Attachment 4

RossDrulisCusenbery
ARCHITECTURE

DESIGN TEAM
BIM EXECUTION PLAN

City/County of San Francisco Public Works New Fire Training Facility

Services: Architectural and Engineering Team led by Executive Architect RossDrulisCusenbery Architecture (RDC) for a New Fire Training Facility

Project: San Francisco Public Works New Fire Training Facility

TABLE OF CONTENTS

BACKGROUND

DOCUMENT PURPOSE
The BIM Execution Plan is intended to support all BIM work undertaken collaboratively between project team members in the project BIM environment. Project team members are encouraged to ensure their internal procedures support the methodologies set out in this document in the interest of project quality control and improving the collaborative process. The BIM Execution Plan is a living document & any updates shall be circulated to the team for review & adoption.

TERMINOLOGY
Building Information Model (BIM) – A digital representation of the physical and functional characteristics of the project, also referred to as Model(s).

Level of Development (LOD) – based on AIA E202, LOD describes the level of completeness to which a Model Element is developed at a given point in time.

BIM Facilitator – The individual and company responsible for hosting and facilitating the BIM effort.

Model Owner – The company responsible for the content or consolidation of a model.

BIM Manager – The individual within each contributing organization assigned to manage their contribution to the modeling effort.

MEP Coordinator – Person responsible to manage the BIM detailing and coordination process and lead the design and construction team in conflict resolution and best practices for detailing their work.

BIM Project Engineer – The main point of contact on the design or construction team responsible for BIM documentation and model integration.

BIM Detailer – The individual who creates 3D models including parametric families and professional quality drawings to support the BIM process.

Design BIM – Produced by the designers (architects and engineers of record) and used in the creation of the Contract Documents. These models are the background for coordination.

CM BIM – Model developed and maintained by the CM/GC as a tool to support collaboration and construction management. This model is utilized by trade subcontractors for the creation of coordinated shop drawings and contain the elements used for fabrication.

As-Planned BIM – Model that is continuously updated to reflect changes in the design.

As-Designed BIM – Model that reflects the project design at the end of the CD Phase.

As-Built BIM – Model that reflects the project as constructed.

Supplemental Model – Modeled items needed for the coordination effort not necessarily covered in the scope of the modeling team.

Coordination Model – The general term for a single consolidated model consisting of linked design, construction and/or supplemental models.

Specialty Model – Models produced to inform the decision-making process and provide data that supports the goals of delivering a high-performance building. Examples of these models include daylight studies and energy modeling.

File Sharing Site – The cloud service used to store project files and support automated file sharing and collaboration.

PROJECT INFORMATION

GENERAL

Project Name:	San Francisco Fire Training Facility
Project Number:	2023132
Project Address:	Carroll Avenue, San Francisco, CA
Project Phases:	Concept Design – 100% Schematic Design – 100% Design Development – 50%, 100% Construction Documents – 50%, 95% Permitting Construction Bid/Negotiation Construction Administration Commission Close Out
Contract Type:	Construction Manager/General Contractor (CM/GC)
Client:	San Francisco Department of Public Works (SFDPW)

PROJECT OBJECTIVES

PRIORITY	OBJECTIVE	SOFTWARE / ACTION
HIGH	Deliver coordinated documentation through collaborative model authoring.	Autodesk Construction Cloud, Revit 2023, AutoCAD, Civil 3D Navisworks
MEDIUM	Use 3D visualization tools to aid in design reviews & client reviews	Revit, Sketchup, Enscape, Rhino, Adobe Suite
HIGH	LEED certification coordination and tracking	Communication and cooperation between AE team to achieve LEED credits
HIGH	Net Zero Energy & Title 24 Energy Modeling	Communication and cooperation between AE team to achieve NZE and Title 24 compliance

MANAGEMENT

CORE LEADERSHIP

RossDrulisCusenbery Architecture (RDC) will function as the BIM Facilitator, and will be responsible for overall management of the BIM process. Each party (Architects, Engineers, CM/GC, etc.) that is responsible for contributing model content will assign a BIM Manager for the project. The BIM Manager from each organization has a number of responsibilities. They include, but are not limited to:

- Participate in the development of early standards, data exchange and coordination processes to optimize the use of BIM during all phases of the project.
- Review and confirm models are clean, accurate and complete with respect to the design.
- Ensure the geometry is error free and presented in an efficient manner.
- Validate the Level of Development and controls as defined for each project phase.
- Validate modeling content during each phase.
- Combine or link multiple models.
- Participating in design review, constructability review, and model coordination sessions.
- Communicating issues back to the internal and cross-company teams.
- Ensure file and layer naming remain consistent and accurate.
- Managing version control.
- Facilitate the exchange and coordination of the 3D model through the collaborative file sharing site.

