
AutoCAD®

Civil 3D®
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.
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.

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.

Parcels
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.

Parcel Layout
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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.
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.

**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.

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

Deliver More Innovative Project Solutions

AutoCAD Civil 3D software enables you to achieve higher quality, productivity, and reduced project costs. Its advanced tools and capabilities are designed to streamline workflows, improve accuracy, and enhance project performance.

Enjoy Higher-Quality Documentation and Better Coordination

AutoCAD Civil 3D delivers more consistent construction documentation that remains synchronized even as design changes are made to the model.

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.

Deliver more consistent construction documentation that remains synchronized even as design changes are made to the model.
AutoCAD Civil 3D offers adaptable tools that enable me to provide innovative solutions to a seemingly endless array of civil engineering problems.

—Cristian Otter
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