

Autodesk®

Solutions for Roads and Highways

The road to success.



Autodesk®

Navigate the Bumps in the Road

Autodesk provides a solution for roads and highways design that helps enable better, faster, and more economical project delivery.

Better

Autodesk® solutions for roads and highways can help transportation designers and engineers achieve goals more quickly and at a lower cost, helping to make better use of available funding.

Faster

Autodesk solutions for roads and highways help reduce the time it takes for tasks in all phases of a transportation project, more rapidly assimilate data from a variety of sources, and evaluate more what-if scenarios—helping you accelerate the environmental approval process and shorten the project lifecycle.

Cheaper

Autodesk solutions for roads and highways enable you to more quickly explore alternatives and perform clash detection, helping you to reduce errors and omissions, and lower construction costs.

A general rule of thumb:

Correcting a change in conceptual design costs: \$1,000

Correcting a change after detail design costs: \$10,000

Correcting a change in construction costs: \$100,000!

Transportation engineering professionals around the world are facing many challenges, including increased economic pressures, a focus on sustainable design, and a declining talent pool.

Economic Pressure

Autodesk solutions for roads and highways offer integrated tools to help stretch dollars further, which is important in a time when the worldwide economic downturn is affecting the funding of infrastructure projects. The integrated tools enable methods to help optimize designs, which is important with the rising cost of materials such as concrete, steel, and asphalt.

Volume of Projects

In response to the economic downturn, governments around the world are committing unprecedented funding for transportation infrastructure projects to help jumpstart the economy. This is leading to an increase in the volume of projects and a further need for Autodesk comprehensive solutions to help increase efficiency.



Environmental Concerns

Growing environmental concerns, including storm-water contamination, global warming, and energy shortages, require the design of infrastructure projects to minimize consumption and maximize sustainability. From the first stage of the design process, green highway planning takes into account many disparate factors, including the impact the route will have on the ecosystem. The Autodesk roads and highways solution helps enable green highway design, which relies on detailed analysis tools and more effective communication.



Talent Acquisition, Training, and Retention

In many geographic areas, the current workforce is nearing retirement. Competition for the limited number of skilled employees is increasing between public and private transportation sectors as well as other technical professions. Use of up-to-date, advanced technology has become a key element in attracting and retaining talent. More than two million students are trained per year on Autodesk software, improving your chance of recruiting trained staff—which helps to minimize out-of-pocket expenses for you and your business.

Smoother workflow, fewer roadblocks

More efficiently and effectively address common workflow problems facing transportation engineering professionals.

Autodesk solutions for roads and highways provide a powerful building information modeling (BIM) process to help users design and build transportation projects better, faster, and more economically.

The ability to more rapidly explore alternatives helps shorten production time, lowering your design costs. Minimize errors and omissions, and lower construction costs. Deliver high-quality, consistent construction documentation with design and crafting that remain synchronized.



Simplify Data-Gathering Tasks

Forget the paper maps and specialized expertise. Autodesk software enables you to put it all together in one place. More easily integrate data from different coordinate systems and sources—including geospatial databases—helping to reduce manpower.

Use Conceptual Design Data Downstream

Leverage the conceptual design model in the detail design phase without duplicating your effort. Design team members have easier access to the data for the selected alternative.

Manage Design Changes with Ease

Autodesk data management tools enable real-time data collaboration. The result is more efficient coordination of design changes from start to finish. Changes made in one area are reflected throughout the model and are immediately accessible to others.

Model Rehabilitation Parametrically

With Autodesk solutions, analysis is part of the equation. Typical sections for rehabilitation interact with the irregularities of existing conditions in a way you define, helping you to minimize consumption and save money on material costs.



Integrate Design and Construction

The data model created and updated in detailed design can be utilized directly in construction, without exports and translations. Reports can be generated in the field, as needed.

Final 3D models can be delivered directly to the contractor for automated machine guidance. Class detection can be performed using data integrated from multiple sources.

Construction project management tools connect people, information, and processes.



Transfer Information Digitally

With a BIM solution, changes made at any point in the project, including construction, impact the information model directly.

Information is readily available to be used in highway asset management, helping you make good maintenance and operations decisions.

Design. Build. Manage.

Enhanced collaboration supports the full transportation lifecycle from conceptual design through to construction, operations, and asset management.

