North East Independent School District

NEISD BIM Project Execution Plan Template

November 8, 2018

This BIM Execution Plan must be approved by the Owner in writing, including any updates to its content.

Date	Description	Author
November 8, 2018	BIM PxP Project Execution Plan Template	NEISD Facilities

Project Team Logos:

(PLACE COMPANY LOGOS OF PROJECT TEAM BELOW)

Table of Contents

Section A: General Project Information

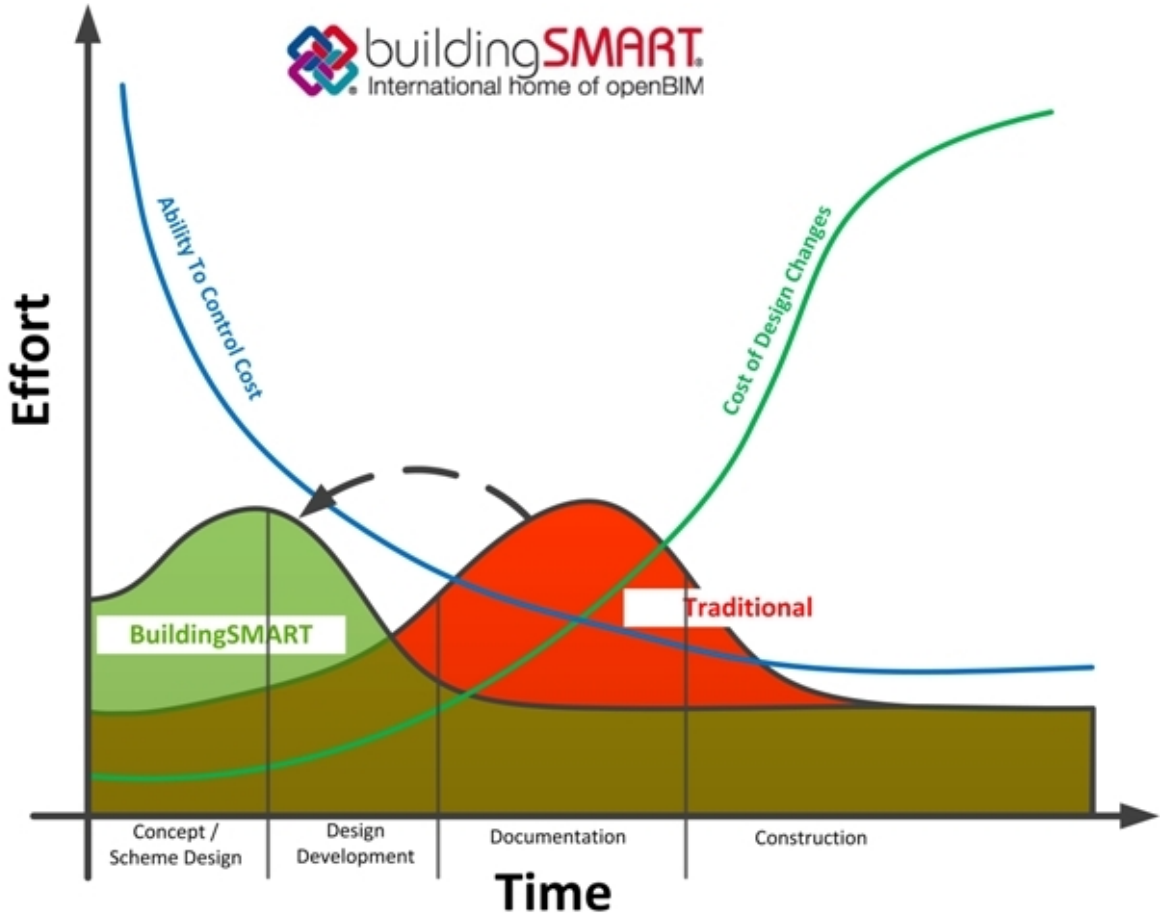
This guide is for the North East Independent School District [insert project name and information here]. It is for the successful implementation of Building Information Modeling (BIM) on a project, the project team has developed this detailed BIM Project Execution Plan. The BIM Project Execution Plan defines uses for BIM on the project (e.g. design authoring, cost estimating, and 3D coordination), along with a detailed design of the process for executing BIM throughout the project lifecycle.

The BIM manager will be responsible for updating this document throughout the project duration. This document summarizes the standards and procedures necessary for a coordinated BIM effort between the multiple firms within the design team.

BIM Effort vs. Impact

Source: Patrick MacLeamy (BuildingSMART)

Owners hire architects for the purpose of designing buildings. However not enough time is dedicated to design. Moreover, Traditional design processes are prone to errors and omissions, and may end up in litigation if changes are introduced later in the project. The ability to control cost goes down and cost of design changes goes up as time go by. The design team must adopt a “Frontloading” process by making early decisions through an iterative design process.



