

Start thinking in 3D.

AutoCAD[®]

Civil 3D[®] 2009



Autodesk[®]

A Better Way of Working

Working with AutoCAD® Civil 3D® software is quite simply a better way of designing, analyzing, and documenting civil engineering projects.

By using AutoCAD Civil 3D, we were able to show multiple design alternatives very quickly. That was a big advantage—and ultimately meant that we ended up with a better, more constructible design that everyone was happy with.

—Brian Christ
Project Engineer
The G. C. Wallace Companies

By intelligently connecting design and documentation, AutoCAD Civil 3D helps you boost productivity, deliver higher-quality designs and construction documentation, improve coordination, and clearly communicate design intent to win the next job. Whether you work on land development, transportation, or environmental projects, Civil 3D is the right choice for your organization.

Not Just Faster: Higher Quality

Working with Civil 3D reduces the time it takes to design, analyze, and implement changes so you can evaluate more what-if scenarios—realizing improved results faster. And with styles-based drafting you can reduce errors and deliver higher-quality, more consistent construction documentation.

On Schedule and on Budget

With Civil 3D, the entire team works from the same up-to-date model so they stay coordinated throughout all project phases. Through a scalable approach ranging from xrefs and data shortcuts to

integrated data management and version control, Civil 3D gives local and remote team members parallel access to the latest model, helping to keep projects on schedule and on budget.

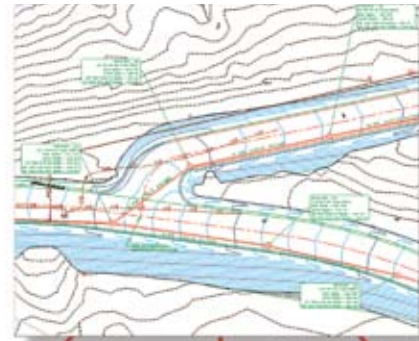
Communicate Winning Ideas

Smart design is not everything. You need to communicate your ideas to multiple stakeholders, including the public and review boards. With 3D visualization tools, Civil 3D makes it easy to create high-impact presentations that quickly communicate design intent to your audience.

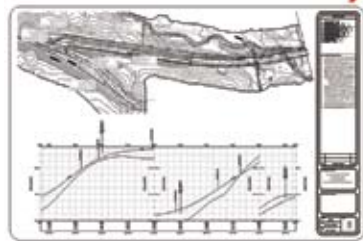
One Flexible Solution

With Civil 3D, you have the flexibility to handle a broad range of project types, including land development, transportation, and environmental. In addition, the software has the depth of functionality to support the technical needs of your entire project team—from civil engineers, designers, and drafters to surveyors.

**One Change.
Multiple Updates.
All Automatic.**



Model. Use the intelligent and dynamic tools to quickly make a design change at any stage of the project.



Drafting. The model automatically reflects any changes to drafting and annotation throughout the project. Sheets update with the most current and accurate design information, helping to reduce errors and omissions.



Visualization. Quickly and efficiently produce visualizations that remain in sync with design changes as they are made.

Reports. Whether it's a volume, structure, or pipe table, when a change to the design is made, all the crucial information for your reports and tables updates automatically.

Better Surveying, Design, and Analysis

From surveying to design and advanced analysis, AutoCAD Civil 3D streamlines and accelerates workflows with purpose-built tools for automating time-consuming tasks and predicting project performance.

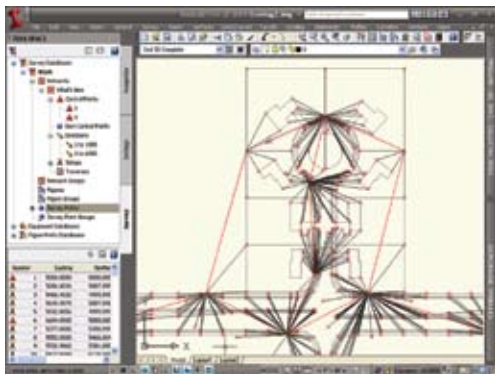
With Civil 3D, design and analysis changes are automatically reflected in the documentation so you can immediately understand the impact of changes, evaluate more alternatives, and achieve higher-quality results faster.

Preliminary Design

Pull in aerial imagery and terrain models from the Google Earth™ application; import geographic information system data such as road centerlines and wetlands boundaries; and then use the purpose-built design tools to lay out preliminary road and lot designs—all without hiring a survey crew. In the detailed design phase, you can swap out your conceptual surface for the more detailed surface and all model information updates automatically.

