

SECTION 01 32 50

BUILDING INFORMATION MODEL (BIM) AND PROVISION OF ELECTRONIC SUBMITTAL DATA

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide a BIM model of the Work using Autodesk Revit software.
- B. Provide electronic Submittal data for the Work via Tandem Digital Twin online software provided by Owner.
- C. Refer to Specification Section 01 30 00 Administrative Requirements for BIM Manager qualification documentation requirements.

1.02 BIM MODEL REQUIREMENTS

- A. Building Information Modeling (BIM) is a digital collection of software applications designed to facilitate coordination and project collaboration. BIM can also be considered as a process for developing design and construction documentation by virtually constructing the building on the computer before actually building it.
- B. BIM Model Level of Development (LOD) definitions applicable to the Work.
 1. LOD 300: The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element. Equipment schedules shall not be included as a Model Element. Provide Equipment Schedules as an Excel spreadsheet from a template provided by Owner.
 2. LOD 350: The Model Element is graphically represented within the Model as a specific system, object, or assembly in terms of quantity, size, shape, orientation, and interfaces with other building systems. This is the minimum level required for trade co-ordination during the construction process. Non-graphic information may also be attached to the Model Element. Equipment schedules shall not be included as a Model Element. Provide Equipment Schedules as an Excel spreadsheet from a template provided by Owner.
 3. After Bid award, the Contractor shall be provided with the Consultant's Revit model. This model is at LOD 300 (Architectural, Structural, Mechanical, and Electrical – A/V, Low Voltage/ Security and Civil are represented in 2D).
 4. The Contractor is responsible for providing the following building components to the following Levels of Development.
 - a. All Mechanical and Electrical equipment (e.g., starters) in the Mechanical/Sprinkler Rooms - LOD 350.
 - b. All perimeter wall Work in the Mechanical/Sprinkler Rooms full height - LOD 350.
 - c. All ceiling hung equipment Work in the Mechanical/Sprinkler Rooms - LOD 350.
 - d. Mechanical and Electrical Work in main corridors including ceilings - LOD 350.
 - e. Mechanical and Electrical Work located in the UFAD floor systems - LOD 350.
 - f. All Electrical Work in the Electrical Rooms LOD 350.
 - g. All perimeter wall Work in the Electrical Rooms full height - LOD 350.
 - h. All ceiling hung equipment Work in the Electrical Rooms - LOD 350.
 - i. All Mechanical and Electrical exterior service connections that are within a distance of 4 ft. in any direction of any exterior wall - LOD 350.

- j. All Mechanical and Electrical exterior service connections that are 4 ft. or a greater distance from any exterior wall - LOD 350.
 - k. All remaining Architectural, Mechanical and Electrical Work not included above - LOD 300.
 - l. All remaining exterior Work (Solar PV array, parking areas, landscaping) - LOD 300.
 - m. All roof Work – LOD 300.
5. Show equipment schedules that have been approved by the Consultant via the project Submittal process in the Electronic Submittal spreadsheet templates provided or approved by Owner. Do not include this information in the BIM model.

1.03 QUALITY ASSURANCE

- A. The Contractor shall be responsible for providing a BIM REVIT model of the Work to the Level of Development defined in this section.
- B. The Contractor shall use BIM REVIT 2022 software, approved by the Owner.
- C. The Contractor or shall appoint a BIM Manager who is responsible for the following:
 - 1. Take overall responsibility for the proper use, implementation, and creation of BIM during construction.
 - 2. Manage and maintain the creation of all BIM content.
 - 3. Coordinate and Manage BIM related meetings with lead BIM technicians. Allow for a minimum of one on-site meeting per month during the construction period. Host Teams/Zoom meetings as required for the Work.
 - 4. Collect model information from all trades and input this information into the BIM model for the Work.
 - 5. Identify clashes and resolve clashes with the trades, the Consultants and the Owner.
 - 6. Collect and organize Electronic Submittal data from the trades for review by Consultants and Owner. Note that this data must not be incorporated into the BIM model.
 - 7. Owner will provide naming conventions in a spreadsheet for all equipment to be added to the BIM model.
 - 8. Provide an as-built version of the BIM REVIT model to Owner as part of the O&M package for the Work.
 - 9. Provide a minimum of 4 hours of training to Owner’s staff.

1.04 SUBMITTALS

- A. Submit the following items as outlined below:
 - 1. Design Review Report: The Report shall include the following:
 - a. Design alternatives proposed by Contractor to improve constructability.
 - b. Virtual mockups that need to be built as working models or full scale mockups.