Section B: Project Information

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

PROJECT INFORMATION	
PROJECT OWNER:	North East Independent School District
PROJECT NAME:	XXXXXXXXXXXXXXXXXXXXXXXX
NEISD PROJECT NUMBER:	XXXXXXXXXXXXXXXXXXXXXXXX
Architect's PROJECT NUMBER:	XXXXXXXXXXXXXXXXXXXXXXXX
PROJECT LOCATION & ADDRESS	XXXXXXXXXXXXXXXXXXXXXXXX
CONTRACT TYPE/DELIVERY METHOD	XXXXXXXXXXXXXXXXXXXXXXXX
PROJECT DESCRIPTION [NUMBER OF FACILITIES, GENERAL SIZE, ETC]	XXXXXXXXXXXXXXXXXXXXXXXX

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
PROGRAMMING	XXXXXXXXXXX	XXXXXXXXXXX
CONCEPTUAL DESIGN	XXXXXXXXXXX	XXXXXXXXXXX
SCHEMATIC DESIGN	XXXXXXXXXXX	XXXXXXXXXXX
DESIGN DEVELOPMENT	XXXXXXXXXXX	XXXXXXXXXXX
CONSTRUCTION DOCUMENTS	XXXXXXXXXXX	XXXXXXXXXXX
BID / PERMIT	XXXXXXXXXXX	XXXXXXXXXXX
CONSTRUCTION	XXXXXXXXXXX	XXXXXXXXXXX
COMMISIONING	XXXXXXXXXXX	XXXXXXXXXXX
TURNOVER	XXXXXXXXXXX	XXXXXXXXXXX XXXX

Section C: Key Project Contacts

List of lead BIM related contacts for each organization on the project.

ORG	SYMB	ROLE	NAME	EMAIL	PHONE
NEISD	NEISD	Owner BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Architect	ARCH	Arch BIM Manager	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Mechanical Engineer	MECH	Mech BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Electrical Engineer	ELEC	Elect BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Plumbing Engineer	PLUM	Plum BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Fire Protection Engineer	FP	FP BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Structural Engineer	STRU	Stru BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Landscape Architect	LAND	Land BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Civil Engineer	CIV	Civ BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
General Contractor	GC	GC BIM Lead	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
COBie Consultant	COBie	COBie Consultant	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
LEED Consultant	LEED	LEED Consultant	XXXXX	XXXXXXXXXXX	XXXXXXXXXX
Commissioning Agent	Cx	Commissioning Agent	XXXXX	XXXXXXXXXXX	XXXXXXXXXX

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.)

NEISD planned BIM Uses by Priority:

NEISD BIM GOALS		
PRIORITY	**PROJECT BIM GOALS**	**DESCRIPTION**
SHORT TERM	Design Authoring	Design intent and parametric relationships are created and documented in a 3D virtual BIM environment
	3D Coordination	Collaborative coordination assembling discipline models to ensure constructability.
	Design Reviews	Provide regular and ongoing virtual review and markup of the building model
	Asset Management	The process of capturing metadata associated with select building components and assets for Facility Management and asset tracking
	Clash Detection	The use of BIM coordination software to discover, manage and resolve clashes (interferences) between building components and systems
	Cost Estimation	Provide conceptual cost, quantity take off, or model component estimation from the virtual building model
	Consistent File Naming	A consistent, predictable and descriptive naming format for all files associated with the BIM and its data
MID TERM	Conceptual Design BIM	Early stage mass model to enable the extraction and use of BIM information at an early stage of the design process, enabling critical decision making earlier in the design process
	Schematic Design BIM	Extends the Conceptual Design BIM to a more definable BIM with generic building components to expand on the information gathered duing the Conceptual Design BIM
	Energy Analysis	Heating and cooling load analysis developed from the geometry and information in the BIM
	Sustainability Analysis	Carbon footprint and building lifecycle energy costs, and identification of opportunities to improve energy efficiency and sustainability using geometry and data from the BIM
LONG TERM	CMMS	Computerized Maintenance Management System to automate, simplify and expedite the generation of maintenance work-orders and track maintenance throughout the facility
	Real-Time System Management	The ability to gather real-time data on critical building systems and make necessary adjustments to optimize their performance and operation

Section E: Organizational Roles / Staffing

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

BIM Roles and Responsibilities

Describe BIM roles and responsibilities such as BIM Managers, Project Managers, etc.

Role	Description	Responsibilities
NEISD Owner's Rep	NEISD Facilities and Safety Departments and project end user. Active contributor in the design process, works with the Design and Construction teams.	Primary stakeholder that Oversees the entire project
Owner's Project Manager	Owner designated project manager responsible to ensure the design and construction teams adhere to project goals, schedule, and budget.	Manages, and plans project milestones to align with owner requirements
Owner's BIM Lead	Owner's BIM expert responsible that the project is aligned with the NEISD BIM standards.	Coordinates project milestones to align with owner's BIM requirements
CM Project Manager	Manages project schedule, budget and quality.	Manages, and plans project milestones to align with owner requirements
CM BIM Manager	Updates and modifies the BIM execution plan "PxP" to be project specific. Coordinates BIM uses on project for all disciplines. Responsible to conduct regular BIM coordination meetings.	BIM Management, BIM implementation, Model Information Exchange
Architect	Coordinates with BIM manager and design team.	Oversees the architecture design and BIM coordination
Structural Engineer	Coordinates with BIM manager and design team. Perform structural analysis.	Oversees the structural design and BIM coordination
MEP Engineer	Coordinates with BIM manager and design team. Perform systems analysis.	Oversees the MEP design and BIM coordination
Interior Designer	Coordinates with BIM manager and designs furniture and casework layouts. Coordinates materials and finishes.	Oversees the interior design and BIM coordination
Lab Consultant	Coordinates with BIM manager and designs lab casework and equipment	Oversees the lab design and BIM coordination
COBie Representative	Coordinates with BIM manager and provides consulting building information exchange and data management.	COBie consulting
Landscape Architect	Coordinates with BIM manager. Design of outdoor spaces.	Oversees the landscape design and BIM coordination
Civil Engineer	Coordinates with BIM manager. Design of site utilities, hydrology, topography and infrastructure.	Oversees the interior civil and BIM coordination
Construction BIM Manager	Construction BIM manager is to be the lead in coordination of construction. Receives or helps create BIM for Constructability and handover for Field Use. Conducts BIM 3D coordination.	Oversees construction and sub-contractor BIM coordination
Commissioning Agent	Contracted directly to the Owner as a third-party independent representative to ensure unbiased building performance.	Insures staff are receiving credible site-specific and relevant training. Confirms that operators fully understand how integrated systems function and systems interface with others to run the building efficiently.