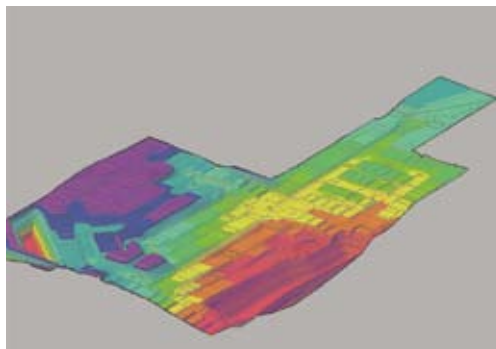
Surveying

Survey functionality is fully integrated into Civil 3D so you have a 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. Most important, the result—points, survey figures, and surfaces—can be used throughout the design process. Civil 3D also provides an interactive Map Check feature for identifying errors and omissions of segment labels, including legal descriptions and plats.



Surfaces

Civil 3D supports large surface models while maintaining dynamic relationships to source data, including contours, breaklines, corridor models, and grading objects. Once generated, the surface can be used to display contours, catchment areas, flow paths, elevation and slope analysis, and 3D render-ready views. Use surfaces as a reference for creating profiles, sections, grading plans, and corridors. Any change to the source data results in automatic updates to surfaces and references.



Data provided by Miller Legg & Associates

Grading

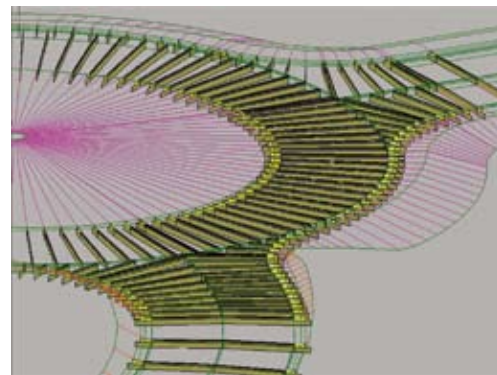
Civil 3D includes powerful daylighting and grade projection tools that team members can use to generate surface models for any type of grading projection. You also get easy-to-use graphical and tabular grading manipulation tools for use in the development of any surface. Civil 3D grading capabilities remain dynamically linked to corridor models and alignments/profiles, enabling you to solve difficult design challenges in new, more flexible ways.

Parcel Layout

Generate parcels by converting existing AutoCAD® polylines or by using flexible layout tools to automate the process. AutoCAD Civil 3D uses a topology to manage parcels so that a change to one parcel is automatically reflected in neighboring parcels.

Corridor Modeling

Corridor modeling combines horizontal and vertical geometric constraints with customizable cross sectional components called subassemblies to create a dynamic model of roads and other transportation systems. Civil 3D ships with hundreds of subassemblies ranging from travel lanes, sidewalks, and ditches to complex lane components. Or create your own to match any conceivable design standard. Civil 3D also enables you to directly use alignments, survey figures, feature lines, and AutoCAD polylines to define corridor transitions. Once the corridor model has been designed, use it to create proposed contours, cut/fill volumes and material totals, drafted sections, and more.



Criteria-Based Road Design

Civil 3D enables you to quickly lay out plan and profile alignment geometry with local design criteria that you specify. These constraints remain in place when using interactive “best fit,” PI-based (point of intersection), or highly flexible element-based layout approaches. Civil 3D also automatically analyzes horizontal and vertical curves while verifying against constraints such as stopping and passing sight distances, and headlight distance.

Pipes

Use rules-based tools to lay out sanitary and storm drainage systems. Make changes to pipes 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.



Data provided by JR Engineering

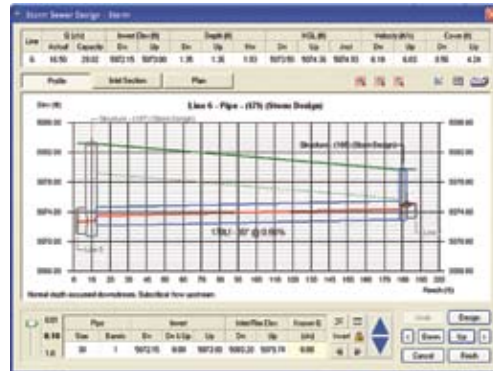
Mass Haul Diagrams

As the coordination between engineers and contractors becomes increasingly important, mass haul diagrams continue to be a vital tool for planning the movement, amount, and placement of material during construction. Use Civil 3D to 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.

Storm Water Hydraulics and Hydrology

Three new extensions are available to Civil 3D customers for storm water hydraulics and hydrology including storm sewer design, watershed analysis, detention pond modeling, and culvert analysis.

- Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® software is an easy-to-use, full-featured storm sewer design and analysis package.
- Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® software is a comprehensive solution for watershed analysis and detention pond design, from simple sites to complex watersheds with interconnected ponds.
- Hydraflow Express Extension for AutoCAD® Civil 3D® provides a collection of powerful calculators that solve everyday hydraulics and hydrology problems for culverts, channels, inlets, hydrology, and weirs.