CONTACT INFORMATION

Below outlines the point of contact for all project stakeholders. All general questions should be directed to or copy in these contacts.

NAME	ROLE	EMAIL	CONTACT #	COLOR
SF Public Works	**Client**			**SFDPW**
Scott Moran	Project Manager	scott.moran@sfdpw.org		
SF Fire Department	**End User**			**SFFD**
Darius Luttropp	Project Manager	darius.luttropp@sfgov.org		
Shayne Kaialoa	Director of Training	shayne.kaialoa@sfgov.org		
RDC Architecture	**Executive Architect**			**RDC**
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Kuth Ranieri	**Associate Architect**			**KR**
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SFDPW - BOA				**BOA**
Lourdes Garcia	Section Manager	lourdes.garcia@sfdpw.org		
Matt Jasmin	Project Manager	matt.jasmin@sfdpw.org		
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SFDPW - BOLA				BOLA
Tony Esterbrooks	Project Manager	anthony.esterbrooks@sfdpw.org		
Abercrombie P+D	**Fire Design Consultant**			APD
Tommy Abercrombie	Principal	tommy@abercrombiedesign.com	817-920-9198	
AGS, Inc.	**Geotechnical**			**AGS**
Bahram Khamenehpour	Principal	Bahram.khamenehpour@agsinc.com	510-219-2656	
BKF	**Civil**			BKF
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Becky Dower	Project Manager	bdower@bkf.com	707-583-8536	
Pannu Larsen McCartney	**Structural**			**PLM**
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Danil Botoshanky	Senior Associate	dbotoshanky@plmse.com	415-625-5313	
Daniel Silva	Associate	dsilva@plmse.com	415-625-5320	
SJ Engineers	**Fire Protection**			**SJE**
Neil Joson	Principal	njoson@sjengineers.com	415-298-9388	
Alex Brown	Project Engineer	abrown@sjengineers.com	510-832-1505	
P2S	**MEP**			**P2S**
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Eric Parker	Associate	eric@niteolighting.com	216-544-0597	
Guidepost Solutions	**Low Voltage**			**GPS**
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Neal Schatmeier	Sr Project Mngr-Telecom	nschatmeier@guidepostsolutions.com	510-250-6227	
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Clearstory, Inc.	**Signage/Wayfinding**			**CLRS**
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P2S	**Energy Modeling**			**P2SEM**
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AR Green Consulting	**LEED**			**ARG**
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NBA Engineering, Inc.	**Building Commissioning**			**NBA**
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SCS Engineers	**Industrial Engineers**			**SCS**
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Salter	**Acoustical Engineering**			**SAE**
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Ethan Salter	Vice President	ethan.salter@cmsalter.com	415-397-0442	
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Cumming	**Cost Estimator**			**CMM**
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Laurel Long	Sr Estimator	llong@cumming-group.com		

ASSIGNED COLORS
Colors shown above shall be assigned to each discipline for the duration of the project. These colors will be employed for markups by each discipline within all Bluebeam markup sessions to allow for cohesive drawing reviews.

ACCOUNTABILITY
Accountability is critical due to the interrelatedness of the coordination effort. Each team member depends upon the others to provide timely information, problem-solving, corrections and updates in order for the coordination effort to proceed smoothly. The dereliction of any one element compromises the integrity of the entire coordination effort. To that end, each entity and its representatives are responsible for the accuracy, completeness and timeliness of their portion of the model.

THE PRODUCTION ENVIRONMENT

SOFTWARE USE
All design team members shall use the following software unless otherwise agreed:

SOFTWARE	USE
Autodesk Revit 2023	Documentation Authoring
AutoCAD 2019-2023	Documentation Authoring (where agreed)
Bluebeam Revu 20	Coordination
Navisworks Manage	Coordination, Clash Detection, Simulation, and Analysis

DOCUMENT HOSTING
The location for documentation shall vary depending on the documentation file type. Below outlines the host location for some of the most important file types used on the project. No documentation should be hosted elsewhere unless agreed with all parties.

