



**Facilities
Construction
Commission**



OHIOBIMS BIM Use Definitions

Standardized BIM Use catalog for State of Ohio projects

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What changed in this edition

About this document. This is the inaugural standalone edition of the OHIOBIMS BIM Use Definitions. Each BIM Use entry provides Definition, Typical Phase, Responsible Party, Deliverables, and Owner Value. This document is referenced by OHIOBIMS Section 2.4.1, by the OHIOBIMS Owner Implementation Guide, and by the OHIOBIMS Delivery Team Implementation Guide.

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1. Introduction

Note on the term "Owner" — In this document, "Owner" means the State of Ohio entity that commissions the project. On many projects, the Ohio Facilities Construction Commission (OFCC) and the operating state agency act jointly as Owner; "Owner" refers to either or both as applicable to the project. This convention was introduced in v3.13 of the State of Ohio BIM Standards and applies throughout this companion document.

1.1 Purpose

This document provides standardized definitions for the BIM Uses that State of Ohio Owners and Delivery Teams reference in Project BIM Requirements (PBRs), BIM Execution Plans (BEPs), and contract scope. It is one of three companion documents that accompany the State of Ohio BIM Standards (OHIOBIMS); the others are the OHIOBIMS Owner Implementation Guide and the OHIOBIMS Delivery Team Implementation Guide.

BIM Uses define the specific purposes and applications for which BIM models and data will be used throughout the project lifecycle. By drawing all definitions from a single source, OHIOBIMS ensures that the same terminology, scope, and deliverable expectations apply across the standard, the PBR, the BEP, and the QA/QC checklist on every State of Ohio project.

1.2 Relationship to OHIOBIMS and the Companion Guides

This document is referenced by:

- OHIOBIMS Section 2.4.1 (BIM Uses and Applications) — lists the BIM Uses available for selection and points to this document for full definitions
- OHIOBIMS Owner Implementation Guide — references this document when discussing BIM Use selection by facility type and RFP language
- OHIOBIMS Delivery Team Implementation Guide — references this document for the definitions used during BEP authoring
- OHIOBIMS Appendix A.1 (BIM Use Definitions attachment) — this PDF is the attachment

When discrepancies exist between this document and other OHIOBIMS materials, the version published with the current OHIOBIMS release governs.

1.3 Alignment with NBIMS-US v4

The BIM Use catalog in this document is aligned with the National BIM Standard – United States Version 4 (NBIMS-US v4) BIM Use Definitions (BUD). State of Ohio BIM Uses retain NBIMS-US v4 names and intents and add Owner Value statements specific to State of Ohio facility management priorities.

2. How to Read a BIM Use Entry

Each BIM Use entry in Sections 3 through 6 includes five fields:

- Definition – what the BIM Use accomplishes
- Typical Phase – when it is applied (planning, design, construction, operations)
- Responsible Party – who typically leads this BIM Use
- Deliverables – what information or models are produced
- Owner Value – how it supports Owner objectives

The BIM Uses are organized by lifecycle phase. Many BIM Uses span more than one phase; the Typical Phase field identifies the phase in which the work is primarily performed. The BEP is the project-specific instrument that records which BIM Uses are required, who is responsible for each, and what is delivered at each milestone.

3. Planning and Pre-Design BIM Uses

3.1 Capture Existing Conditions

- Definition: Development of an existing conditions model using survey data, laser scanning, photogrammetry, or digitization of legacy drawings to represent current site and building conditions.
- Typical Phase: Planning, Pre-Design
- Responsible Party: Survey consultant, design team
- Deliverables: Point cloud data, existing conditions model including Architectural, Structural, Mechanical, Electrical and Plumbing (MEP) as required, and survey control documentation
- Owner Value: Provides accurate baseline for renovation and addition projects; reduces field conflicts and change orders; supports feasibility studies and space planning.

3.2 Establish Project Requirements

- Definition: Definition of Owner's functional, spatial, performance, and information requirements in a structured format that can inform design models and be validated throughout delivery.
- Typical Phase: Programming, Planning
- Responsible Party: Owner, programming consultant
- Deliverables: Owner's Information Requirements (OIR), Facility Program, space and adjacency requirements
- Owner Value: Ensures design aligns with operational needs; creates traceable link between program requirements and delivered facility.