Section F: BIM Process Design

Provide process maps for each BIM Use selected in section D: Project Goals/BIM Uses. 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 Overall BIM Execution Process Map:

*To be developed at a later stage after the intial BIM round of 2015 BIM projects have been completed and an in-depth process review can be conducted.

Level Two – Detailed BIM Use Process Map:

*To be developed at a later stage after the intial BIM round of 2015 BIM projects have been completed and an in-depth process review can be conducted.

Section G: BIM Information Exchanges

Model elements by discipline, Level of Development (LOD) and any specific attributes important to the project are documented below.

NEISD LOD by Phase and Discipline.

The following table is explanatory, not prescriptive, and illustrates typical LODs at the critical phases of design/construction/lifecycle management, and the disciplines responsible.

LOD by PHASE & DISCIPLINE

	Design							Construction						Commissioning	Facility Management O&M	
	Schematic Design			Design Development	Construction Documents			Pre-Construction			Construction			Post Construction	Owner Occupied	
	2D Design	3D Design		3D Coordination												
Discipline	Programming & Performance Specs	Massing	Advanced SD	DD	50% CD	100% CD	COBie Design Data	3D Coordination	3D Virtual Mockups	Model-Based Estimating & Procurement	Detailing Shop Dwgs Fabrication	AS-Built Record Modeling	COBie Field Data	Systems Testing Commissiong & Handover	Spatial Planning	Asset Tracking & Maintenance
ARCH	LOD 50	LOD 100	LOD 150	LOD 200	LOD 250	LOD 300	LOD 300	LOD 300								
MEP-FP	LOD 50	LOD 100	LOD 150	LOD 200	LOD 250	LOD 300	LOD 300	LOD 300								
STRUCT	LOD 50	LOD 100	LOD 150	LOD 200	LOD 250	LOD 300	LOD 300	LOD 300								
CIVIL	LOD 50	LOD 100	LOD 150	LOD 200	LOD 250	LOD 300	LOD 300	LOD 300								
GC								LOD 300	LOD 350	LOD 350	LOD 400	LOD 450	LOD 500			
Cx														LOD 500		
OWNER															LOD 550	LOD 600

* This table depicts the intent of BIM project lifecycle: utilizing one set of models thru mapping LOD by phase and discipline.

NEISD Omniclass vs. LOD Legend.

The following table is explanatory, not prescriptive, and illustrates the LOD as it relates to Omniclass, which is required for classifying objects tracked using COBie.

Omniclass vs. LOD Legend			
LOD Level	**Omniclass Table #23**	**# of Digits**	**Description**
LOD 50	N/A	N/A	Programming & Performance Specs
LOD 100	N/A	N/A	SD - Schematic Design - Massing
LOD 150	xx.xx	4	ASD - Advanced Schematic Design
LOD 200	xx.xx.xx	6	DD - Design Development
LOD 250	xx.xx.xx	6	50% CD - Construction Documents
LOD 300	xx.xx.xx.xx	8	100% CD - Construction Documents/ 3D Coordination
LOD 350	xx.xx.xx.xx	8	Model-based Estimating & Procurement
LOD 400	xx.xx.xx.xx.xx	10	Detailing - Shop Drawings - Fabrication
LOD 450	xx.xx.xx.xx.xx	10	As-Built Record Modeling
LOD 500	xx.xx.xx.xx.xx.xx	12	COBie data added to BIM models
LOD 550	xx.xx.xx.xx.xx.xx	12	As-Built Spatial Planning by Occupancy
LOD 600	xx.xx.xx.xx.xx.xx	12	Asset Tracking & Maintenance

NEISD LOD Requirements.

The Project Team shall use the following Level of Development requirements to execute the project for each given phase. Refer to the *NEISD LOD Requirements* document.

