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PENDING UFGS-**01 78 XX (ver 1.1, Dec 2009)**

**------------------------------------**

Drafting Activity: USACE-ERDC-CERL

PROPOSED UNIFIED FACILITIES GUIDE SPECIFICATION

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**12/2009**

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NOT USED

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NOT USED

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PENDING UFGS-**01 78 XX (ver 1.0, Dec 2009)**

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Drafting Activity: USACE-ERDC-CERL

PROPOSED UNIFIED FACILITIES GUIDE SPECIFICATION

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**12/2009**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: This specification covers the requirements for the delivery of documents currently specified to be submitted in paper format in design, construction, renovation and maintenance contracts. In most cases this specification does not change the content of current deliverables. Existing specification sections that reference this specification must eliminate the requirement to produce multiple paper copies of such deliverables. One paper copy, shall be required for documents identified delivered via. COBie2.**

**This proposed specification is provided for consideration by those adopting the Construction Operations Building information exchange (COBie2) format.**

**Questions regarding the COBie2 project or format, these questions should be answered by existing information posted on the Whole Building Design Guide. To find this information google “cobie bim.” Comments and suggestions are welcome. Please send constructive comments regarding the specific text of this specification to** [**bill.east@us.army.mil**](mailto:bill.east@us.army.mil)**.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

PART 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.

**International Standards Organization**

ISO/PAS 16739 Industry Foundation Classes

**buildingSMART**

FM Handover MVD Facility Management Handover Model View Definition

**buildingSMART alliance**

COBie2 Construction-Operations Building information exchange (ver. 2)

SPie Specifiers’ Properties Information Exchange

**Whole Building Design Guide**

Product Guide Listing of Required SPie Product Properties

**COBie2 Checker**

bimServices COBie checker (<http://www.aec3.com/6/6_04.htm>)

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**NOTE: Include appropriate reference for encryption method if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1.2 SUBMISSION OF BUILDING INFORMATION

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**NOTE: This specification pertains only to the COBie2 requirements developed through the buildingSMART international. COBie1 format has been fully depreciated and is not allowed under this specification. Note that IFC formatted files may only be used as an intermediate internal product that is used to produce the COBie2 formatted spreadsheet file.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The contractor shall provide all building information submittals required elsewhere in the contract using the COBie2 format. This information includes but is not limited to: (1) a depiction of the spatial and system organization of the facility, (2) all scheduled, installed, or tagged materials, products, and equipment, and (3) operations and maintenance information. The contractor is responsible for the full aggregation and coordination of such information that is provided by designers, design consultants, subcontractors, suppliers, and/or manufacturer’s as is applicable to the specific type of deliverable to be formatted using this COBie2 specification. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

* + 1. Package Quality

1. One (1) paper copy of the electronic COBie2 data set shall be provided. This copy shall include a tab for the COBie2 printed worksheets and separate tabs for each reference documented. The materials shall be provided in three ring binders. The binders shall be labeled on the cover, spine, and first page with the following information: project, project location, contract number, designer contact company contact, prime contractor company contact, commissioning agent company contact, title of submission, security classification, and contact information for the office who produced the information (if different from that above).
2. The technology used for the data transmission shall be selected to ensure that the data is provided on one single "disk" or "drive." The contractor shall provide data on either disk-based (CD or DVD) or portable hard drive media. The selection of disk-based on drive-based media shall be made by the government.
3. If disk-based media is provided, a printed label on the data disk shall list the name of the project, project location, contract number, design firm or prime contractor company’s name, title of submission, and security classification. To insure that any problems with the data or media can be easily resolved the label shall also include the name and contact information of the individual who produced the final data disk.
4. If drive-based media is provided, the drive shall be legibly hand labeled with a permanent marker. The label shall include the phrase "COBie2 DATA" and the appropriate contract or task order number.
5. An ASCII file named "readme.txt" file shall be provided in the same directory as the COBie2 spreadsheet. The "readme.txt" file shall list the name of the project, the contract number, the name of the lead designer, and the name of the prime contracting company. To insure that any problems with the data or media can be easily resolved the label shall also include the name and contact information of the individual who produced the final data disk.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following if appropriate for the sponsoring agency.**