Gain a competitive edge and minimize redundancy by using the model across the lifecycle to design innovative projects, more accurately visualize appearance, and simulate real-world performance—delivering projects more on time and on budget.

Conceptual Design

More quickly iterate through different design options and more easily integrate information from many different sources, including geospatial databases, for conducting an impact analysis.

Explore Options

AutoCAD® Civil 3D® software provides a powerful set of tools to more efficiently lay out preliminary corridors and explore more what-if scenarios.

Drive Up Investment Value

AutoCAD® Map 3D software and AutoCAD® Raster Design software help to increase the value of your IT investment. Share information with a larger audience beyond the CAD or GIS departments to optimize designs faster.

Public Participation Meetings

Help community stakeholders better understand project performance, design intent, and impacts to the community and surrounding environment.

Visualize Your Designs

Autodesk® 3ds Max® Design software helps enable you to explore, validate, and communicate civil designs more clearly and accurately before they are real.

Create Impressive Graphics

Autodesk® Impression software provides the tools to create presentation-ready graphics straight from CAD drawings.



Detailed Design, Analysis, and Documentation

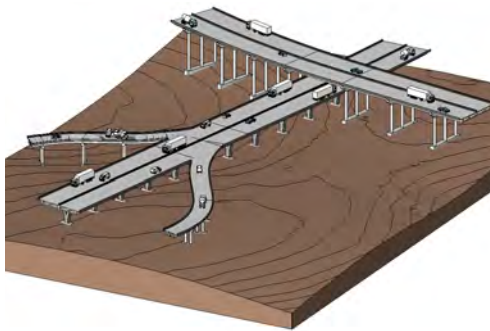
Powerful roadway design tools and a coordinated model help enable a cost-effective, iterative process to improve and optimize the design based on analyses.

Synchronize Updates

AutoCAD Civil 3D software and AutoCAD® Civil software enable communication of design changes to team members automatically while synchronizing updates across reporting and documentation.

Facilitate Project Collaboration

Autodesk® Revit® Structure software interoperates with AutoCAD Civil 3D, providing a mechanism for the civil engineer and the structural engineer to exchange information more easily.



Construction

Leverage the power of BIM to help reduce errors and omissions in the field.

Accommodate Changes on the Fly

Use AutoCAD Civil 3D to make modifications in the field that can immediately change the 3D model used by automated machine guidance.

Experience the Whole Project

Autodesk® Navisworks® software can aggregate existing design data in order to help visualize the whole project, simulate scheduling, and identify interferences to promote better insight and predictability in the field.

Streamline Communication

Autodesk® Constructware® software and Autodesk® Buzzsaw® software assist in streamlining communication with on-demand collaborative project management tools that help enable construction managers to more successfully execute projects based on timely decisions and more accurate information.

Operations, Maintenance, and Asset Management

Make better decisions in the future by populating geospatial databases and asset management systems with as-built model information. Instead of starting over, the next project continues from the last.

Complete the Cycle

AutoCAD Civil 3D includes robust support to provide as-built model data back to GIS file formats. No data translations or reentry is needed.

