

**Autodesk®**

# Civil Engineering Solutions

Integrated tools. Faster results.  
Advantages you need.



Civil engineers and technicians are discovering ways to help streamline workflows to gain a competitive advantage.

We're looking forward to using AutoCAD® Civil 3D® for increased green design, as more of our project requirements are guided by the principles of smart growth. AutoCAD® Civil 3D® will make it easier for us to find solutions that meet these requirements.

—Jon Rizzo  
Project Engineer  
Langan Engineering and  
Environmental Services

### Address Industry Challenges

Rising material costs. Shortage of qualified labor. Environmental concerns. Civil engineering professionals around the world are facing unprecedented obstacles. Civil engineers, technicians, and drafters are creating ever-more productive ways of working, and they need a solution that supports an integrated process built on more reliable information.

Autodesk offers a broad suite of engineering design, documentation, and collaboration software solutions to help you address industry challenges. Get all the benefits of building information modeling (BIM) for civil engineering, while protecting your investment in software, trained personnel, and design data.

### Better Accommodate Last-Minute Changes

Civil engineering teams today are spending too much time on repetitive tasks, such as labeling and manual drafting. With continuous pressure to reduce costs and accommodate last-minute changes, engineering firms must reevaluate how they approach their work and what tools will get the job done most efficiently. Autodesk provides solutions that help streamline production with design and drafting that remain synchronized.

### Explore Design Alternatives

Autodesk Civil Engineering Solutions range from the advanced design tools that enable civil engineers to more easily explore design alternatives and make changes while the software coordinates those changes throughout the design and documentation processes—to widely adopted general drafting and documentation software.



# Multiple Options for How You Work

Adapt workflows for different project and staffing needs—from surveying and design to advanced analysis, and visualization, to construction management.

## Design, Analysis, and Documentation

Help boost productivity and streamline design and analysis tasks on your way to more consistent and coordinated documentation.

### AutoCAD Civil 3D

Autodesk's BIM solution for civil engineering, AutoCAD® Civil 3D® software helps civil engineers explore more what-if scenarios with visualization and analysis tools that allow interactive simulations. Because the information model is integrated and coordinated, you can communicate design changes to team members automatically while synchronizing those updates across documents.

### AutoCAD Civil

AutoCAD® Civil software, purpose-built for civil engineering design and construction documentation, offers civil engineering technicians, drafters, and surveyors a focused toolset to help them perform their jobs more effectively. Facilitate workflow from surveying through the creation of construction documentation within a familiar AutoCAD® environment, using tools and processes you already know.

### AutoCAD Map 3D

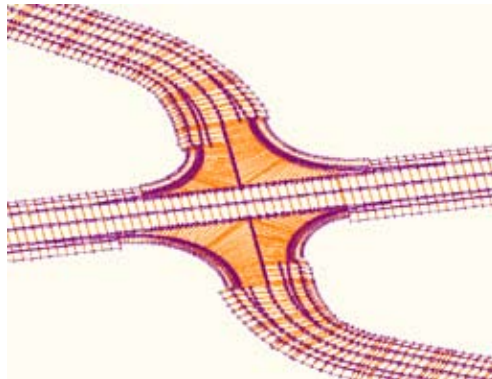
Access, edit, visualize, and analyze a wide range of CAD and spatial data using AutoCAD® Map 3D software. Engineering and GIS professionals can work with the same information more effectively, making the most of existing AutoCAD expertise by using familiar CAD tools

### AutoCAD Raster Design

Perform raster editing, visual analysis, and geospatial image processing using a broad variety of imagery with AutoCAD® Raster Design software. Unlock and extend the value of existing information by using scanned engineering drawings and plans in current projects, and save redrafting time with rubbersheeting and raster-to-raster conversion tools.

### AutoCAD

Design and shape the world around you with AutoCAD® software. Help speed documentation, share ideas seamlessly, explore ideas more intuitively in 3D, and customize programs for your specific needs.



## Visualization and Presentation

More accurately convey design intent to stakeholders, with stunning visualizations and simulations.

### Autodesk 3ds Max Design

Autodesk® 3ds Max® Design software is a powerful 3D modeling, animation, and rendering toolset used to help explore, validate, and communicate civil designs with greater clarity and accuracy before they are real. Civil engineers can visualize impacts of their designs, thereby speeding up the design process.



### Autodesk Impression

Create compelling, presentation-ready graphics straight from CAD drawings with Autodesk® Impression software available to subscription members. Add everything from pencil lines to watercolor washes using prebuilt styles—or create your own custom look.