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1. Encryption of all data on the COBie2 disk is required per REFERENCED data encryption standard.
   * 1. Package Content

While the COBie2 specification provides a data model and associated software implementation covering the entire facility life-cycle, individual COBie2 deliverables for a given project will be limited according to the following requirements:

1. COBie2 files may only refer to a single facility or building. If more than one facility or building is being constructed as part of the subject contract, the contractor shall provide a separate COBie2 file for each facility.
2. COBie2 files will only be required to provide that portion of the facility or building’s life-cycle information as specified in the specification below.
3. COBie2 files are expected to refer to linked documents. All COBie2 submissions must provide copies of all linked documents in, at a minimum, Portable Document Format (PDF). All image files shall be provided in “jpg” format in lieu of PDF. Design software deliverables must be provided in both native file format as well as PDF format.
4. A PDF file containing a COBie2 compliance checking report indicating that no internal consistence errors have been identified in the COBie2 file and that the file is of “adequate” or better quality.
   * 1. Changes to Submittals

Manufacturer-originated changes or revisions to COBie2 data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of COBie2 data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

* + 1. Review and Approval

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: If the project employs third-party commissioning paid by the government under separate contract the requirement for submitting COBie2 files should be placed on the commissioning contractor.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. If a COBie2 file is not provided as the starting point for the work in this specific contract, the [designer/contractor] shall be responsible to produce a COBie2 file of the project life-cycle stage preceding the scope of their contract deliverable. This file shall be submitted as an additional COBie2 submission within forty-five (45) days of the Notice to Proceed of this contract. If not provided with the allotted time retainage may be held.
2. The contractor shall verify compliance of the COBie2 file using either manual methods and/or referenced COBie2 checking software. The use of COBie2 compliant software and/or automated checking software does not eliminate the possibility that failure to follow software system instructions may provide incorrect COBie2 deliverables.
3. The contractor shall check all COBie2 files prior to submission, regardless of the source of those files. The Contractor shall submit a brief report with each COBie2 deliverable indicating steps taken to verify compliance with the COBie2 format.
4. The contractor is responsible to correct all errors found in the COBie2 file regardless of the source of those errors. Failure to submit corrected COBie2 files within fifteen (15) days of the rejection of a COBie2 submittal may result in retainage being held.
   * 1. Retainage

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**NOTE: Include the following paragraph if appropriate for the sponsoring agency. The SPECIFIER must ensure that only the deliverables required for the specific type of contract design, construction, design/build, and commissioning or maintenance specification are included in this section.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Failure of the contractor to provide the COBie2 data with the associated design or construction documents, or at the time specified in later COBie2 specifications, will result in the following retainages. The retainage shall be released following the approval of the required COBie2 data set. These retainages reflect the cost to the government to independently recreate the data required by the COBie2 format:

1. ARCHITECTURAL PROGRAMMING PHASE. $5,000 retainage shall be held from the [designer] [design/builder] if COBie2 data is not provided upon delivery of the Architectural Programming set.
2. ARCHITECURAL DESIGN PHASE. $5,000 retainage shall be held from the [designer] [design/builder] if COBie2 data is not provided upon delivery of the Architectural Design Set.
3. COORDINATED DEISGN PHASE. $10,000 retainage shall be held from the [designer] [design/builder] if COBie2 data is not provided upon delivery of the Coordinated Design Set.
4. CONSTRUCTION DOCUMENTS PHASE. $15,000 retainage shall be held from the [designer] [design/builder] if COBie2 data is not provided upon delivery of the Construction Documents Set.
5. CONSTRUCTION MOBLIZATION PHASE. . $15,000 retainage shall be held from the [designer] [design/builder] if COBie2 data is not provided upon delivery of the Construction Documents Set.
6. CONSTRUCTION 60% COMPLETE PHASE. $20,000 retainage shall be held from the [construction contractor] [design/builder] if COBie2 data is not provided at the earlier of 70% fiscal completion or four (4) months prior to the date of beneficial occupancy.
7. BENEFIAL OCCUPANCY PHASE. $25,000 retainage shall be held from the [construction contractor] [design/builder] if COBie2 data is not provided on the date of beneficial occupancy.
8. FISCAL COMPLETION. $30,000 retainage shall be held from the [construction contractor] [design/builder] if COBie2 data is not provided with the as-built drawings at fiscal completion of the project.
9. CORRECTIVE MAINTENANCE. $1,000 retainage shall be held from the [designer] [design/builder] [maintainer] if COBie2 data is not provided upon completion of corrective action work orders.
   1. INFORMATION TYPES REQUIRED
10. Unique identifiers are required (email or name) on all records in all worksheets, except Attributes and Coordinates where the name and applicable named object taken together shall be unique. To ensure compatibility between COBie2 information and design information the [designer/contractor] shall ensure that unique COBie2 names are provided. If unique names must be added or modified for COBie2 compliance, the [designer/contractor] shall update the design documents to reflect these unique names.
11. Unique identifies shall not contain commas, nor non-printing characters.
12. Contact identifiers shall be valid email addresses.
13. All internal references must be valid.
14. All references to external documents must be complete.
15. All required fields shall be provided. Those fields identified as required for the purpose of correctly transmitting the COBie2 file, that are not required as part of a specific project deliverable, shall contain the text “n/a”.
    * 1. ARCHITECTURAL PROGRAMMING PHASE

The [designer/contractor] shall submit a COBie2 file containing, at a minimum, the following worksheets.

1. Contact Worksheet. A minimum of one (1) record shall be provided.
2. Facility Worksheet. Only one (1) record shall be provided. If the contractor is delivering COBie2 data on multiple buildings, the contract shall provide one file for each building.
3. Floor Worksheet. One record for each named floor. Buildings must also include a minimum of one (1) record for the roof and one (1) record for the site.
4. Space Worksheet. One record for each named space. All spaces must be classified by function. Spaces with distinct functional areas may be subdivided.

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**NOTE: Modify the following paragraph for the requirements of the sponsoring agency. For facilities with public and private access a minimum of one zone, circulation zone, must be included.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Zone Worksheet. The following zones shall be provided [as specified]. A minimum of one record for each named zone area shall be provided for the following zones:
   * 1. Circulation Zone
     2. Lighting Zone
     3. Fire Alarm Zone
     4. Historical Preservation Zone
     5. Occupancy Zone
     6. Ventilation Zone
     7. ARCHITECURAL DESIGN PHASE
     8. The [designer/contractor] shall submit a COBie2 file containing the information required in the ARCHITECTURAL PROGRAMMING PHASE updated to reflect the state of the current project and the following additional information. If the ARCHITECTURAL PROGRAMMING PHASE COBie2 is not provided by the government, or developed during the [designer/contractor]’s prior work effort, then the [designer/contractor] shall begin the development of the ARCHITECURAL DESIGN PHASE deliverable by recreating the ARCHITECTURAL PROGRAMMING PHASE COBie2 data set.

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**NOTE: Include the following paragraph if government furnished** ARCHITECTURAL PROGRAMMING PHASE COBie2 file is NOT provided.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The [designer/contractor] shall be responsible for the production of the full COBie2 file containing all required COBie information from all prior phases as referenced in the Review and Approval section of this specification.

