

# TN OSA PM BIM Checklist-Contractors

## Pre-Construction

- Provide Conformed Bid BIMs in IFC and native format, as well as COBie spreadsheet to Contractor
  - All Conformed Bid BIMs and COBie spreadsheet have been delivered to the Contractor

Within 30 days:

- Review Resume of BIM Manager
  - Professional qualifications
  - BIM knowledge
  - Previous experience in BIM management role
- Review Proposed Web-Based Collaboration System
  - Ability of Owner to access all content
  - Automated versioning of BIM and other files
  - Ability to access previous versions of BIM files
  - The collaboration site is configured to provide all trades with access to all models
  - The collaboration site prevents changes to one trade's model(s) by another trade
- Review BIM Execution Plan
  - Construction team is modeling the complete building
  - All trades required to produce BIMs are included
    - Each trade has designated a BIM Coordinator
  - All topics are covered
  - All trades are required to share BIM models via the collaboration site
  - A computer with software capable of viewing merged models is provided onsite
  - Modeling standards cover all indicated sub-topics
  - Modeling standards, especially naming conventions, are consistent across all trades
  - Modeling standards require geo-referencing of all BIMs
  - Model naming indicates that models will be segmented by discipline and floor
  - Model naming makes it easy to identify contents of each model file
  - Model naming indicates that collaboration system versioning rather than dates will be used to manage model revisions
  - Kickoff meeting attendees, location, date, and agenda are provided
  - Kickoff meeting agenda includes topics in outline
  - Description of the processes for using BIMs during construction coordination include:
    - Reference model(s) to be used by all trades
    - Technique to be used for modeling clearances
    - Partitioning of model for purposes of coordination
    - Sequence of coordination
    - Responsibility of trades to upload models to collaboration system
    - Schedule for uploads

- List of interference checks to be performed, typically each system against each other system (structural vs. plumbing, structural vs. duct, structural vs. electrical, duct vs. plumbing, etc.)
    - Responsibility for performing interference checks
    - Process and schedule for reviewing interferences and assigning responsibility for resolution
    - Process for tracking interference resolution
    - Process for signing off on a Coordination BIM
    - Requirement to build to signed off Coordination BIM
    - Requirement to generate all shop and coordination drawings from signed off Coordination BIM
  - Verify with team that all software products used for model authoring are IFC and COBie compliant
  - Identifies other construction-phase analyses including:
    - Software to be used
    - BIMs to be analyzed
    - Responsible team members
  - Process and responsibility for insuring that all building configuration changes resulting from RFI responses, change orders, etc. are incorporated in the Construction BIM
  - Project deliverables include As-Built BIMs partitioned by floor in IFC format, site and landscape model in IFC or 3D DWG format, As-Built drawings extracted from As-Built BIMs, COBie spreadsheet, all documents listed in COBie spreadsheet
  - Project deliverable section describes how each deliverable will be produced and delivered from the coordinated Construction models
  - Project team describes acceptable level of quality control
  - All organizations providing BIM deliverables have signed
- Attend BIM Kickoff Meeting

### **Coordination Phase**

- Verify that Shop Drawings are being extracted from Coordinated BIMs
  - The information shown in the Shop drawings is seen in the model(s)
- Verify that Coordination Drawings are being extracted from Coordinated BIMs
  - The information shown in the drawings is seen in the model(s)

### **Construction Phase**

- Verify that Construction BIMs are being maintained to reflect any field changes or change orders
  - Approved building configuration changes have been modeled in the Construction BIMs
- Spot check that equipment inventory and documents are maintained in the COBie format
  - Don't wait until closeout to find out whether the contractor is capable of producing a COBie spreadsheet

## Project Closeout Phase

- Receive As-Built BIMs in IFC format (site may be in 3D DWG)
  - All As-Built BIMs have been delivered
- Verify separate BIMs for each floor and discipline
  - As-Built BIMs have been partitioned by floor and discipline in IFC format. The site model may be in IFC or 3D DWG format
- Verify As-Built drawings are extracted from the As-Built BIMs
  - The information shown in the As-Built drawings is seen in the As-built BIMs
- Verify that As-Built BIMs have been reviewed by Designer for conformance to design intent
- Receive and Validate COBie Deliverable using automated tools
  - Contact, Facility, Floor, Space, Zone, Type, Component, System, Document, & Attribute worksheets are provided and valid
  - All documents listed are provided