## Collaboration and Information Sharing

More effectively manage geographically dispersed teams and the hundreds of documents required to successfully deliver a project.

### Autodesk Buzzsaw

Autodesk® Buzzsaw®, a collaborative project management solution, delivered on-demand, helps organizations simplify and centralize all project-related documents and information, supporting the successful execution of projects based on timely decisions and more accurate information.

### Autodesk Navisworks

Exploit the full benefit of 3D building information models regardless of file format, size, or source for more effective design project visualization, construction simulation, and clash detection with Autodesk® Navisworks® software.

### Autodesk MapGuide® Enterprise

Deliver CAD and GIS information quickly, easily, and cost-effectively via the web with this powerful mapping platform. Maximize the value of design and spatial data by enabling information sharing with customers and internal teams, and integrating with enterprise applications.

### Autodesk Design Review

Autodesk® Design Review software is the all-digital way to review, measure, mark up, and track changes to building models and complex drawing sets without the original design creation software.

### AutoCAD DWF Writer

DWF™ publishing helps you enhance collaboration and easily exchange project information with extended teams. Autodesk® DWF™ Writer application enables you to safely share 2D and 3D data as DWF files, no matter what design application you are using.

# Whatever Your Challenge

Autodesk Civil Engineering Solutions are well suited for a broad range of projects from roadways to land development and water resources.



## Transportation Projects

Transportation professionals benefit from more streamlined processes at all stages of a roadway design project. Problems and probable impacts can be identified faster using analysis and visualization tools. Teams can share data in real time, helping them to stay coordinated throughout the project. Since design data and documentation are connected, last minute design changes can be more quickly integrated with production. Interoperability between Autodesk® Revit® Structure software and AutoCAD® Civil 3D® software allow roadway and bridge designers to more effectively communicate. Simulations help you study what the road will look like and how it will perform, and using 3D models in construction assists contractors in optimizing their use of automated machine guidance.

## Land Development Projects

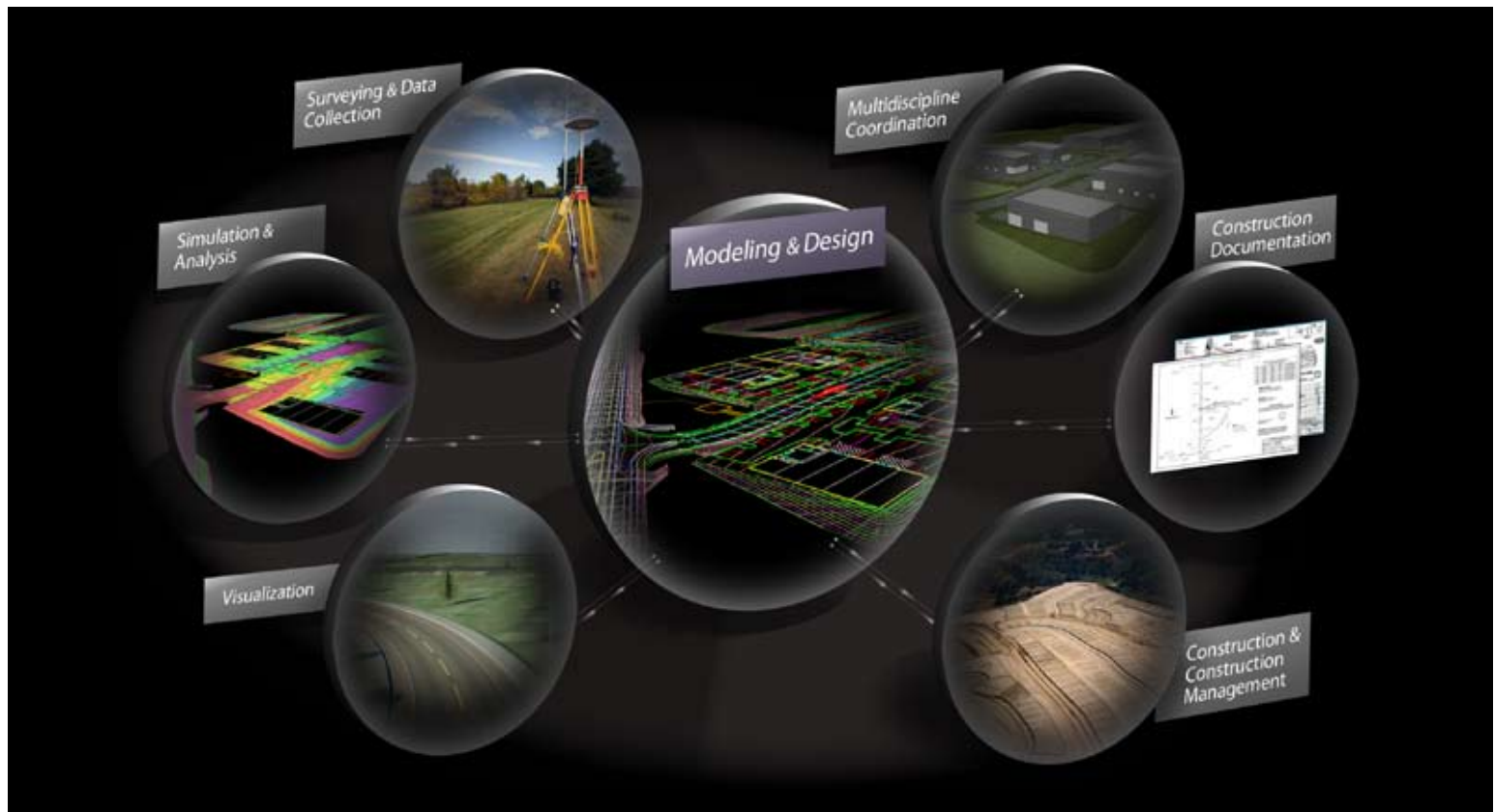
Land development professionals can improve their designs with tools that help them balance sustainability issues against the scope of a development project, weighing environmental constraints, aesthetic concerns, and construction costs. Working with intelligent data in the conceptual design phase helps save days of work versus using conventional paper maps. Visualization and simulation methods enable three-dimensional land planning for a deeper understanding of a site.