DOCUMENT TYPE	HOST	DETAILS / LOCATION
Revit Models (.rvt)	ACC Docs	02 Production
CAD Backgrounds	ACC Docs	02 Production
Issued Drawings (.pdf)	SharePoint	Milestone Documents/*Phase*
Meeting Minutes	SharePoint	Project Management/Meeting Minutes
Project Data	SharePoint	Discovery
Programming Data	SharePoint	Design Program
Coordination Docs (.pdf)	Bluebeam	Session ID:

FILE NAMING CONVENTION

REVIT FILE NAMING CONVENTION
Project Abbreviation_Building ##_Discipline Abbreviation.rvt
Ex: SFFTF_BLDG-01_AR-RDC.rvt

NON-REVIT FILE NAMING CONVENTION (.dwg)
Project Abbreviation_Discipline Abreviation_Building-##_VIEW NAME.dwg
Ex: SFFTF_AR-RDC_BLDG-01_FLOOR PLAN LEVEL 01.dwg

DISCIPLINE ABREVIATIONS
Architecture (RDC): **AR-RDC**
Architecture (BOA): **AR-BOA**
Civil: **CE**
Landscape: **LA**
Structural: **SE**
Fire Protection: **FP**

Plumbing: **PE**
Mechanical: **ME**
Electrical: **EE**
Fire Alarm: **FA**
Low Voltage: **LV**

## ACCESSING AUTODESK CONSTRUCTION CLOUD DOCS

GETTING ACCESS
Autodesk Construction Cloud (ACC) Docs requires all participants to Sign-In with their existing Autodesk ID or Create a new Autodesk ID. Participants may already have an Autodesk ID from other ACC projects.

UPLOADING YOUR CLOUD WORKSHARED MODEL
1. Ensure your model is 'Workshared' and has been saved as a Central model. Check that the file name is in line with conventions set out in the BIM Execution Plan.

2. Open the Central model and navigate to the "Collaborate" tab. Click "Collaborate in Cloud" within the "Manage Collaboration" area of the Revit ribbon.
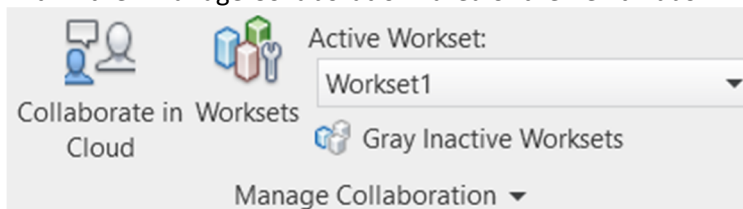
3. After selecting "Collaborate in Cloud" you will be prompted to select your collaboration method – select "In the cloud".
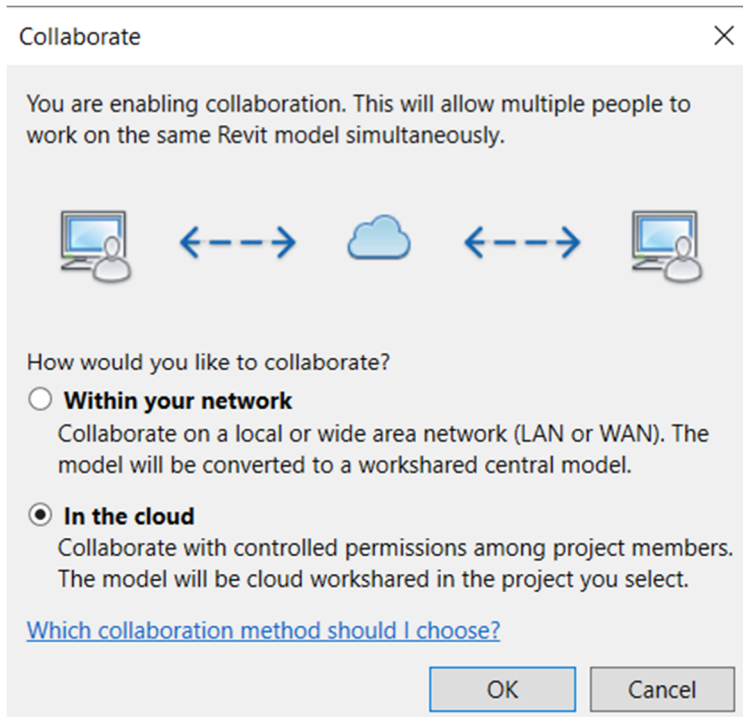
4. When prompted navigate to the appropriate discipline folder and save the cloud workshared model – confirm that the file name is in line with conventions set out in the BIM Execution Plan.
<*ENTER RDC FILE STRUCTURE IMAGE*>

