



Multidisciplinary BIM Modeling for Phased Healthcare & Laboratory Infrastructure

(Architectural, Structural & MEPF BIM Modeling, and BIM & VDC Coordination Services)

CASE STUDY



TECHTURE



Client : Owner

Team Size : 4 No.s (BIM Engineer & BIM Coordinator)

Disciplines : Architectural, Structural & MEPF

Duration : 3 Month

Type : Healthcare

Software : Autodesk Revit

Location : Texas, USA



Project Overview

Techture developed LOD 300 Revit models across Architecture, Structure, and MEP/FP disciplines for a healthcare laboratory facility covering approximately 76,000 SF across five levels (Levels 2, 4, 6, 7, and Penthouse/Roof). Modeling was carried out in phases, capturing both existing-to-remain and new construction conditions for areas marked as "in work," using Revit for authoring and delivering coordinated .rvt and .nwd files. The scope included specialized systems such as Lab Gas, Fire Alarm, and Technology pathways, making above-ceiling coordination the primary focus of the effort.

Scope and Deliverables

- Developed LOD 300 architecture models per level floor plans, reflected ceiling plans, walls with overall thickness, soffits, ACT layouts, doors, windows, vertical mullions, and simplified casework representations.
- Developed LOD 300 structure models covering floor slabs, beams, columns, and supplemental steel members as indicated in drawings.
- Modeled MEP systems for above-ceiling coordination of HVAC routing, conduits, cable trays, plumbing piping, sprinkler mains and branch lines, fire alarm pathways, lab gas piping, and technology containment routing.
- Set up the Revit model with levels, grids, and phase filters to correctly separate existing-to-remain and new construction elements across all five levels.
- Used standard Revit families throughout, with client notification raised immediately where drawing information was missing or unclear.

Challenges

- Managing phased modeling conditions (existing vs. new construction) across five non-consecutive levels without mixing up element phases or misrepresenting scope boundaries.
- Coordinating a broad discipline mix including lab gas, fire alarm, and technology pathways where above-ceiling space is tight and routing conflicts are common even at LOD 300.
- Working strictly within IFC drawing inputs with no fabrication-level detail, meaning model accuracy was directly dependent on the clarity and completeness of drawings shared at project start.
- Keeping scope boundaries clear across multiple specialized disciplines while ensuring all "in-work" areas were correctly identified and modeled without overreaching into excluded zones.



Techture Approach

- ❏ Followed a phased Revit modeling approach, setting up existing and new construction phases at the start so all elements were correctly categorized from the beginning, avoiding rework later.
- ❏ Kept each discipline modeled to what was visible and coordination-relevant in the drawings, particularly for above-ceiling systems, without adding detail beyond what the LOD 300 scope required.
- ❏ Raised client notifications immediately when drawing information was missing or unclear, rather than making assumptions, to keep the model accurate to the source inputs.
- ❏ Delivered both .rvt and .nwd file formats, giving the client a Revit-native model for further development and a Navisworks file for coordination review.

Benefits

- ❏ Phased model setup (existing vs. new construction) gave the project team a clear, level-by-level picture of what was changing and what was staying useful for both planning and on-site reference.
- ❏ Above-ceiling coordination across seven discipline systems (Mechanical, Electrical, Plumbing, Fire Protection, Fire Alarm, Lab Gas, and Technology) in a single federated model reduced the risk of routing conflicts going undetected.
- ❏ Limiting the scope strictly to LOD 300 and "in work" areas kept the modeling effort focused and avoided unnecessary work on areas outside the project's active construction zone.
- ❏ A clean Revit model set up with correct levels, grids, and phase filters gave the client a reliable base for any further coordination or design development work downstream.