Explore. Analyze. Optimize.

AutoCAD®

Civil 3D®

A Powerful Building Information Modeling Solution for Civil Engineering

Use an integrated process built on a coordinated, consistent, digital model for design, analysis, visualization, documentation, and construction.

One Model. One Change. Multiple Updates. All Automatic.
Building information modeling (BIM) is an integrated process for exploring a project's key physical and functional characteristics digitally—before it's built. AutoCAD Civil 3D software is Autodesk's building information modeling solution for civil engineering. The software creates coordinated, data-rich models that enable you to conduct analysis from the earliest stages of design; better visualize and simulate real-world appearance, performance, and cost; and document designs more accurately.

AutoCAD Civil 3D produces a single model, with intelligent and dynamic data, enabling you to more quickly make a design change at any stage of the process. Make better-informed decisions and choose design alternatives based on analytical and performance results. More quickly and efficiently produce visualizations that remain in sync with design changes as they are made. The model automatically reflects any changes to drafting and annotation throughout the project.

Deliver More Innovative Project Solutions

AutoCAD Civil 3D offers a better way of designing, analyzing, and documenting civil engineering projects.

AutoCAD® Civil 3D® software enables you to deliver higher-quality transportation, land development, and environmental engineering projects faster. The software's purpose-built tools support building information modeling (BIM) processes and help reduce the time it takes to design, analyze, and implement changes. The result is that you can evaluate more what-if scenarios and optimize project performance.

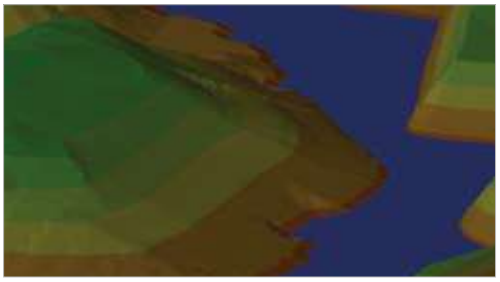
Civil 3D software's tools for surveying and design help streamline project workflows by automating time-consuming tasks.

Surveying

Survey functionality is fully integrated in Civil 3D, so you have a more consistent environment for all tasks, including direct import of raw survey data, least-squares adjustment, editing of survey observations, and automated creation of survey figures and surfaces. You can create and edit survey figure vertices interactively, and identify and edit crossing breaklines to avoid potential issues, resulting in points, survey figures, and surfaces that can be used throughout the project.

Surfaces and Grading

With Civil 3D, you can build surfaces from traditional survey data, such as points and breaklines. Utilize large data sets from aerial photogrammetry, laser scanning, and digital elevation models by taking advantage of the surface reduction tools. View the surface as contours or triangles, or create elevation and slope banding analysis. Use surfaces as a reference for creating intelligent objects that maintain dynamic relationships to the source data. Team members can use the powerful daylighting and grade projection tools to generate surface models for any type of grading projection.

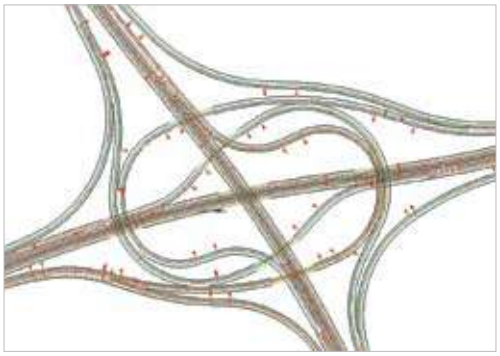


Parcel Layout

The software enables you to generate parcels by converting existing AutoCAD® software entities or by using more flexible layout tools to automate the process. A change to one parcel is automatically reflected in neighboring parcels. Advanced layout tools include options for measuring frontage at an offset and laying out parcels by minimum depth and width.

Corridor Modeling

Corridor modeling combines horizontal and vertical geometry with customizable cross sectional components to create a parametrically defined, dynamic 3D model of roads and other transportation systems. Use the included subassemblies—ranging from travel lanes, sidewalks, and ditches to complex lane components—or create your own based on a design standard. The model can be easily modified via visual interaction or by changing input parameters that define the roadway typical section. Unique characteristics of each subassembly allow the 3D model to target known features.