ACCESSING THE PROJECT SHAREPOINT

GETTING ACCESS
The RDC project team will issue invitations to all design team members requiring access. No documents are to be shared with external team members without authorization. **Individuals should ensure they are using their organization email address and NOT a personal email to access.**

FOLDER STRUCTURE
The project SharePoint has been created with a standard set of folders. See below for the "Design Team" folder structure and a brief description of the intended contents of specific subfolders. These can be edited to suit the project needs. Any alterations should be approved & carried out by RDC.
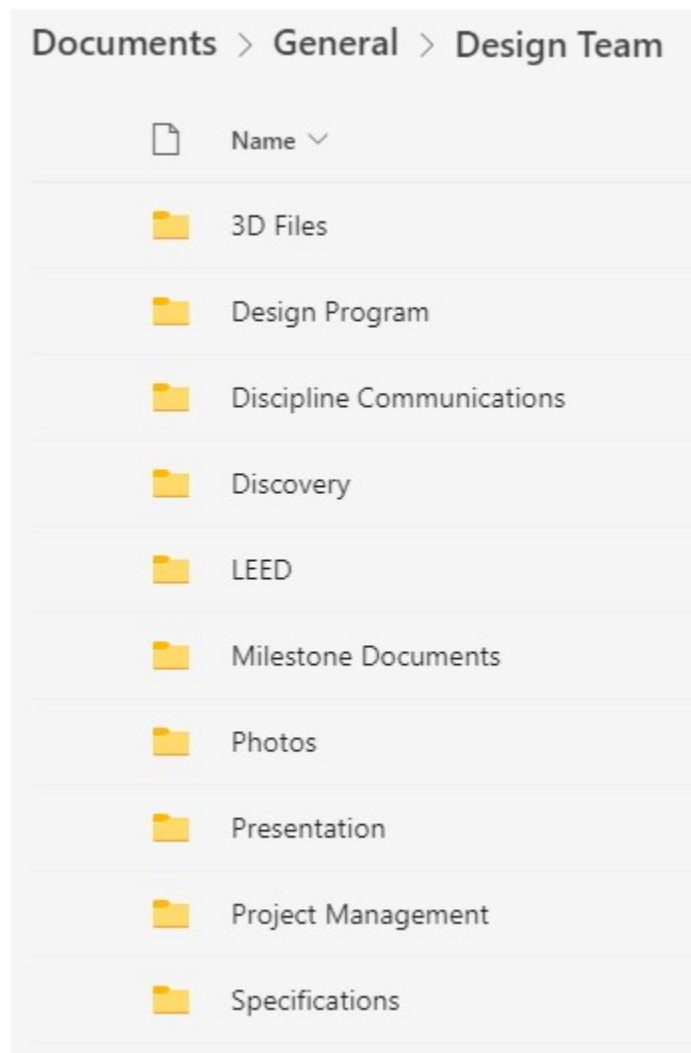
Subfolder Content Descriptions

3D Files – Storage of specific 3D elements in Revit, Rhino, SketchUp, etc.

Discipline Communications – used to share information & files between disciplines. Each discipline has its own folder where files are to be uploaded.

Discovery -Agency regulations, Site Reports (Geotechnical, Hazardous Materials, etc.), and Topographic Surveys

Milestone Documents – Final editions of documents published and distributed by Phase.

Presentation – Incremental Phase documents used for presentations to the Fire Department or Regulatory Agencies.

