component Inventory Management Unit (CIMU)

CIMU is an organization of like-kind real property into manageable maintenance units. CIMU is a building component, group of components or component assemblies, serving a specific purpose in a facility that can be expected to follow a common and predictable lifecycle behavior. This class of non-equipment will include items such as exterior walls, exterior windows, interior finish, and roofs. This class of equipment will include items such as fan coil units, air handling units, lighting, and water closets. CIMUs can include items of installed equipment typically subject to routine scheduled maintenance.

1.2.2 Real Property Inventory Equipment (RPIE)

RPIE is a Government owned or leased individual pieces of equipment, apparatus, or fixture that are essential to the function of the real property (i.e. plumbing, electrical, heating, cooling and elevators). It is physically attached to, integrated into, and built in or on the property. Individual RPIE's can be combined to make a CIMU to facilitate facilities management.

1.2.3 BOTH (Combined CIMU and RPIE)

A BOTH is a stand-alone piece of equipment that can be managed independently and therefore is a Component Inventory Management Unit and a Real Property Installed Equipment. (If a CIMU has a Quantity of "One", it would be considered a BOTH)

1.2.4 Utility and Energy Management (UEM)

UEM is a part of the Government Public Works (PW) Organization that manages the operation and maintenance of the Base utilities.

1.2.5 Systems

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

1.2.6 Computer Assisted Design and Drafting (CADD)

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

1.2.7 eOMSI Spreadsheet Workbook

The eOMSI Spreadsheet Workbook is a group of Excel spreadsheets that provide forms, samples, and tools to assist the Contractor in identifying equipment and non-equipment data for the project. Use these Excel spreadsheets to organize and record maintenance data for the project. Use the eOMSI Spreadsheet Workbook in conjunction with this specification section with the file title: "eOMSI_spreadsheet_wkbk_new_constr.xls" located inside the zip file at the following web link:

http://www.wbdg.org/ccb/DOD/UFGS_SUPPLEMENTS/UFGS_01_78_24.00_20_eOMSI_spreadsheet.zip

1.2.8 Flat File

The flat file is the blank forms portion of the eOMSI Spreadsheet Workbook used to fill in the equipment and non-equipment data. These flat file forms are Excel templates with column headings that identify required information for equipment and non-equipment. The data placed on the flat file spreadsheets are organized by the Contractor into RPIE, and BOTH maintenance units.

1.2.9 KTR

KTR is an abbreviation for "Contractor."

1.3 ORGANIZATION of eOMSI

Prepare the eOMSI submittals in two components, eOMSI Data Files and eOMSI Document Files.

1.3.1 eOMSI Data Files

Provide facility specific information listed in the DESCRIPTION of WORK of this specification section and divide into Equipment Data and Non-Equipment Data on eOMSI Spreadsheet Workbook / Flat Files. The Government will use the completed eOMSI Spreadsheet Workbook to update information of the CMMS indicated above. The following tabs are included in the eOMSI Spreadsheet Workbook and serve the purpose stated:

- a. Flat File - Equipment Data; This spreadsheet provides an organized format for the contractor to fill in required information about dynamic equipment (fans, pumps,...) that is part of the project.
- b. Flat File - Non-Equipment Data; This spreadsheet provides an organized format for the Contractor to fill in required information about non-equipment (doors, windows, etc.) that is part of the project.
- c. New CONST - RENOVATION Schema; Provides information and instructions to explain the task of completing the Flat File - Equipment Data and Flat File - No-Equipment Data spreadsheets.
- d. Facility and UEM Unifomat; Provides a Unifomat division of facility and utility systems and components of the project. This information is used to complete the Master-System-Subsystem portions of the Flat File - Equipment Data and Flat File - Non-Equipment Data spreadsheets.
- e. UEM Asset Classification: Provides a list of critical Utility and Energy Management components that must be identified in the Flat File - Equipment Data spreadsheet.

f. Asset Identification List: List of items that require equipment tagging. Tag numbering must be entered in the Equipment Tag Number of the Flat File - Equipment Data spreadsheet.

g. Data Definitions; Provide definitions of terms used on the spreadsheet workbook.

