

Bentley Certified Road Modeler - OpenRoads Modeling

Core Skills

Target Audience

- Highway Design Engineers
- Civil Engineers
- Transportation Engineers
- Road Design Consultants
- CAD/BIM Technicians
- Infrastructure Designers
- Survey and Geomatics Professionals
- Engineering Students and Graduate Trainees interested in roadway design using Bentley OpenRoads Designer.

Course Objectives

By the end of this course, participants will be able to:

- Navigate the OpenRoads Designer interface and efficiently manage project data.
- Create and analyze terrain models for roadway design.
- Design accurate horizontal and vertical alignments based on engineering standards.
- Develop advanced roadway geometry including intersections, curb returns, turn lanes, and driveways.
- Build roadway templates and generate intelligent corridor models with superelevation.
- Perform earthwork analysis and quantity estimation for construction planning.
- Produce professional plan, profile, and cross-section drawings with automated annotations.
- Complete an end-to-end roadway design workflow using Bentley OpenRoads Designer.

Course Outcomes

After successfully completing this course, participants will be able to:

- Confidently use Bentley OpenRoads Designer for roadway design projects.
- Create intelligent terrain, geometry, and corridor models following industry best practices.
- Apply roadway templates, superelevation, and dynamic civil modeling techniques.
- Generate accurate earthwork calculations and quantity reports for project estimation.

- Produce construction-ready plan, profile, and cross-section drawings with automated annotations.
- Execute a complete roadway design workflow from project setup through final drawing production.

Course Outline

The course comprises **40 hours** of theory and hands-on laboratory sessions and is divided into **7 comprehensive modules**. Each module is followed by practical exercises and real-world site development workflows designed to reinforce learning and evaluate the participant's understanding of the concepts covered.

Table of Contents: -

Module 1 – Getting Started with the OpenRoads Interface

- Introduction to Bentley OpenRoads Designer
- User Interface
- Ribbon Workflow
- Explorer
- Properties Window
- Element Selection
- Civil Features
- Multiple Views
- View Controls
- Display Styles
- Civil Analysis Tools
- Navigating Models
- Working with Civil Data
- Workspace and WorkSets
- Project Setup
- Interface Customization

Module 2 – Terrain Modeling and Surface Visualization

- Introduction to Terrain Models
- Terrain Display

- Contour Display
- Contour Intervals
- Terrain Features
- Feature Definitions
- Existing Ground Model
- Reference Terrain to 2D Files
- Override Symbolology
- Element Templates
- Background Maps
- Label Contours
- Analyze Terrain Points
- Terrain Display Settings

Module 3 – Horizontal & Vertical Geometry Design

- Creating New Projects
- Civil Geometry Concepts
- Horizontal Alignments
- Tangents
- Curves
- Spirals
- Alignment Constraints
- Existing Terrain Review
- Profile Creation
- Existing Ground Profiles
- Vertical Alignment
- Vertical Curves
- Grade Design
- Design Checks

Module 4 – Advanced Civil Geometry

- Civil Geometry vs Graphics
- Pavement Edge Creation
- Centerline Offsets
- Curb Returns
- Partial Offsets
- Turn Lanes
- Tapers
- Cul-de-Sac Design
- Driveway Design
- Driveway Tie-ins
- Dynamic Geometry Updates
- Civil Rules

Module 5 – Template Design and Corridor Modeling

Part A – Template Creation

- Template Library
- Template Components
- End Conditions
- Point Controls
- Components
- Constraints
- Parametric Constraints
- Review Existing Templates
- Build Templates
- Modify Templates

Part B – Corridor Modeling

- Corridor Creation
- Corridor Assignment

- Template Drops
- Corridor Targets
- Dynamic Cross Sections
- Corridor Editing
- Corridor Reprocessing
- Superelevation
- Assign Superelevation
- Cross Section Review

Module 6 – Quantities and Earthwork Analysis

- Quantity Manager
- Component Quantities
- Material Quantities
- Earthwork Volumes
- Cut and Fill Analysis
- Named Boundaries
- Quantity Reports
- End Area Volumes
- Volume Comparison
- Reporting Tools

Module 7 – Drawing Production

Part A – Plan & Profile Sheets

- Sheet Seed Files
- Plan Sheets
- Profile Sheets
- Plan & Profile Production
- Sheet Index
- Named Boundaries
- Annotation Groups
- Civil Labels

- Sheet Creation Methods
- Sheet Management

Part B – Cross Section Sheets

- Cross Section Creation
- Dynamic Cross Sections
- Cross Section Sheets
- Advanced Sheet Generation
- Cross Section Annotation
- Label Styles
- Sheet Layout
- Printing Setup