BIM PROJECT EXECUTION PLAN

VERSION 2.0

FOR

[PROJECT TITLE]

DEVELOPED BY

[AUTHOR COMPANY]

This template is a tool that is provided to assist in the development of a BIM project execution plan as required per contract. The template plan was created from the buildingSMART alliance™ (bSa) Project "BIM Project Execution Planning" as developed by The Computer Integrated Construction (CIC) Research Group of The Pennsylvania State University. The bSa project is sponsored by The Charles Pankow Foundation (http://www.pankowfoundation.org), Construction Industry Institute (CII) (http://www.construction-institute.org), Penn State Office of Physical Plant (OPP) (http://www.opp.psu.edu), and The Partnership for Achieving Construction Excellence (PACE) (http://www.engr.psu.edu/pace). The BIM Project Execution Planning Guide can be downloaded at http://www.engr.psu.edu/BIM/PxP.

This coversheet can be replaced by a company specific coversheet that includes at a minimum document title, project title, project location, author company, and project number.

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SECTION A: BIM PROJECT EXECUTION PLAN OVERVIEW

To successfully implement Building Information Modeling (BIM) on a project, the project team has developed this detailed BIM Project Execution Plan. The BIM Project Execution Plan defines uses for BIM on the project (e.g. design authoring, cost estimating, and design coordination), along with a detailed design of the process for executing BIM throughout the project lifecycle.

The goal of the Snowdon Towers BIM implementation is to leverage digital transformation strategies to ensure the successful delivery of a mixed-use development in Brownsville, PA. By utilizing a fully coordinated multi-disciplinary model (Architecture, Structure, MEP, and Site), the project team aims to optimize the "Design-to-Field" workflow.

Snowdon Towers is a mixed-use development project located in the historic downtown of Brownsville, Pennsylvania. The project reimagines the site of demolished historic structures, incorporating their preserved façades into a new modern facility.

SECTION B: PROJECT INFORMATION

This section defines basic project reference information and determined project milestones.

1. **PROJECT OWNER: SNOWDON DEVELOPMENT GROUP (FICTIONAL)**
2. **PROJECT NAME: SNOWDON TOWERS**
3. **PROJECT LOCATION AND ADDRESS: BROWNSVILLE, PENNSYLVANIA, USA**
4. **CONTRACT TYPE / DELIVERY METHOD: INTEGRATED PROJECT DELIVERY (IPD)**
5. **BRIEF PROJECT DESCRIPTION: A MULTI-STORY, MIXED-USE FACILITY INTEGRATING HISTORIC MASONRY FAÇADES WITH MODERN STEEL AND CONCRETE STRUCTURAL SYSTEMS.**
6. **PROJECT SCHEDULE / PHASES / MILESTONES:**

Include BIM milestones, pre-design activities, major design reviews, stakeholder reviews, and any other major events which occur during the project lifecycle.

PROJECT PHASE / MILESTONE	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	PROJECT STAKEHOLDERS INVOLVED
Design Validation (Clash Detection)			
4D Phasing Simulation			
Safety Walkthroughs			
Asset Data Delivery (COBie/IFC)			

SECTION C: KEY PROJECT CONTACTS

List of lead BIM contacts for each organization on the project. Additional contacts can be included later in the document.

Role	Organization	Contact Name	Location	E-Mail	Phone
Project Manager(s)	TU Delft	Koen Hammink	Delft		
		Puck Winters	Delft		
		Thomas Rivas Smits	Delft		
BIM Manager(s)	TU Delft	Koen Hammink	Delft		
		Puck Winters	Delft		
		Thomas Rivas Smits	Delft		
Instructor / Supervisor	TU Delft	Dr.ir. G.A. van Nederveen	Delft		
	TU Delft	Dr. Ir. R. Kuttantharappel Soman	Delft		
	TU Delft	Dr.ir. E. Papadonikolaki	Delft		

SECTION D: PROJECT GOALS / BIM USES

Describe how the BIM Model and Facility Data are leveraged to maximize project value (e.g. design alternatives, life-cycle analysis, scheduling, estimating, material selection, pre-fabrication opportunities, site placement, etc.) Reference www.engr.psu.edu/bim/download for BIM Goal & Use Analysis Worksheet.

1. Major BIM Goals / Objectives:
   State Major BIM Goals and Objectives

PRIORITY (HIGH/ MED/ LOW)	GOAL DESCRIPTION	POTENTIAL BIM USES
High	**Resolve Design Conflicts:** Ensure that MEP systems do not clash with structural elements.	3D Coordination (Clash Detection)
High	**Optimize Construction Schedule:** Visualize the complex construction sequencing (phasing) to ensure site safety and logistical efficiency in a dense urban area.	Phase Planning (4D Modeling)
High	**Enhance Safety:** Simulate construction risks, particularly regarding the stability of the historic façade during excavation and steel erection.	Construction System Design (Virtual Mockups)
Med	**Sustainability Targets:** Analyze embodied carbon and energy performance to meet the project's green building standards.	Sustainability Evaluation

2. BIM Use Analysis Worksheet: Attachment 1

Reference www.engr.psu.edu/bim/download for BIM Goal & Use Analysis Worksheet. Attach BIM Use analysis Worksheet as Attachment 1.

3. BIM Uses:
   Highlight and place an X next to the additional BIM Uses to be developed by the use of the BIM model as selected by the project team using the BIM Goal & Use Analysis Worksheet. See BIM Project Execution Planning Guide at www.engr.psu.edu/BIM/BIM_Uses for Use descriptions. Include additional BIM Uses as applicable in empty cells.

