

## COMPANY

**Pinnacle Infotech**

## LOCATION

**Durgapur, India**

## SOFTWARE

**Autodesk® Revit®****Autodesk® Navisworks®**

# Creating 3D building models of complex geometry was never so easy

Pinnacle uses Autodesk Revit for high-level detailing of a residential project in USA to create different stages of drawing set for construction.

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President  
Pinnacle Infotech

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Vice President  
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Image courtesy: Pinnacle Infotech

**Headquartered in Durgapur, India and with offices in Houston (USA), London (UK), Dubai (UAE) and Calolziocorte (Italy) and Zurich (Switzerland), Pinnacle Infotech is catalyzing renaissance in the construction arena with BIM services. Pinnacle facilitates more than 1035 clients in over 32 countries, across 6 continents, collaborating across time zones with global delivery centers in India, USA, UAE, UK & Italy, comprising of more than 810 in-house BIM specialists, architects & engineers.**

Being a leading provider of innovative BIM services to architectural, engineering & construction industries for over 18 years, Pinnacle has successfully executed more than 4500 landmark BIM projects across industries. Some of the significant BIM projects include Kingdom Tower in Jeddah – Saudi Arabia, Dubai International Airport, Muscat Airport, Delhi International Airport (T3), New York University, Julphar Pharmaceutical Plant, Msheireb Downtown Construction (Doha), Dubai Festival City, University of California Health Longmont Hospital, Santa Ana College, Kolter Hotel in

Tampa, Florida, Ambuja Patna City Center and Rosslyn Central Place, Arlington County, USA among others.

## The Project—Multifamily Project, Los Angeles, USA (Mixed Use Construction)

Pinnacle created the BIM Model of a residential project in USA to create different stages of drawing set for construction. Moreover, the 3D Model is used to meet various project objectives such as 3D coordination, clash mitigation, schedule for door & room finish and visualization. The project was divided into 5 Zones (1, 2, 3, 4, 5 building) with 7 storeys over two subterranean and one mezzanine level parking areas.

## Project Specialty

High Level detailing was used for the mixed use construction. Pinnacle worked with various designs of different residential apartments, where wood, metal CMU and concrete were used. Pinnacle conducted code analysis, fenestration analysis, area analysis, F.N.R. analysis and Egress to meet several project requirements at various stages.