- c. Code validation issues.
 - d. Owner-supplied naming conventions to be used.
 - e. Owner-supplied asset tags to be used.
 - f. Completed Element Attributes Table as described above.
2. Clash Detection Report: The Report shall provide a list of clashes to be resolved by the Consultant. Clash detection shall be performed on the following systems:
- a. Architectural Systems vs. Structural Systems.
 - b. Architectural Systems vs. HVAC Systems.
 - c. Architectural Systems vs. Plumbing Systems.
 - d. Architectural Systems vs. Fire Protection Systems.
 - e. Architectural Systems vs. Electrical Systems.
 - f. Architectural Systems vs. Electronics Systems.
 - g. Structural Systems vs. HVAC Systems.
 - h. Structural Systems vs. Plumbing Systems.
 - i. Structural Systems vs. Fire Protection Systems.
 - j. Structural Systems vs. Electrical Systems.
 - k. Structural Systems vs. Electronics Systems.
 - l. HVAC Systems vs. Plumbing Systems.
 - m. HVAC Systems vs. Fire Protection Systems.
 - n. HVAC Systems vs. Electrical Systems.
 - o. Interconnections between the Work of the Solar PV array Contractor and the Work of this General Contractor.
 - p. Clashes with any equipment in the Server Room and Radio Room.
- B. Provide the following Submittals information by these Specification Section using the Autodesk Tandem software. Only Pdf documents are allowed for Approved Submittal, O&M, and Warranty uploading into Tandem. Update to as-built conditions at the end of the Work.
- 1. Provide make, model, serial number, installation date, product data sheets, O&M, and Warranty for the following specification sections:

07 46 46 Fiber Reinforced Cementitious Panels
 07 54 23 Thermoplastic Membrane Roofing

12 24 00 Window Shades
 14 42 00 Wheelchair Lifts
 21 10 00 Water-Based Fire-Suppression Systems
 21 13 16 Dry Pipe Sprinkler Systems
 22 11 23 Domestic Water Pumps – Provide also:
 Pump GPMs
 Electrical Data Plate Information
 22 36 00 Fuel-Fired Water Heaters
 22 40 00 Plumbing Fixtures – Provide also:
 Finish/ Color
 Provide all required information for the following fixture types:
 Water closets
 Urinals
 Flush Valves
 Shower Mixing Valve Assemblies
 Lavatories
 Faucets
 Drinking Fountains
 Eye/ Face Wash
 Point of Use Mixing Valves
 23 05 13 Common Motor Requirements for HVAC Equipment – Provide also:
 Electrical Data Plate Information
 23 05 15 Motor Variable Frequency Controllers – Provide also:
 Electrical Data Plate Information
 23 21 23 Hydronic Pumps – Provide also:
 Pump GPMs
 Electrical Data Plate Information
 23 34 23 HVAC Power Ventilators – Provide also:
 Electrical Data Plate Information
 23 36 00 Air Terminal Units – Provide also:
 Electrical Data Plate Information
 23 37 13 Diffusers, Registers, and Grilles – Provide also finish/color this specification
 23 37 23 HVAC Gravity Ventilators
 23 52 16 Condensing Boilers – Provide also:
 Electrical Data Plate Information
 23 73 13 Central-Station Air-Handling Units – Provide also:
 Electrical Data Plate Information
 Testing, Adjusting, and Balancing information
 23 74 16 Packaged Rooftop Air-Handling Units – Provide also:
 Testing, Adjusting, and Balancing information
 23 81 26 Split-System Air-Conditioners
 23 82 39.19 Fan Coil Units
 23 82 39.16 Propeller Units Heaters
 26 28 16 Enclosed Switches and Circuit Breakers
 26 33 53 Static Uninterruptible Power Supply – Provide also:
 Electrical Data Plate Information
 26 51 00 Lighting – Provide also:
 Electrical Information
 CCT (Correlated Color Temperature)
 CRI (Color-Rendering Index)
 LER (Luminaire Efficacy Rating)
 Lumens (Measured Output of Luminaire)
 Foot Candles
 Luminaires
 LED Systems

Exit and Emergency Systems

2. Provide make/model, finish/color, fire rating, door schedule, shop drawings, product data sheets and warranty data for the following specification sections:

08 11 13 Hollow Metal Doors and Frames

08 14 16 Flush Wood Doors

08 33 23 Overhead Coiling Doors

08 34 00 Special Function Doors

08 34 36 Detention Doors and Frames

08 71 00 Door Hardware – Provide also:

Type, style, function, size, label, hand, and finish of each door hardware item

Manufacturer of each item

Fastening and other connection information

Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door/frame schedules

Explanation of abbreviations, symbols, and codes

Mounting locations for door hardware

Door and frame sizes and materials

Warranty information for each product

08 80 00 Glazing

09 51 00 Acoustical Ceilings

09 54 45 Modular Wood Ceilings

09 65 00 Resilient Flooring

09 67 23 Resinous Flooring

09 68 13 Carpet Flooring

09 91 00 Exterior and Interior Painting and Coating

10 21 13.19 Plastic Toilet Partitions

10 44 00 Fire Protection Specialties

1.05 RECORD DOCUMENTS

- A. Provide an electronic copy of the final as-built version of the BIM REVIT model. Provide the model at the Levels of Development outlined in this Section.
- B. Provide electronic copies of the as-built electronic spreadsheet information.

PART 2 – PRODUCTS

Not Required

PART 3 – EXECUTION

Not Required

END OF SECTION 01 32 50