LEVEL OF DEVELOPMENT SUMMARY TASK REQUIREMENTS	
Level	**Required Tasks**
LOD 50	Analyze and Inetgrate owner spatial requirements
LOD 100	Develop a 2D Sketch or 3D Massing Study
LOD 150	Specify project location (latitude/longitude)
LOD 200	Link Civil survey with 3D topo, property lines, set backs and easements
	Generate cost estimates based on square footages and construction type
	Establish model origin/shared coordinates, True North orientation
	Create major building systems (walls, floors, roofs, ceilings, stairs, ramps)
	Generate cost estimates based on model assemblies
LOD 250	Generate cost estimates based on count and material take-offs
LOD 300	Generate cost estimates based on detailed components
	COBie data added by Design Team
	Provide NEISD Room Numbers for all rooms
	Define Omniclass Classification for Asset Tracking
LOD 350	Use models for Construction Pre-Fabrication where applicable
	Define Assemblies and Parts
	Create detailed means and methods Project Timeline
	Use manufacturer specific content where applicable
	Update Cost Estimates based on actual components at buyout
LOD 400	Use Models for Construction shop drawings where applicable
	Analyze models for detailed systems performance
	Update models for actual and accurate As-Builts
	COBie field data added by Construction Team
LOD 450	Ongoing Model updates based on RFIs, supplemental sketches and Change Orders
	Update Models to match As-Built conditions
LOD 500	COBie field data added by Construction Team
	Systems testing and Commissioning
LOD 550	Room Area Plans based on BOMA Standards
LOD 600	COBie FM data added by NEISD
	As-Built geometry utilized for future Alterations and Additions

NEISD Model Element LOD Requirements by Phase.

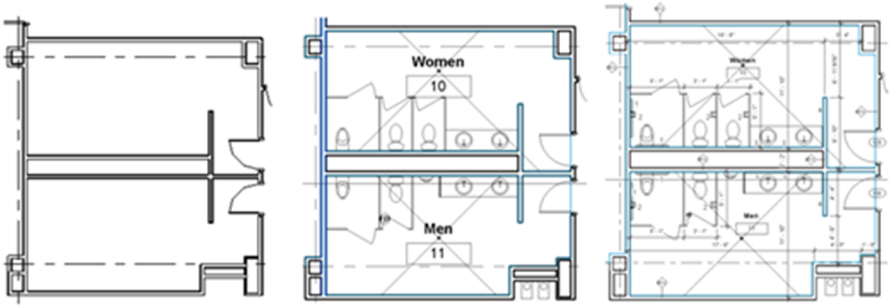
The Project Team shall use the following Level of Development requirements for Model Elements for each given phase. Partial table shown below. Refer to the *NEISD LOD Requirements* document.

MODEL ELEMENT LOD REQUIREMENTS BY PHASE									
						Design Development (DD) Phase	Construction Documents (CD) Phase		
Model Elements (by CSI UniFormat™)						LOD @ 100%	LOD @ 75%	LOD @ 90%	LOD @ 100%
A	**Substructure**	A10	Foundations	A1010	Standard Foundations	200	300	300	300
				A1020	Special Foundations	200	300	300	300
				A1030	Slab on Grade	200	300	300	300
		A20	Basement Construction	A2010	Basement Excavation	NA	NA	NA	NA
				A2020	Basement Walls	NA	NA	NA	NA
B	**Shell**	B10	Superstructure	B1010	Floor Construction	200	300	300	300
				B1020	Roof Construction	200	300	300	300
		B20	Exterior Enclosure	B201	Exterior Walls	200	300	300	300
				B202	Exterior Windows	200	300	300	300
				B203	Exterior Doors	200	300	300	300
		B30	Roofing	B3010	Roof Covering	200	300	300	300
				B3020	Roof Openings	200	300	300	300
C	**Interiors**	C10	Interior Construction	C1010	Partitions	200	300	300	300
				C1020	Interior Doors	200	300	300	300
				C1030	Fittings	200	300	300	300
		C20	Stairs	C201	Stair Construction	300	300	300	300
				C202	Stair Finishes	200	300	300	300
		C30	Interior Finishes	C3010	Wall Finishes	200	300	300	300
				C3020	Floor Finishes	200	300	300	300
				C3030	Ceiling Finishes	200	300	300	300

D	**Services**	D10	Conveying	D1010	Elevators and Lifts	300	300	300	300
				D1020	Escalators and Moving Walks	NA	NA	NA	NA
				D1030	Other Conveying Systems	200	300	300	300
		D20	Plumbing	D2010	Plumbing Fixtures	200	300	300	300
				D2020	Domestic Water	200	300	300	300
				D2030	Sanitary Waste	200	300	300	300
				D2040	Rain Water Drainage	200	300	300	300
				D2090	Other Pluming Systems	200	300	300	300
		D30	HVAC	D3010	Energy Supply	200	300	300	300
				D3020	Heat Generating Systems	200	300	300	300
				D3030	Cooling Generating Systems	200	300	300	300
				D3040	Distribution Systems	200	300	300	300
				D3050	Terminal and Package Units	200	300	300	300
				D3060	Controls and Instrumentation	200	300	300	300
				D3070	Systems Testing and Balancing	200	300	300	300
				D309	Other HVAC Systems & Equip.	200	300	300	300
		D40	Fire Protection	D4010	Sprinklers	200	300	300	300
				D4020	Standpipes	200	300	300	300
				D4030	Fire Protection Specialties	200	300	300	300
				D4090	Other Fire	200	300	300	300
		D50	Electrical	D5010	Electrical Service and Distribution	200	300	300	300
				D5020	Lighting and Branch Wiring	200	300	300	300
				D5030	Communications and Security	200	300	300	300
				D5090	Other Electrical Systems	200	300	300	300