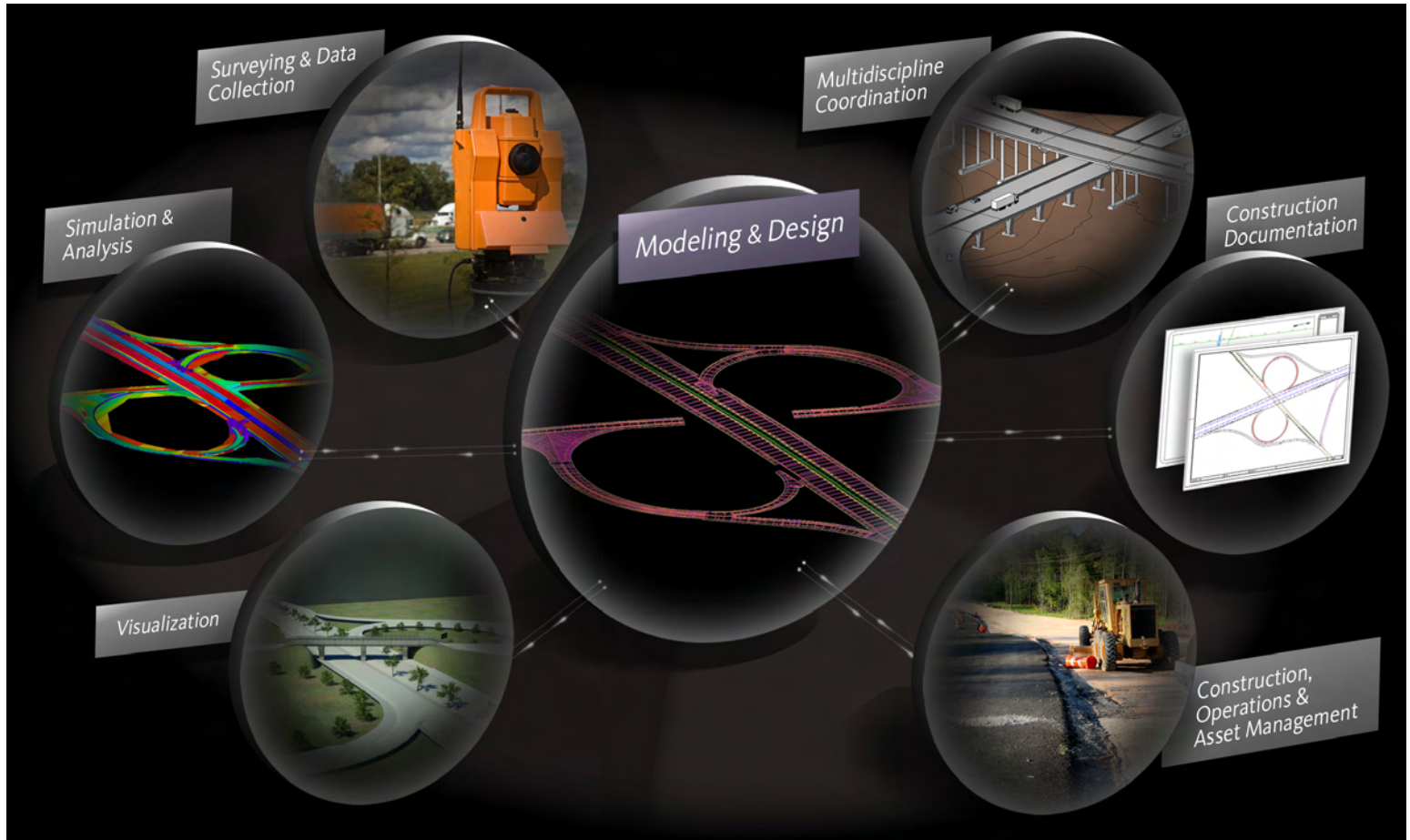
Manage Infrastructure Data

Autodesk® Topobase® software integrates design and operations, providing accurate information about the location and status of your assets. Maintenance staff is afforded information they need to visualize and resolve service requests quickly.

Access Information

Autodesk MapGuide® Enterprise software provides a solution to deliver CAD and GIS information via the web to assist in operations and maintenance activities.

Building Information Modeling (BIM) for Roads and Highways



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

The transportation industry is facing unprecedented challenges, and confronting those challenges requires innovative ways to design, build, and operate our roads and highways.

The global transportation engineering community is quickly moving away from traditional ways of doing business and standardizing on new methods and technologies for project delivery.

Using Autodesk's BIM solution, roadways can be designed for optimal performance, constructed with improved coordination, and operated and maintained with confidence.

Improve Operational Efficiency

BIM has led to tremendous gains in efficiency and quality. The principles of BIM apply to everything in the built environment—including roads and highways. BIM is an integrated workflow that allows engineers and builders to explore projects digitally before they are built. With BIM, coordinated, reliable information is used throughout the process to design innovative projects, accurately visualize appearance for better communication, and simulate real-world performance to better understand cost, scheduling, and environmental impact.

Keep Traffic Moving

Autodesk road and highway design solutions enable a powerful BIM process to help design and build transportation projects better, faster, and cheaper.

The digital model is at the center, enabling teams to create more accurate design information. The model is then used for:

- Surveying and data collection
- Simulation and analysis
- Multidiscipline coordination
- Visualization
- Construction documentation
- Construction, operations, and asset management

With Autodesk® civil engineering solutions, we can now focus more on the details of our designs. When priorities suddenly change, we can accommodate them and keep the project on target and on time.

—Michael Flesch
Beloit City Engineer
Beloit, WI

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