## Environmental Projects

From conceptual planning, modeling and review to permitting and final site design, Water Resources specialists use Autodesk Civil Engineering solutions to better balance the needs of development with the importance of natural resource protection and regulatory compliance. Environmental engineers can digitally map and analyze large areas, utilizing the vast amount of geospatial data that is readily available. Designers can use grading and corridor modeling tools to create channels, streams, ponds, embankments, and dams. Powerful visualization tools help teams communicate the intent of a project to clients, government agencies, and the public. Site remediation, land fills and waste management, water/waste water distribution are other examples of projects where Autodesk solutions offer great advantages to civil engineers and designers.

# Building Information Modeling for Civil Engineering

An integrated process built on coordinated, reliable information about a project from design through construction and into operations.



By adopting BIM, architects, engineers, contractors, and owners can easily create coordinated, digital design information and documentation; use that information to accurately visualize, simulate, and analyze performance, appearance, and cost; and reliably deliver the project faster, more economically, and with reduced environmental impact.

BIM for civil engineers follows this same approach, focusing on a digital model that can be used for coordination with surveyors, contractors, structural engineers, architects, and developers. The digital model integrates with analysis, design, and construction documentation throughout the civil engineering process.

## Modeling and Design

The digital model is at the center of BIM for civil engineering, helping enable teams to create accurate design information. The model built in this stage includes horizontal and vertical geometries, parcels, corridor models, grading, and pipe networks.

## Surveying and Data Collection

Surveying and data collection provide the necessary observations and field measurements to support both the conceptual and final design phases of a civil engineering project.

## Simulation and Analysis

Project teams can explore more what-if scenarios and hone designs through analysis and simulation with a model-centric approach. This results in better decision making and shortened production times.

## Multidiscipline Coordination

Civil engineers, architects and structural engineers can communicate directly with each other. Coordinating between disciplines reduces errors and minimizes redundancy.

## Visualization

Engineering teams can explore, validate, and communicate design intent at any stage in the project, helping them to effectively sell their proposal to stakeholders.

## Construction Documentation

The model-centric approach connects a design to its documentation, automating much of the process. Last-minute design changes are easily accommodated.

## Construction and Construction Management

Construction teams can directly access an accurate 3D model of a project, enabling them to engage GPS machine control grading methods employed by the contractor. Construction project management can provide effective collaboration between people, information, and processes.

We utilize Autodesk products in a number of our schemes from 3D Max Design to AutoCAD Civil 3D to Revit. The workflow is straightforward because the solutions are all geared to work together.

—Paul Wilson  
Digital Media Manager  
Scott Wilson  
Northern Ireland

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To learn more about Autodesk Civil Engineering Solutions, visit [www.autodesk.com/civil](http://www.autodesk.com/civil).

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