Pipes

Use rules-based tools to lay out sanitary and storm drainage systems. Break or join existing pipe networks or make changes to pipe networks and structures using graphical or numerical input and conduct interference checks. Plot and complete final drafting of the pipe network in plan, profile, and section views, and share pipe network information, such as material and size, with external analysis applications.

Earthwork Calculations

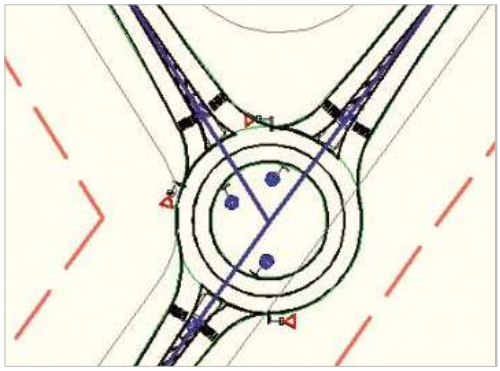
The software enables you to more quickly process earth volumes between your existing and proposed surfaces using composite volume or average end area methods. Generate mass haul diagrams for analyzing the distance over which cut and fill can balance, the amount of material to be moved, the direction of movement, and the identification of borrow pits and dump sites.

Criteria-Based Geometric Design

More quickly lay out plan and profile alignment geometry with design criteria based on government standards or customized for clients' needs. Design constraints alert users when standards violations occur, providing immediate feedback so necessary modifications can be made.

Purpose-Built Tools for Road and Highway Design

Transportation-specific design tools offer a more efficient way to design roads and highways. Build interactive intersection models that dynamically update. Focus on optimizing the design and know the production drawings and annotations stay up to date. Lay out roundabouts more quickly, including signage and striping, based on common design standards.



Quantity Takeoff Analysis

Extract material quantities from corridor models, or assign material types to lightposts, landscaping, and more. Run reports, or utilize built-in pay item lists to help generate bid-ready contract documents. Make better decisions about the cost of the project earlier in the design process with more accurate quantity takeoff tools.

Enjoy Higher-Quality Documentation and Better Coordination

Deliver more consistent construction documentation that remains synchronized even as design changes are made to the model.

By intelligently connecting design and documentation, AutoCAD Civil 3D helps you boost productivity and deliver higher-quality designs and construction documentation. Civil 3D's styles-based drafting helps reduce errors and promotes documentation consistency.

Production Drafting

Automatically generate production plans such as fully annotated section sheets, profiles, grading plans, and more. Most important, drafting can be generated across multiple drawings by using xrefs and data shortcuts. The result is a workflow that enables production sheets to use a single instance of the model. And if the model changes, you can more quickly synchronize all production sheets to reflect the update.

Plan Production

Comprehensive tools assist with the layout of cross section and plan and profile sheets. Fully integrated with the AutoCAD software's Sheet Set Manager, the Plans Production wizard automates the layout of sheets and matchlines along alignments, and generates plan and profile sheets based on the layout. The finished product is a series of drawing sheets ready for final annotation and plotting.

The map books functionality lays out sheets across your project while generating key maps and legends for your entire sheet set. This capability is ideal for laying out utility maps and grading plans.

Annotation

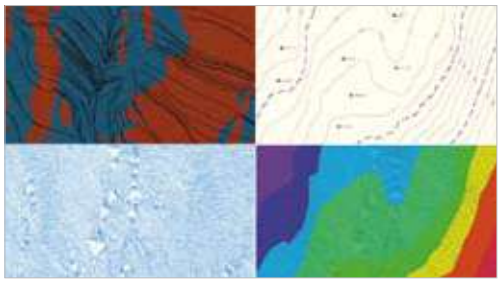
The software's annotation is derived directly from design objects or through external references, and updates automatically when the design changes. It also automatically responds to changes in drawing scale and view orientation, so labels update instantly when the plot scale is changed or rotated within different viewports.

Reporting

AutoCAD Civil 3D software provides more flexible, real-time, and extensible report generation. Because the data is derived directly from the model, reports can more easily be updated, providing quicker feedback as design changes are made.

Drafting Styles and Standards

AutoCAD Civil 3D provides country-specific CAD styles to control many aspects of drawing display. Colors, linetypes, contour increments, labeling, and much more are fully controlled by styles.