# Pinnacle generated detailed 3D BIM model for producing construction document set from Schematic Design.

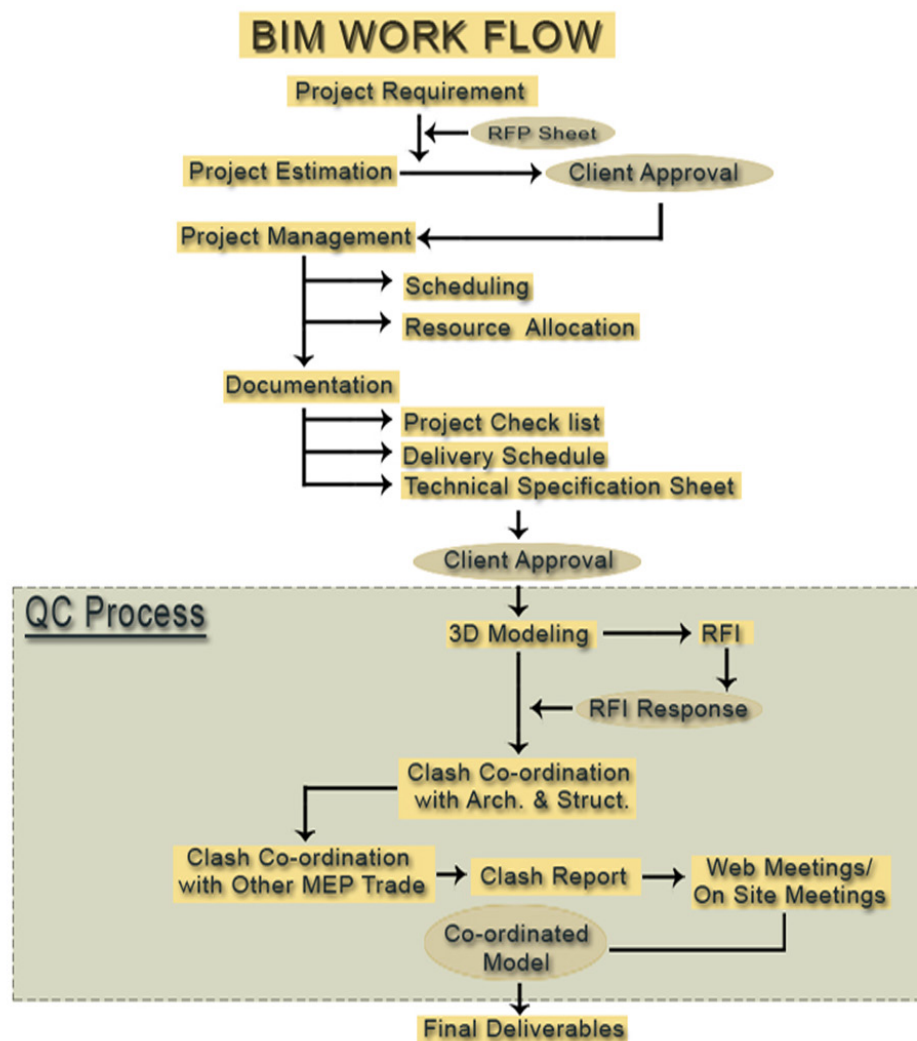


Image courtesy: Pinnacle Infotech

## BIM Scope for Pinnacle:

Pinnacle's scope of work for the project was to generate detailed 3D BIM model for producing construction document set from Schematic Design.

- **Trades Covered:** Architecture & Basic Concrete Structure
- **Software Used:** Autodesk Revit 2016
- **LOD:** 350

## Challenges & Solutions

- **Design Issue:** Design change was a huge challenge in this project. Also, several new details were required by the client to develop along with the design change.
- **Solution:** Raised RFIs and communicated to client through Webex and email for incorporating desired changes.

## Modeling Stages

### Stage 1: Schematic Stage Modeling in LOD 200

- Area Analysis, LA Code Analysis & basic modeling including Windows, Doors, Furniture(Generic), Ceilings, Curtain Walls, Roofing, Stairs, Rails (Generic), Elevators, Walls, Exterior Wall (Generic), Interior Wall & Wall Finishes

### Stage 2: DD& CD Stage Modeling in LOD 350

- Clash Coordination with services, Detailed

modeling of furniture & Design validation using building codes, Construction details and references through model

- Clash report was shared with client in the form of RFI's & subsequent solution was incorporated in the design

## BIM Software helped Structural Coordination in Architectural Modeling

1. Floor plan change was found at south-east corner of Bldg 1. The building edge (used to be a trimmed edge) was pushed out for extending the cantilever end of the steel transfer beam (W36x194) on fourth floor by about 7.5' (it was 15', now 22.5'). A larger size steel beam was anticipated. Moreover, the framing at this corner at all floors needed to be redesigned (probably seismic design too because of increased floor areas, especially at roof deck level). The change occurred in 2017-3-16 Revit model updates.

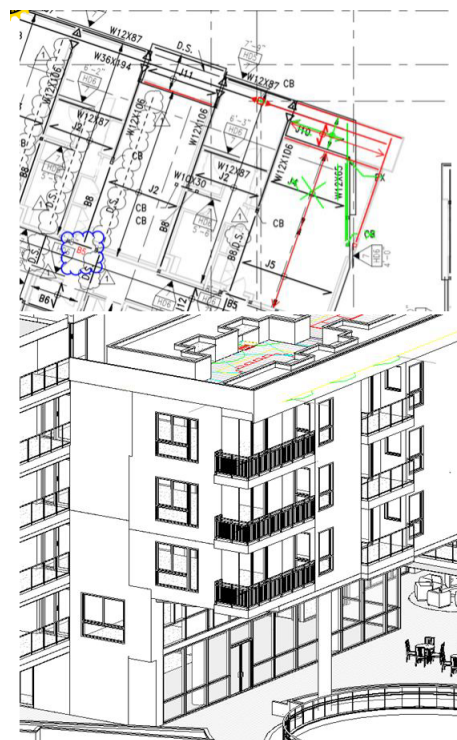


Image courtesy: Pinnacle Infotech

2. BIM helped to clarify the right joist depth to be used (10" or 12" deep joist). Moreover, when 10" joist at the balcony was required, Pinnacle used tapered wood beams in lieu of notched wood beams to ensure maximum beam capacity.