1.3.2 eOMSI Document Files

Provide facility specific information, which was used to construct the project and provide information on operation and maintenance of the facility in a form that can be easily accessed and used. Organize the document files to facilitate storage in an electronic Government document file management system. Arrange the eOMSI Documents files in the following order and identify the document files as follows:

NOTE: Choose the bracketed option below for complex projects. Eliminate the Facility Information and the Primary Systems Information for simple projects.

[a. Facility Information

b. Primary Systems Information]

c. Product and Drawing Information

Cross-referencing within or between the eOMSI Document File parts must be specific.

1.3.3 Order of Precedence of eOMSI Requirements

This specification section takes precedence over the eOMSI Spreadsheet Workbook in the event of conflict between this specification section and the eOMSI Spreadsheet Workbook.

1.3.4 Sources of eOMSI Information

The sources of data needed to prepare the eOMSI include, but are not limited to, the design plans and specifications, field visits, approved construction submittals and manufacturer's catalog data for materials, products, systems, as-built drawings, contract modifications, and construction methods used in this contract. Ensure that the eOMSI reflect changes to systems and equipment made during construction as a result of contract modifications. Collect and input needed information to complete the data and document files

1.3.5 Unified Facility Guide Specifications (UFGS) Operation and Maintenance Data Packages

NOTE: Choose the bracketed option in the following paragraph for Design-Build projects.

Provide information necessary to maintain the equipment and non-equipment of the facility by utilizing the SD-10 Operations and Maintenance Data

Packages as defined in section 01 78 23 OPERATIONS AND MAINTENANCE DATA. Provide the SD-10 Data Packages required in the individual sections for each product, material, and system used on the project. [Include Section 01 78 23 OPERATIONS AND MAINTENANCE DATA in the Contractors final construction specification documents]

1.4 eOMSI MEETINGS

Organize, coordinate, and facilitate the meetings necessary to obtain the information to complete the eOMSI submittal.

1.4.1 eOMSI Start-Up Meeting

NOTE: Choose the Preconstruction Meeting bracketed option for Design-Bid-Build projects; or choose the Post Award Kickoff Meeting bracketed option for Design-Build projects in meeting paragraphs below.

During the [Pre Construction Meeting] [Post Award Kickoff Meeting], discuss the following;

- a. The eOMSI Development Meetings schedules and participants.
- b. Processes and methods of gathering of facility eOMSI information during construction.
- c. The qualifications of the eOMSI Preparer.
- d. The eOMSI Submittals schedule. Place the eOMSI submittal schedule on the construction schedule.

1.4.2 eOMSI Development Meetings

NOTE: Choose the Commissioning Authority bracketed option below for complex projects that require a LEED rating.

Meet with key personnel to discuss the eOMSI requirements and the deliverables. These are a series of meetings that begin after the [Preconstruction Meeting] [Post Award Kickoff Meeting] and conclude with the Contractor's first eOMSI submittal. Include the eOMSI Preparer[, Commissioning Authority (CA)] and the Quality Control Manager to attend these meetings. Also include the Mechanical, Electrical and Fire Protection Sub Contractors as required. The purposes of these meetings are to:

- a. Familiarize the Contractor with the Government PW maintenance processes.
- b. Provide the Contractor with an understanding of the RPIE, CIMU, and BOTH to organize the facility into these information structures.
- c. Obtain the "By KTR Using Government Info" information for the eOMSI Flat File Spreadsheets.
- d. Review and identify the electronic format, units of measure, titles, and

wording necessary to load the eOMSI data into the designated Government CMMS and eOMSI documents into the Government Document Management System.

- e. Review progress of eOMSI development and discuss issues that need to be resolved.
- f. Coordinate requirements for eOMSI training.

