School Building Authority of West Virginia
BUILDING INFORMATION MODELING (BIM) EXECUTION PLAN
SBA FORM 191

Section 1: General

1.0 Alignment with Organizational Vision

In the space provided below, read our organizational vision statement and see how the implementation of BIM technologies can enhance your business.

Organization Vision Statement:
The SBA embraces BIM (Building Information Modeling) as a core best practice for ensuring the very highest return on investment over the entire lifetime of a facility, continuing to pay dividends long after the last milestone in the design and construction phases have been completed.
BIM Enhances Vision:
Building Information Modeling (BIM) is the process of generating and managing building data during its life cycle. Typically it uses three-dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction. The process produces the **Building Information Model** (also abbreviated BIM), which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.
BIM Alters Vision:
BIM technologies allow for enhanced collaboration across the board in the CM-Agent, Design-Build and Integrated Project Delivery (IPD) project delivery methods.

1.1 Project Description

Enter key information about the project below. Include the project name, owner's project number, address, project description, and areas of the project that will and will not be modeled.

Project Name:	
CM Project Number:	
Project Address:	

Project Description:	
Areas Modeled:	
Purpose of BIM Implementation:	The purpose for BIM Implementation on this project is to allow for enhanced coordination of the project design through construction operations to achieve a more efficient process. The BIM process serves to allow for visualization of design and construction elements, increase communication between the design team and the construction team, more accurate coordination of installed systems and components, reduction in errors and oversights normally found in field conditions and mis-coordination, and a higher quality installation of product and deliverable as-builts for record for the Building Owner.

1.2 Project Goals and Objectives

Below, are some objectives for using BIM and collaborative project management technology and processes on this project. Also note how you will measure the achievement of each objective, and its target time frame.

Project Goal:	Objective:	Achieved If:	Projected Timeframe:
Successful coordination of all building systems using Autodesk Navisworks Manage Software during the Construction Coordination Process	Require MEP Primes/Subs to produce 3D models for coordination process, streamline coordination from traditional paper drawing method	MEP systems are effectively coordinated when installed, systems are installed on time per the project schedule	Per the Project Schedule

BIM deliverable to the Owner is a data-rich model used for O&M information / learning tool for Owner to use with students/faculty	A/E develops coordinated design-intent model, CM populates construction coordination model with O&M info as submitted and installed by Prime/Subcontractors	Construction Coordination Model is delivered to Owner for use by FM staff at Project Closeout	Per the Project Schedule
Development of coordinated, successful BIM process and BIM model between the Construction Manager and the Project Team	Creating standards and protocols to efficiently collaborate between the A/E and CM team resulting in a project delivery method that improves schedule durations, increases productivity, and reduces costs	BIM process can be duplicated in an efficient manner for the next project; BIM model is accurate representation of new building and its components	Design Phase through Project Closeout

1.3 Project Phases/Milestones

In the table below, outline the phases of your project, their estimated start dates, and the stakeholders involved.

Project Phase/Milestone:	Estimated Start Date:	Estimated Completion Date:	Project Stakeholders Involved:
Early Site CD Package Complete	TBD	TBD	Owner, A/E, CM
Early Site Pkg Bid/Award	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Site Construction	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Entry/Structural Steel CD Package Complete	TBD	TBD	Owner, A/E, CM
Entry/Structural Pkg Bid/Award	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Entry/Structural Pkg Construction	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Building CD Package Complete	TBD	TBD	Owner, A/E, CM

Building Pkg Bid/Award	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Building Package Construction	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Punchlist	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Substantial Completion	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Punchlist, FFE and Closeout	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
Final Completion	TBD	TBD	Owner, A/E, CM, Prime Trade Contractors
			(all dates subject to change based on Project Schedule revisions as determined by Project Team)

Section 2: Design/Construction Documents

2.0 Model Managers/Collaboration Team

List the major members for your project below.

Contact Name:	Role/Title:	Company:	Email:	Phone:
	Project Architect			
	Mechanical Eng.			
	Electrical Eng.			
	Structural Eng.			
	Fire Protection			
	Civil Eng.			

	Construction Manager			
	Prime Contractor			
	Prime Contractor			
	Prime Contractor			
	Construction Manager			
	Coordination Manager			
	Mech. Contractor Model Manager			

2.1 Planned Models / Reviewing

In the table below, outline the models that will be created for the project. List the model name, model content, project phase at which the model will be delivered, the model's authoring company, and the model authoring tool to be used. For models that will not be used or created in your project, just leave the row blank; add rows for any model types you anticipate a need for that are not already listed.