# TN OSA PM BIM Checklist-Designers

## Pre-Planning

- Designate design disciplines required to produce BIM
  - All building systems will be modeled
- Designate construction trades required to produce BIM
  - All building systems will be modeled

## Design Project Startup

Prior to completion of program verification phase:

- Review Resume of BIM Manager
  - Professional qualifications
  - BIM knowledge
  - Previous experience in BIM management role
- Review Proposed Web-Based Collaboration System
  - Ability of Owner to access all content
  - Automated versioning of BIM and other files
  - Ability to access previous versions of BIM files
- Review BIM Execution Plan
  - All disciplines required to produce BIMs are included
  - All topics are covered
  - All disciplines are required to upload BIM revisions to the collaboration site promptly
  - Modeling standards cover all indicated sub-topics
  - Modeling standards, especially naming conventions, are consistent across all disciplines
  - Model naming indicates that models will be segmented by discipline and floor
  - Model naming makes it easy to identify contents of each model file
  - Model naming indicates that collaboration system versioning rather than dates will be used to manage model revisions
  - Description of generating drawings is clear that drawings will be derived from the models and that they will not be edited subsequent to extraction
  - Verify with team that all software products used for model authoring are IFC and COBie compliant
  - Model analysis plan indicates that model will be used for:
    - Space area calculations
    - Energy analysis (if required for project)
    - Building system coordination
    - Space and equipment inventories in COBie format
  - Project deliverables include all BIM requirements
  - Project deliverable section describes how each deliverable will be extracted from the coordinated models
  - Project team describes acceptable level of quality control
  - All organizations providing BIM deliverables have signed

## Schematic Design

- Review BIM Deliverable
  - Massing BIM in IFC format

- Geo-reference mark and annotation
- Review/Validate COBie Deliverable using automated tools
  - Contact, Facility, Floor, & Space worksheets are provided and valid

## Design Development

- Review BIM Deliverables
  - BIM Partitioned by Discipline and Floor in IFC Format
  - Site Model in IFC or 3D DWG Format
  - Polyline of FEMA building footprint
  - Geo-reference mark and annotation
- Spot check to see that drawings are being exported from the models
  - The information shown in the drawings is seen in the model
- Spot check to see that areas are being calculated from the models
  - Area calculations in the model match those on the drawings
- Review/Validate COBie Deliverable using automated tools
  - Contact, Facility, Floor, Space, Zone, Type, System, & Attribute worksheets are provided and valid
- Review Interference Report
  - All interferences are resolved or adequately annotated
- Review Energy Analysis Report
  - Verify that energy Analysis input came from the Design BIMs

## Construction Documents

- Review BIM Deliverables
  - BIM Partitioned by Discipline and Floor in IFC Format
  - Site Model in IFC or 3D DWG Format
  - Polyline of FEMA building footprint
  - Geo-reference mark and annotation
- Spot check to see that drawings are being exported from the models
  - The information shown in the drawings is seen in the model
- Spot check to see that areas are being calculated from the models
  - The area calculations in the model match those on the drawings
- Review/Validate COBie Deliverable using automated tools
  - Contact, Facility, Floor, Space, Zone, Type, Component, System, & Attribute worksheets are provided and valid
- Review Interference Report
  - All interferences have been resolved
- Review Energy Analysis Report
  - Verify that the energy Analysis input came from the Design BIMs

## Bidding Phase

- Review Conformed Bid BIMs

- Must reflect addenda and accepted alternates
  - Must be delivered in IFC and native format partitioned by floor and discipline
  - Site Model in native or 3D DWG Format
- Review Conformed COBie File
  - Reflects changes in conformed bid BIMs
  - Run automated check to ensure conformance with Tennessee's BIM standards

### **Construction Closeout**

- Deliver As-Built BIMs to Designer for Review for Conformance to Design Intent