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Drafting Act	tivity: USACE			
	UNIFIED FACILITIES GUIDE SPECIFICATION			

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UNIFIED FACILITIES GUIDE SPECIFICATION

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 XX XX

Construction-Operations Building information exchange (COBie) 02/2014

NOTE: This guide specification covers the requirement for capture and delivery of construction handover information.

This specification section is intended for inclusion in designbuild and design-bid-build contracts.

For construction-only contracts, design deliverables shall be removed from this specification before inclusion in the contract.

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.

This specification section is intended for inclusion in design-build and design-bid-build contracts.

For construction-only contracts, design deliverables shall be removed from this specification before inclusion in the contract.

Remove information and requirements not required in respective project, whether or not brackets are present.

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

1 GENERAL

1.1 REFERENCES

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.

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

NBIMS-US V3: (2014) United States National Building Information Model Standard

INTERNATIONAL STANDARDS ORGANIZATION (ISO)

ISO 16739: (2013) Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries

CONSTRUCTION SPECIFICATIONS INSTITUTE (CSI)

OmniClass: (2013) OmniClass Construction Classification System OCCS Development Committee Secretariat, Construction Specification Institute

1.2 ADMINISTRATIVE REQUIREMENTS

date of beneficial occupancy.

Failure to provide approved COBie-Specific Submittals (COBie-Specific Submittals) will result in the following withholdings. The withholding will be released following the compliance with the specifications and Government approval of the required COBie data set. These withholdings reflect the cost to the Government to independently recreate the required COBie Data and Document Files.

design-bid-build project manual.

NOTE: Update withholding amounts to reflect the cost to contract
out replacement COBie deliverables based on the specifics of a
given project.
******************* <mark>*</mark> ***** <mark>*</mark> *********
1.2.1 Architectural Design Phase (30% Design)
An additional [\$5,000] [] withholding will be held if COBie data is not
provided upon delivery of the Architectural Design Set.
1.2.2 Coordinated Design Phase (60% Design)
An additional [\$10,000] [] withholding will be held if COBie data is not
provided upon delivery of the Coordinated Design Set.
1.2.3 Construction Documents Phase (100% Design)
An additional [\$15,000] [] withholding will be held if COBie data is not
provided upon delivery of the Construction Documents Set.
1.2.4 Construction Mobilization Phase
An additional [\$15,000] [] withholding will be held if COBie data is not
provided upon delivery of the Construction Documents Set.
1.2.5 Construction 60% Complete
An additional [\$20,000] [] withholding will be held if COBie data is not
provided at the earlier of 70% fiscal completion or four months prior to the

1.2.6 Beneficial Occupancy Phase An additional [\$25,000] [] withholding will be held if COBie data is not provided on the date of beneficial occupancy.
1.2.7 Fiscal Completion An additional [\$30,000] [] withholding will be held if COBie data is not provided with the as-built drawings at fiscal completion of the project.
1.3 SUBMITTALS

Standard UFGS instructions to be included prior to publication. ***********************************
Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.][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-11 Closeout Submittals
1.3.1 COBie Information Delivery Plan Provide a COBie Information Delivery Plan to document their plan to complete the work described in this specification.
1.3.2 COBie-Specific Submittals Provide COBie-Specific submittals at the major project milestones listed below:

NOTE: Remove project phases not included in this Design-Build or design-bid-build project manual.
Concept Design Phase (30% Design) COBie File Coordinated Design Phase (60% Design) COBie File Construction Documents Phase (100% Design) COBie File Construction Mobilization Phase COBie File Construction 60% Fiscally Complete COBie File Beneficial Occupancy Phase COBie File Fiscal Completion Phase COBie File
1.3.3 COBie-Formatted Submittals Provide the following submittals, required elsewhere in this contract, in COBie-compatible format:

NOTE: Remove submittals not included in this Design-Build or design-bid-build project manual.

