Revit for Structural Design Training Course

Description

Introduction:

Revit is one of the most widely used Building Information Modeling (BIM) tools in the construction industry, enabling structural engineers to design and analyze structures efficiently while improving collaboration with other disciplines. This 5-day course is designed to provide structural engineers and designers with the essential skills to use Revit for creating accurate and detailed structural models. Participants will learn how to use Revitâ??s features for structural design, analysis, and documentation, enhancing their productivity and ensuring the delivery of high-quality projects.

Objectives:

By the end of this course, participants will:

1. Understand the basic principles of Building Information Modeling (BIM) and its application in structural design.
2. Learn how to navigate the Revit interface and workspaces.
3. Be able to create structural elements such as beams, columns, foundations, and reinforcement in Revit.
4. Understand how to integrate structural components with other disciplines using Revit.
5. Learn to generate detailed structural drawings, schedules, and reports from the Revit model.
6. Master advanced features for analyzing and optimizing structural designs within Revit.
7. Understand how to collaborate with other project stakeholders through Revitâ??s cloud-based tools.

Who Should Attend:

This course is intended for structural engineers, BIM professionals, and CAD technicians who want to improve their skills in using Revit for structural design and modeling, including:

- Structural Engineers and Designers
- BIM Managers and Coordinators
- CAD Technicians
- Architects working closely with structural teams
- Project Managers involved in BIM-based projects

Course Outline:

Day 1: Introduction to Revit and BIM Concepts

- **Session 1: Understanding BIM and Its Importance in Structural Design**
  - What is BIM? The Role of BIM in Modern Construction Projects
  - Benefits of Using Revit for Structural Design: Coordination, Visualization, and Analysis
  - Overview of Revitâ??s Interface and Tools for Structural Engineers
- **Session 2: Revit Workspace and Navigation**
  - Revit User Interface: Ribbon, Properties, Project Browser, and Viewports
  - Navigation Tools: Zoom, Pan, and Rotate
  - Viewing and Organizing Views: Floor Plans, Elevations, 3D Views
- **Session 3: Project Setup and Template Management**
  - Setting Up a New Project in Revit
  - Understanding Revit Templates: Structural, Architectural, and MEP Templates
  - Managing Project Units, Levels, and Grids for Accurate Modeling
- **Activity**: Hands-on Exercise â?? Setting Up a Structural Project Template

Day 2: Creating Structural Elements in Revit

- **Session 1: Creating Structural Walls and Columns**
  - Modeling Concrete and Masonry Walls: Types, Sizes, and Modifications
  - Creating and Editing Structural Columns: Vertical Loads and Column Placement
  - Using Grid Lines and Reference Planes for Accurate Positioning
- **Session 2: Structural Beams and Foundations**
  - Modeling Beams: Placement, Types, and Aligning with Columns
  - Creating Foundation Systems: Slab, Spread Footings, Pile Foundations
  - Using Revitâ??s Structural Analysis Tools for Preliminary Design
- **Session 3: Advanced Structural Elements: Floors and Roofs**
  - Modeling Structural Floors and Slabs: Thickness, Layers, and Reinforcement
  - Roof Structures: Sloped and Flat Roofs, and Roof Beams
  - Modifying Structural Elements for Specific Project Needs
- **Activity**: Hands-on Exercise â?? Modeling Columns, Beams, and Foundations

Day 3: Reinforcement and Detailing in Revit

- **Session 1: Reinforcement Detailing in Revit**
  - Adding Rebars to Concrete Elements: Slabs, Beams, and Columns
  - Reinforcement Settings and Detailing Tools: Bar Schedules and Rebar Shapes
  - Creating Custom Rebar Shapes and Managing Rebar Placement
- **Session 2: Structural Detailing and Annotation**
  - Adding Structural Details: Views, Section Cuts, and Details for Steel and Concrete
  - Annotation Tools: Dimensions, Tags, and Text Notes
  - Managing Details with Detail Groups and Drafting Views
- **Session 3: Creating Structural Schedules and Quantities**
  - Generating and Customizing Structural Schedules: Beams, Columns, and Foundations
  - Creating Quantity Takeoffs and Material Schedules
  - Working with Revitâ??s Parametric Features for Accurate Quantity Reporting

- **Activity**: Hands-on Exercise â?? Adding Reinforcement and Generating Structural Schedules

Day 4: Collaboration and Integration with Other Disciplines

- **Session 1: Collaborating with Architects and MEP Engineers**
  - Coordinating Structural Elements with Architectural and MEP Models
  - Linking Revit Models and Managing Interdisciplinary Conflicts
  - Using Revitâ??s Worksharing and Central Model for Team Collaboration
- **Session 2: Coordination with External Files and Software**
  - Importing and Linking CAD Files, IFC Models, and Other External Sources
  - Coordinating with Structural Analysis Software (e.g., SAP2000, ETABS)
  - Exporting Revit Models for Use in Structural Analysis
- **Session 3: Cloud-Based Collaboration with Revit BIM 360**
  - Introduction to BIM 360 and Its Role in Revit Collaboration
  - Working with Cloud-Based Models: Sharing, Reviewing, and Markup Tools
  - Tracking Project Changes and Maintaining Version Control in the Cloud
- **Activity**: Group Exercise â?? Linking a Revit Structural Model with an Architectural Model

Day 5: Advanced Features and Project Delivery

- **Session 1: Advanced Structural Analysis in Revit**
  - Structural Analysis Tools in Revit: Load Analysis and Structural Simulation
  - Reviewing and Modifying Structural Models for Analysis
  - Exporting Data for Use in Structural Analysis Software
- **Session 2: Parametric Modeling and Custom Families**
  - Creating Custom Structural Families: Beams, Columns, and Connections
  - Using Parametric Design to Adjust Structural Models Dynamically
  - Understanding Revitâ??s Family Editor for Custom Components
- **Session 3: Finalizing Structural Drawings and Project Documentation**
  - Generating Construction Documents: Drawings, Details, and Schedules
  - Preparing and Printing Structural Models for Presentation
  - Managing Project Deliverables: Finalizing and Sharing Revit Files
- **Activity**: Hands-on Exercise â?? Finalizing a Structural Design Project and Generating Documentation

Course Delivery:

- **Interactive Lectures**: Detailed instruction on Revitâ??s tools, functions, and workflows for structural design.
- **Hands-on Exercises**: Practical exercises where participants will model structural components, generate schedules, and create detailed drawings.
- **Case Studies**: Real-world case studies showcasing how Revit is used in structural design projects.
- **Collaborative Activities**: Group work to enhance understanding of BIM and coordination with other project disciplines.

- **Q&A Sessions**: Open forum for addressing participant questions and specific challenges in using Revit.