[1.4.3 Field Validation Meetings

NOTE: Choose the following bracketed option for a complex project to include the "Field Validation." Delete the following bracketed paragraph for complex projects that are programmed by a separate contract to have someone other than the Contractor accomplish the Field Validation. For complex DB projects, include the DOR in the Field Validation Meetings. Simple eOMSI projects do not require a "Field Validation."

Meet with key personnel to determine the accuracy of the eOMSI Data and Documents as described in this specification. Include the [DOR and] Subcontractors as required to verify as-built conditions.

]1.4.4 Facility Turnover Meetings

NOTE: Choose the bracketed option section 01 33 00 SUBMITTAL PROCEDURES for Design-Bid-Build projects and section 01 31 19.05 20 POST AWARD MEETINGS for Design-Build projects.

[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.]

1.5 UNITS of MEASURE

NOTE: Choose the first bracketed option to continue using the units of measure on the Government created contract documents for Design-Bid-Build projects. Choose second bracketed option to define the eOMSI units of measure by using section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES for Design-Build projects.

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 shall be in SI (System International) metric units exclusively.

[1.6 QUALIFICATIONS of eOMSI PREPARER

NOTE: Choose the following bracketed paragraph if
the Contractor will provide the eOMSI Preparer.
Delete this paragraph if eOMSI Preparer is provided
by a separate contract.

Submit Qualifications of eOMSI Preparer that meet the following:

- a. Possess multidiscipline technical knowledge of the operations and maintenance of building systems.
- b. Experience with the type of systems that are identified in this specification and capable of augmenting manufacturer's information to clarify operations instructions.
- c. Experience preparing detailed Operations and Maintenance Manuals for facilities of equal size and complexity as required by this contract
- d. Ability to prepare spreadsheets to be loaded into a CMMS.
- e. Experience presenting training and coordinating a team of manufacturer's representatives to provide training of Facility Users and Maintenance Personnel.

]1.7 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.

For Design-Bid-Build projects choose the first bracketed paragraph below and delete the second

bracketed paragraph. In the first paragraph, choose first bracketed item for Navy/MC Design-Bid-Build, Air Force, and NASA projects; choose the second bracketed item for Army projects. Delete this paragraph for Navy/MC Design-Build projects.

[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:]]

NOTE: Choose the following bracketed paragraph below for Navy/MC Design-Build projects and delete the bracketed Design-Bid-Build paragraph above.

Review submittal description (SD) definitions in section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

[Government approval is required for submittals with a "G" designation for submittals found in RFP PART 2. Additional construction submittals reserved for Government approval are listed in the section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES. Submittals with a "G" designation found in the sections used by the Contractor to create construction specification, require DOR approval. DOR approved submittals are also listed in the "CONSTRUCTION SUBMITTALS" paragraph in each RFP PART 4, Performance Technical Specifications. Submit the following in accordance with section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.]

SD-07 Certificates

Qualifications of eOMSI Preparer[; G][; G, [____]]

SD-10 Operation and Maintenance Data

Training Plan[; G][; G, [____]]

For each training session; submit dates start and finish times, and locations; outline of the information to be presented; names and qualifications of the presenters; and list of texts and other materials required to support training.

Training Outline[; G][; G [____]]

Training Content[; G][; G [____]]

SD-11 Closeout Submittals

NOTE: Eliminate the bracketed option for a Preliminary Submittal for simple projects.