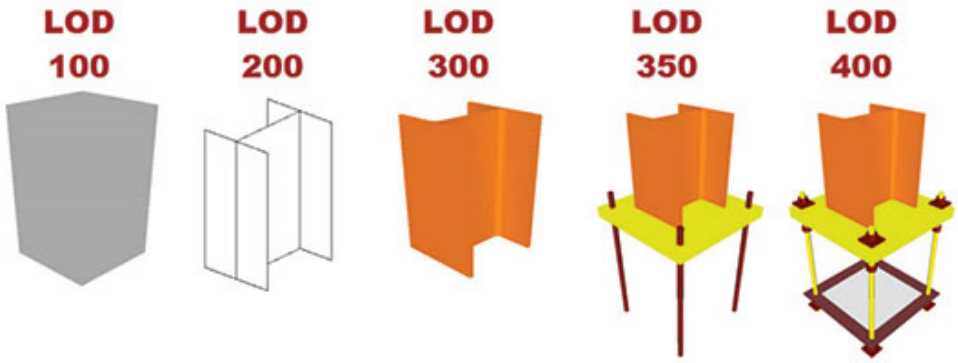
E	**Equipment and Furnishings**	E10	Equipment	E1010	Commercial Equipment	200	300	300	300
				E1020	Institutional Equipment	200	300	300	300
				E1030	Vehicular Equipment	200	300	300	300
				E1090	Other Equipment	200	300	300	300
		E20	Furnishings	E2010	Fixed Furnishings	200	300	300	300
				E2020	Movable Furnishings	200	300	300	300
F	**Special Construction and Demolition**	F10	Special Construction	F1010	Special Structures	200	300	300	300
				F1020	Integrated Construction	200	300	300	300
				F1030	Special Construction Systems	200	300	300	300
				F1040	Special Facilities	200	300	300	300
				F1050	Special Controls & Instrumentation	200	300	300	300
		F20	Selective Bldg Demolition	F2010	Building Elements Demolition	200	300	300	200
				F2020	Hazardous Components Abatement	NA	NA	NA	NA

BIM LOD Samples for Architectural Discipline

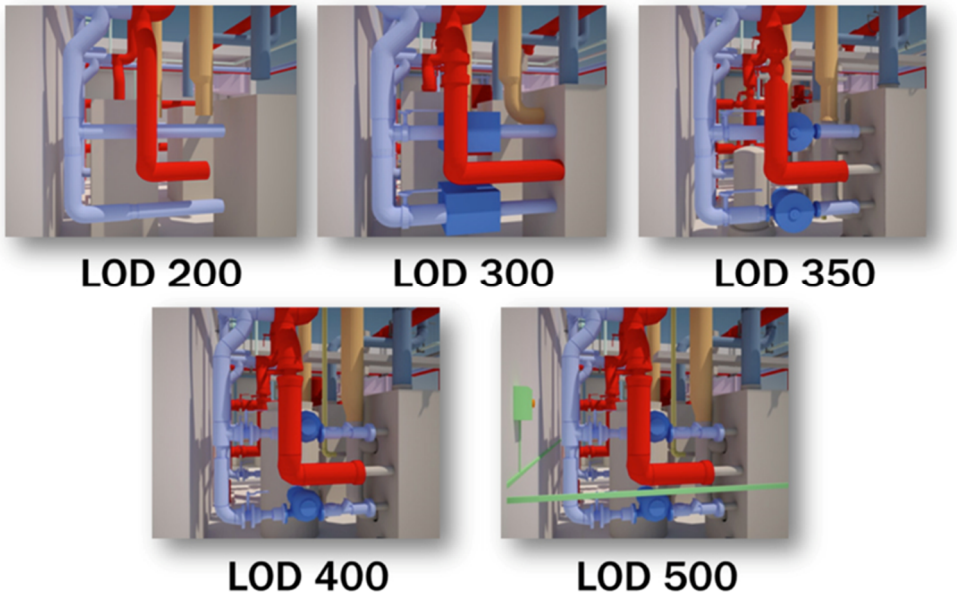


Level 100 Floor Plan ***Level 200 Floor Plan*** ***Level 300 Floor Plan***

BIM LOD Samples for Structural Discipline



BIM LOD Samples for Mech, Elec, Plum & FP Disciplines



Section H: BIM and Facility Data Requirements

[This section should include the owners BIM requirements. Also refer to the attached NEISD BIM Component COBie Checklist_Omniclass Table 23 for a phase by phase description of COBie items and the responsibilities of each team member].

COBie is defined as "Construction Operations Building Information Exchange". COBie uses Omniclass classifications for asset tracking.

This checklist depicts OmniClass classifications by LOD by Revit Category. Refer to the *NEISD BIM Uses and Required Parameters* document fo specific assets and associated data to be tracked.

