INFRASTRUCTURE CONSTRUCTION IN RUSSIA





ГРУППА КОМПАНИЙ МОСПРОЕКТ-3



THE GROUP OF COMPANIES MOSPROEKT-3





OF BIM STANDARDS IN RUSSIA

150

CERTIFICATES AND PATENTS



MOSCOW METRO MEGA PROJECT: 2010-2023



2021 - 2023

57,5 км

OF MOSCOW METRO LINES

24

MOSCOW METRO STATIONS



BIM: SOKOLNICHESKAYA LINE



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING BIM-TECHNOLOGY

The unique experience of developing of a digital information model of a metro line in Russia. Since an above-ground section of the route, which is located on the developing territory of the New Moscow, is integrated with a road-tunnel, it was necessary to minimize site area and thus increase the density of engineering communications.

Chapters designed using BIM:



- Architectural solutions
- Structural solutions



Full spectrum of engineering systems including heating, ventilation, air conditioning, power supply, water supply and water disposal





BIM: SOKOLNICHESKAYA LINE



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING BIM-TECHNOLOGY

The use of BIM-technology makes it possible to shorten construction period and to use station space in the most rational way. There was created space engineering solutions monitoring system, basis for model elements and equipment and BIM-design normative framework.







BIM: TROITSKAYA LINE



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING BIM-TECHNOLOGY

THE UNIQUE EXPERIENCE OF DEVELOPING OF A DIGITAL INFORMATION MODEL OF A METRO LINE IN RUSSIA, WHICH IS LOCATED IN THE EXISTING URBAN DEVELOPMENT WITH A HIGH DENSITY OF UTILITIES



Expansion in the number of information modelling tools



Digital model for automatic generation of all drawing views, specifications, issuance of sets of documents for major disciplines directly from information model, bypassing classic packages



Special components of information models, the prototypes of future location of utilities in structural elements



Corporate regulatory documents development and implementation



BIM: TROITSKAYA LINE



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING BIM-TECHNOLOGY

DESIGN SOLUTIONS WERE RECOGNIZED AS THE BEST IN DOMESTIC PRACTICE BY RUSSIAN TUNNELING ASSOCIATION

Information model that is linked to a PERT chart makes it possible to construct a facility without any traffic disruption and utilities resurfacing







BIM SOFTWARE PRODUCTS: TROITSKAYA LINE

BIM EXTENDED FUNCTIONALITY WHEN MODELLING MOSCOW METRO FACILITIES

THE GROUP OF COMPANIES MOSPROEKT-3 USES BIM IN **CONJUNCTION WITH COMPLEX ANALYTIC AND CALCULATION** METHODS CREATING A COMMON DATA ENVIRONMENT FOR **DEVELOPING AN INFORMATION MODEL**

Fire growth and evacuation modelling

Digital model is used to analyze fire growth and evacuation and makes it possible to decrease potential risk of a designed facility at an early stage. A model is converted to an open data format IFC, which then is imported from Common Data Environment (CDE) into a highly specialized software, thus shortening the period and increasing the quality of the estimates.

Geotechnical modelling

BIM is also used for geotechnical design and structure-medium interaction assessment, as well as for transport impact on the surrounding development assessment. The data obtained is then used to create complex engineering geological models. Based on the results of geotechnical calculation, the design solutions adjustment is made along with making some changes in an information model.



EUROPE – WESTERN CHINA INTERNATIONAL TRANSIT CORRIDOR



A LARGE-SCALE TRANSCONTINENTAL **PROJECT, THE ALTERNATIVE TO EXISTING SEA AND RAILWAY ROUTES**

LAUNCH IN 2024

2 300 км **TOTAL LENGTH ON THE TERRITORY OF RUSSIA**





EUROPE – WESTERN CHINA: INFORMATION MODELLING



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING ENGINEERING GEOLOGICAL MODELS

There was developed the digital model, which is unique for Russian infrastructure projects. Based on this model there was forecasted future karst deformations. The data obtained formed the basis for engineering protection project.

Complex engineering geological model contains the full spectrum of initial data:



geologic record



digital model of relief



geophysical exploration surveys data, including electrical resistivity tomography (ERT), seismography, vertical electrical sounding



groundwater exploration surveys



EUROPE – WESTERN CHINA: INFORMATION MODELLING



IMPROVING THE QUALITY OF INFRASTRUCTURE CONSTRUCTION BY USING ENGINEERING GEOLOGICAL MODELS

ENGINEERING EVALUATION OF GEOLOGICAL SITUATION WAS CONDUCTED AT A QUALITATIVELY NEW LEVEL, THEREBY ENSURING BETTER ACCURACY AND EFFICIENCY OF DESIGN SOLUTIONS

Complex model can be integrated into a building information model, thereby increasing its informativeness and quality. Engineering geological model can be used by a Customer at the facility operational phase. It can also be integrated with monitoring systems for automatic update of some model parameters.







EUROPE – WESTERN CHINA: DIGITAL PRODUCTS AND SURVEY INVESTIGATION



REMOTE SOUNDING METHODS

The creation of 3D terrain model using digital aerial photography method

Digital interpretation of data in order to detect areas with a risk of development of any dangerous engineering-geological processes.

Interferometric analysis of satellite data in order to detect areas of active development of dangerous geological processes.







EUROPE – WESTERN CHINA: INNOVATIVE MONITORING SYSTEM



THE UNIQUE POTENTIAL KARST DEFORMATION MONITORING **SYSTEM**

Innovative geophysical monitoring system, which automates integrated data collection on soil mass condition. It makes possible to detect future karst deformations at an early stage and to avert disastrous consequences.