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[      eOMSI, Preliminary Submittal[; G][; G, [____]]
]      eOMSI, 100 percent, Prefinal Submittal[; G][; G [____]]

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

      Training Video Recording[; G][; G [____]]

      Validation of Training Completion[; G][ G [____]]

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1.8 SUBMITTAL FORMAT

1.8.1 eOMSI Data Files

Provide eOMSI data on compact disks (CD) or data digital versatile disk (DVD) disks in formats that are compatible with used on the project. Provide eOMSI Data information by completing the eOMSI Spreadsheet Workbook / Flat File initial templates:

- a. eOMSI Spreadsheet Workbook / Flat File - Equipment Data tab; Provide information to all spreadsheet fields. Obtain the information indicated to be supplied "By KTR using Government info" from the Contracting Officer / [Facility Maintenance Specialist (FMS)][____] and fill in this part of the Flat File. Typically identify individual pieces of equipment by RPIE. Group equipment with similar Uniformat classification, design life, install date, remaining service life, and direct condition rating - into manageable CIMUs. Except, when the individual RPIE is complex enough to require its own management planning and in this case the individual RPIE is also a BOTH. Each CIMU shall be greater than \$2,500 in value.
- b. eOMSI Spreadsheet Workbook / Flat File - Equipment Data tab; Provide information to all spreadsheet fields. Group Non-equipment with similar Uniformat classification, design life, install date, remaining service life, and direct condition rating - into manageable CIMUs. Obtain the information indicated to be supplied "By KTR using Government info" from the Contracting Officer / [FMS] [____] to complete that portion of the Flat File. Each CIMU shall be greater than \$2,500 in value.

1.8.2 eOMSI Document Files

Provide eOMSI document files on CD or data DVD disks using the most current version of Adobe Acrobat or similar software capable of producing PDF files that can be used to upload the files into an electronic Government document management system. Bookmark the PDF files for easy access to the information. Bookmark Facility Information and Primary Systems Information to at least one level lower than the major system. Bookmark Product and Drawing Information documents using the current version of Masterformat and arrange submittals using the specification sections as a structure. Use Masterformat and UFGS numbers along with descriptive bookmarking titles that explain the content of the information that is being bookmarked.

Provide the following information on the compact disk label and disk holder/ 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

1.9 SUBMITTAL SCHEDULE

Provide the following eOMSI submittals. Scan electronic files of eOMSI Data and eOMSI Documents for malicious viruses using a commercially available scanning program that is routinely updated to identify/remove current virus threats.

[1.9.1 eOMSI, Preliminary Submittal

NOTE: Choose the Preliminary Submittal bracketed paragraphs for complex projects. Simple eOMSI facilities do not require a Preliminary eOMSI submittal.

Submit the Preliminary submittal when construction is approximately 50 percent complete;

- a. eOMSI Data Files.(Excel)
- b. eOMSI Document Files (Bookmarked PDF) that include:
 - (1) Facility Information
 - (2) Primary Systems Information
 - (3) Product and Drawing Information

Provide [four] [_____] electronic copies to the Contracting Officer for approval. Provide the submittal in sufficient detail to allow the Government to substantiate that the data collection, detail of discussion, and information organization of both the data and document files are in accordance with the contract. Include in the submittal, as a minimum, all available Facility Information; all systems of the Primary Systems Information (at least one system to be essentially complete and the remaining systems shall be at least 50 percent complete); and at least two Masterformat divisions of the completed Product Data.

1.9.1.1 Preliminary eOMSI Submittal Review Duration

Allow the Government a minimum of [30] [_____] calendar days to review and comment on the submittal, from the time the Government receives the Preliminary eOMSI submittal.

]1.9.2 100 percent - Prefinal eOMSI Submittal

NOTE: Choose the bracketed option of submission of the Prefinal submittal 90 calendar days prior to BOD for complex projects. Choose 60 calendar days prior to BOD for simple projects or provide a timeframe practical to the project duration for smaller projects. Choose the bracketed option to include the Preliminary Submittal comments in the Prefinal submittal for complex projects.

Submit [four] [_____] electronically formatted copies of the 100 percent submittal of the eOMSI Data File and eOMSI Document File to the Contracting Officer for approval. The eOMSI, 100 percent, Prefinal Submittal is due [90] [60] [_____] calendar days prior to Beneficial Occupancy Date (BOD)/ Placed In Service Date. This submittal shall be a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate will require the entire submittal to be returned for correction. Incorporate all Government requested changes from the [Preliminary submittal and the]eOMSI Development Meetings comments into the Prefinal submission. Provide the same information required for each eOMSI document file CD/ DVD disk label, on the introductory page of each eOMSI submittal volume. Refer to paragraph titled "eOMSI Document Files" of this section for a list of this required introductory page information.