X	PLAN	X	DESIGN	X	CONSTRUCT	X	OPERATE
	PROGRAMMING		DESIGN AUTHORING		SITE UTILIZATION PLANNING		BUILDING MAINTENANCE SCHEDULING
	SITE ANALYSIS		DESIGN REVIEWS		CONSTRUCTION SYSTEM DESIGN		BUILDING SYSTEM ANALYSIS
			3D COORDINATION		3D COORDINATION		ASSET MANAGEMENT
			STRUCTURAL ANALYSIS		DIGITAL FABRICATION		SPACE MANAGEMENT / TRACKING
			LIGHTING ANALYSIS		3D CONTROL AND PLANNING		DISASTER PLANNING

			ENERGY ANALYSIS		RECORD MODELING		RECORD MODELING
			MECHANICAL ANALYSIS				
			OTHER ENG. ANALYSIS				
			SUSTAINABLITY (LEED) EVALUATION				
			CODE VALIDATION				
	PHASE PLANNING (4D MODELING)		PHASE PLANNING (4D MODELING)		PHASE PLANNING (4D MODELING)		PHASE PLANNING (4D MODELING)
	COST ESTIMATION		COST ESTIMATION		COST ESTIMATION		COST ESTIMATION
	EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING		EXISTING CONDITIONS MODELING

SECTION E: ORGANIZATIONAL ROLES / STAFFING

Determine the project's BIM Roles/Responsibilities and BIM Use Staffing

1. BIM Roles and Responsibilities:

BIM Manager
- Develops and enforces the BIM Execution Plan (BEP).

Project Manager
- Ensures BIM goals align with the overall project schedule and budget.

BIM Model Manager
- Leads the modeling effort for all disciplines (Architecture, Structure, or MEP).

4D Scheduler / Planner
- Links the 3D model elements to the project schedule tasks (P6/MS Project).

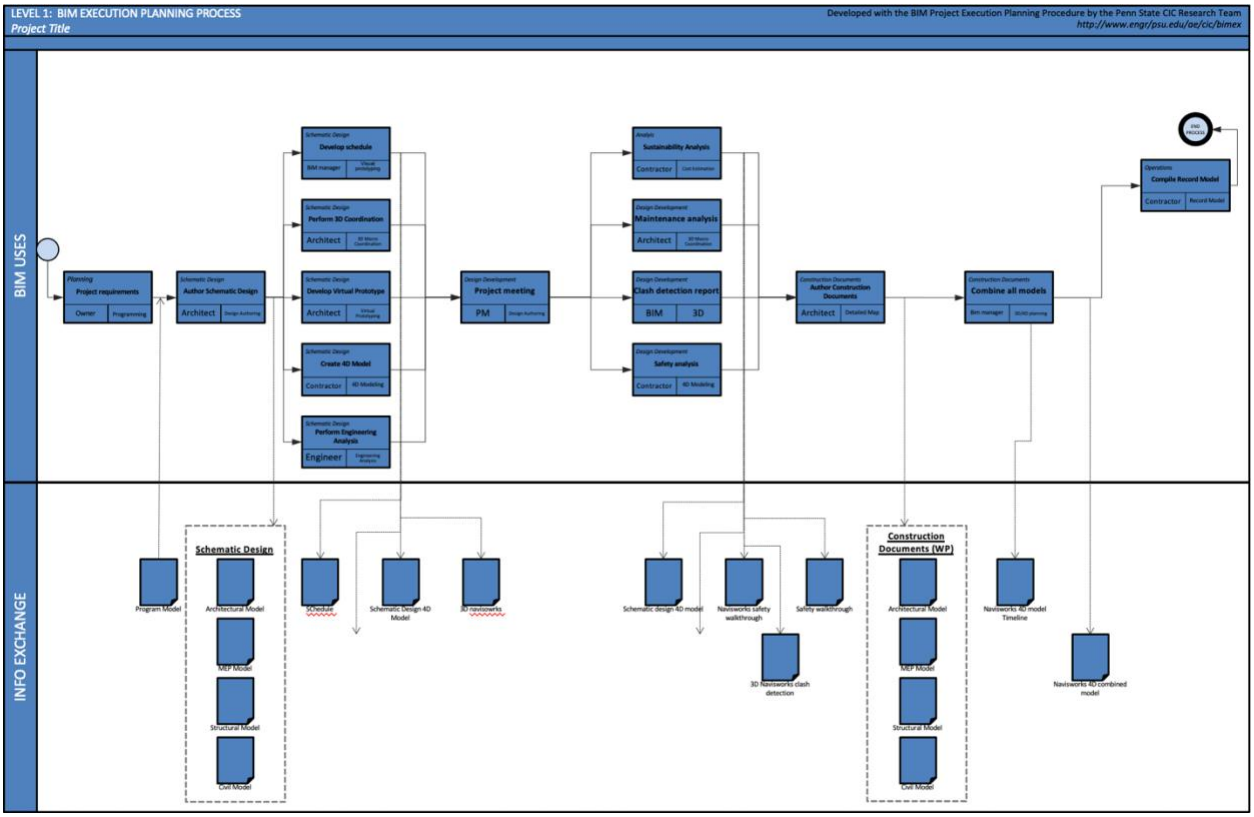
2. BIM Use Staffing:
   For each BIM Use selected, identify the team within the organization (or organizations) who will staff and perform that Use and estimate the personal time required.