4. Design Phase BIM Uses

4.1 Design Authoring

- Definition: Creation of the BIM model by Discipline (architectural, structural, mechanical, electrical, plumbing, fire protection, civil, landscape, equipment) as the primary means of developing and documenting design intent.
- Typical Phase: Schematic Design, Design Development, Construction Documents
- Responsible Party: Design team (architects, engineers)
- Deliverables: Discipline design models developed in accordance with the project BEP and MET, with LOD progression defined by element and milestone. Typical baseline progression is LOD 200 at 30 percent design, LOD 300 at 60 percent design, and LOD 350 at 90 percent and 100 percent design, unless project-specific requirements define a different progression.
- Owner Value: Provides coordinated, data-rich design documentation; supports coordination, analysis, and review; forms the basis for construction and operations models.

4.2 Design Coordination

- Definition: Integration and clash detection of discipline design models to identify and resolve spatial conflicts, system interferences, and coordination issues before construction.
- Typical Phase: Design Development, Construction Documents
- Responsible Party: Design team BIM Manager, Discipline coordinators
- Deliverables: Federated design coordination model, clash detection reports, coordination meeting minutes, resolved issue log
- Owner Value: Reduces construction RFIs and change orders; improves constructability; shortens construction schedule.

4.3 Design Review

- Definition: Use of BIM models and visualizations to facilitate Owner and stakeholder review of design intent, spatial relationships, and functional performance.
- Typical Phase: Schematic Design, Design Development

- Responsible Party: Design team, Owner project manager
- Deliverables: Renderings, fly-through animations, virtual reality walkthroughs, design review meeting documentation
- Owner Value: Enables non-technical stakeholders to understand design; improves decision-making; validates compliance with program requirements.

4.4 Energy Analysis

- Definition: Use of BIM model geometry and system data to perform building energy simulations and evaluate energy performance, life-cycle costs, and code compliance.
- Typical Phase: Schematic Design, Design Development
- Responsible Party: Energy consultant, mechanical engineer
- Deliverables: Energy model (Green Building XML (gbXML) or equivalent), energy analysis reports, code compliance documentation
- Owner Value: Supports sustainable design goals; informs HVAC system selection; validates compliance with energy codes and green building certifications.

4.5 Analyze Design (Value Engineering / Design for Maintainability)

- Definition: Use of BIM data to evaluate design alternatives, life-cycle costs, maintainability, and value engineering opportunities.
- Typical Phase: Design Development
- Responsible Party: Design team, value engineering consultant, Owner facilities staff
- Deliverables: Value engineering reports, design alternative comparisons, maintainability assessments
- Owner Value: Optimizes initial cost and life-cycle cost; ensures systems are accessible for maintenance and replacement; supports long-term operational efficiency.

4.6 Generate Estimates

- Definition: Extraction of quantity and cost data from BIM models to support cost estimating, budgeting, and cost control throughout design.
- Typical Phase: Schematic Design, Design Development, Construction Documents
- Responsible Party: Cost estimator, design team

- Deliverables: Quantity take-offs, cost estimates at each design milestone
- Owner Value: Improves cost estimate accuracy, simplifies early cost control, reduces risk of budget overruns.

5. Construction Phase BIM Uses

5.1 Coordinate Design and Construction

- Definition: Refinement and augmentation of design models by the construction team to support fabrication, installation sequencing, and trade coordination.
- Typical Phase: Construction
- Responsible Party: General contractor, trade contractors
- Deliverables: Construction coordination models, fabrication models, clash detection reports, RFI responses integrated in model
- Owner Value: Reduces field conflicts; improves installation quality; accelerates schedule; ensures as-built accuracy.

5.2 Generate Fabrication Details

- Definition: Development of fabrication and installation models from design and coordination models to support off-site prefabrication, modular construction, shop drawing production, and installation planning where required.
- Typical Phase: Construction
- Responsible Party: Trade contractors, fabricators
- Deliverables: Fabrication models, shop drawings, and CNC or equivalent production files, with LOD 400 applied only to those systems or components requiring fabrication-level development as defined in the BEP and MET.
- Owner Value: Improves quality and precision; reduces field labor and waste; accelerates construction schedule.