NOTE: Choose the first bracketed paragraph below and delete the second bracketed paragraph for complex projects. Choose the second bracketed paragraph below and delete the first bracketed paragraph for simple projects.

[Submit the Prefinal submittal when construction is 90 percent complete that include;

- a. eOMSI Data Files.(Excel)
- b. eOMSI Document Files (Bookmarked PDF) that include;
 - (1) Facility Information
 - (2) Primary Systems Information
 - (3) Product and Drawing Information]

[Submit Prefinal submittal when construction is approximately 90 percent complete that include;

- a. eOMSI Data Files (Excel)
- b. eOMSI Document Files (Bookmarked PDF) that include;
 - (1) Product and Drawing Information]

1.9.2.1 Prefinal eOMSI Submittal Review Duration

Allow the Government a minimum of 30 calendar days to review and approve the submittal, from the time the Government receives the Prefinal eOMSI submittal. If the Prefinal submittal is required to be resubmitted, the Government review of subsequent submittals shall have the same review duration as the first submittal. No extension in project completion date will be granted due to resubmittal.

1.9.3 eOMSI, Final Submittal

NOTE: Determine the number of Final copies required with the Project Manager.

For complex projects, choose the bracketed option for the "Field Validation" below. Simple eOMSI projects do not require a "Field Validation".

Complete the eOMSI Data and Documents and provide Final submittal in Excel and bookmarked PDF format as required in the Prefinal Submittal. Deliver submittals to the Contracting Officer for approval. The Final submittal is due at BOD/ Placed in Service Date. Include all Government requested changes from the Prefinal submittal, [Field Validation,] and the Project Closeout Meetings to complete the Final submittal.

In addition to the formats stated above, provide [four] [_____] electronic copies of the Final submittal in editable formats. Provide editable eOMSI Document drawing and diagram files in CADD and other editable eOMSI Document files in MS Word or Excel. Refer to Product and Drawing Information below to describe the format of the Record Drawings submission.

[1.9.3.1 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 [Italian] [Spanish] [Portuguese] [Greek] [Japanese] [_____] translation of all items under Facility Information and Primary Systems Information (except Equipment Tags) in electronic format as defined above. Provide drawings, charts and tables in both English and the foreign language. If hard copies of the eOMSI are required provide a split format showing the foreign language on the left and English translation on the right.

]1.10 FACILITY SYSTEMS

The project is anticipated to include the following critical systems. Provide eOMSI data, eOMSI documents, and training for all products, materials, and equipment that make up these systems in the final constructed facility, including the following systems:

NOTE: Modify and add systems to the list below as necessary to describe systems anticipated to be in the project.

- [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)]
- [k. [_____]]

PART 2 PRODUCTS

2.1 DESCRIPTION OF WORK

2.1.1 eOMSI DATA FILES

Provide the following items of data in a format compatible with the CMMS used on the project. Enter all data in the eOMSI Spreadsheet Workbook / Flat File.

2.1.1.1 Equipment Information

NOTE: The following listed Equipment Data applies to Navy projects. Revise the Equipment Data list below and the corresponding Flat File -- Equipment Data, to properly transition the data to the Marine corps CMMS. Coordinate the required data with the facility users if this specification is used by a different agency.

- a. Equipment Listing - Provide the following information for each piece of installed equipment and for each applicable item listed on the UEM Asset Classification tab of the eOMSI Spreadsheet Workbook. Enter all information on the Flat File - Equipment Data tab of the eOMSI Spreadsheet Workbook.