1. Type Worksheet. One record is required for each type of scheduled architectural element listed in the design. Examples of such elements include, but are not limited to: doors and windows.
2. Component Worksheet. One record is required for each individual component named in architectural schedules as listed in the design. Examples of such components include, but are not limited to: doors and windows.
3. Component records for interior doors and windows shall be identified as being in two spaces. Component records for exterior doors and windows shall be identified as being in a single space.
4. Manufacturer Information in Component Worksheet. Information on the worksheet related to Manufacturer, Model Number, and warranty information shall not be required at for the COORDINATED DESIGN PHASE.
5. Attribute Worksheet. The following minimum set of attributes must be shall be provide for each space: floor finish, wall finish, ceiling finish. Doors and windows shall be identified by a minimum of one property, “IsExternal” to identify both internal and external spaces.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

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1. Coordinate Worksheet. The [designer/contractor] shall include a minimum of one bounding box for each record in the Space worksheet. Identification of the bounding box requires a consistent definition of the upper and lower corners of the space. Spaces defined in COBie2 shall not have gaps between adjacent spaces. Spaces shall be defined to the centerline of walls.
   * 1. COORDINATED DESIGN PHASE

The [designer/contractor] shall submit a COBie2 file containing the information required in the ARCHITECURAL DESIGN PHASE updated to reflect the state of the current project and the following additional information. If the ARCHITECTURAL DESIGN PHASE COBie2 is not provided by the government, or developed during the [designer/contractor]’s prior work effort, then the [designer/contractor] shall begin the development of the COORDINATED DEISGN PHASE deliverable by recreating the ARCHITECTURAL DESIGN PHASE COBie2 data set.

1. Type Worksheet. One record is required for each type of scheduled material, product, or equipment element listed in the design. All types of scheduled architectural, mechanical, electrical, and plumbing items shall be included.
2. Component Worksheet. One record is required for each individual component named in all design schedules listed in plans and specifications.
3. Manufacturer Information in Component Worksheet. Information on the worksheet related to Manufacturer, Model Number, and warranty information shall not be required for the COORDINATED DESIGN PHASE.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Modify the following paragraph for the requirements of the sponsoring agency. For facilities with public and private access a minimum of one zone, circulation zone, must be included.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. System Worksheet. The following zones shall be provided. Where systems are decomposed into smaller sub-systems, the lowest level system decomposition shall be listed. All related sub-systems shall be coded with a consistent Category column value. A minimum of one record for each named zone area shall be provided for the following zones:
   * 1. Fire Protection Zones
     2. Intrusion Detection Zones
     3. HVAC Service Zones
     4. Plumbing Service Zones
     5. Electrical Service Zones

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Coordinate Worksheet. The [designer/contractor] shall include a minimum of one bounding box for each row in the Space worksheet. Identification of the bounding box requires a consistent definition of the upper and lower corners of the space. Spaces defined in COBie2 shall not have gaps between adjacent spaces. Spaces shall be defined to the centerline of walls.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Connection Worksheet. The [designer/contractor] shall identify the logical connections between all mechanical, electrical, and plumbing system components using the COBie2 Connection worksheet. A minimum of one occurrence of all such Components in the Connection worksheet shall be required.
   * 1. CONSTRUCTION DOCUMENTS PHASE

The [designer/contractor] shall submit a COBie2 file containing the information required in the COORDINATED DEISGN PHASE updated to reflect the state of the current project and the following additional information. If the COORDINATED DESIGN PHASE COBie2 is not provided by the government, or developed during the [designer/contractor]’s prior work effort, then the [designer/contractor] shall begin the development of the CONSTRUCTION DOCUMENTS PHASE deliverable by recreating the COORDINATED DESIGN PHASE COBie2 data set.

1. Spatial Assets. The [designer/contractor] shall update the following attributes for each Space. Attribute records shall be added to provide the following information:

* 1. Gross Area
  2. Net Area
  3. Floor Covering Type
  4. Wall Covering Type
  5. Ceiling Type

1. Manufacturer Information in Component Worksheet. Information on the worksheet related to Manufacturer, Model Number, and warranty information shall not be required at the COORDINATED DESIGN PHASE.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Fixed Assets. The [designer/contractor] shall list the direct cost of replacement and expected service life, as provided from the manufacturer, for all assets identified as fixed assets under the Type worksheet.
2. Document Worksheet. The [designer/contractor] shall provide an electronic version of the construction submittal register in the Document worksheet. All documents required to be provided by the construction contractor shall be identified by setting the “Stage” of the submittal to “Requirement.”