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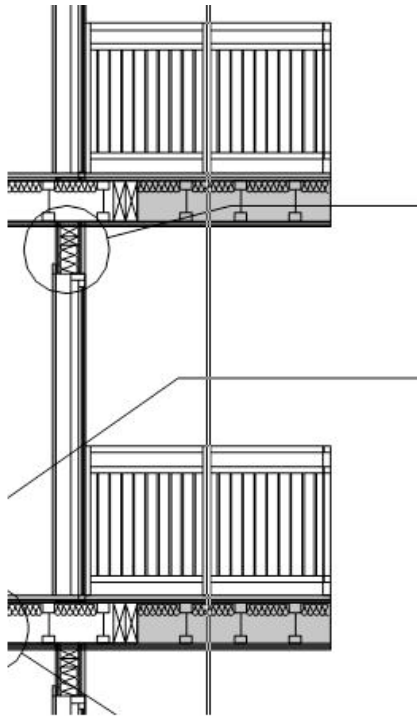


Image courtesy: Pinnacle Infotech

#### Pinnacle's Value Addition:

- Pinnacle raised more than 20 RFIs to resolve clashes for producing accurate drawings to help the client for the project at various stages, including Window Package, LAGBL Green Plan Check Clearances, ADA Plan Check Clearances, Fire Fighting Plan Check Clearances and some Pre-bid Package.

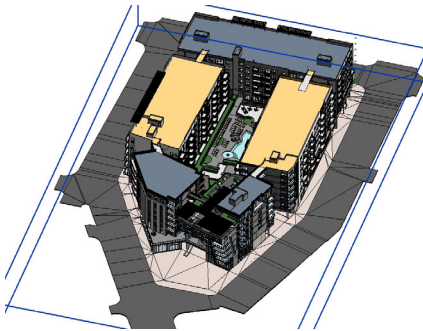


Image courtesy: Pinnacle Infotech

progress through each phase of the project, starting from floor setup to structural and MEP clash detection. Pinnacle has reviewed critical areas in 3D for any changes made and evaluated space constraint successfully. BIM facilitated various design disciplines to collaborate in a flawless manner as single information platform, enhancing work efficiency, reducing errors, verifying aesthetic looks and improving building performance."

"Using Autodesk BIM software, we could easily produce the models with complex geometry. We used Revit for project coordination and thus could avoid the cost of rework from the existence of clashes. Revit helped us in generating schedules – doors, windows, intense area statement and finish specifications and developing architectural construction details," – added **Vikash Tripathy, Deputy Manager, Pinnacle Infotech.**



Image courtesy: Pinnacle Infotech



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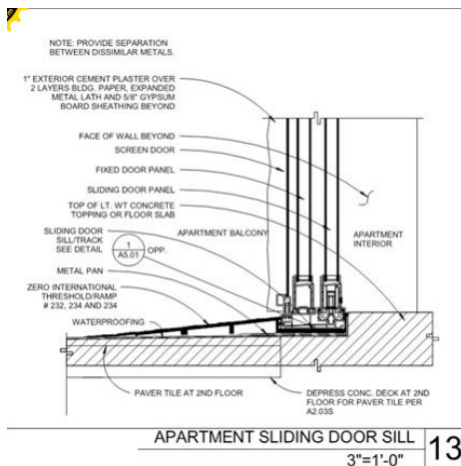


Image courtesy: Pinnacle Infotech

#### BIM Process identified several constructability issues:

- Location, Size & Thickness of Structural Wall does not match with Architectural Wall
- Location of Structural Column does not match with Architectural Column
- Absence of Shear Wall in Architectural File
- Mismatch in Column Location between Structure & Architecture

#### Summary:

Autodesk Revit BIM helped Pinnacle Infotech to plan using intelligent models and allowed the team to anticipate, plan, and coordinate every aspect of the project design, detailing, construction, and maintenance. It helped to identify constructability issues prior to construction by detecting the number of clashes, thus avoiding work stoppages, rework & wastage of time, material and manpower.

**Soumya Bhattacharya & Somali Ray - Senior Managers, Pinnacle Infotech** said - "Autodesk Revit BIM software helped us to identify constructability issues prior to tender stage and

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**Client:** Don Dildine, ddildine@nadelarc.com, Nadel Residential & Commercial Inc.

#### Facts at a glance:

- **BIM Start Date:** 19th February, 2016
- **Expected BIM End Date:** April, 2017
- **Project Area:** 347,019 Sq. ft
- **Team Size:** 12 Engineers
- **Architecture & Planning:** Nadel Residential & Commercial Inc.

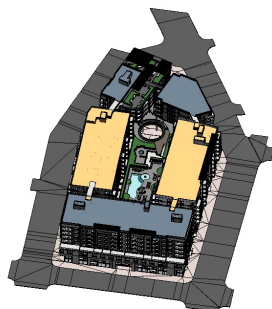


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— **Somali Ray**  
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