As-Installed Equipment Schedule As-Installed Warranty Tags Approved Submittals Door Schedule Room Finish Schedule
Hardware Schedule
Signage Schedule
Spare Parts Schedule
Warranty Certificates and Data
Preventative Maintenance Plans
Diagnostic Testing Plans
Repair and Replacement Plans
Real Property Equipment Transfer Report
Operations and Maintenance Manuals

1.3.4 COBie Equipment Photographs

Upon approval by the Government, provide a complete set of installed equipment photographs with each of the following COBie-Specific Submittals:

Construction 60% Fiscally Complete COBie File Beneficial Occupancy Phase COBie File Fiscal Completion Phase COBie File

1.4 QUALITY ASSURANCE

1.4.1 COBie-Specific Submittal Quality

Meet the following minimum quality standards for all COBie-Specific Submittals:

1.4.1.1 COBie Guide - General Requirements

The UNITED STATES NATIONAL BUILDING INFORMATION MODEL STANDARD (NBIMS-US) defines the minimum quality standards for COBie submittals.

1.4.1.2 COBie Guide - USACE Appendix

The USACE COBie Guide Appendix clarifies and supersedes the minimum quality standards for COBie submittals found in the buildingSMART COBie Guide. Unless otherwise defined in the USACE Appendix classifications required in any COBie submission shall utilize OMNICLASS.

1.4.1.3 COBie Data File - Facility Asset Scope

Provide one COBie-Specific Submittal Set for each facility identified in a project.

1.4.1.4 COBie Data File - Site Asset Scope

Provide one COBie-Specific Submittal Set for SITE assets, if SITE assets are used by multiple facilities.

1.4.1.5 COBie Data File - Reported Errors

Update all COBie Data files until zero errors are reported from the relevant COBie Tool Kit Quality Control Report.

1.4.1.6 COBie Data File- Reported Warnings

Document and submit, for Government Approval, the reason for warnings reported from the relevant COBie Tool Kit Quality Control Report.

1.4.1.7 COBie Data File - Design Phase

Accurately reproduce all design drawing schedules in COBie-Specific Submittals. For products scheduled by Type, individually list each specific asset.

1.4.1.8 COBie Data File - Construction Phase

NOTE: Remove this paragraph below if (1) this is a Design-Build contract or (2) the Government -HAS- a Design COBie file to provide to the Contractor.

Provide a Mobilization Phase COBie-Specific submittal that reflects the spatial and equipment schedules in construction contract drawings and all subsequent amendments at construction contract award.

1.4.2 COBie-Formatted Submittal Quality

Meet the minimum quality standards for all COBie-Formatted Submittals as noted below.

1.4.2.1 COBie Templates

Utilize the COBie Tool Kit to produce templates for all COBie-Formatted Submittals. These templates are used to collect data for all COBie-Formatted Submittals.

1.4.2.2 COBie-Formatted Submittal Contents

Ensure that the information contained in COBie-Formatted Submittals accurately reflects current state of the as-built project at the time of the submission.

1.4.3 COBie Data File Quality

Ensure that location of all linked COBie in either COBie-Specific Submittals or COBie-Formatted Submittals conform to the following standards:

1.4.3.1 Document Files

Utilize PDF files for all document-based files. Create documents to be compatible with Adobe Acrobat Reader Version 6.0 and later. Provide files from original sources, text-searchable, and saved in "Standard" resolution.

1.4.3.2 Scanned Document Files Prohibition

Submittal of scanned or photocopied document files is prohibited. Only electronically marked-up manufacturer files are acceptable.

1.4.3.3 Photograph Files

Utilize JPEG files for all photograph and image files. A maximum resolution of 300 Pixels Per Inch/Dots Per Inch (PPI/DPI). Publish 5x7 photographs

1.4.3.4 Drawing Files

Utilize both PDF and native design or shop drawing file format. Create PDF documents to be compatible with Adobe Acrobat Reader Version 6.0 and later. Produce files from original sources, text-searchable, and saved in "Standard" resolution.