- (1) Asset_ID
- (2) Asset Description
- (3) ORG_ID
- (4) Site_ID
- (5) Building Name
- (6) Asset Type
- (7) Inventory Category
- (8) Location Code
- (9) Design Life
- (10) FCI
- (11) Remaining Service Life
- (12) DCR
- (13) Work Center
- (14) Belongs to (Parent Asset. ID)
- (15) Contract number
- (16) Task/delivery order number
- (17) Drawing reference ID
- (18) Location description
- (19) Master system Unifomat
- (20) System Unifomat
- (21) Subsystem Unifomat
- (22) Quantity
- (23) Install date
- (24) Replacement cost
- (25) Manufacturer
- (26) Model number
- (27) Serial number

- (28) Manufacturer Warranty end date
- (29) Warranty Company Info
- (30) Comment (Such as: Required information not to void warranty)
- (31) Status Date
- (32) Asset Status
- (33) UEM Classification ID
- (34) UEM Classification Description
- (35) Job Plan Code (Preventive Maintenance)

The Job Plan List is provided by NAVFAC to identify applicable Job Plan Codes. If NAVFAC does not have a Job Plan for the equipment used, provide information in paragraph entitled Job Plan for Equipment NOT assigned a NAVFAC Job Plan below.

- (36) Equipment Tag Number

b. Job Plan for Equipment NOT assigned a NAVFAC Job Plan - Preventive Maintenance Procedures, and Schedules. If the Ggovernment cannot provide a job plan for a specific piece of equipment, provide a detailed Job Plan (Preventive Maintenance Plan) using manufacturer's recommendations and sound engineering practice. Show associated frequencies when job plan is to be performed and include detailed preventive maintenance (PM) procedures such as inspections, tests, adjustments required to ensure proper and economical operation and minimize corrective maintenance. For periodic calibrations, provide manufacturer's specified frequency and procedures for each operation. Detailed Job Plans include the following:

- (1) Safety instructions and precautions,
- (2) Including lock out/tag out precautions,
- (3) Required skill level,
- (4) Number of personnel needed,
- (5) Frequency of performing the job plan,
- (6) Special tools needed,
- (7) Parts needed
- (8) Estimated time required to complete the task.
- (9) Lubrication schedules indicating types, grades and capacities.

2.1.1.1.2 Non-Equipment Information

NOTE: The following listed Non-equipment data applies to Navy projects. Revise the Non-Equipment

Data list below and the corresponding Flat File --
Non-Equipment Data, to properly transition the data
to the Marine Corps CMMS. Coordinate the required
data with the facility users if this specification
is used by a different agency.

a. Provide the following information for each item of non-equipment. Enter
all information on the eOMSI Spreadsheet Workbook - Flat File
Non-Equipment Data tab.

- (1) Asset ID
- (2) Asset Description
- (3) ORG_ID
- (4) Site_ID
- (5) Asset Type
- (6) Inventory Category
- (7) Design Life
- (8) FCI
- (9) DCR
- (10) Building Name
- (11) Location Code
- (12) Contract Number
- (13) Task/ Delivery Order Number
- (14) Drawing Reference _ID
- (15) Notes on CIMU Structure
- (16) Master System Unifomat
- (17) System Unifomat
- (18) Subsystem Unifomat
- (19) Quantity
- (20) Install Date
- (21) Remaining Service Life
- (22) Replacement Cost
- (23) Warranty End Date
- (24) Warranty Company Info

(25) Comments (Such as: Required information not to void warranty)

2.1.2 eOMSI DOCUMENT FILES

[2.1.2.1 Facility Information

Facility Information includes the following;

**NOTE: Coordinate Facility Information requirements
with the Submittal Requirement paragraphs above.
Require Facility Information for complex projects.
Eliminate Facility Information for simple projects.**

- a. 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.