Project Management – BIM Execution Plan, Logos, Meeting Minutes, Project Directory, Project Schedule, and QA/QC spreadsheets

PUBLISHING SCHEDULE & SHARING BACKGROUNDS

HOSTING FILES
Autodesk Docs will be used to distribute Revit & non-Revit production files (e.g. AutoCAD) where certain disciplines will be producing .DWG files and will require exported .DWG backgrounds from other disciplines.

SHARING SCHEDULE
To ensure all discipline information is working with up-to-date information, the below table outlines the file sharing schedule for Revit & non-Revit production.

FOR REVIT USERS

Published File	Frequency	Location
Revit Model(s)	COB Friday, each week	Autodesk Docs; '02 Production' discipline specific folder
CAD Backgrounds (.dwg, plans & RCP)	COB Friday, each week	Autodesk Docs; 'Backgrounds' folder per discipline

FOR NON-REVIT USERS

Published File	Frequency	Location
CAD Backgrounds (.dwg, plans & RCP)	COB Friday, each week	Autodesk Docs; 'Backgrounds' folder per discipline

All exported files shall be saved in the 'Backgrounds' folder of that disciplines collaboration folder on Autodesk Docs. For each upload, a subfolder should be created to hold each export & names as follows:

YYYYMMDD Background – Description (if required)

PROJECT COMMON DATA

EXISTING PROJECT DATA
Below outlines existing project data related to the project &/or site. All received data must be validated by the team prior to use.

Document	SharePoint Location	Shared By	Date	Validated
Topo Survey	Discovery/Topographic Surveys			
Project Scope	Design Program			
Fire Flow Test	Discovery/Site Reports			
Geotech Report	Discovery/Site Reports			
Development Plan	Discovery/Regulations			

PROJECT COORDINATES & DATUMS
Project will use the following file as the basis for coordinates in all models:

<Provide File Name>

ACQUIRING SHARED COORINDATES

1. Open the appropriate discipline model.

   a. Link in the "*File Name*" model.

      1. Click Insert tab ➤ Link panel ➤ Link Revit.

      2. In the Import/Link RVT dialog, select the "*File Name*" model from the current project location in the cloud.

      3. Use the default positioning of "Auto - Center to Center".

      4. Click Open.

   b. Position the "*File Name*" model to the correct place in the appropriate discipline building model.

      1. In the Site Plan view, use the Align command align the references such as grids and levels on the site model to references of the building model.

      2. In any elevation view, use the Align command to align the site building pad to the base of the building model.

   c. Acquire the Shared Coordinate system from the "*File Name*" model into the appropriate discipline building model.

      1. Click Manage tab ➤ Project Location panel ➤ Coordinates dropdown ➤ Acquire Coordinates.

      2. Select the "*File Name*" model linked instance in the open view. When the site model is selected it will be pinned in place.

All models shall use the following project base point & survey point:

DATUM	COORDINATES	NOTES
Survey Point		
Project Base Point	<Insert>	Each stakeholder shall place the coordination marker family at the project base point and at each level to allow for visual detection of coordination issues.
First Floor Slab	X' – X"	Levels to be aligned to XXXXX model at all times. Finish floor elevations will vary across the different buildings on the site.

PROJECT UNITS & ACCURACY

All stakeholders shall use consistent units of measurement as set out below:

MEASUREMENT	UNIT	ACCURACY	
		MODELLING	DOCUMENTATION
Length	Feet & Inches	To 1/256"	To 1/8"
Angle	Degrees	To 2 decimal places	To 0 decimal places
Area	Square Feet (sqft)	Exact	Round Up

Volume	Cubic Feet	-	-

REVIT MODEL SETTINGS

PHASING
Below outlines the Revit phases to be used by all stakeholders to organize modeled elements and ensure clear documentation. These shall be created matching the order shown below

ORDER	PHASE NAME	DESCRIPTION
1	Reference	Used for objects not intended for documentation but useful for coordination. These include markers for coordinate validation.
2	Existing	Used for all existing construction on-site
3	Temporary	Used for all temporary construction where documentation is required.
4	New Construction	Used for all new construction

WORKSETS
Below outlines the minimum Revit Worksets to be used by stakeholders to organize modelled elements and ensure clear documentation.

