Changjiang Institute of Survey, Planning, Design and Research

Customer Success Story

AutoCAD[®] Civil 3D[®]

Civil 3D helped increase our efficiency by simplifying the design process and enabling us to speed up the progress of the irrigation work by approximately 50 percent.

Leng Xinghuo
Project Manager
Changjiang Institute of Survey,
Planning, Design and Research

Work faster—with greater accuracy.

Autodesk Civil 3D helps CISPDR increase efficiency on world's largest water conservancy project.



Photo of the South-to-North Diversion project (central route). Image courtesy of the Changjiang Institute of Survey, Planning, Design and Research.

Project Summary

For more than 50 years, the Changjiang Institute of Survey, Planning, Design and Research (CISPDR) has delivered engineering, surveying, planning, design, and construction services on major public works projects throughout the People's Republic of China and in more than 20 countries around the world. CISPDR has developed particular expertise in the design of mega-infrastructure projects. That is why the firm's employees have taken a leading role on some of the nation's most prominent and ambitious projects, including the Three Gorges Dam-the world's largest hydropower project-and the Southto-North Water Diversion Project, a \$64-billion, 50-year effort to divert water from river basins in southern China to arid regions in the north, where serious water shortages restrict economic growth and threaten the environment. Topping even the massive Three Gorges Dam project in size and complexity, this project is one of the largest water conservancy project ever undertaken in the world.

The Challenge

CISPDR is responsible for overseeing surveying and design on the project's 1,245-kilometer central route, which diverts water from the Danjiangkou Reservoir in the south to Beijing via super-long-distance channels, including a tunnel underneath the Yellow River, the world's sixth-longest river. Because the project is one of China's three key strategic projects and has received considerable international attention, CISPDR and the other project team members must meet rigorous performance standards at every stage—from surveying and mapping through design and construction—and collaborate closely with a multitude of local and national design institutes, river commissions, and government ministries.

To complete a project of such complexity and magnitude, CISPDR determined that it needed a complete, fully integrated design solution rather than a selection of isolated software applications. After careful review, the firm selected AutoCAD[®] Civil 3D[®] software, a building information modeling (BIM) solution from Autodesk for civil engineering design, analysis, and simulation.

Autodesk[®]

With help from Civil 3D software, CISPDR accelerated completion of the project's irrigation work.

The Solution

CISPDR relied on Civil 3D for quick, efficient, and more accurate creation of 3D models and channel designs throughout the surveying and mapping, soil excavation, site planning, and road design processes. To optimize Civil 3D for the specific needs of the project, CISPDR asked Autodesk for assistance in customizing the software based on the drafting standards of Chinese engineers.

The investment in Civil 3D paid off quickly. On past mega-projects with complex landscape geometries, CISPDR engineers using traditional design software had to design slowly, or risk making small errors in one location that would have a large ripple effect elsewhere. On the South-to-North project, however, the engineers were able to use Civil 3D to simulate complex, real-world environments more accurately, enabling them to test the feasibility of the designs and to identify—and correct—potential construction problems earlier in the design process.

Whenever the designers did have to make a change, Civil 3D automatically updated all other interrelated design components in real time, helping to provide better data accuracy and consistency, while mitigating time wasted searching for and manually updating all corresponding data. "Civil 3D helped increase our efficiency by simplifying the design process and enabling us to speed up the progress of the irrigation work by approximately 50 percent," says Leng Xinghuo, project manager for CISPDR. BIM with Civil 3D also played a valuable role in the firm's practice of sustainable design on the project by enabling the project team to view the entire project by phases, helping to prevent unnecessary waste of personnel, capital, and resources.

The Result

When complete, the South-to-North Water Diversion Project will significantly improve water resource conditions in northern and northwestern China, providing a fundamental, sustainable solution to water shortages in those regions, promoting social stability, and encouraging sustained economic growth.

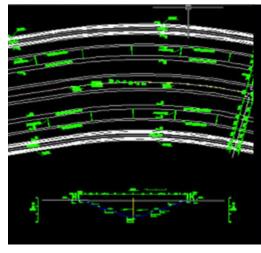
After using Autodesk products on the South-to-North project, as well as several others, many of the CISPDR engineers now view Autodesk as a reliable partner, capable of helping them simulate field conditions to higher levels of accuracy and realism, while also automating many of the time-consuming, repetitive tasks that engineers perform and enhancing productivity. "Using Autodesk BIM software, each one of us is now able to complete within less than a week what previously four to five of us could only complete in two to three months," says Leng. "It has helped to greatly increase our work efficiency."

For more information, visit **www.autodesk.com/** civil3d.



Rendering of the South-to-North Diversion project. Image courtesy of the Changjiang Institute of Survey, Planning, Design and Research.

Channel design in AutoCAD Civil 3D software. Image courtesy of the Changjiang Institute of Survey, Planning, Design and Research.



Using Autodesk BIM software, each one of us is now able to complete within less than a week what previously four to five of us could only complete in two to three months. It has helped to greatly increase our work efficiency.

—Leng Xinghuo Project Manager Changjiang Institute of Survey, Planning, Design and Research

Autodesk[®]

Autodesk, AutoCAD, and Civil 3D are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2010 Autodesk, Inc. All rights reserved.