Model Name:	Model Content:	Project Phase:	Reviewing Company:	Authoring Tool:
Design-Intent Coordination Models	Architectural, Civil, Structural, and MEP components of main building and other associated structures (as necessary for proper construction coordination and assembly of building systems/components). (as specified under AIA E203 LOD 100	Design Development and Construction Documents	Architect, Civil Engineer, Structural Engineer, MEP Engineer, Other Consultants as needed	Autodesk® Revit® software, other programs to be submitted for approval to A/E and CM. (Current Versions)

	(Landscape), LOD 200 (Civil) and LOD 300 (Arch/Struct/MEP)			
Architectural Model	Architectural components of main building and other associated structures (as necessary for proper construction coordination and assembly of building systems/components). (as specified under AIA E203 LOD 300)	Design Development and Construction Documents	Architect	Autodesk® Revit® software, other programs to be submitted for approval to A/E and CM. (Current Versions)
Structural Model	Structural components of the proposed building, including foundations, basic connections (steel detailing by Prime Contractor), framing details, and associated elements that are designed by the Structural Engineer. (as specified under AIA E203 LOD 300)	Design Development and Construction Documents	Structural Engineer	Autodesk® Revit Structure® software, Tekla Structures, Bentley Structural Modeler, other programs to be submitted for approval to A/E and CM. (Current Versions)
M/E/P/R/FP Model(s)	M/E/P/R/FP system components of the existing building design, including objects, elements that are designed by the M/E/P/R/FP Engineer(s). (as specified under AIA E203 LOD 300)	Design Development and Construction Documents	MEP Engineer, Other Consultants as needed	Autodesk® Revit MEP® software, other programs to be submitted for approval to A/E and CM.

Overall Construction Coordination Model(s)	Coordinated Design-Intent Model through Clash Detection sessions, includes Site Logistics and phasing (optional), 4-D scheduling (optional); model will be populated with O&M information as a deliverable to Owner. (as specified under AIA E203 LOD 400)	Construction Documents and ongoing through Construction Phase	**A/E** to deliver Design-Intent Models at outlined LODs to **CM**. **CM** becomes model owner during construction coordination process. **Prime Contractors** model their respective scopes of work in 3D and produce coordination models.	Autodesk Revit, Autodesk Navisworks, Microsoft Project, Primavera P6, other programs to be submitted for approval to A/E and CM. (Current Versions)
Prime/Subcontractor Coordination Model(s)	All specific components of the **Prime/Subcontractor's** scope of work to interface with the Construction Coordination Model, models are developed by **Primes/Subs** and coordinated by the **Lead Contractor (HVAC)** and **CM**. (as specified under AIA E203 LOD 400). **Primes/Subs** required to submit models are: **Structural Steel, HVAC, Electrical, Plumbing, Fire Protection, Geothermal (coordinate paths and locations in 3D), Technology (coordinate paths and locations in 3D).**	Construction Documents and Contractor Coordination Meetings	Models created and presented by each **Prime/Subcontractor**, models managed by **Lead Contractor (HVAC)** and **CM**; **A/E** participates as needed during coordination. **HVAC Contractor is Lead Prime for Navisworks Manage 3D coordination.**	Autodesk Civil 3D, Autodesk Revit Structure, Autodesk Revit MEP, Autodesk Navisworks, other programs to be submitted for approval to A/E and CM

2.2 Model File Naming Structure

List the structure for all model file names: Project name, Trade, Model owner, Date, Revit Version.

Model File Names:
(Examples): NAMEOFSCHOOL_ARCH_FIRMNAME_9-28-2015_R16

2.3 Model Reference Coordination

Check the box for the reference positioning for this project in the table below. Share this with the project team.

Reference Positioning:	0,0,0	Auto – Origin to Origin	Auto – Shared Coordinates
Select One	☐	☐	☐

2.4 Link Model Matrix

Check the box for the models that will be linked into your authoring software model during design below.