BIM Use	Organization	Number Total Staff	Estimated Worker Hours	Location(s)	Lead Contact
BIM Manager & Project Manager	Group 11	3	40	Delft	Thomas Rivas Smits
3D Coordination	Group 11	3	40	Delft	Puck Winters
Design Authoring	Group 11	3	40	Delft	Puck Winters
Energy Analysis	Group 11	3	40	Delft	Puck Winters
Clash Detection	Group 11	3	40	Delft	Puck Winters
4D Scheduler	Group 11	3	40	Delft	Koen Hammink
Asset Management	Group 11	3	40	Delft	Koen Hammink
Sustainability Evaluation (LEED)	Group 11	3	40	Delft	Koen Hammink
Safety Walkthrough & Analysis	Group 11	3	40	Delft	Puck Winters

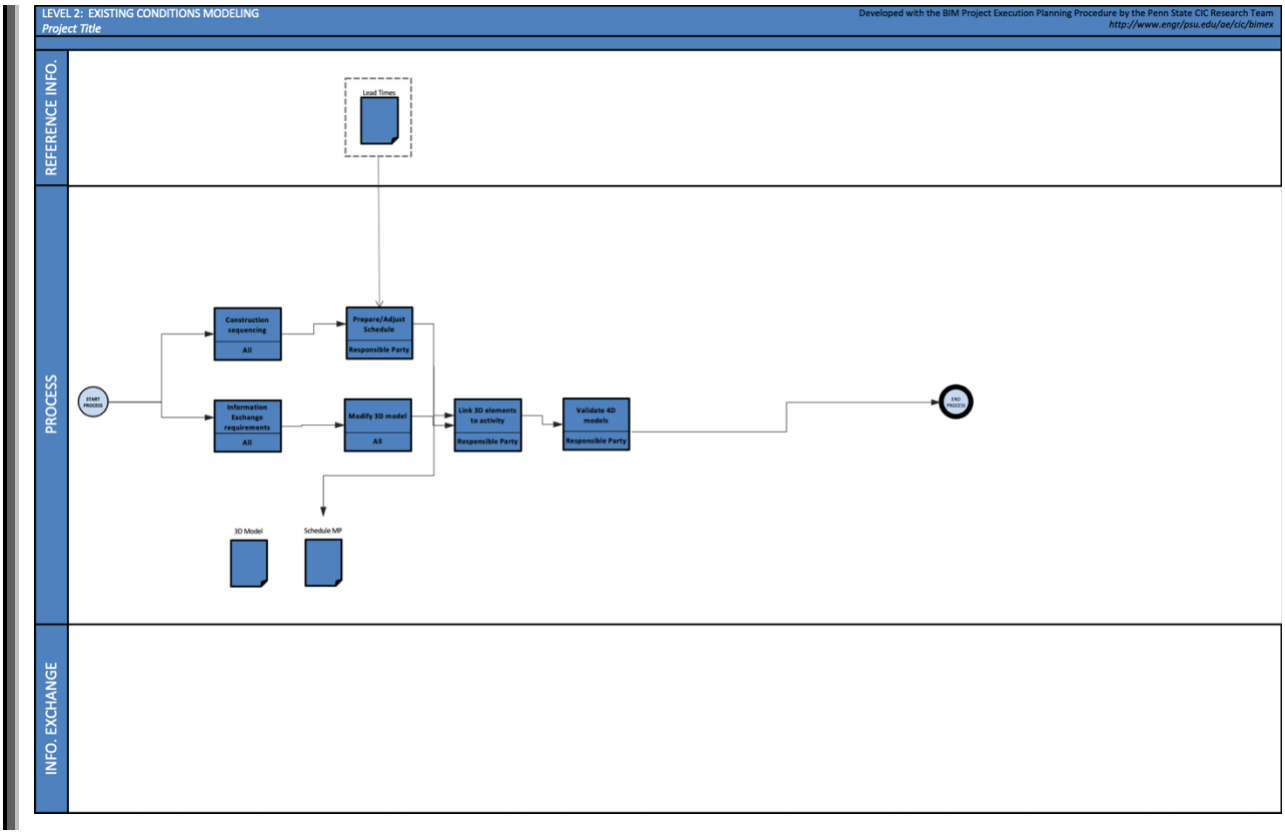
SECTION F: BIM PROCESS DESIGN

Provide process maps for each BIM Use selected in section D: Project Goals/BIM Objectives. These process maps provide a detailed plan for execution of each BIM Use. They also define the specific Information Exchanges for each activity, building the foundation for the entire execution plan. The plan includes the Overview Map (Level 1) of the BIM Uses, a Detailed Map of each BIM Use (Level 2), and a description of elements on each map, as appropriate. Level 1 and 2 sample maps are available for download at www.engr.psu.edu/BIM/download. (Please note that these are sample maps and should be modified based on project specific information and requirements). Please reference Chapter Three: Designing BIM Project Execution Process in the BIM Project Execution Planning Guide found at www.engr.psu.edu/BIM/PxP

1. Level One Process Overview Map: Attachment 2



2. List of Level Two – Detailed BIM Use Process Map(s): Attachment 3



SECTION G: BIM INFORMATION EXCHANGES

Model elements by discipline, level of detail, and any specific attributes important to the project are documented using information exchange worksheet. See Chapter Four: Defining the Requirements for Information Exchanges in the BIM Project Execution Planning Guide for details on completing this template.