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Attribute Worksheet. The minimum set of properties required for all type worksheet rows shall be the properties found in the Specifiers’ Properties information exchange (SPie) specification. [designers/contractors] shall refer to the Product Guide of the Whole Building Design Guide to identify the minimum SPie properties that must appear for each row of product Types.
   * 1. CONSTRUCTION MOBLIZATION PHASE

The contractor shall submit a COBie2 file containing the information required in the CONSTRUCTION DOCUMENTS PHASE updated to reflect the state of the current project and the following additional information. If the CONSTRUCTION DOCUMENTS PHASE COBie2 is not provided by the government, or developed during the contractor’s prior work effort, then the contractor shall begin the development of the CONSTRUCTION MOBLIZATION PHASE deliverable by recreating the CONSTRUCTION DOCUMENTS PHASE COBie2 data set.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if government furnished** CONSTRUCTION DOCUMENTS PHASE COBie2 file is NOT provided.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The [contractor] shall be responsible for the production of the full COBie2 file containing all required current COBie information from all prior phases as referenced in the Review and Approval section of this specification.

1. Document Worksheet. The contractor shall provide an electronic version of the construction submittal register in the Document worksheet updated to reflect how the contractor is to provide the submittals. All documents required to be provided by the construction contractor shall be identified by setting the “Stage” of the submittal to “Requirement.”
   * 1. CONSTRUCTION 60% COMPLETE PHASE

The contractor shall submit a COBie2 file containing the information required in the CONSTRUCTION MOBLIZATION PHASE updated to reflect the state of the current project and the following additional information. If the CONSTRUCTION MOBLIZATION PHASE COBie2 is not provided by the government, or developed during the contractor’s prior work effort, then the contractor shall begin the development of the CONSTRUCTION 60% COMPLETE PHASE deliverable by recreating the CONSTRUCTION MOBLIZATION PHASE COBie2 data set.

1. Subcontractor Contact Information. Additional Contact Worksheet rows will be provided for each subcontractor providing specific submittal documents. The contractor shall ensure that the corresponding subcontractor is listed as the contact for each submittal package.
2. Manufacturer Contact Information. Additional Contact Worksheet rows will be provided for the manufacturers of all approved submittals. The contractor shall ensure this contact information is referenced in the Manufacturer column of the Type Worksheet.
3. Room Tag. If the contractor has installed room number signage in the building that differs from that listed on the design drawings, then the contractor shall provide the room signage designation in the Space Worksheet.
4. Manufacturer Information in Type Worksheet. Information on the Type worksheet related to Manufacturer, Model Number, and warranty information shall be required for the CONSTRUCTION 60% COMPLETE PHASE submission. The only exception to this requirement shall be products, whose submittals have not yet been approved.
5. Installed Material, Products, and Equipment. For all installed material, products, and equipment identified in the Component Worksheet the contractor shall: (i) verify the location of the item, (ii) provide serial number, the item has a manufacturer’s name plate, (iii) provide a tag number if the item has been tagged during the construction process, (iv) identify installation date.

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**NOTE: Include the following paragraph if appropriate for the specific project.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Government Furnished Products. The contractor shall document all Government Furnished-Contractor Installed (GFCI) materials, products, or equipment using the Type, Component, and System worksheets. If needed, the contractor shall scan GFCI manufacturer data to produce PDF files. Government provided manufacturer data on GFCI shall be listed in the Documents worksheet as “Approved” documents.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Bar Codes. The code numbers of all Bar Coded items shall be included in the Component Worksheet.
2. Approved Submittals. All approved electronic submittal files shall be linked to the Document worksheet. Approved documents shall be identified by setting the “Stage” of the submittal to “Approved.” The contractor shall provide an electronic copy of all approved submittals in formats as specified previously in this specification.
3. Submittals Remaining to be Approved. All submittals not yet approved will remain listed in the Documents worksheet. These submittals shall be identified by setting the “Stage” of the submittal to “Required.”