1.4.3.5 File Linking

Link COBie Document Files and Photographs to the relevant records in the COBie Data File per COBie specification.

1.4.3.6 File Protection

Do not restrict COBie Data Files, Document Files or Photographic Files from being modified or copied.

1.4.3.7 Manufacturer-Specific Documents

Provide document files for each product family based on the manufacturer on-line documentation. Do not submit document files containing multiple product catalogs from the same manufacturer, or product data from multiple manufacturers.

1.4.3.8 Operations and Maintenance Manual Documents

To support the production of electronic Operations & Maintenance manuals, either (a) split single manufacturer files to ensure that the file contains information from on a single product type and split specific manufacturers' product type specific files to ensure that the file contains information pertaining to a single submittal type or (b) provide electronic bookmarks within these documents that link to product type and submittal type.

1.5 INFORMATION DELIVERY, STORAGE, AND HANDLING

1.5.1 Delivery Method - COBie-Specific Submittals

Provide COBie-Specific Submittals on electronic storage media as directed. Document this format in the COBie Information Delivery Plan. Specifically address the following minimum requirements in the COBie Information Delivery Plan:

1.5.2 Electronic Media

Provide data on either disk-based (CD or DVD) or portable hard drive media. Select and apply technology used for COBie electronic data transmission to ensure that the full data set is provided on one single "disk" or "drive." Document the selection of disk-based on drive-based media in the COBie Information Delivery Plan.

1.5.2.1 Disk-Based Media

If disk-based media are provided, then apply a printed label to the data disk and list the name of the project, project location, contract number, design firm or prime Contractor company's name, title of submission, and security classification of the data contained on the disk on the label. Also include on the label the name and contact information of the individual who produced the final data disk to insure that any problems with the data or media can be easily resolved.

1.5.2.2 Drive-Based Media

If drive-based media are provided, then legibly label the drive content and date on the outside of the drive. Include the phrase "COBie DATA" and the appropriate contract or task order number. Also include the name and contact information of the individual who produced the final data disk to insure that any problems with the data or media may be easily resolved.

1.5.3 Transmission of Physical Media

When media is not hand-delivered by Contractor personnel, it shall be delivered using an accountable commercial delivery service. Provide the tracking number and request a return receipt acknowledging the Government office receiving the package. Wrap all Storage media within a separate envelope with full mailing address in case the exterior envelop is damaged.

1.5.4 Encryption

Encrypt COBie data as directed by Area/Resident/Project Office Engineer. Document the encryption to be used in the COBie Information Delivery Plan.

2 PRODUCTS

2.1 GOVERNMENT FURNISHED INFORMATION

2.1.1 COBie Tool Kit

The Government will provide one (1) copy of the COBie Tool Kit software to support the preparation, testing, and submission of all COBie deliverables. For full COBie submittals (COBie-Specific Submittals) the COBie Tool Kit provides the Design and Construction Quality Control Reports. For submittals that rely on the use and re-use of COBie information (COBie-Formatted Submittals, Installed Equipment Photographs) the COBie Tool Kit provides partially completed templates through which COBie data may be correctly captured in the field.

111e to provide to the contractor.

2.1.2 COBie Design File

The Government will provide one (1) electronic copy of the COBie Design File. This file is provided for information only. If the COBie Design File provided by the Government is utilized, full responsibility is transferred for any corrections and changes needed to bring the format or content of that COBie Design File up to the quality standards identified in this specification.

2.2 COMMERCIAL OFF-THE SHELF (COTS) SOFTWARE

A variety of COTS software systems have been tested against the COBie requirements. Document all software used in the COBie Information Delivery Plan.

2.3 COBIE TOOL KIT

The COBie Tool Kit (paragraph GOVERNMENT FURNISHED INFORMATION) provides: (1) quality control testing reports for COBie-Specific Submittals (COBie-Specific Submittals), (2) templates and merging routines for COBie-Formatted Submittals (COBie-Formatted Submittals), (3) reports such as the DD1354 Transfer of Real Property Report, and (4) a consolidated project eBook that may be generated in support (or in lieu) separate Operations and Maintenance Documentation.