1. List of Information Exchange Worksheet(s): Attachment 4

Exchange Milestone	Information / Model Deliverable	Sender (Author)	Receiver (User)	Format	Purpose
1. Existing Conditions	**Site & Historic Façade Model**	Thomas (Arch)	Koen (BIM Mgr)	.RVT / .RCP	Initial reference for site logistics and historic preservation context.
2. Design Authoring	**Discipline Models (Arch, Struct, MEP)**	Thomas & Puck	Koen (BIM Mgr)	.RVT	Sharing the "Work in Progress" models for the first federated review.
3. Clash Detection	**Coordination Report & Clashed Model**	Koen (BIM Mgr)	Thomas & Puck	.NWD / HTML	Identifying conflicts to be fixed in the next authoring cycle.
4. 4D Phase Planning	**Phasing Simulation / Animation**	Koen (4D)	Project Team	.AVI / .MP4	Visualizing the demolition and construction sequence linked to the schedule.
5. Energy & Sustainability	**Energy Analysis Model**	Thomas (Arch)	Course Instructor	.XML / .IFC	Simplified model geometry for energy performance and embodied carbon simulation.

Exchange Milestone	Information / Model Deliverable	Sender (Author)	Receiver (User)	Format	Purpose
6. Cost Estimation	**Quantity Take-off (QTO) Data**	Puck (Struct)	Course Instructor	.XLSX / .RVT	Model extracts (concrete volume, steel tonnage) for cost analysis.
7. Asset Data Handover	**Enriched Asset Model**	Puck (MEP)	Facility Mgr	.RVT / Tandem	Model elements populated with FM data (Maintenance schedules, Manufacturers).
8. Record Modeling	**Final "As-Built" Digital Twin**	Koen (BIM Mgr)	Client / Owner	.IFC (Archived)	The final, verified representation of the physical building for operations.

SECTION H: BIM AND FACILITY DATA REQUIREMENTS

Model Element Type	Discipline	LOD	LOI	Required Attributes (Parameters)	Classification
Historic Façade (Masonry)	Arch	350	3	• Material: Original Brick • Condition Rating (1-5) • Preservation Status	**Uniclass 2015**: Ss_25_10_20 (Brick walls)
Steel Columns / Beams	Struct	300	3	• Structural Usage • Fire Rating (e.g., 2HR) • Load Bearing (Yes/No)	**OmniClass**: 23-13 23 11 (Structural Steel)
HVAC Units (AHU / RTU)	MEP	350	4	• Mark (Asset Tag) • Manufacturer & Model Number • Airflow (CFM) • Preventative Maintenance Sched.	**Uniclass 2015**: Pr_60_65_04 (Air handling units)

Model Element Type	Discipline	LOD	LOI	Required Attributes (Parameters)	Classification
Lighting Fixtures	Elec	300	3	• Voltage • Wattage • Lamp Type (LED) • Color Temperature (K)	**OmniClass**: 23-50 45 11 (Lighting Fixtures)
Rooms / Spaces	Arch/MEP	200	2	• Name & Number • Department (Retail/Resi) • Target Occupancy	**OmniClass**: 13-00 00 00 (Space by Function)

SECTION I: COLLABORATION PROCEDURES

1. Collaboration Strategy:

The team will utilize a Federated Model workflow. Each discipline lead (Thomas/Puck) works on local copies of their specific model (Architecture/MEP) and uploads them to the Common Data Environment (CDE) on a weekly basis. Koen (BIM Manager) is responsible for aggregating these files into the central Navisworks/Solibri model for coordination.

- **File Naming Convention:** [Project Code]_[Discipline]_[Description].rvt

Example: ST25_ARCH_SnowdonTowers.rvt

- **Common Coordinate System:** All models will share coordinates based on the **Site Model** managed by Thomas. The "Survey Point" must align with the provided Point Cloud origin to ensure the historic façade fits correctly.
- **Common Data Environment (CDE):** The team will use **Google drive** to host the central files.

2. Meeting Procedures:

Meeting Type	Frequency	Participants	Agenda / Goals	Meeting Type
BIM Kick-off	Once	All Members	• Confirm coordinates & levels. • Assign roles (Koen, Thomas, Puck). • Review BEP standards.	**BIM Kick-off**
Coordination / Clash Review	Weekly	All Members	• Review Clash Reports (generated by Koen). • Assign "Action Items" for clashing elements.	**Coordination / Clash Review**

			• Discuss 4D phasing logic.	
Model Freeze / Sign-off	Milestones	All Members	• Final visual check before submission. • Verify all asset data (Section H) is populated.	**Model Freeze / Sign-off**

3. Model Delivery Schedule of Information Exchange for Submission and Approval:

BIM Submittal Item	Stage / Activity	Approximate Due Date	Format	Notes
Existing Conditions Model	**Week 3:** Site & Context Setup	Nov 28, 2025	.RVT	Includes historic façade & site context (point cloud integration).
Design Coordination Model	**Week 4:** Design Authoring	Dec 05, 2025	.NWC / .RVT	First federation of Arch, Struct, and MEP for visual check.
Clash Detection Report	**Week 5:** Coordination	Dec 12, 2025	.HTML / PDF	List of active clashes (e.g., Structure vs. MEP) to be resolved.
4D Phasing Simulation	**Week 6:** 4D Modeling	Dec 19, 2025	.AVI / .MP4	Video file showing construction sequence linked to schedule.
Sustainability Analysis	**Week 7:** Analysis	Jan 09, 2026	.XML / Report	Embodied carbon & energy

BIM Submittal Item	Stage / Activity	Approximate Due Date	Format	Notes
				performance results.
Final Asset Model (Handover)	**Week 8:** Digital Handover	Jan 16, 2026	.IFC (COBie)	Final model with all facility management data populated.

4. Interactive Workspace

The project team should consider the physical environment it will need throughout the lifecycle of the project to accommodate the necessary collaboration, communication, and reviews that will improve the BIM Plan decision making process. Describe how the project team will be located. Consider questions like "will the team be collocated?" If so, where is the location and what will be in that space? Will there be a BIM Trailer? If yes, where will it be located and what will be in the space such as computers, projectors, tables, table configuration? Include any additional information necessary information about workspaces on the project.

