CASE STUDY

Point Cloud conversion for underground railway tunnel, UK

Industry

BIM AEC industry

Overview

Geometrically complex underground railway tunnel with multiple levels and nodes in all directions was scanned, and point cloud conversion with higher level of detailed 3D modeling within short time frame was delivered.

Business Needs

- As-built BIM information for renovation, maintenance, and facility management
- Bring the existing underground tunnel structure into the 3D BIM process
- Analyzing deformations of tunnel linings

Client

Leading Survey Company

Challenges

- Geometrically complex tunnel with several levels and nodes in all directions
- Record and retain architectural features of the tunnel
- Higher level of detailed modeling within a very short time frame

Hitech’s Solution

Our 3D imaging experts leveraged Revit to deliver BIM outputs for underground railway tunnel, and conventional outputs of elevators and other excess points. We also created specific families for Structure elements, architecture elements and MEP.
Hitech’s Advantage

- Transforming designs and inter-disciplinary collaboration for architects, engineers and contractors; supporting their sustainable building strategy
- Virtual design capabilities, project management skills and domain knowledge to accelerate building design & development
- State-of-the-art modeling capabilities to restore dated design data, explore design alternatives, and revamp existing designs
- Global presence: U.S., UK, Australia, Canada and the Middle East

Approach

- Teams used Revit to deliver BIM outputs for the tunnel model, duly populated with associated equipments and services
- Conventional outputs of elevators and several other access points of the tunnel were prepared and delivered
- Team created specific Revit families for structural and architectural elements along with MEP part models classified category wise as per BIM modeling standards
- Structure elements, architecture elements and MEP models as per standard BIM modeling category were integrated in to the model

Benefit

- Existing model further used for renovation and design additions
- Co-ordination of existing and proposed new MEP services
- Avoided interdisciplinary clashes

Client Speaks

“The underground railway tunnel project was a stepping stone to the next level of BIM model and Hitech assisted us in accomplishing it, making us a part of the prestigious infrastructure project of such high importance.”

Results

- Smart monitoring of underground railway tunnel to determine tunnel deformation
- Safe operation of trains and upgrading of freight capacity