	Table 23	Products					
Responsible Parties		Design Team			Construction Team		
Revit Categories	OmniClass Number	LOD 100	LOD 200	LOD 300	LOD 400	LOD 500	LOD 600
Roofs	23-13 39 31			Roof Membranes			
Speciality Equipment	23-15 11 15			Sanitary Partitions and Cubicles			
Floors	23-15 17 00		Floor Coverings				
Ceilings	23-15 19 00		Ceiling Coverings, Claddings, and Linings				
Door Hardware	23-17 19 00		Hardware for Openings				
Furniture Systems	23-21 11 00		Commercial Furniture				
Specialty Equipment	23-23 11 00		Vertical Transportation Equipment				
Specialty Equipment	23-23 11 11			Elevators			
Electrical Equipment	23-27 13 00		Control and Monitoring Boards Panels				
Electrical Fixures	23-27 15 00		Building Automation and Control				
Mechanical Equipment	23-27 17 00		Pumps				
Mechanical Equipment	23-27 23 00		Heat Exchangers				
Pipe Fittings	23-27 31 00		Valves				
Pipe Fittings	23-27 31 11			Backflow Preventors			
Pipe Fittings	23-27 33 00		Valve Actuators				
Lighting Devices	23-29 11 00		Security Detection and Monitoring				
Lighting Devices	23-29 13 00		Security Access Controls				
Sprinklers	23-29 25 15			Fire Hose Equipment			
Sprinklers	23-29 25 15 13				Fire Hose Outlets		
Sprinklers	23-29 25 15 15				Cabinets for Fire Hoses		
Sprinklers	23-29 25 15 19				Fire Hose Connectors		
Pipes	23-29 25 15 19 11					Fire Fighting Standpipes	
Pipe Accessories	23-29 25 15 19 13					Fire Fighting Pumper Connections	
Specialty Equipment	23-29 25 19			Fire Extinguishers			
Mechanical Equipment	23-29 27 00		Fire Ventilation Equipment				
Lighting Devices	23-29 29 00		Fire Detection Devices				
Lighting Devices	23-29 31 00		Fire Notification Appliances				
Sprinklers	23-29 33 00		Fire Suppression System Components				

Plumbing Fixtures	23-31 00 00	Plumbing Specific Products and Equipment					
Plumbing Fixture	23-31 29 00		Hot Water Heaters				
Plumbing Fixture	23-31 31 00		Drinking Fountains				
Mechanical Equipment	23-33 11 00		Commercial Boilers				
Mechanical Equipment	23-33 13 00		Furnaces				
Mechanical Equipment	23-33 15 00		HVAC Heating Units				
Mechanical Equipment	23-33 17 00		Heat Pumps				
Mechanical Equipment	23-33 21 00		Chillers				
Mechanical Equipment	23-33 25 00		Air Handling Units				
Mechanical Equipment	23-33 25 15			Heating and Ventilating Units			
Electrical Devices	23-33 27 00		Air Humidity Control Equipment				
Mechanical Equipment	23-33 29 00		HVAC Dampers				
Mechanical Equipment	23-33 31 00		Air Circulators				
Mechanical Equipment	23-33 31 19			Fans			
Mechanical Equipment	23-33 33 00		HVAC Fan Coil Units				
Mechanical Equipment	23-33 37 00		Refrigerant Condensing Units				
Mechanical Equipment	23-33 39 00		Air Conditioning Equipment				
Mechanical Equipment	23-33 41 00		HVAC Air Terminals				
Air Terminals	23-33 41 17			Terminal Air Units			
Mechanical Equipment	23-33 41 17 13				Variable Air Volume Terminal Units		
Electrical Equipment	23-33 53 15			Solar Water Heating Collector Units			
Mechanical Equipment	23-33 55 00		Energy HVAC Recovery Equipment				
Electrical Equipment	23-35 11 00		Electrical Generators				
Electrical Equipment	23-35 23 21			Uninterrupted Power Supply (UPS) Units			
Electrical Devices	23-35 37 00		Electrical Switches				
Electrical Devices	23-35 37 11			Automatic Transfer Switches			
Electrical Devices	23-35 37 15			Barrel Switches			
Electrical Devices	23-35 37 17			Dimmer Control Switches			
Electrical Devices	23-35 37 19			Disconnect Switches			
Electrical Devices	23-35 37 21			Drum Switches			
Electrical Devices	23-35 37 23			Flow Switches			

Electrical Devices	23-35 37 25			Key Lock Switches			
Electrical Devices	23-35 37 27			Limit Switches			
Electrical Devices	23-35 37 29			Modular Wiring System Switches			
Electrical Devices	23-35 37 33			Pressure Switches			
Electrical Devices	23-35 37 35			Rocker Switches			
Electrical Devices	23-35 37 37			Time Switches			
Electrical Devices	23-35 37 39			Foot Switches			
Electrical Devices	23-35 37 43			Programmable Logic Control Switches			
Electrical Devices	23-35 37 45			Proximity Switches			
Electrical Devices	23-35 37 49			Push Button Switches			
Electrical Devices	23-35 37 51			Radio Frequency Switches			
Electrical Devices	23-35 37 53			Rotary Switches			
Electrical Devices	23-35 37 55			Slide Switches			
Electrical Devices	23-35 37 57			Snap Switches			
Electrical Devices	23-35 37 59			Speed Switches			
Electrical Devices	23-35 37 61			Tamper Switches			
Electrical Devices	23-35 37 63			Temperature Switches			
Electrical Devices	23-35 37 65			Vacuum Switches			
Lighting Fixtures	23-35 47 00		Electrical Lighting				
Lighting Fixtures	23-35 47 11			Lighting Fixtures			
Lighting Fixtures	23-35 47 13			Emergency Lighting			
Lighting Fixtures	23-35 47 15			Exit Illuminated Signs			
Communication Devices	23-37 15 00		Audio Visual Equipment				
Communication Devices	23-37 17 00		Audio Information Equipment				
Communication Devices	23-37 21 00		Audio Visual Systems				
Communication Devices	23-37 27 00		Emergency Communications				

Section I: Collaboration Procedures

Collaboration Strategy

Describe how the project team will collaborate. Include items such as communication methods, document management and transfer, and record storage, etc.