- Shared Google Drive simulated the Common Data Environment
- Weekly physical coordination sessions
- Central modeling work done in Autodesk Revit 2023

Electronic Communication Procedures:

(Note: File Naming and Folder Structure will be discussed in Section L: Model Structure).
The following document management issues should be resolved and a procedure should be defined for each: Permissions / access, File Locations, FTP Site Location(s), File Transfer Protocol, File / Folder Maintenance, etc.

FILE LOCATION	FILE STRUCTURE / NAME	FILE TYPE	PASSWORD PROTECT	FILE MAINTAINER	UPDATED
Google Drive (CDE)	Snowdon_Towers_CME4121 (Root)	FOLDER	NO	Koen Hammink	ONCE
	01_WIP (Work In Progress)	FOLDER	NO	Discipline Leads	DAILY
	02_SHARED (Coordination)	FOLDER	NO	Koen Hammink	WEEKLY (FRI)
	03_PUBLISHED (Submission)	FOLDER	NO	Koen Hammink	MILESTONES
	ST25_ARCH_Model.rvt	.rvt	NO	Thomas Rivas Smits	WEEKLY
	ST25_STR_Model.rvt	.rvt	NO	Puck Winters	WEEKLY
	ST25_COORD_ClashReport	.html	NO	Koen Hammink	WEEKLY
WhatsApp	CME4121_Snowdon_Group	CHAT	NO	All Members	DAILY

SECTION J: QUALITY CONTROL

1. OVERALL STRATEGY FOR QUALITY CONTROL:

- **Discipline-Level Self-Check:** Before any weekly upload to the CDE, Discipline Leads (Thomas/Puck) must sanitize their own models. This involves resolving warnings, purging unused elements, and ensuring the "Historic Façade" alignment is maintained.
- **Federated Coordination Check:** The BIM Manager (Koen) aggregates the models to perform automated Clash Detection and Visual Walkthroughs. This ensures that the new steel structure does not intersect with the existing historic elements or MEP routing.
- **Data Validation:** Prior to the final "Asset Handover" milestone, a specific audit is conducted to verify that all required facility management parameters (as defined in Section H) are present and correctly populated.

2. QUALITY CONTROL CHECKS:

Check Type	Definition	Software	Frequency	Responsible
Visual Check	Ensure there are no unintended model components (e.g., "flying" objects) and that the design intent is visually correct.	Revit / Navisworks	Weekly (Before Upload)	Discipline Leads (Thomas/Puck)
Interference Check	Detect clashes between major systems (e.g., Structure vs. HVAC ductwork).	Navisworks Manage	Weekly (Friday)	BIM Manager (Koen)
Standards Check	Verify that File Naming, Fonts, Dimensions, and Line Styles	Revit	Monthly	BIM Manager (Koen)

Check Type	Definition	Software	Frequency	Responsible
	match the Project Standards.			
Model Integrity	Review the "Warnings" list in Revit and purge unused families to keep file size manageable.	Revit	Weekly	Discipline Leads
Data Validation	Check that specific elements (Doors, HVAC) contain the required LOI parameters (e.g., Fire Rating, Manufacturer).	Solibri / Revit Schedule	Before Submission	BIM Manager / MEP Lead

3. Model Accuracy and Tolerances:

Phase	Discipline	Element	Tolerance / Accuracy	Comments
Existing Conditions	**Survey / Site**	**Point Cloud Data**	+/- 1 inch (25mm)	The laser scan data of the historic façade is considered the "Ground Truth."
Design / Coordination	**Architecture**	**New Walls / Floors**	+/- 1/8 inch (3mm)	Modeled to exact design dimensions. Gaps between new walls and the historic scan must be > 1 inch to account for irregularities.
Design / Coordination	**Structure**	**Steel / Concrete**	+/- 1/4 inch (6mm)	Structural members are modeled to nominal dimensions.
Design / Coordination	**MEP**	**Ducts / Pipes**	+/- 1/2 inch (12mm)	Routing is diagrammatic but must respect the "Clash Free" zones defined in the coordination model.
As-Built / Record	**All**	**Final Deliverable**	+/- 1 inch (25mm)	The final model should represent the "As-Built" condition. Any field deviation larger than 1 inch must be

Phase	Discipline	Element	Tolerance / Accuracy	Comments
				updated in the model.

SECTION K: TECHNOLOGICAL INFRASTRUCTURE NEEDS

1. Software:

List software used to deliver BIM. Remove software that is not applicable.

BIM Use	Discipline	Software	Version	Notes
Design Authoring	Architecture / Structure / MEP	**Autodesk Revit**	**2025**	Required for model creation and editing. Must install the same build/update.
Clash Detection & Coordination	BIM Management	**Autodesk Navisworks Manage**	**2025**	Used for federating models and running interference checks.
4D Phase Planning	Construction Management	**Autodesk Navisworks Manage**	**2025**	Used to link the model geometry to the MS Project schedule.
Scheduling	Planning	**Microsoft Project**	**2021**	"Project Professional 2021" is used to create the construction timeline (.mpp & .csv).
Asset Management (Digital Twin)	Facility Management	**Autodesk Tandem**	Cloud (Browser)	Web-based platform for connecting asset data and documentation.
Sustainability Analysis	Sustainability Lead	**Autodesk Insight**	Cloud (Revit Plugin)	Built-in Revit tool for carbon and energy analysis.

BIM Use	Discipline	Software	Version	Notes
Document Management (CDE)	All	**Google Drive**	Cloud	As defined in Section I for file storage and exchange.