3D Models	Architectural	M&P	Electrical	Structural	Fire Protection	Civil
Architectural	☐	☐	☐	☐	☐	☐
M&P	☐	☐	☐	☐	☐	☐
Electrical	☐	☐	☐	☐	☐	☐
Structural	☐	☐	☐	☐	☐	☐
Fire Protection	☐	☐	☐	☐	☐	☐
Civil	☐	☐	☐	☐	☐	☐

2.5 Steps to a "Clash Free Model"

Below is a chart to which you can follow to run an "Interference Check" or "Clash Detective" during the design phase. **Run this feature as often as possible**.

	Interference Test(s):	Software with this function:	Authoring Software for final check:
M&P Model	**Duct vs Duct** **Pipe vs Pipe** **Duct vs Pipe** **Duct vs Struct** **Duct vs Elec** **Duct vs Ceilings** **Mech Equip vs (all)**	**Revit** **BIM Glue** **Navisworks Manage**	**Navisworks Manage**
Elec Model	**Elec vs Duct** **Elec vs Pipe** **Elec vs Struct** **Elec vs Fire Protection** **Lights vs Duct** **Lights vs Pipe** **Elec Equip vs (all)**	**Revit** **BIM Glue** **Navisworks Manage**	**Navisworks Manage**
Structural	**Struct vs Duct** **Struct vs Pipe** **Struct vs Elec**	**Revit** **BIM Glue** **Navisworks Manage**	**Navisworks Manage**
Architectural	**Ceiling vs Duct**	**Revit** **BIM Glue** **Navisworks Manage**	**Navisworks Manage**
*Federated Model In Navisworks	**M&P vs Struct** **Elec vs Struct** **M&P vs Elec** **Duct vs Ceilings**	**Navisworks Manage**	**Navisworks Manage**

*Federated model is all of the project 3D models (A, M, E, P, S) merged together in proper orientation.

2.6 Precision and Dimensioning

In the table below, enter which items' placement will not be considered entirely accurate and should not be relied on for placement or assembly (from the Design-Intent Model):

Items Not to be Considered Accurate for Dimensioning or Placement:

2.7 Exclusions

List the objects to be excluded from the design-intent models in the table below:

Items to be Excluded from the Coordinated Design-Intent Model (issued for Bidding):

2.8 Contract Documents

Place an "X" by the models that will be considered part of the contract documents in the table below.

Models to be Considered Part of Project Contract Documents:
☐ **A/E Coordinated Design-Intent Model** (represents the project bidding documents).
☐ **Prime/Subcontractor Coordination Models** will be used for Construction Document Coordination, but are still required to submit hard copy of 2D coordination drawings and 2D As-Built Drawings per their Contract Requirements. 3D Coordination Models are required for the BIM Coordination process as per the Project Contract Documents. *Prime/Subcontractor coordination models are required to meet LOD400 requirements.*
☐ **Federated (combined) Construction Coordination Model** with O&M information turned over to the Owner as per the Project Contract Documents (does not require As-Built conditions, RFIs, ASIs, and other changes made during construction to building elements). This model does not replace As-Built hard copy drawings for Record. *This model is the product of the HVAC Contractor's successful BIM coordination with all other Prime Trade Contractors.*

☐ **As-Built Construction Model** with O&M information embedded into the modeling elements. This model is turned over to the Owner as per the Project Contract Documents. Model includes Architectural revisions (made by the A/E) based on RFIs, ASIs, field changes/conditions, and can be used with basic FM system integration if parameters are outlined by the Owner in advance of final Construction Coordination Model completion. This model does not replace As-Built hard copy drawings for Record. ** This model is managed throughout construction by the CM and submitted by the CM to the Owner as a deliverable at the end of the project.*

2.9 File Access and Sharing

The project Architect shall provide their own "Cloud-base" file sharing site for the design team during the design phase of the project. Fill your information in below:

What Cloud-base system:	How to get access:	Permission Level:

Section 3: Construction

3.0 Contract Documents

Place an "X" by the models that will be considered part of the contract documents in the table below.