Meeting Procedures

The following are examples of meetings that should be considered.

MEETING TYPE	PROJECT PHASE	PARTICIPANTS	FREQUENCY	LOCATION
BIM REQUIREMENTS KICK-OFF	Programming	Project Team	One Time	IN-PERSON / NEISD
PxP REVIEW and UPDATE	SD/DD/CD/CM/FM	BIM Leads	Every Phase	Virtual Video Conference
3D DESIGN COORDINATION	DD/CD	BIM Leads	XX	Virtual Video Conference
3D CONSTRUCTION COORDINATION	CM	BIM Leads	XX	Virtual Video Conference
COBie COORDINATION	DD/CD/CM	Project Team	XX	Virtual Video Conference
ASBUILT RECORD MODELS	CM	Project Team	One Time	Virtual Video Conference
COMMISIONING / TURNOVER	Cx	Project Team	Weekly	IN-PERSON / NEISD

Protocols and Procedures

- Construction drawing sheets to be 30"x42" ("E1" size)
- Sheet naming and numbering to follow the National CAD Standards unless approved by NEISD.
- Naming conventions and locations for structural grids and levels will be coordinated by the project team. This includes the BIM manager, AE team, and the general contractor.
- *Refer to National BIM Standards for additional information.
- Refer to AIA-G202-Project Building Information Model Protocol Form
- Refer to 2014 BIMForum LOD Specification

Delivery Schedule of Information Exchange for Submission and Approval

Document the information exchanges and file transfers that will occur on the project.

INFORMATION EXCHANGE	DESIGN TEAM	FREQUENCY	DUE DATE	MODEL FILE	MODEL SOFTWARE	NATIVE FILE TYPE
DESIGN AUTHORING	ARCHITECT	WEEKLY	WEEKLY	ARCH	REVIT	.RVT / .PDF
	STRUCTURAL ENGINEER	AS NEEDED		STRUCT	REVIT	.RVT / .PDF
	MEP-FP ENGINEER	WEEKLY	WEEKLY	MECH,ELEC, PLUM, FP	REVIT	.RVT / .PDF
	CIVIL ENGINEER	AS NEEDED		CIVIL	CIVIL 3D	.DWG / .PDF
	LANDSCAPE ENGINEER	AS NEEDED		LAND	REVIT / CIVIL 3D	.RVT / .DWG

- ***DO NOT INCLUDE ANY HYPERLINKS IN NAVISWORKS OR PDF FILES.***
- ***NAVISWORKS MANAGE TO BE USED FOR CLASH DETECTION. (NORTH EAST INDEPENDENT SCHOOL DISTRICT TO BE INCLUDED DURING CRITICAL MEETINGS)***

INFORMATION EXCHANGE	DESIGN TEAM	FREQUENCY	MODEL FILE	NATIVE FILE TYPE
3D COORDINATION (CLASH DETECTION)	ARCHITECT	AT PROJECT MILESTONES DEFINED IN THE NEISD BIM REQUIREMENTS & AS NEEDED	ARCH, LAB, FURN, SITE	.RVT / .PDF
	STRUCTURAL ENGINEER		STRU	.RVT / .PDF
	MEP-FP ENGINEER		MECH,ELEC, PLUM, FP	.RVT / .PDF
	CIVIL ENGINEER		CIVIL, LAND	.DWG / .PDF

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 the team be collocated in a BIM Trailer? If yes, where will it be located and what will be in the space such as computers, projectors, tables, table configuration? Will there be a broadband Ethernet connection? How about Wi-Fi for mobile devices? Include any additional information necessary information about workspaces on the project.

Electronic Communication Procedures

(Note: Refer to File Naming and Folder Structure in Section L: Model Structure).

Alternate 1: Autodesk A360
Alternate 2: Autodesk A360 Team with A360 Collaboration for Revit as a possible enhancement
Alternate 3: Use FTP link below for file sharing.

- Website : ftp.XXXXX.com
- User Name : XXXXX@XXXXX.com
- Password : XXXXXX

For a better FTP experience, please use this link to download FileZilla FTP Client:
https://filezilla-project.org/

General Guidelines:

- All project team members can use these credential to access project files
- Organization specific folders are created in the FTP server
- New folder (Formatted by date YYYYMMDD) to be created with every submission & notification should be sent through email informing other disciplines team members
- All uploaded files will be remain on FTP for the duration of the project

Model Cleanup:

- Make sure your model origin and true north align with other disciplines
- Prior to uploading or sharing files with anyone, all Revit models must be detached from central & purged. Refer to Section 23 in the *NEISD BIM Requirements for Architects, Engineers and Contractors*
- Organization specific folders will be utilized on the FTP server
- All links should be set to be relative path
- All unused CAD files are to be removed from model
- Before exporting to NWC, make sure to remove incorrect and extraneous model geometry and turn off any unwanted objects.