2. Computers / Hardware:

Understand hardware specification becomes valuable once information begins to be shared between several disciplines or organizations. It also becomes valuable to ensure that the downstream hardware is not less powerful than the hardware used to create the information. In order to ensure that this does not happen, choose the hardware that is in the highest demand and most appropriate for the majority of BIM Uses.

BIM USE	HARDWARE	OWNER OF HARDWARE	SPECIFICATIONS
DESIGN AUTHORING	HP ZBook	All	Intel i7 - NVIDIA Quadro P2000
	HP ZBook	All	Intel i7 - NVIDIA Quadro P2000

3. Modeling Content and Reference Information

BIM Use	Discipline	Modeling Content / Reference Information	Version	Notes
Design Authoring	**Architecture**	**Revit System Families** (Walls, Floors, Roofs) & **Snowdon Sample Families**	2025	Use existing types from Snowdon_Towers_Sample.rvt to maintain graphic standards.
Design Authoring	**Structure**	**Autodesk Standard Library** (UK/US Imperial)	2025	Structural columns and framing families must use the W-Shape steel profiles provided in the dataset.
Design Authoring	**MEP**	**Snowdon MEP Families** &	2025	Prioritize families already present in the sample model

BIM Use	Discipline	Modeling Content / Reference Information	Version	Notes
		Autodesk Default MEP		to ensure connectivity with existing systems.
Coordination	**All**	**Shared Grids & Levels**	N/A	The "Site Model" is the single source of truth for Grids and Levels. No discipline may move these elements.
Reality Capture	**Site/Arch**	**Point Cloud Data (.RCP)**	N/A	Laser scan data of the historic façade acts as the geometric reference for all new exterior wall connections.
Asset Management	**All**	**Uniclass / OmniClass Classifications**	N/A	All loadable families must have their "Assembly Code" and "Keynote" parameters populated for FM export.

SECTION L: MODEL STRUCTURE

1. File Naming Structure:

Determine and list the structure for model file names.

Category	Requirement / Standard	Details / Examples
File Naming Convention	**[Discipline]-[Project]-[Building].fmt**	• ARCH-ST25-BL01.rvt (Architecture) • STRUCT-ST25-BL01.rvt (Structure) • MECH-ST25-BL01.rvt (Mechanical) • COORD-ST25-BL01.nwd (Coordination)
Model Federation	**Discipline-Based Separation**	Models are authored separately by discipline (Arch, Struct, MEP) and linked into a central Federated Model for coordination.
Coordinate System	**Shared Coordinates**	• **Origin:** Project Base Point (0,0,0) established by CIVIL-ST25-SITE.rvt. • **Survey Point:** Shared across all files. • **North:** Project North aligned to Grid A/1.
Measurement Units	**Project Specific**	**Imperial (Feet/Inches)** *(Required to match the US-based Snowdon Towers dataset).*
BIM Standards	**ISO 19650 (Adapted)**	Principles of "Work in Progress" (WIP) and "Shared" states apply to the CDE folders.
Classification	**Uniclass 2015 / OmniClass**	All loadable families must contain classification codes for Asset

Category	Requirement / Standard	Details / Examples
		Handover (e.g., Pr_60_65_04 for AHUs).
Interoperability	**IFC 4**	Final deliverables must be exported to **IFC4 Reference View** for open-standard archiving.

2. Model Structure:

Describe and diagram how the Model is separated, e.g., by building, by floors, by zone, by areas, and/or discipline.

Separation Type	Structure
By Discipline	The project is divided into separate models for **Architecture**, **Structure**, and **MEP**. This allows multiple disciplines to work simultaneously without file locking or performance issues.
By Building Levels	Within each discipline model, elements are assigned to specific Levels (e.g., Level 1, Level 2, Roof) to facilitate floor-by-floor filtering and visibility control.
Federated Model	The individual discipline models are linked together in **Autodesk Navisworks** to create a single "Federated Model." This combined model is used for inter-disciplinary Clash Detection and 4D Phasing simulations.
Asset Organization	All model elements are enriched with **Uniclass 2015** classification codes and asset parameters (e.g., Manufacturer, Warranty Date) to support the digital handover to Facility Management (Tandem).

3. Measurement and Coordinate Systems:

Describe the measurement system (Imperial or Metric) and coordinate system (geo-referenced) used.

SYSTEM	USED
Measurement System	**Imperial** (Feet and Fractional Inches).

SYSTEM	USED
Coordinate System	**Revit Shared Coordinates**. All models must share the same Project Base Point and Survey Point to align with the historic façade Point Cloud.

4. BIM and CAD Standards:

Identify items such as the BIM and CAD standards, content reference information, and the version of IFC, etc.

STANDARD	VERSION	BIM USES APPLICABLE	ORGANIZATIONS APPLICABLE
ISO 19650	Parts 1 & 2	All (Information Management & CDE)	All Team Members
IFC	IFC4 Reference View	Asset Handover / Coordination / OpenBIM	Facility Management / All Disciplines
Revit Modeling Guide	Autodesk Sample	Design Authoring	All Disciplines

SECTION M: PROJECT DELIVERABLES

BIM SUBMITTAL ITEM	STAGE	Approximate Due Date	FORMAT	NOTES
Existing Conditions Model	**Preliminary Planning** (Week 3)	**Nov 28, 2025**	.RVT	Includes site context, topography, and alignment with the historic façade Point Cloud.
Design Coordination Model	**Design Development** (Week 4)	**Dec 05, 2025**	.NWC / .RVT	Federated model containing Architecture, Structure, and MEP for visual review.
Clash Detection Report	**Coordination** (Week 5)	**Dec 12, 2025**	.HTML	Exported from Navisworks Manage showing active clashes (e.g., Structure vs. MEP).
4D Phasing Simulation	**Construction Simulation** (Week 6)	**Dec 19, 2025**	.AVI / .MP4	Video file showing the construction sequence linked to the MS Project schedule.
Sustainability Analysis	**Analysis** (Week 7)	**Jan 09, 2026**	.PDF / .XML	Embodied Carbon and Energy analysis report