HOST MODEL	WORKSET	USE
All models	LINK-RVT-<discipline>	Used to hold each linked model on its own workset. e.g. Links-RVT-Structural
All models	LINK-DWG	Used by each discipline to hold CAD links in their models.
All models	Workset1	Used for general modelled elements where no additional subdivision is required.
Architectural	Shared Levels and Grids*	Will hold the basis for all grids and levels on the projects. All disciplines shall use 'copy/monitor' tool to ensure alignment across models.
Architectural	FFE	Will hold all furniture, fittings and equipment.
Arch & Electrical	Lighting	Holds all lighting fixtures
Elec, AV & Telecom	Devices	Holds all wall & ceiling devices

LINKED VIEWS FOR CAD BACKGROUNDS
To ensure all design team models are using clean views for exporting backgrounds, 'linked' views will be setup for use with linked models. Below outlines the current linked views to be used.

HOST MODEL	VIEW NAME	USE
Architectural	+LINK-A-SLAB	For coordinating slab openings w/ structural
Architectural	+LINK-A-LEVEL XX PLAN	Used by S & MEPF for background plans.
Architectural	+LINK-A-LEVEL XX RCP	Used for MEPF for background RCPs
Electrical	+LINK-E-LIGHTING	Used to show electrical lighting fixtures.

REVIT MODEL QUALITY CONTROL & MODEL HEALTH

RDC will provide and require an internal Revit model QC on the part of the entire Design Team prior to the completion of each project phase

INTERNAL QUALITY CONTROL
Each team member is responsible for producing quality Revit model components that can be used and opened effectively by all other team members. Team members will perform checks on their respective model components pursuant to the following:
1. Visual Check: Perform a visual check to confirm that there are no unintended model components and confirm design intent has been followed.
2. Interference Check: Detect problems within individual model components and with the interface between model components where two building components clash, including where required clearances clash.
3. Modeling Protocols Check: Confirm that the protocols defined in other portions of this BIM Execution Plan have been followed.
4. Model Integrety Check: Check for items that affect the integrety of each model component, such as corrupted families, duplicated model elements, software warnings, models with overly large file sizes, etc.

EXTERNAL QUALITY CONTROL
Upon receipt of another team member's Revit model, team members shall report to the Model Author any model quality issues discovered. Model Authors shall promptly resolve reported model quality issues and issue a new version of the model.

MODEL ELEMENT AUTHORING MATRIX

WHAT IS THE MODEL ELEMENT AUTHORING MATRIX (MEAM)?
This matrix is used to determine the level of detail each discipline model must show for all building elements at the various project stages. Each disciple must notify the RDC team where alterations to the LOD matrix below is required or where elements noted will not be modeled in 3D.

WHAT IS LEVEL OF DEVELOPMENT (LOD)?
As defined in Article 2 of AIA G202-2013 Contract Document, the BIM model should represent a certain Level of Development (LOD) at certain phases of the project. The 'Model Element Authoring Matrix' provided sets out the minimum level of development of the elements within each discipline's model at every project phase.

HOW DO WE DEFINE LOD COMPLIANCE?
The project team will use the LOD descriptions set out in E202-2008 and the following document as the basis for LOD compliance:

Level of Development Specification Part 1, December 2020.
Download Link: https://bimforum.org/lod/

LEVEL OF DEVELOPMENT	DEFINITION	REPRESENTATION
LOD 100	Graphical representation using non-geometric symbols or elements.	Linework, 2D symbols, annotation
LOD 200	Represented by **generic** systems, objects or assembly in terms of quantity, size, shape, location & orientation.	3D Geometric placeholders (e.g. cube for equipment or a wall with no layers)
LOD 300	Represented by **specific** systems, objects or assembly in terms of quantity, size, shape, location & orientation.	Representative 3D Geometry & accurate information
LOD 400	Represented by additional detailing, fabrication, assembly & installation information	Detailed 3D geometry & information for fabrication
LOD 500 As-Built	Field verified in terms of size, shape, location, quantity & orientation	Geometry is moved following verified as-built on-site. No additional geometric detail required.

