

## Top 10 Reasons

# AutoCAD Civil 3D software is the building information modeling (BIM) solution for civil engineering.

### 1. Geospatial Analysis Integration in Conceptual Design

Integration of imagery and geospatial data allows for identification of the optimal solution early in the overall process, helping to save time and money. Leverage imagery and terrain models from Google Earth™ mapping services and other sources to visualize the ecosystem of a project. Import geospatial data, such as soil types, land use information, and environmental constraints to quickly analyze and better understand the probable impacts of different alternatives.

### 2. Surveying and Coordinate Systems

Survey functionality, including direct import of raw survey data, least squares adjustments, coordinate system settings and transformations, editing of survey observations, automated creation of survey figures and surface creation, is fully integrated into AutoCAD Civil 3D software. This provides a more consistent design environment where points, survey figures, and surfaces can be used throughout the design process without having to manually translate coordinate systems or transfer data from a survey package to your civil engineering design software. Survey data introduced into a project will result in design elements updating automatically.

### 3. Surfaces, Grading, and Dynamic Relationships

AutoCAD Civil 3D includes terrain shaping tools that support large-surface models while maintaining dynamic relationships to source data, including contours, breaklines, corridor models, and grading objects. Use surfaces as references for creating profiles, sections, and corridors. Any change to the source data results in automatic updates to surfaces and references, helping you save time and reduce errors.

The powerful daylighting and grade projection tools can be used to generate surface models for any type of grading projection. Easy-to-use graphical and tabular grading manipulation tools help you develop any surface. Solve challenging design problems using grading capabilities that remain dynamically linked to corridor models and alignments/profiles.

#### **4. Building Information Modeling for Street and Highway Design**

Quickly lay out dynamic 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.

Create intelligent models of roads and other transportation systems using the corridor modeling functionality. Corridor modeling uses customizable cross-sectional components called subassemblies to create a dynamic model of various types of transportation systems. Directly use alignments, profiles, survey figures, feature lines and AutoCAD polylines to define corridor transitions and elevation constraints. Use the interactive intersection builder to create complex models through intersecting roads that remain dynamic as your designs change. Corridor models can ultimately be used to create proposed surfaces, earthwork volumes, material totals, drafted cross sections, and more.

#### **5. Intelligent Pipes Layout**

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 invert elevations, size, slope, and type with external analysis applications or use the Hydraflow extensions that are part of AutoCAD Civil 3D.

#### **6. Integrated Hydraulic and Hydrological Analysis for Stormwater Management**

Analyze pre- and post-development hydrologic conditions using integrated hydraulic and hydrology tools. Analyze your AutoCAD Civil 3D pipe networks models, culverts, and channels using hydrographs to make better and more sustainable stormwater design decisions. Generate robust reports for submittal to review agencies.

#### **7. Facilitate Team Coordination—Synchronizing Design Changes**

Your entire team can work from the same consistent, up-to-date model. Team members can stay better coordinated through all phases of the project, from survey to construction documentation. Using AutoCAD external references, data shortcuts, and Autodesk® Vault project team members can share individual model elements, such as surfaces, alignments, and pipes and work off the same instance of a design object for multiple design tasks. Design changes are synchronized using one model that can result in multiple updates across several drawings, all of which is automatic.

#### **8. Dynamic Quantity Takeoff and Earthwork Calculations**

Customizable pay item information can be directly imported into AutoCAD Civil 3D for use in assigning pay item values to objects in the drawing, including AutoCAD entities and AutoCAD Civil 3D model elements. Automatically calculate quantities and generate reports based on pay item values, which can then be exported for use in Autodesk® Quantity Takeoff software or formats used by AASHTO Trns\*port products.

The mass haul and earthwork features allow contractors and engineers to plan the movements, amounts, and placements of material during construction. As designs are changed, AutoCAD Civil 3D can quickly generate mass haul diagrams to help analyze the distance over which cut and fill can balance, the amount and direction of material to be moved, and the identification of borrow pits and dump sites.

## 9. Styles, CAD Standards, and Production Drafting

CAD and design standards are an important component of a project. Use the extensive library of country-specific CAD styles available to control virtually every aspect of drawing display such as colors, linetypes, contour increments, and robust labeling. AutoCAD Civil 3D provides a framework for customizing your own styles and standards to meet the specific needs of your organization. Automatically generate construction documents using the styles-based drafting environment to automate the creation of drafting while maintaining drafting standards. Use xrefs and data shortcuts to generate drafting across multiple drawings. When the model changes, the construction documentation is automatically synchronized to reflect the update.

## 10. Visualization and Better Communication of Design Intent

Create simple and more effective visualizations by publishing model information to Google Earth or by creating 3D DWF files, to communicate design intent to nontechnical audiences. Develop robust reproductions of corridor models using render materials that correspond to specific corridor elements in the model, such as asphalt, concrete, or gravel. Create photorealistic animations and simulations leveraging AutoCAD Civil 3D models within Autodesk® 3ds Max® Design.

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