2.4 APPLICATION

NOTE: On MILCON Construction Program projects over 10 Million USD, the maximum time allowed for the Contractors delivery of a

COBie Implementation Plan should be 90 days. For smaller projects, in other programs, this delivery time should be reduced.

2.4.1 COBie Information Delivery Plan Application

Within [90] [____] days following Notice to Proceed provide an Information Delivery Plan describing the roles and responsibilities, software and services that will be used to capture COBie data including, but not be limited to, the topics below:

2.4.1.1 COBie Quality Control Responsibility

Designate one individual and one alternate party responsible for the production of COBie submittals in accordance with this specification.

2.4.1.2 COBie Creation and Capture Responsibility

Prepare a table that identifies any party responsible for the creation and/or capture of each specific COBie data elements.

2.4.1.3 Request for Photography

Provide a scanned copy of the letter requesting allowance to take installed equipment photographs on this project. Include the documentation as to the Government action on that request.

2.4.1.4 COTS Software Selection

Identify each COTS software product used in the production of COBie submittals.

2.4.1.5 COBie Tool Kit

Identify expected use of the COBie Tool Kit for purposes of Quality Control, production of submittal templates, production of contractually required reports, and production of electronic O&M manuals. Use of an alternative COTS product requires a pre-approved substitution documented in the COBie Implementation Plan.

2.4.1.6 Authoritative Sources

Describe the way in which the selected COTS Software and/or COBie Tool Kit are used to collect COBie data and provide that data in the appropriate COBie-Specific Submittals (1.2.2 COBie-Specific Submittals) or COBie-Formatted Submittals (1.2.3 COBie-Formatted Submittals).

2.4.1.7 Multiple Data Source Merging

Explicitly identify how the COTS Software and/or COBie Tool Kit are used to merge electronic information provided by multiple design consultants and/or subcontractors.

2.4.1.8 Manual Transcription Elimination

Explicitly identify how the COTS Software and/or COBie Tool Kit are used to capture COBie data without intermediate paper documents, manual data transcription, or manual copying of COBie data.

2.4.1.9 Site Survey Elimination

Explicitly identify how the Manual Transcription Elimination described in the COBie Information Delivery Plan has been used to eliminate site survey data collection. COBie Implementation Plans that fail to directly address the elimination of a minimum of one job site survey shall be returned for revision.

2.4.1.10 Request to Eliminate Paper Manuals

If approved by the Government, COBie deliverables may be submitted in lieu of paper-based handover documents specified elsewhere in this contract. COBie Implementation Plan shall document the results of any request to eliminate paper-based handover documents.

2.4.2 COBie-Specific Submittal Set

Provide a complete set of files in each COBie-Specific Submittal Set as described below:

2.4.2.1 COBie Data File

Prove one COBie Data File with each COBie-Specific Submittal Set.

2.4.2.2 COBie Data File Quality Control Report

Provide one COBie Quality Control Report with each COBie-Specific Submittal Set. Select the COBie Tool Kit software (GOVERNMENT FURNISHED INFORMATION) Quality Control report for Design or Construction depending on the phase of the COBie Data File.

2.4.2.3 COBie Document Files

Create individual Portable Document Format (PDF) files for each approved submittal and link in the COBie Data File to the related facility information.

2.4.2.4 COBie Equipment Photographs

Provide photographs of installed equipment as of the date of submission of the COBie-Specific Submittal Set as specified by the COBie format.

Provide a minimum of two photographs for each piece of individually scheduled equipment identified on the Construction Documents' stage design drawings. Provide one photograph of the installed equipment prior to covering by insulation, walls, or ceilings. Provide one photograph clearly showing that equipment's nameplate.