Representative	Project Phase		
	SD	DD	CD
Architectural			
Casework	-	200	300
Ceilings	100	200	300
Columns	100	200	300
Curtain Panels	-	200	300
Curtain Systems	-	200	300
Curtain Wall	-	200	300
Detail Items	-	-	300
Doors	100	200	300
Roof Fascias	-	200	300
Interior and Finish Products	-	-	-
Floors	100	200	300
Furnishings, Fixtures & Equipment Products	-	-	300
Furniture Systems	-	-	300
Grids	100	100	100
Roof Gutters	-	-	300
Levels	100	100	100
Property Lines	100	100	100
Railings	-	200	300
Ramps	100	200	300
Roofs	100	200	300
Shading Devices	-	-	-
Shaft Openings	100	200	300
Stairs	100	200	300
Wall Sweeps	-	200	300
Walls	100	200	300
Windows	100	200	300
Laundry Washing Machine	-	200	300
Laundry Dryers	-	200	300
Refrigerator and Freezer	-	200	300
Dishwashers	-	200	300

Representative	Project Phase		
	SD	DD	CD
Dishwasher Steam Hood	-	200	300
Cleaning Equip. Central Pressure Wash System	-	200	300
Structural			
Steel			
Structural Columns	-	200	300
Primary Framing	-	200	300
Secondary Framing	-	200	300
Misc. Metals Framing	-	-	-
Structural Connections	-	-	-
Braced Frames	-	200	300
Braced Frame Gussets	-	-	300
Beam Bracing/Kickers	-	-	300
Concrete/CMU			
Structural Floors/Slabs	-	200	200
Foundations & Grade Beams	-	200	300
Structural Concrete/CMU Walls	-	200	300
Wood			
Wood Posts	-	200	300
Heavy Timber Framing	-	200	300
Dimensional Lumber Framing	-	100	200
Structural Wood Walls	-	100	200
I-Joist Framing & Prefab Trusses	-	100	200
Mechanical			
Dampers	-	-	-
Duct Accessories	-	-	300
Duct Fittings	-	-	300
Duct Systems	-	200	300
Duct Primary Runs	-	200	300
Duct Secondary Runs	-	200	300
Flex Ducts	-	200	300
Flex Pipes	-	-	-
Package Rooftop Unit	-	200	300
VAVs, CAVs		200	300
Exhaust Fans	-	200	300
Hydronic Equipment	-	200	300
Chiller	-	200	300
Pumps	-	200	300
Valves Boxes	-	200	300
Duct Smoke Detectors	-	200	300
BMS Operator Workstations	-	200	300
Indirect Direct Heating/Cooling Units	-	200	300
Condensing Units	-	200	300
Fan Coil Units	-	200	300
Filters Supply Units	-	200	300
Expansion Tanks	-	200	300
Radiant Floor Chillers	-	200	300
Variable Frequency Drives	-	200	300
Radiant Manifolds	-	200	300
BMS VAV Controllers	-	200	300
BMS Unitary Controllers	-	200	300
Automatic Air Vents	-	200	300
Hydronics Pressure Regulators	-	200	300
Hydronics Pressure Relief Valves	-	200	300

Representative	Project Phase		
	SD	DD	CD
Minimum Inlet Temp. Valves for Boilers	-	200	300
Plumbing			
Pipe Accessories	-	-	300
Pipe Fittings	-	-	300
Pipes			
<1 ½"	-	-	300
>1 ½"	-	-	-
Sinks	-	200	300
ADA Accessible Showers	-	200	300
Eye Wash Station	-	200	300
Water Coolers	-	200	300
Wall Mounted Faucets	-	200	300
Toilets	-	200	300
Urinal	-	200	300
Water Hammer Arrestors	-	200	300
Domestic Hot Water Balancing Valves	-	200	300
Wash Station Temp. Control Valves	-	200	300
Plumbing Individual Flow Measuring Meters	-	200	300
Plumbing Water Hammer Arresters	-	200	300
Plumbing Floor Drain Trap Primers	-	200	300
Plumbing Eyewash Fixtures	-	200	300
Specialty Sink & Wet Tables	-	200	300
Rain Water Leaders	-	-	300
Domestic Water Backflow Preventors	-	200	300
Irrigation Water Backflow Preventors	-	200	300
Backflow Device for Hydronics System	-	200	300
Water Meters	-	200	300
Booster Pumps	-	200	300
Primary Hot Water Pumps	-	200	300
Secondary Hot Water Pumps	-	200	300
Radiant Chiller Pumps	-	200	300
Radiant Loop Pumps	-	200	300
Circulating Pumps	-	200	300
Storm Water Catch Basins, separators, Filters	-	200	300
Cleanouts	-	200	300
Sewer sediment Interceptors	-	200	300
Sewer Pump System	-	200	300
Irrigation Controller and Central Monitoring System Connection	-	200	300
Irrigation System Monitoring Sensors	-	200	300
Irrigation Flow Sensors	-	200	300
Irrigation System Valves	-	200	300
Water Heater	-	200	300
Hydronic Boilers	-	200	300
Sand Solids Interceptor	-	200	300
Hose Bibs	-	200	300
Trap Primers	-	200	300
Electrical			
Cable Tray Fittings	-	-	-
Cable Tray Runs	-	-	-
Cable Trays	-	200	300
Communication Devices	-	200	200
Conduit Fittings	-	-	-