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if appropriate for the sponsoring agency.**

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1. Attribute Worksheet. The minimum set of properties required for all installed products shall be the properties found in the Specifiers’ Properties information exchange (SPie) specification. The Contractor shall refer to the Product Guide of the Whole Building Design Guide to identify the minimum SPie properties that must appear for each row of product Types. Designer provided SPie data must be updated during this deliverable to reflect installed product properties.
   * 1. BENEFIAL OCCUPANCY PHASE

The contractor shall submit a COBie2 file containing the information required in the CONSTRUCTION 60% COMPLETE PHASE updated to reflect the state of the current project and the following additional information. If the CONSTRUCTION 60% COMPLETE PHASE COBie2 is not provided by the government, or developed during the contractor’s prior work effort, then the contractor shall begin the development of the BENEFIAL OCCUPANCY PHASE deliverable by recreating the CONSTRUCTION 60% COMPLETE PHASE COBie2 data set.

1. Spatial Assets. The contractor update the following attributes for each Space in the Space and Attributes worksheet:

* 1. Gross Area
  2. Net Area
  3. Floor Covering Type
  4. Wall Covering Type
  5. Ceiling Type

1. Equipment Assets. The contractor shall identify the replacement cost of each type of material, product, and equipment listed in the Type Worksheet.
2. Parts and Warranty Contacts. Contact information for all replacement parts companies and warranty guarantors shall be listed in the Contact worksheet.

1. Warranty Information. In COBie2 manufacturer parts and labor warranties are conferred against product types. If warranty terms for individual components differ from the warranty of the Type, then the contactor shall include Attribute records for all warranty data properties for individual components.
2. Replacement Parts. Depending on the type of information available from the product manufacturers replacement parts may be included in COBie2 one of two ways.
3. Detailed Parts Set. If the manufacturer provides an electronic catalog of replacement parts those parts may be individually identified within the optional Set Number” and ”Part Number” columns of the Spare worksheet.
4. Replacement Parts Diagrams. If the manufacturer provides replacement parts information in document format, the contractor shall identify the document in the Document worksheet and shall use the worksheet to identify the associated product type.
5. Operating Plans. The contractor shall provide the following plans for individual components, types of components, and systems in the Job worksheet.

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**NOTE: Include the following paragraph if the contract does *NOT* have third-party commissioning**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Building Services Descriptions may be provided one of two ways. If the data is provided by the manufacturer, then the contractor shall enter the operating instructions in the COBie2 Jobs worksheet. If the data is provided in document format, then these documents will be linked to the COBie2 file through the Documents Worksheet. The following types of information shall be provided in these plans:

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**NOTE: Include the following paragraph if the contract does has third-party commissioning**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The contractor shall enter the operating instructions in the COBie2 Jobs worksheet. Where needed, the contractor shall extract operating plans from the documentation provided by manufacturers’ literature. Jobs for specific equipment and job type may be listed in either as series of steps using Prior column, listed in paragraph format in the Description column. The following types of information shall be provided in these plans:

1. Operator Prestart. Include procedures required to install, set up, and prepare each system for use.
2. Startup, Shutdown, and Post-Shutdown Procedures. Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.
3. Normal Operations. Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.
4. Operator Service Requirements. Include instructions for services to be performed by the operator such as lubrication, adjustment, calibrations, inspection, and recording gage readings.
5. Operating Instructions. Includes specific instructions, procedures, and illustrations for operation of the installed Components and features of each Type and System.
6. Preventive Maintenance. Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

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**NOTE: Include the following paragraph if the contract does NOT have third-party commissioning**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Preventative Maintenance Schedules may be provided one of two ways. If the data is provided by the manufacturer, then the contractor shall enter the operating instructions in the COBie2 Jobs worksheet. If the data is provided in document format, then these documents will be linked to the COBie2 file through the Documents Worksheet.