**NOTE: Provide the Basis of Design to the Contractor
from the Government's Designer of Record for
Design-Bid-Build projects. The Contractor must
include this information in the eOMSI Facility
Information.**

**The Contractor will create the Basis of Design eOMSI
information for Design-Build projects.**

- b. Basis of Design - [Include the Government furnished] [Create the] Basis of Design that shows the basic design scope of work, assumptions and the original intentions of the 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.
- c. Safety Hazards - List all residual hazards identified in the Activity Hazard Analysis as prepared by the DOR. Provide recommended safeguards for each identified hazard.
- d. Floor Plans - Provide uncluttered, legible 29.9 by 43.2 centimeters 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 construction instructions, references, frame numbers, etc.
- e. Floor Coverings, Wall Surfaces, Ceiling Surfaces - Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish. The table shall include a facility summary of the total area for each type of space and floor, wall, or ceiling finish.
- f. 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.

- g. 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.

] [2.1.2.2 Primary Systems

NOTE: Coordinate Primary Systems and Primary Systems Information requirements with the Submittal Requirement paragraphs above. Require Primary Systems and Primary Systems Information for complex projects. Eliminate Primary Systems and Primary Systems Information for simple projects.

Provide Primary Systems Information for all primary systems listed below. Primary systems information shall address operations, troubleshooting guides and diagnostic techniques, repair, and preventive maintenance.

NOTE: Add systems to the list below as necessary to describe Primary Systems of the project.

- a. HVAC facility systems
- b. Direct digital controls/ space temperature controls
- c. Electrical systems
- d. Fire protection systems and fire alarm and detection systems
- e. Cathodic protection
- f. Site civil utilities (including water, wastewater, storm water collection, gas/ fuel, manholes/ hand holes, and pumping, and treatment systems)
- g. Site electrical utilities (including power generation, communications, distribution, ducts, and manholes/ hand holes)
- h. [_____]

] [2.1.2.3 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 Document 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.

b. Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures for isolating the cause of system malfunctions. The procedures shall 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.

c. Repair

Repair Procedures - Provide repair instructions required for restoring equipment to proper operating condition and standards. References must be specific as to location within the eOMSI manuals.

]2.1.2.4 Product and Drawing Information

NOTE: Product and Drawing Information is required
on all projects.

This portion of the eOMSI provides a 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.

a. O&M Data. Include, as a minimum O&M Data, required in the SD-10 Data Packages of the UFGS specifications. Provide the following for each product, material, and system on the project:

- (1) Materials
- (2) Equipment
- (3) Data Sheets
- (4) Test Reports
- (5) Warranties
- (6) Certificates
- (7) Shop Drawings

b. Drawings. Provide original CADD drawings or original facility design drawings that have been edited to eliminate unneeded information and highlight eOMSI information in 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.

- (1) 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 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.
- (2) Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the 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 the room number, panel number, circuit breaker, valve number, etc., of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

c. Equipment Tags. Provide equipment tags for all applicable items listed in eOMSI Spreadsheet Workbook/ Asset Identification List tab. Provide tags that are durable, oil and water-resistant and approved by the Contracting Officer. Attach tag with copper wire and spray with a

clear silicone waterproof coating. Place tags on the equipment in a visible location that can be read by an inspector in a standing position. Provide tag information to include: Contract Number, [Maximo] [DMLSS] [_____] Equipment Identification Numbers, and Equipment Tag Number that corresponds with the drawing. Only equipment with a value of greater than \$2,500 or sized as noted in eOMSI Spreadsheet Workbook/ Asset Identification List tab, shall be tagged.

Provide tags for the items listed below in addition to the items listed in eOMSI Spreadsheet Workbook/ Asset Identification List tab:

- (1) Control valves for heating, cooling, gas, fuel, water and wastewater for piping 3.8 Centimeters 1 1/2 inches or greater. Main interior and exterior utility cut off valves (no dollar value restriction).

NOTE: If project complexity requires more tagging,
list additional items below that are not listed in
the Asset Identification List tab.