Better Coordination

AutoCAD Civil 3D software enables your entire team to work from the same consistent, up-to-date model so they stay coordinated throughout all phases of the project, from survey to construction documentation. By providing a scalable approach to data management and team coordination, Civil 3D addresses the needs of any organization, regardless of size or organizational structure.

Data Shortcuts and References

Starting with xrefs and data shortcuts, project team members can share model data such as surfaces, alignments, and pipes and work off the same instance of a design object for multiple design tasks. For example, if a surveyor creates the existing ground surface, engineers and designers can connect to that data in parallel to conduct design tasks such as parcel layout or road design. Annotation can also be generated from the data shortcuts or directly through an xref to help ensure that production drafting remains in sync.

Advanced Data Management

For companies looking for more advanced data management for their civil engineering workflow, the addition of Autodesk® Vault technology, included with Civil 3D, enhances the data shortcut functionality with advanced change management, version control, user permissions, and archive control.

Better Documentation

Creating and delivering construction documentation is the final step for most civil engineering projects. It is also one of the most time-consuming, error-prone phases of a project.

Drafting Styles and Standards

Civil 3D provides an extensive library of country-specific CAD styles to control virtually every aspect of drawing display. Colors, linetypes, contour increments, labeling, and much more are fully controlled by styles. Civil 3D also provides a framework for customizing your own styles and standards to match the needs of your organization.

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 quickly synchronize all production sheets to reflect the update.

Plan Production

Civil 3D includes a comprehensive tool for the layout of plan and profile sheets. Fully integrated with the AutoCAD 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.

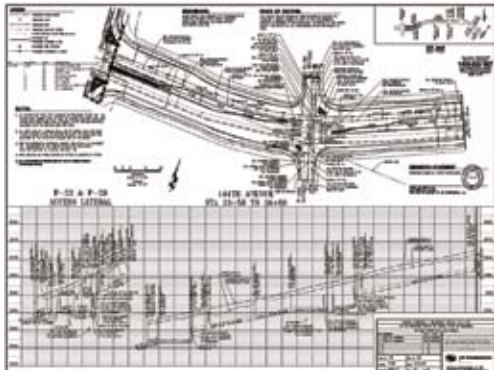
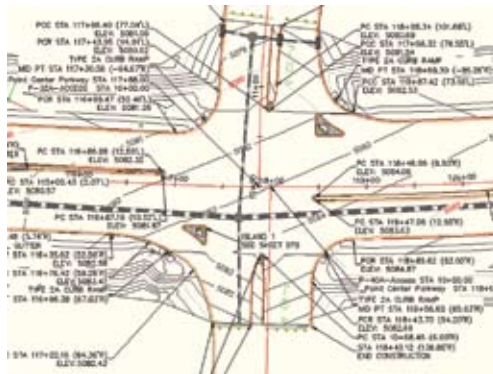


Image courtesy of JR Engineering

Annotation

Civil 3D annotation is derived directly from design objects, through external references, and updates automatically when the design changes. It also automatically responds to changes in drawing scale and view orientation so if you rotate or change the plot scale within different viewports, all labels update instantly.



Data provided by JR Engineering

Reporting

Civil 3D provides flexible, real-time, and extensible report generation directly in the software. And because the data is derived directly from the model, reports update dynamically, providing quick feedback as design changes are made.

Map Books

Designed for use with the Sheet Set Manager, the map books feature lays out sheets across your entire project while generating key maps and legends for your entire sheet set. This capability is ideal for laying out utility maps, grading plans, or even cross section sheets.

Design Review

Today, the engineering process from design through construction is more complex than ever. Design review often involves team members who are not CAD software users, yet who are vital to the project. Publishing to DWF™ format helps overcome these challenges by extending design review, digitally, to the entire team.

With Civil 3D we saw a significant time savings—upwards of 27 percent—in production plan development. We foresee that number increasing to upwards of 40 percent once we're past the learning curve.

—J. C. Davis
Project Manager
David Evans and Associates, Inc.

Visualization

Most civil engineering projects require you to deliver presentations to review boards and funding agencies. But preparing those presentations can be time consuming and disconnected from the design process. Civil 3D provides integrated tools for developing 3D visualizations directly from the model. You can even publish to Google Earth to quickly demonstrate how designs fit into the surrounding landscape.



Image courtesy of Tibi Architects and RDV Systems

The biggest advantage of AutoCAD Civil 3D is the return on investment we will see for years to come. The software has not only heightened our firm's internal design efficiencies and enhanced capabilities for client presentations, but it also distinguishes RGS among the next generation of civil engineers.

—Amy Eidemiller
Managing Principal
RGS

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