BIM SUBMITTAL ITEM	STAGE	Approximate Due Date	FORMAT	NOTES
				(Autodesk Insight).
Asset Data Handover	**Closeout / Handover** (Week 8)	**Jan 16, 2026**	.IFC (COBie)	Final model enriched with facility management data (Uniclass codes, Manufacturer info) for Tandem.
Record Model	**Project Closeout**	**Jan 30, 2026**	.RVT	The final "As-Built" Revit file. See Record Model Information Exchange to ensure proper data is contained.

SECTION N: DELIVERY STRATEGY / CONTRACT

1. Delivery and Contracting Strategy for the Project

What additional measures need to be taken to successfully use BIM with the selected delivery method and contract type?

As this is a university-led academic project for the CME4121 course, no formal legal contract exists between the participants. However, the project simulates an **Integrated Project Delivery (IPD)** or highly collaborative **Design-Build (D-B)** strategy. This approach was selected because the Snowdon Towers project requires tight integration between the design of the new structure and the preservation of the existing historic façade, necessitating early "contractor" (simulation/scheduling) involvement.

- **Centralized Information Management:** Use of a Common Data Environment (CDE) on Google Drive
- **Digital Transformation Focus:** The strategy prioritizes not just construction documents, but downstream data usage, specifically **4D Phasing** (for site logistics) and **Asset Management** (for the Digital Twin in Autodesk Tandem).
- **OpenBIM Deliverables:** The project delivery includes both native (.RVT) and open (.IFC, COBie) formats to simulate a vendor-neutral handover to the facility manager.

2. Team Selection Procedure

How will you select future team members in regards to the above delivery strategy and contract type?

For this academic assignment, team members were selected and roles assigned based on individual interest and the specific technical requirements of the Snowdon Towers dataset:

- **BIM Management & Coordination:** Assigned to **Thomas Rivas Smits** to oversee the federation of the complex multi-disciplinary dataset and lead the Clash Detection process.
- **Architecture & Reality Capture:** Assigned to **Koen Hammink** to manage the interface between the new architectural design and the existing point-cloud data of the historic façade.
- **Structural/MEP & Asset Data:** Assigned to **Puck Winters** to handle systems modeling and the population of LOI (Level of Information) for the Digital Twin handover.

3. BIM Contracting Procedure

How should BIM be written into the future contracts? (If documents / contracts are developed, please attach as attachment 6)

While no binding commercial contracts were signed, this **BIM Execution Plan (BEP)** serves as the binding agreement for the student team. The "contractual" obligations are derived from the **CME4121 Study Guide**, which acts as the **Exchange Information Requirements (EIR)** from the "Client" (Course Instructors).

The team agrees to the following stipulations simulated as contractual clauses:

- **BIM Goals:** Adherence to the Use Cases defined in **Section D** (Clash Detection, 4D Phasing, Asset Handover).

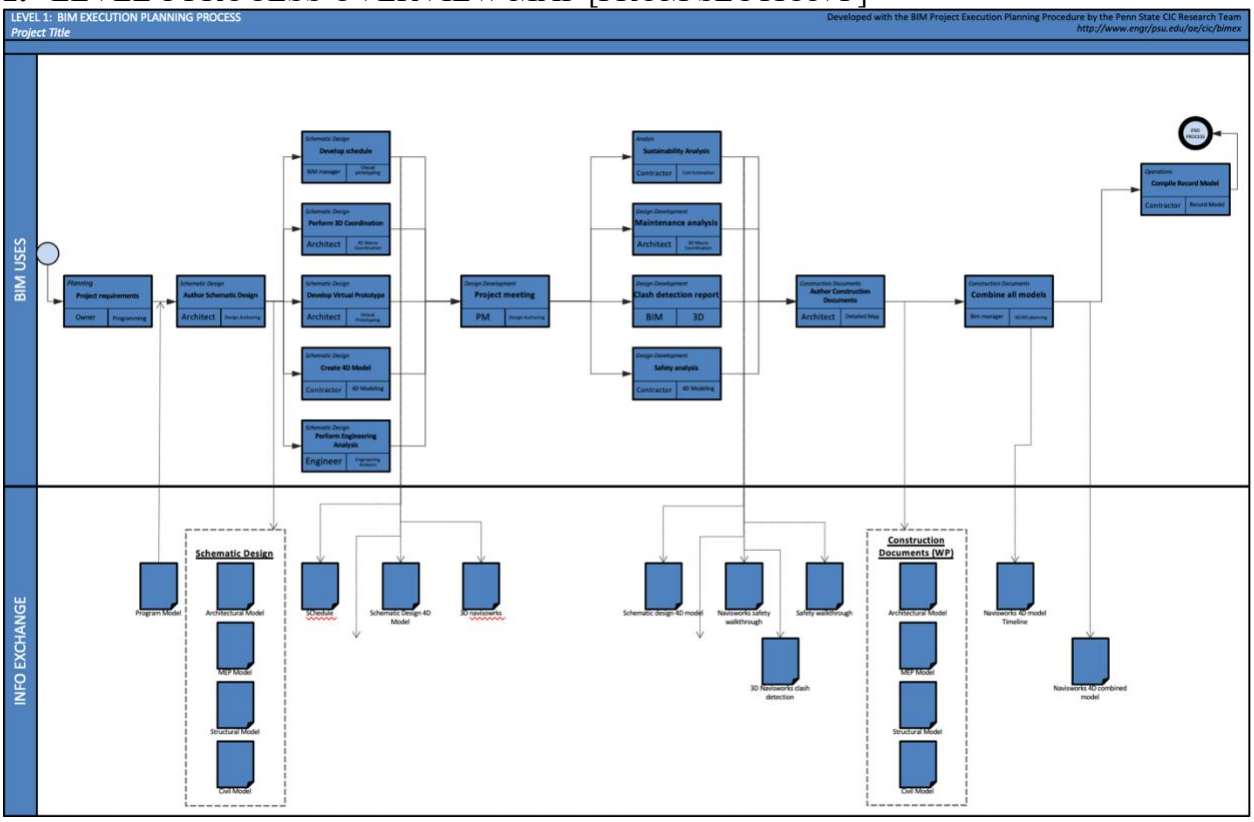
- **Information Exchange:** strict adherence to the Friday submission deadlines outlined in **Section I**.
- **Quality Control:** Compliance with the accuracy tolerances for the historic façade defined in **Section J**.