2.4.3 COBie-Specific Submittal Application

Provide COBie-Specific Submittal Sets as described below, as documented in the COBie Information Delivery Plan:

2.4.3.1 Architectural Design Phase (30% Design)

Provide an Architectural Design Phase COBie file that contains the same information found on the design drawings submitted at this stage of the project. COBie contents at this stage are focused on room, room types, and finish schedules; and equipment such as plumbing and lighting fixtures found in the associated design drawings.

2.4.3.2 Coordinated Design Phase (60% Design)

in this Design-Build or design-bid-build project manual.

Provide a Coordinated Design Phase COBie file that contains the same information found on the design drawings submitted at this stage of the project. COBie contents at this stage update the Architectural Design Phase (30% Design) COBie file and emphasize the inclusion of equipment schedules provided by design and engineering consultants.

2.4.3.3 Construction Documents Phase (100% Design)

Provide a Construction Documents Phase COBie file that contains the same information found on the design drawings submitted at this stage of the project. COBie contents at this stage update the Coordinated Design Phase (60% Design) COBie file and emphasize the completion of room finish and equipment schedules. Also provide the basis of design for all scheduled equipment types.

2.4.3.4 Construction Mobilization Phase

Within 90 days following construction Notice to Precede provide a Construction Mobilization COBie file that contains the same information found on the Construction Documents (100% Design) COBie file as updated to include all contract amendments. The Contractor's Information Delivery Plan discusses the re-use and updating of this COBie file as

the basis for the delivery of subsequent COBie deliverables.

2.4.3.5 Construction 60% Fiscal Complete Phase

Provide a Construction 60% Fiscal Complete COBie file updated to reflect the current state of the project at this milestone. This COBie deliverable reflects all changes to COBie data resulting from executed modifications at the time of the submission of this file. The Information Delivery Plan discusses the re-use and updating of this COBie file as the basis for the delivery of subsequent COBie deliverables.

2.4.3.6 Beneficial Occupancy Phase

Provide a Beneficial Occupancy Phase COBie file updated to reflect the current state of the project at the time of Beneficial Occupancy. This COBie deliverable reflects all changes to COBie data resulting from executed modifications at the time of the submission of this file. Include COBie data needed to inform the facility manager of the maintenance activity conducted prior to Beneficial Occupancy. The Information Delivery Plan discusses the re-use and updating of this COBie file as the basis for the delivery of subsequent COBie deliverables.

2.4.3.7 Fiscal Completion Phase

Provide a Fiscal Completion Phase COBie file updated to reflect the current state of the project at the time of Fiscal Completion. Include COBie data needed to inform the facility manager of the maintenance activity conducted between the previous COBie deliverable and this final COBie deliverable. This file must fully reflect the as-built conditions and include changes required to COBie data resulting from all contract amendments and modifications.

2.4.4 COBie-Formatted Submittal Application

Provide COBie-Formatted Submittal Sets as described below, as documented in the COBie Information Delivery Plan:

2.4.4.1 Approved Submittals

Prepare and submit monthly updates of all approved submittal line items. At a minimum provide the following information in COBie format: product type, specification section, document name, document type, document website location. Also provide a compressed, but legible, PDF of the approved submittal document. If the submittal document contains multiple sub-types of documents, split the file into documents each of a category (Single Purpose Files).

2.4.4.2 Diagnostic Testing Plans

Prepare and submit information on preventative maintenance testing requirements. Provide the following minimum information s in COBie format: product type, manufacturer, model number, test name, expected test values and/or testing limits, actual test value.

2.4.4.3 As-Installed Equipment Schedule

Submit monthly updates of installed equipment. Provide the following minimum information in COBie format: component name, installed manufacturer, installed model number, serial number, manufacturer's catalog reference number, room number from which equipment is operated, specification section and paragraph, installation date, and start-up date.

2.4.4.4 As-Installed Warranty Tags

Submit monthly updates of information provided on installed equipment tags. Provide the following minimum information in COBie format: product or material name, product type, manufacturer name, installed model number, serial number, responsible contractor contact

information, warranty start date, warranty duration, warranty contact information, warranty response time priority code.