- (2) [_____]

- d. Record Drawings. Provide an electronic copy of the Record Drawings for the project in [PDF format, bookmarking all drawings using the sheet title and sheet number] [CADD format]. Provide the Record Drawings on the same electronic media as used for the eOMSI submittal but on separate disks or files to allow simultaneous use of the eOMSI and Record Drawings.

PART 3 EXECUTION

3.1 eOMSI TRAINING

NOTE: Choose the Facilities Management Specialist
as a trainee for Navy projects. Fill in the Public
Works Facility Project Lead for Marine Corps and
other Agencies.

NOTE: Choose the bracketed option in the following
paragraph for the eOMSI Preparer to direct a Team of
specialists for complex projects.

Prior to acceptance of the facility by the Contracting Officer for Beneficial Occupancy/ Placed in Service Date, the eOMSI Preparer must provide a comprehensive project-specific Government personnel training program for the systems and equipment of the facility specified in the technical specifications of this Contract. The trainees must include the [Facilities Management Specialist] [_____] , maintenance staff, and applicable building occupants. Coordinate, schedule, and ensure that training is completed. Instructors shall be well-versed in the particular systems that they are presenting. [The eOMSI Preparer shall direct a team of specialist to address all aspects of the eOMSI submittal. The 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 LEED 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.

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. Objectives.
- e. Subjects covered including description.
- f. Duration of training on each subject.
- g. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.).
- h. Instructor and instructor qualifications for each subject.

3.1.2 Training Content

NOTE: Choose the Commissioning Authority (CA) to oversee and approve the training content if the project is a LEED 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 shall 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. The eOMSI Preparer and the [QC] [CA] must interview the Government Facilities Management Specialist and the Contracting Officer to determine the special needs and areas where training will be most valuable. The Contracting Officer and [QC] [CA] must decide how rigorous the training should be for each piece of equipment. The training shall include the following for each

Primary System:

- 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.

NOTE: Include the following bracketed option for
complex projects. Delete the following bracketed
paragraph for simple projects.

[In addition to the training requirements above, 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:

- d. Design intent.
- e. Use of O&M Manuals.
- f. Review of control drawings and schematics.
- g. Interactions with other systems.
- h. Special maintenance and replacement sources.
- i. Tenant interaction issues.

]3.1.3 Training Outline

The eOMSI Preparer shall provide each trainee in the course a written course outline, listing the major and minor topics to be discussed by the instructor on each day of the course. Provide the course outline 14 calendar days prior to the training.

3.1.4 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) shall 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.

3.1.5 Unresolved Questions from Trainees

If, at the end of the training course, there are questions from trainees that remain unresolved, the instructor shall send the answers, in writing, to the Contracting Officer for transmittal to the trainees, and the

training video shall 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, one copy to the OMSI Preparer for inclusion into the OMSI documentation, and one copy to the LEED Documentation Preparer.

3.1.7 Quality Control Coordination

NOTE: Choose the Commissioning Authority (CA) for QC coordination if the project is a LEED 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 the section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL FOR DESIGN-BUILD for Design-Build or the section 01 45 00.00 20 QUALITY CONTROL for Design-Bid-Build.

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

[3.2 FIELD VALIDATION

NOTE: Use the following bracketed option for a complex project to include the "Field Validation." Delete this paragraph for simple eOMSI projects; simple eOMSI projects do not require a "Field Validation".

Perform the field validation at the 100 percent - Prefinal submittal stage. Coordinate with the Contracting Officer to establish the field validation date, to ensure the availability of Government representatives. Validation without Government representative, unless waived, is not acceptable.

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 Data and eOMSI Documents. 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; verifying that equipment nomenclature and system configurations are accurate; and confirming correct equipment tagging.

The eOMSI Preparer, Superintendent, Quality Control Manager, and the Design Quality Control Manager/ Commissioning Authority (CA) shall attend the field validation, to verify the accuracy of the eOMSI Submittal. The eOMSI Preparer shall perform the validation, document the results of the field validation and correct the final eOMSI submittal to reflect the changes identified.

] -- End of Section --