Company Name

HUNAN CONSTRUCTION ENGINEERING GROUP

Project Location

Hunan, China

Project Software

Autodesk® AutoCAD®
Autodesk® Revit®
Autodesk® Navisworks®
Autodesk® BIM 360™ Glue®
Autodesk® BIM 360™ Layout
Autodesk® Point Layout

Mexi Lake International New City Island – BIM application for construction surveying and mapping

Autodesk assists HNCEG to accomplish the largest double-spiral steel structure building in the world

BIM application for construction surveying and mapping connects design and construction. It makes BIM data go through different phases. It helps a lot in complicated construction projects like skyscrapers, special-shaped steel structures, pipeline complex and underground works. BIM + Intelligent Total Station, as one of the 16 special BIM topics HNCEG focuses on, is an important part of our BIM practice.

– **Tuo Shi**
Chief Engineer, BIM Center
HNCEG

Abstract

HUNAN CONSTRUCTION ENGINEERING GROUP (HNCEG) is a large state-owned enterprise that has developed comprehensive capabilities of building & installation, road & bridge construction, survey & design, scientific research, and real estate development. In addition, HNCEG has gained special permits for general contract of overseas business, labor cooperation and import & export trade business. With more than 218,000 employees, HNCEG is a large enterprise with assets of RMB 13 Billion. As one of “Top 500 China Enterprises” and “Top 80 China Contractors”, HNCEG has successfully completed a great number of various design and construction projects ever since it’s founded in 1952.

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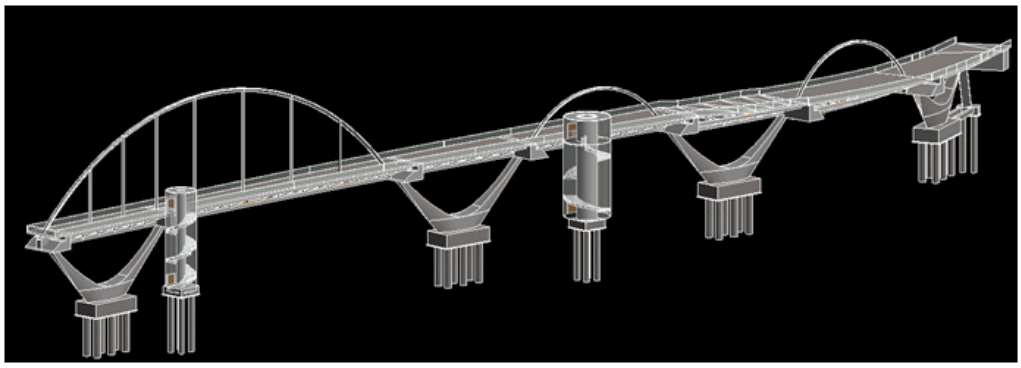
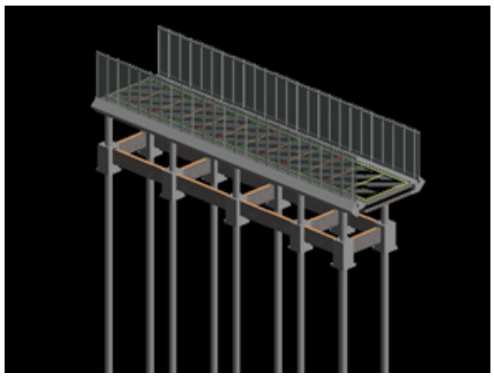
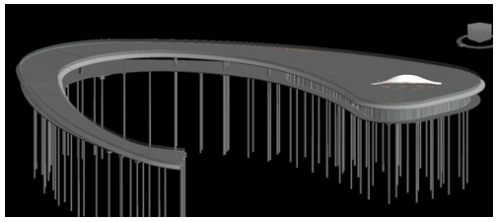
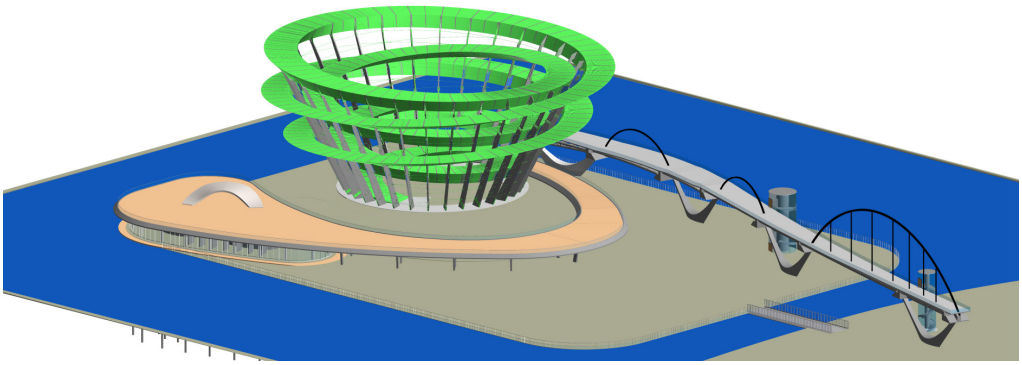






Mexi Lake International New City Island is a city complex which consists of 1 double-spiral observatory, 1 service center, 1 flyover, 1 bridge and outer plaza. With steel volume over 7,000 tons, the project is the largest double-spiral steel structure building in the world. The standards and requirements of assembling, installation and monitoring are high and strict due to the unique and complicated structure. The traditional setting-out method cannot satisfy the requirements caused by technical complexity and stringent project schedule. So the project team tried and adopted a new BIM technology based on cloud --- the combination of Autodesk BIM 360 and TOPCON LN-100 BIM layout robotic total station.

They picked up setting point in Autodesk Revit models first, then uploaded model and points information to cloud through Autodesk BIM 360 Glue, meanwhile synchronized these information to Autodesk BIM 360 Layout, thus they could log in Autodesk BIM 360 Layout on iPad to download models and setting point information, and connected to TOPCON LN-100 to do on-site surveying and mapping.



As a result, this workflow not only deepened connection between design and construction, but also identified design problems in advance and avoided rework. It significantly increased efficiency of steel structure construction in this kind of complex projects. For Mexi Lake International New City Island Project, the work speed was quickened to 200-250 setting point/day. Only 1-2 team members needed to do each lofting, compared to 3-4 in traditional method. It saved about 50% total labor and more than 20% worktime.

HNCEG overcomes all difficulties step by step with their own experiences, IT capability and smart combination of software and hardware. HNCEG established specific BIM team for this project, which played an important role. Furthermore, HNCEG summarizes a set of seamless operation workflow in Mexi Lake International New City Island Project, which simplified setting-out and positioning, and also helped transferring data from design to construction stage. Autodesk endeavors to assist HNCEG to complete this giant project and fulfill the seamless link of BIM model with site construction.