Models to be Considered Part of Project Contract Documents:
☐ **A/E Coordinated Design-Intent Model** (represents the project bidding documents).
☐ **Prime/Subcontractor Coordination Models** will be used for Construction Document Coordination, but are still required to submit hard copy of 2D coordination drawings and 2D As-Built Drawings per their Contract Requirements. 3D Coordination Models are required for the BIM Coordination process as per the Project Contract Documents. **Prime/Subcontractor coordination models are required to meet LOD400 requirements.*
☐ **Federated (combined) Construction Coordination Model** with O&M information turned over to the Owner as per the Project Contract Documents (does not require As-Built conditions, RFIs, ASIs, and other changes made during construction to building elements). This model does not replace As-Built hard copy drawings for Record. **This model is the product of the HVAC Contractor's successful BIM coordination with all other Prime Trade Contractors.*

☐ **As-Built Construction Model** with O&M information embedded into the modeling elements. This model is turned over to the Owner as per the Project Contract Documents. Model includes Architectural revisions (made by the A/E) based on RFIs, ASIs, field changes/conditions, and can be used with basic FM system integration if parameters are outlined by the Owner in advance of final Construction Coordination Model completion. This model does not replace As-Built hard copy drawings for Record. ** This model is managed throughout construction by the CM and submitted by the CM to the Owner as a deliverable at the end of the project.*

3.1 Special Instructions
Review the specific requirements in the table below.

Team Responsible:	Detailed Special Instructions:
CM, BIM 3D Construction Coordination through Navisworks Manage 2016 (NAV)	The BIM 3D Construction Coordination Process will be managed by the Coordination Manager and assisted by, HVAC Contractor, the Architect and their consultants (A/E). The CM will coordinate 3D information as submitted by the prime/subcontractors using Autodesk Navisworks Manage 2016. The HVAC Contractor will be the Lead Contractor responsible for the physical coordination of the Prime Trade Contractors' 3D models using Navisworks Manage 2016, with oversight from the CM. The CM is responsible for overseeing construction coordination and clash detection only; the CM will not provide design work or modeling work to assist prime/subcontractors. Prime/subcontractors are required to submit 3D model information that is generated from/based off of their 2D coordination drawings, which is a required submittal for this project. Prime/subcontractors are required to participate in BIM Coordination Meetings with the CM and A/E. Primes/subcontractors must supply their coordination drawings in a 3D format as listed in the above specifications. If the Prime/subcontractor utilizes a 3rd party consultant for their coordination drawings, said consultant is required to attend coordination meetings with the CM and A/E.
Construction Manager (CM)	The CM shall assess with receiving necessary photos, issues and descriptions to generate RFI's for the submission to the project architect.

3.2 Meeting Minutes

In the space below, review the types of meetings necessary for the project, meeting host(s), required attendees, and required technology.

Meeting Type:	Host:	Required Attendees:	Required Technology:
Clash Detection Review Meetings	Construction Manager (CM)	A/E, CM, HVAC Contractor, Prime/Subcontractors	Internet, Revit, Navisworks Manage, A360, Projector (as needed)
General Progress / Project Meetings	Construction Manager (CM)	CM, Prime Contractors, Architect	Navisworks Manage, Large Flat Screen Monitor onsite

3.3 File Access and Sharing

Coordination Manager will host the "Cloud-based" service for file sharing. The construction team will have access to documents and be able to upload your models for review.

What Cloud-base system:	How to get access:	Permissions:

**3.4 Other Construction Management
Business Processes**

List the modules the Project Team plans to use, including any special instructions and processes, in the table below.

Additional Business Process Modules to be Used:	Special Instructions or Processes:

3.5 Construction Coordination / As-Built Models

List any inclusions or exclusions from the As-Built model content in the table below.

Prime Contractor Models / As-Built Model Inclusions:	As-Built Model Exclusions:
[List special items that will be included in the model above and beyond the Level of Detail specified in section 1.2.3.2.]	*[List items that will be excluded from the model above and beyond the Level of Detail specified in section 1.2.3.2.]*
Added Fields (input into the prime contractor models): Serial Number Manufacturer/Model Number Applied to Elements Below: (taken from the AIA E202 Model Element Detail LOD400) **4.3 Model Element Table** D30 HVAC (all) D50 Electrical (all) *The model handed off to the Owner will be the Federated Construction Coordination Model (combined models) with O&M information built-in as outlined in the BIM Execution Plan. The CM will attach Prime Trade Contractor O&M info to backend of As-Built Model, once submitted by all Prime Trade Contractors. **Prime Contractors are responsible for the above LOD data input into as-built models.**	Link to Product Data Installer Contact Info Supplier Contact Info

Note: Most Current version of software refers to the level of software required for proper coordination and collaboration between the Project Team members. If software upgrades should be deemed necessary by the A/E and CM to perform proper construction coordination, team members should consult with their software providers to perform the necessary upgrades.