

Bentley Certified Road Designer - Road Design Modeling with OpenRoads Designer

Target Audience

- Highway Design Engineers
- Civil Engineers
- Transportation Engineers
- Infrastructure Designers
- CAD/BIM Professionals
- Survey Engineers
- OpenRoads Designer Beginners
- Civil 3D users transitioning to OpenRoads Designer

Course Objectives

After completing this course, participants will be able to:

- Navigate the OpenRoads Designer environment efficiently.
- Create terrain models and perform surface analysis.
- Design complete roadway geometry, including horizontal and vertical alignments.
- Build and customize roadway templates and corridors.
- Apply superelevation and corridor modeling techniques.
- Calculate quantities and earthwork volumes accurately.
- Produce professional construction documentation, including plan, profile, and cross-section sheets.

Course Outcomes

Upon successful completion of the course, participants will be able to:

- Develop complete road design projects using Bentley OpenRoads Designer.
- Create intelligent civil models aligned with industry best practices.
- Manage roadway corridors using parametric templates and constraints.
- Perform quantity takeoffs and earthwork calculations for project estimation.
- Generate high-quality construction drawings and deliverables suitable for transportation infrastructure projects.

Course Outline

The course comprises **40 hours** of theory and hands-on laboratory sessions and is divided into **9 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 OpenRoads Designer

- Introduction to OpenRoads Designer
- User Interface and Workspace
- Using Element Selection to Explore Civil Elements and Features
- Element Properties and Explorer
- Navigating Multiple Views and Models
- View Controls
- Analyzing Civil Data
- Project Setup and File Organization
- Understanding Civil Models

Module 2: Terrain Modeling and Surface Management

- Introduction to Terrain Display
- Terrain Models
- Terrain Features
- Contour Generation
- Changing Contour Intervals
- Feature Definitions
- Terrain Symbolology
- Referencing 3D Terrain Models
- Override Symbolology
- Element Templates
- Labeling Contours
- Terrain Point Analysis

Module 3: Road Geometry Design

- Creating New Design Files
- Horizontal Alignment Design
- Existing Terrain Integration
- Vertical Geometry
- Profile Creation
- Civil Geometry vs Plain Graphics
- Pavement Edge Creation
- Offset Alignments
- Partial Offsets
- Tapers
- Curb Returns
- Driveways
- Turn Lanes

Module 4: Template Design and Corridor Components

- Introduction to Templates
- Template Library
- Reviewing Existing Templates
- Template Components
- Creating New Templates
- Editing Templates
- Corridor Templates
- Template Drops
- Parametric Components

Module 5: Superelevation Design

- Introduction to Superelevation
- Design Standards
- XML Preferences

- Lane Definitions
- Rules-Based Superelevation
- Manual Superelevation
- Superelevation Sections
- Cross Slopes
- Auxiliary Lanes
- Corridor Integration
- Automated Superelevation

Module 6: Corridor Modeling and Editing

- Corridor Creation
- Template Assignment
- Corridor References
- Editing Template Drops
- Template Library Organizer
- Parametric Constraints
- Key Stations
- Point Controls
- Secondary Alignments
- Target Aliasing
- Corridor Clipping
- End Condition Exceptions
- Corridor Review
- OpenRoads Model Explorer

Module 7: Quantities and Earthwork Analysis

- Component Quantities
- Element Quantities
- Material Quantities
- Earthwork Calculations
- 3D Volume Analysis

- Named Boundaries
- Quantity Reports
- End Area Volume Reports

Module 8: Drawing Production – Plan & Profile Sheets

- Plan Sheet Creation
- Profile Sheet Creation
- Plan & Profile Sheet Generation
- Sheet Models
- Sheet Index
- Additional Sheet Creation Methods
- Civil Annotation
- Labeling Standards

Module 9: Cross Section Production

- Cross Section Generation
- Cross Section Sheets
- Advanced Cross Section Sheets
- Cross Section Annotation
- Labeling Cross Sections
- Production Workflows
- Sheet Management