2.4.4.5 Spare Parts Schedule

Submit information on spare parts. Provide the following minimum information in COBie format: product type, manufacturer, model number, manufacturers part number, part name, minimum stock level, replacement ordering level, part supplier, supplier part number, and related manufacturer or commissioning agent documents.

2.4.4.6 Warranty Certificates and Data

Submit information on product warranties. Provide the following minimum information in COBie format: product type, manufacturer contact information, model number, suppliers contact information, warranty guarantors contact information, warranty description, durations, warranty start date, expected warranty response time, and related manufacturer warranty certificate documents.

2.4.4.7 Preventative Maintenance Plans

Submit information on preventative maintenance. Provide the following minimum information in COBie format: product type, manufacturer, model number, job name, job description, required tools, materials, and training, and related manufacturer or commissioning agent documentation.

2.4.4.8 Repair and Replacement Plans

Submit information on product and system troubleshooting, repair, and replacement. Provide the following minimum information in COBie format: product type, manufacturer, model number, job name, job description, required tools, materials, and training, and related manufacturer or commissioning agent documentation.

2.4.4.9 Operations and Maintenance Manuals

Submit two sets of electronic operations and maintenance manuals using the COBie Tool Kit "eBook" format. Update any documents to ensure that each manufacturer catalog is either split into individual files, or referenced by electronic bookmark and noted in the COBie Documents as a linked data file. The need to provide paper copies of this electronic set of O&M manuals will be determined by the Government and documented in the COBie Implementation Plan.

2.4.4.10 Interactive Floor Plan

If an as-built, building information model, in INDUSTRY FOUNDATION CLASS MODEL Coordination Model View format, is required elsewhere in this contract, produce an interactive floor plan module using the COBie Tool Kit "eBook" export.

2.4.4.11 Real Property Equipment

Provide all required deliverables of the DD 1354, "Transfer and Acceptance of Military Real Property," Form using COBie data as the basis for real property assets. Also provide a separate report of installed personal property.

2.4.4.12 Door Schedule

Submit information on installed doors. Provide the following minimum information in COBie format: door type, door number, door size, frame type, fire rating, door finish, operating room number, connecting room number.

NOTE: Remove if UFGS 08 71 00 is not in this Design-Build or design-build project manual.

2.4.4.13 Hardware Schedule

Submit information on installed hardware. Provide the following minimum information in COBie format: hardware set type, installed manufacturer, installed model number, manufacturer's catalog reference number, quantity used, size, finish, BHMA finish designation, fire rating, key control number.

NOTE: Remove if UFGS 10 14 02 is not in this Design-Build or design-bid-build project manual.

2.4.4.14 Signage Schedule

Submit information on door/room signage. Provide the following minimum information in COBie Format: room number, signage type, signage text, signage inserts, symbol text, remarks.

of building rooms.

2.4.4.15 Room Finish Schedule

At the beneficial occupancy and fiscal completion stage, submit, in COBie Format, an updated room schedule that identifies, at a minimum, the following set of information: updated room number, floor finish, ceiling finish, and wall finishes.

NOTE: The section below is to be included in all projects that
where photographs of manufactured equipment are allowed to be
taken. Additional clarification is required on classified
projects.

2.4.5 Installed Equipment Photograph Application

Submit a request to take photographs of installed equipment on the project. Following Government approval of this request, submit the minimum specified electronic photographs of installed equipment reported in the As-Installed Equipment Schedule in COBie Format. Additional photographs may be provided documenting the as-installed condition of equipment to be covered later by insulation, ceilings, floors, or partitions. Provide the set of all photographs as attachments to the monthly As-Installed Equipment Schedule. Provide the following minimum information in COBie format: component name,

photograph name, date photograph was taken, description/notes regarding the job progress or condition.

3 EXECUTION

Not used.

[End of Document]