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**NOTE: Include the following paragraph if the contract does has third-party commissioning**

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The contractor shall enter the Preventative Maintenance Schedules in the COBie2 Jobs worksheet. Where needed, the contractor shall extract these schedules from manufacturer’s literature. Jobs for specific equipment and job type may be listed in either as series of steps using Prior column, listed in paragraph format in the Description column.

1. Emergency Operations. Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

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**NOTE: Include the following paragraph if the contract does NOT have third-party commissioning**

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Emergency Operations Schedules may be provided one of two ways. If the data is provided by the manufacturer, then the contractor shall enter the Emergency Operations in the COBie2 Jobs worksheet. If the data is provided in document format, then these documents will be linked to the COBie2 file through the Documents Worksheet.

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**NOTE: Include the following paragraph if the contract does has third-party commissioning**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

The contractor shall enter the Preventative Maintenance Schedules in the COBie2 Jobs worksheet. Where needed, the contractor shall extract these emergency operations plans from manufacturers’ literature. Jobs for specific equipment and job type may be listed in either as series of steps using Prior column, listed in paragraph format in the Description column.

1. Troubleshooting Instructions. Include Troubleshooting Instructions to allow permit the expected failure modes of building service systems. The contractor shall include Troubleshooting Instructions for the following minimum set of systems: Alarm Systems, Conveying Systems, Cooling Systems, Elevator Systems, Damping Systems, Emergency Power Generation Systems Fire Suppression Systems, Heating Systems, and Ventilation Systems.

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**NOTE: Include the following paragraph if the contract does NOT have third-party commissioning**

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Troubleshooting Instructions may be provided one of two ways. If the data is provided by the manufacturer, then the contractor shall enter the Troubleshooting Instructions in the COBie2 Jobs worksheet. If the data is provided in document format, then these documents will be linked to the COBie2 file through the Documents Worksheet.

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**NOTE: Include the following paragraph if the contract does has third-party commissioning**

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The contractor shall enter the Troubleshooting Instructions in the COBie2 Jobs worksheet. Where needed, the contractor shall extract the Troubleshooting Instructions from manufacturer’s literature. Jobs for specific equipment and job type may be listed in either as series of steps using Prior column, listed in paragraph format in the Description column.

1. Safety Instructions. Include Specific Safety Instructions that describe the procedures needed to overcome hazards associated with any of the equipment or systems in the facility.

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**NOTE: Include the following paragraph if the contract does NOT have third-party commissioning**

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Safety Instructions may be provided one of two ways. If the data is provided by the manufacturer, then the contractor shall enter the Safety Instructions in the COBie2 Jobs worksheet. If the data is provided in document format, then these documents will be linked to the COBie2 file through the Documents Worksheet.

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**NOTE: Include the following paragraph if the contract does has third-party commissioning**

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The contractor shall enter the Safety Instructions in the COBie2 Jobs worksheet. Where needed, the contractor shall extract the Safety Instructions from manufacturer’s literature. Jobs for specific equipment and job type may be listed in either as series of steps using Prior column, listed in paragraph format in the Description column.

1. Final Approved Submittals and Documents. The contractor shall verify that all manufacturer literature, shop drawings, and other submittal documents have been provided as linked documents referenced in the COBie2 Documents Worksheet.
2. Coordinates. The contractor shall update the space coordinates to reflect as-built conditions.
3. Products and Equipment Attributes. The contractor shall confirm that manufacturer’s product data attributes are referenced all Type and Component Attributes.
   * 1. FISCAL COMPLETION

The contractor shall submit a COBie2 file containing the information required in the BENEFIAL OCCUPANCY PHASE updated to reflect the state of the current project and the following additional information. If the BENEFIAL OCCUPANCY PHASE COBie2 is not provided by the government, or developed during the contractor’s prior work effort, then the contractor shall begin the development of the current deliverable by recreating the BENEFIAL OCCUPANCY PHASE COBie2 data set.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

{end of section}

CHANGE LOG

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| --- | --- | --- | --- |
| Change | Date | Author | Contents |
| 1.01 | 23-Dec-09 | BE | * 1. Consistent number of copies (one) cited   2. Description of binder required for copy |