Data Shortcuts and References

With data shortcuts and xrefs, project members can share model data such as surfaces, alignments, and pipes, working off the same instance of a design object for multiple design tasks. Annotation can also be generated from the data shortcuts or directly through an xref to help production drafting remain in sync.

Advanced Data Management

For companies looking for advanced data management, the addition of Autodesk® Vault technology enhances data shortcut functionality with advanced change management, version control, user permissions, and archive control.

Design Review

Today, the engineering process is more complex than ever. Design review often involves team members who are not CAD software users yet are vital to the project. Publishing to DWF™ file format enables you to digitally extend design review to your team.

Multidiscipline Coordination

Import Autodesk® Revit® Architecture software building shells into AutoCAD Civil 3D to use information such as utility connection points, roof areas, and building entrances directly from architects. Similarly, transportation design engineers can pass information such as profiles, alignments, and surfaces directly to the structural engineers, to assist in the layout of bridges, box culverts, and other transportation structures in Autodesk® Revit® Structure software.

Optimize Performance with Analysis and Visualization

Explore more what-if scenarios earlier in the design process and communicate your winning ideas with best-in-class 3D visualization tools.

AutoCAD Civil 3D software's integrated analysis and visualization tools help you evaluate what-if scenarios, so you can realize innovative designs faster.

Stormwater Analysis and Simulation

Design and analyze stormwater systems with integrated simulation tools for collection systems, ponds, and culverts. Help reduce post-development runoff, and prepare reports to support sustainability requirements for stormwater quantity and quality. Evaluate more design alternatives, including innovative green best management practices to create a more environmentally sensitive and visually appealing design. Prepare more accurate construction documents, including hydraulic and energy grade lines, to assist in evaluating the design and helping to ensure public safety.

Geospatial Analysis and Mapping

AutoCAD Civil 3D includes geospatial analysis and mapping capabilities to support engineering-based workflows. Analyze spatial relationships between drawing objects. Extract or create new information by overlaying two or more topologies. Create and use buffers to select features within the specified buffer distance of other features. Use publicly available geospatial information to assist with site selection and better understand design constraints at the proposal stage of a project. Generate robust mapping exhibits to help meet requirements for sustainable design.

Point Clouds

Create point clouds in AutoCAD Civil 3D using data from LIDAR. Import and visualize point cloud information; stylize point data based on LAS classifications, RGB, elevation, and intensity; and use data to create surfaces, perform site surveys, and digitize as-built features for civil engineering design projects.

Sustainable Design

AutoCAD Civil 3D software can help to make civil engineering projects more sustainable. By combining the robust model of the site conditions and design constraints with the powerful ability to evaluate alternatives, you can consider more innovative and environmentally sensitive designs. AutoCAD Civil 3D includes tools to assist with many aspects of recognized sustainability initiatives, such as LEED®, by providing analysis to study linkage, project orientation, stormwater management alternatives, and more.

AutoCAD Platform

AutoCAD Civil 3D is built on the AutoCAD® platform, one of the world's leading CAD programs. Leverage the millions of professionally trained AutoCAD users worldwide to share and complete projects faster. AutoCAD software's DWG™ file format enables you to save and share files with confidence. DWG technology from Autodesk is the more accurate, and reliable way to store and share design data.

Visualization

Create more powerful visualizations that give stakeholders an opportunity to better envisage the project before it is built. Produce visualizations directly from the model for several design alternatives to help better understand the impact of the design on the community and the surrounding environment. Publish the model to Google Earth™ mapping service for even greater understanding of the project in context. Make near photorealistic renderings of your models using Autodesk® 3ds Max® Design software. Simulations using the Civil 3D model can be created in Autodesk® Navisworks® software, which can help project stakeholders better understand how the project will look and perform once built.

64-bit support

AutoCAD Civil 3D supports 64-bit operating systems, enabling the software to handle larger projects and improving performance and stability for memory-intensive tasks.

AutoCAD Civil 3D offers adaptable tools that enable me to provide innovative solutions to a seemingly endless array of civil engineering problems.

—Cristian Otter
Senior Designer, Large Infrastructure Department
Breijn B.V.
The Netherlands

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