Exporting to BIM 360 Glue / Navisworks:

- Create a named “3D Navisworks” view just for exporting
- Export 3D view only
- Use NWC file format for all exported files
- Export all element properties and parameters
- Divide the model by level and export each level as a separate NWC file

Section J: Quality Assurance

Overall Strategy for Quality Assurance

Describe the strategy to control the quality of the model. Refer to Section 20 of the *NEISD BIM Requirements for Architects, Engineers and Contractors*

COBie Best Practices

1. Use the latest version of the COBie addin for Revit
2. Remove Redundant or Unplaced Spaces/Rooms from both the plans and schedules
3. Remove spaces/rooms with zero volume
4. Adjust the Space Height boundary to bottom of slab above. This must include the MEP components located in ceiling plenum
5. Make a copy of the original Revit and detach from central
6. Remove Design Options by 'accepting the primary option', if applicable
7. Remove phasing, if applicable
8. Use the 'Revit space naming utility' to make sure 'space names match room names
9. Verify that all MEP components are associated with spaces in which they are located
10. Verify that all Furniture components are associated with rooms in which they are located
11. Link all disciplines models before performing the COBie setup, to make sure Spaces and rooms have valid boundaries. Make sure that links are room bounding
12. Remove MEP suffix from COBie space names (in the COBie Setup)
13. Remove ARCH suffix from COBie room names (in the COBie Setup)
14. GUID is required to be maintained throughout the lifecycle of the project

Quality Assurance Checks

The following checks are required to be performed to assure quality. Quality assurance reports to be shared with owner.

CHECKS	DEFINITION	RESPONSIBLE PARTY	SOFTWARE PROGRAM(S)	FREQUENCY
VISUAL CHECK	Ensure there are no unintended model components and the design intent has been followed	ALL	Revit /AutoCAD	Weekly
INTERFERENCE CHECK/ 3D COORDINATION	Detect problems in the model where two building components are clashing including soft and hard	ARCH / MEP	BIM 360 Glue / Navisworks	Weekly
BIM STANDARDS CHECK	Ensure BIM Standards have been followed (fonts, dimensions, line styles, levels/layers, etc.)	ALL	Revit Model Review	Beginning of every Phase
MODEL INTEGRITY CHECKS	Describe the QC validation process used to ensure that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements and the reporting process on non-compliant elements and corrective action plans	BIM Manager	Revit Model Review / BIM 360 Glue	End of every Phase
Other?				

Model Accuracy and Tolerances

Models should include all appropriate dimensioning as needed for design intent, analysis, and construction. Level of detail and included model elements are provided in the NEISD LOD Requirements.

PHASE	DISCIPLINE	TOLERANCE
DESIGN DOCUMENTS	ARCH	ACCURATE TO +/- (1/8") OF ACTUAL SIZE AND LOCATION
SHOP DRAWINGS	MECH SUB-CONTRACTOR	VERIFY WITH GC / OWNER
Other?		

Refer to Section M for attachments: NEISD COBie mapping

Section K: Technological Infrastructure Needs

Software

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

BIM USE	DISCIPLINE (if applicable)	SOFTWARE	VERSION
DESIGN AUTHORING	ARCH,MEP, STRU	Revit	VER. X.X (YEAR)
3D COORDINATION	ALL	BIM 360 Glue / Navisworks	VER. X.X (YEAR)
DESIGN REVIEW	ALL	BIM 360 Glue / Design Review	VER. X.X (YEAR)
DESIGN AUTHORING	CIVIL	AutoCAD Civil 3D	VER. X.X (YEAR)
DESIGN AUTHORING	Infrastructure	AutoCAD Civil 3D / InfraWorks	VER. X.X (YEAR)
Other?			

Infrastructure / Hardware

Understanding 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	SHALL MEET OR EXCEED **AUTODESK RECOMMENDED HARDWARE**	ALL DISCIPLINES	CPU, OS, RAM, GRAPHIC CARD, HARD DISK, NETWORKING, ETC.
Other?			

Modeling Content and Reference Information

Identify items such as families, workspaces, and databases.

BIM USE	DISCIPLINE (if applicable)	MODELING CONTENT / REFERENCE INFORMATION	VERSION
DESIGN AUTHORING	ARCH/ ENGINEER	XYZ APP FAMILIES	VER. X.X. (YEAR)
ESTIMATING	CONTRACTOR	PROPRIETARY DATABASE	VER. X.X (YEAR)
Other?			

Section L: Model Structure

File Naming Structure

Determine and list the structure for model file names.

FILE NAMES FOR MODELS SHOULD BE FORMATTED AS:	
DISCIPLINE _PROJECT NUMBER_BUILDING NUMBER.XYZ (example: ARCH_2016011_BLDG001.rvt)	
ARCHITECTURAL MODEL	ARCH_
MECHANICAL MODEL	MECH_
PLUMBING MODEL	PLUM_
ELECTRICAL MODEL	ELEC_
FIRE PROTECTION MODEL	FP_
STRUCTURAL MODEL	STRU_
LABORATORY EQUIPMENT CASEWORK MODEL	LAB_
SITE MODEL (REVIT)	SITE_
LANDSCAPE MODEL (REVIT / CIVIL 3D)	LAND_
CIVIL MODEL (AUTOCAD CIVIL 3D)	CIV_
ENERGY MODEL	ENER_
COORDINATION MODEL (CLASH)	COOR_
COST ESTIMATE MODEL (QTO)	COST_
LOGISTICS MODEL (MEANS & METHODS)	LOGI_

Model Structure

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

Measurement and Coordinate Systems

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

Section M: Attachments : (Latest version of the following documents :)

1. NEISD BIM GOALS
2. NEISD BIM Component COBie Checklist_Omniclass Table 23
3. NEISD LOD BY PHASE and DISCIPLINE
4. NEISD LOD Requirements
5. NEISD Omniclass vs. LOD Legend