In a real-world application for Snowdon Towers, these responsibilities would be formalized in:

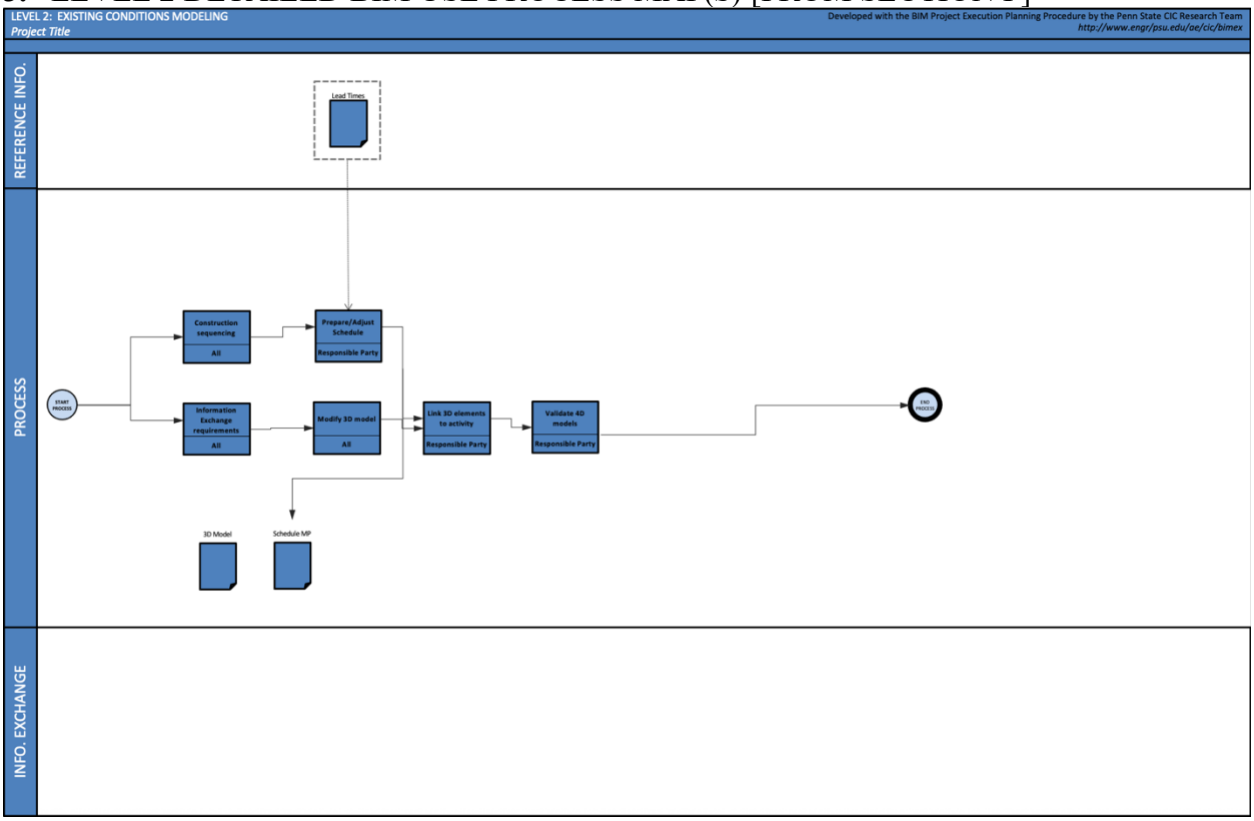
- **EIR (Exchange Information Requirements):** Defining the Client's specific asset data needs (e.g., Tandem parameters).
- **TIDP (Task Information Delivery Plan):** A detailed schedule of exactly which model elements are delivered when.
- **MPDT (Model Production and Delivery Table):** Defining the LOD/LOI responsibility for every building element.

SECTION O: ATTACHMENTS

1. BIM USE SELECTION WORKSHEET [FROM SECTION D]
2. LEVEL 1 PROCESS OVERVIEW MAP [FROM SECTION F]



3. LEVEL 2 DETAILED BIM USE PROCESS MAP(S) [FROM SECTION F]



4. INFORMATION EXCHANGE REQUIREMENT WORKSHEET(S) [FROM SECTION G]
5. MODEL DEFINITION WORKSHEET [FROM SECTION G]
6. DEVELOPED DOCUMENTS / CONTRACTS [FROM SECTION H]