5.3 Sequence Construction (4D Modeling)

- Definition: Linking of BIM model elements to construction schedule to visualize construction sequencing, phasing, and logistics.
- Typical Phase: Pre-construction, Construction
- Responsible Party: General contractor, construction manager
- Deliverables: 4D construction sequence animations, phasing plans
- Owner Value: Improves construction planning; reduces conflicts with ongoing operations (occupied renovations); communicates schedule to stakeholders.

5.4 Layout Construction (Digital Layout)

- Definition: Use of BIM models and digital layout tools (total stations, laser scanners, robotic layout systems) to transfer design coordinates to the field for accurate installation.
- Typical Phase: Construction
- Responsible Party: General contractor, surveyor
- Deliverables: Survey control points, digital layout reports
- Owner Value: Improves installation accuracy; reduces rework; ensures as-built aligns with design intent.

6. Turnover and Operations BIM Uses

6.1 Compile Record Deliverables

- Definition: Creation of as-built and record models incorporating field-verified conditions, approved changes, RFIs, and commissioning data for handover to Owner.
- Typical Phase: Project Closeout
- Responsible Party: General contractor, design team (record model), closeout coordinator
- Deliverables: Record model (LOD 300–350), as-built drawings, asset data worksheets, Operations and Maintenance (O&M) manuals linked to model
- Owner Value: Provides accurate baseline for facility operations; eliminates reliance on outdated or incomplete as-built documentation.

6.2 Manage Assets

- Definition: Use of BIM model and asset data to populate and maintain facility management systems (CMMS, CAFM) for maintenance planning, work orders, and asset lifecycle management.
- Typical Phase: Operations
- Responsible Party: Owner facilities management staff
- Deliverables: Record model, as-built drawings, asset data worksheets, and Operations and Maintenance manuals linked to the model, with the required level of development defined by the BEP, MET, and owner turnover requirements. The turnover model is not assumed to require uniform LOD 500 content unless field-verified installed conditions are contractually required for specific elements.
- Owner Value: Reduces asset onboarding time from 1–2 years to 2–3 months; enables preventive maintenance; improves work order response; supports capital planning.

6.3 Manage Space

- Definition: Use of BIM spatial data to support space allocation, occupancy tracking, move management, and space utilization analysis.
- Typical Phase: Operations
- Responsible Party: Owner facilities management staff, space planning team

- Deliverables: Space inventory, occupancy reports, space utilization dashboards
- Owner Value: Optimizes space utilization; supports real estate decisions; enables efficient move and reconfiguration planning.

6.4 Monitor Performance (Energy / Systems)

- Definition: Integration of BIM model with Building Automation Systems (BAS), energy management systems, and IoT sensors to monitor real-time performance and support predictive maintenance.
- Typical Phase: Operations
- Responsible Party: Owner facilities management staff, controls contractor
- Deliverables: Digital twin platform, energy dashboards, fault detection reports
- Owner Value: Enables proactive maintenance; reduces energy costs; extends equipment life; supports sustainability goals.

7. Selecting BIM Uses by Facility Type

The table below maps common BIM Uses to facility types. Owners should use this as a reference when defining required and optional BIM Uses in the project BEP.

Project-specific requirements may make a BIM Use required even where this table shows Optional, and Owners may waive a default Required selection where a project does not warrant it.

BIM Use	Office	Healthcare	Correctional	Educational	Transportation	Parks/Rec
Capture Conditions	Optional	Required	Optional	Optional	Optional	Optional
Design Authoring	Required	Required	Required	Required	Required	Required
Design Coordination	Required	Required	Required	Required	Required	Required
Clash Detection	Required	Required	Required	Required	Required	Optional
Record Modeling	Required	Required	Required	Required	Required	Required
Asset Management	Required	Required	Required	Required	Required	Limited
Space Management	Required	Optional	Optional	Required	Optional	N/A
Energy Analysis	Optional	Required	Optional	Required	Optional	Optional
Life-Safety Analysis	Required	Required	Required	Required	Optional	Optional
4D Sequencing	Optional	Optional	Optional	Optional	Optional	N/A
Cost Estimating	Optional	Optional	Optional	Optional	Optional	Optional