Representative	Project Phase		
	SD	DD	CD
Conduit Runs	-	-	-
Groups <1 ½"	-	-	300
Groups >1 ½"	-	-	-
Conduits			
<1 ½"	-	-	300
>1 ½"	-	-	-
Emergency Egress Lights	-	200	300
Exit Lights	-	200	300
Switchgear	-	200	300
Panel Boards	-	200	300
Generators	-	200	300
Electrical Fixtures	-	200	300
Fire Alarm Devices	-	200	200
Lighting Devices	-	200	200
Lighting Fixtures	-	200	300
Security Devices	-	200	200
Automatic Transfer Switches	-	200	300
Transformer	-	200	300
Telephone Devices	-	-	-
Intrusion Panels	-	200	300
CCTV	-	200	300
Batteries	-	200	300
Control Panels	-	200	300
Annunciators	-	200	300
Smoke Detectors	-	200	300
Heat Detectors	-	200	300
Wall Horn/Strobe	-	200	300
WP Horn/Strobe	-	200	300
Power Switchboard	-	200	300
Civil			
Topography	100	100	100
Roads, Driveways, Access Ways, Parking Lots	-	200	300
Pavement	-	200	300
Curbs and Gutters	-	200	300
Retaining Walls	-	200	300
Exterior Building Structures	-	200	300
Storm Water Lines <3"	-	200	300
Sanitary Sewer Lines <3"	-	200	300
Points of Connection (Within and Beyond Project Area)	-	200	300
Trees	100	100	100
Irrigation Lines <4"	-	200	300
Planting	100	-	-
Sprinklers	-	-	300
Sprinkler Head	-	-	300
Risers	-	-	300
FCR Panel	-	-	300
Manifolds and Valve Bodies			
Pumps	-	200	300
Fire Protection			
Fire Sprinklers Riser Valves and Flow Switches with Alarm	-	200	300
Fire Sprinkles Manifolds and Test Port	-	200	300

Representative	Project Phase		
	SD	DD	CD
Fire Extinguishers	-	200	300
Pre-Action System	-	200	300
Tamper Switches	-	200	300

## COLLABORATING ON BLUEBEAM

GETTING ACCESS
The design team Bluebeam session ID is listed below. All collaborative sessions will be hosted here: Session ID: <*Provide*>

DISCIPLINE COLORS
All design team disciplines will utilize their assigned color to create clear markups on all Bluebeam sessions. Refer to the "Contact Information" section above.
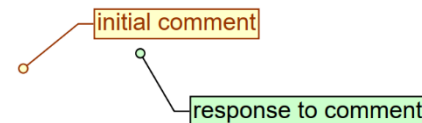
ADDING NOTES
Use all caps or lower case to indicate the type of comment.
Adjust leader toward pertinent area.
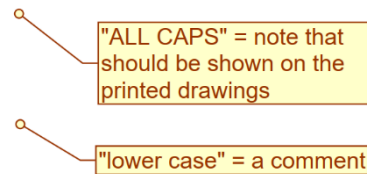
REPLYING TO NOTES
To reply to a comment, use your discipline-designated text box color. Place text and box and position leader toward initial comment.

ALERTING SOMEONE TO A NOTE
After adding a comment to the session, right-click the text box an select 'Alert Attendee' and select 'Choose'. On the pop-up window, select the person you would like to alert. They will receive an email notification.

STEP 5 - CLOSE A COMMENT
After a comment has been fully addressed, right-click the comment, select 'Set Status' and choose 'Completed'. The RDC team will periodically remove completed comments.