

# The facilities which have been constructed and are constructed under projects of the Institute



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## More than 85 years of successful work!

Today, Design and Survey Institute JSC “Mosgiptrotrans” is one of the leading institutes of the Russian transport industry.

We implement complex efficient high technology projects which ensure the safety and reliability of construction works and operation, and meet interests of customers and society.



Kievsky Terminal in Moscow

## Our pride

- We are the first designer of high-speed rail lines in the Russian Federation;
- We were the General Designer of the Baikal-Amur Mainline (BAM);
- We have implemented projects in **43** foreign countries;
- We have designed:
  - about **19 000** km of new railways;
  - more than **5 500** km of reconstructed railways;
  - about **900** railway stations;
  - more than **20 000** km of fiber-optic lines.

## Our awards



On November 5, 1981 by the decree of the Supreme Soviet of the USSR No 5936-X Mosgiptrotrans was awarded the Order of the Red Banner of Labour for achievements in surveying and designing railway facilities and some executive officers and members of the staff of the Institute received orders and medals.



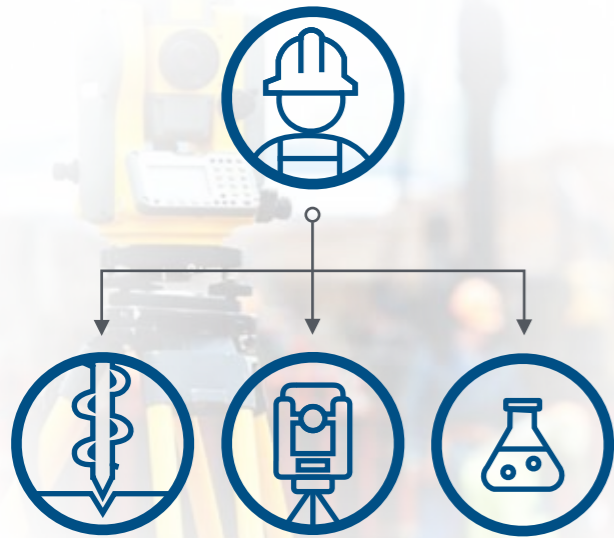
In recognition of high achievements in All-Union Social Competition and completion of Economic and Social Development Plan for 1974, 1979 and 1980, Mosgiptrotrans was awarded the Challenge Red Banner of the Central Committee of the Communist Party of the Soviet Union, the Council of Ministers of the USSR, the All-Union Central Soviet of Trade Unions, the Central Committee of All-Union Leninist Young Communist League and the Ministry of Transport Construction of the USSR, and also the Red Banner of Leningradsky and Babushkinsky District Committees of the Communist Party of the Soviet Union and District Councils, memorable sign, and entered the Honours Board in the Hall of Fame of VDNH of the USSR.



The Institute was listed in the Moscow Book of Honours for effective and quality work.

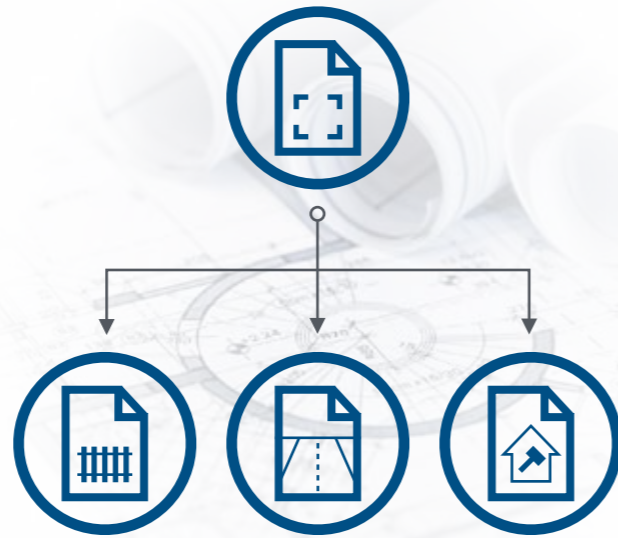


## Our primary specialization



Various types of surveying:

Topographical, geological, environmental, hydrometeorological surveys; building materials testing; ground water finding for water supply; archeological studies.



Integrated design of railway and highway infrastructure and construction of industrial and civil facilities.

## Equipment capability



**52** wheeled-caterpillar vehicles

including:



**14** drilling machines



**≈ 34 000 m<sup>2</sup>**  
administration building

## Certificate of Conformity to the requirements of GOST



ISO 9001:2015  
Certificate of Conformity



ISO 14001:2004  
Certificate of Conformity



OHSAS 18001:2007  
Certificate of Conformity



Certificate of compliance  
"CORPORATE IMAGE  
AND GOODWILL"



Certificate of admission to a particular type or types of works that have an impact on the safety of objects of capital construction for engineering surveys No.0022-09-2017-7717023413-П-065 dated 12.04.2017



Certificate of admission to a particular type or types of works that have an impact on the safety of objects of capital construction for preparation of the project documentation No.0012/5-2017-7717023413-И-023 dated 12.04.2017



Certificate of the Union of Railway Builders



## Our employees are our greatest asset!

*Our operating departments perform:*

- Preparation of area planning and demarcation documentation;
- Engineering surveys, measurements, explorations and laboratory studies;
- Design of:
  - linear transport facilities;
  - railway stations and hubs;
  - transport interchange hubs, railway terminals, depots etc.;
  - artificial structures;
  - electrification and power supply systems;
  - railway automation and telemechanics systems;
  - communications and data transmission systems;
  - urban planning solutions;
  - residential, non-residential and industrial buildings (for non-transport purposes);
  - all types of engineering systems, internal and external networks;
  - facilities of the Ministry of Defense and other power-wielding agencies;
  - water supply from groundwater (hydrogeology);
- Development of Construction Management Plans and estimate documentation.



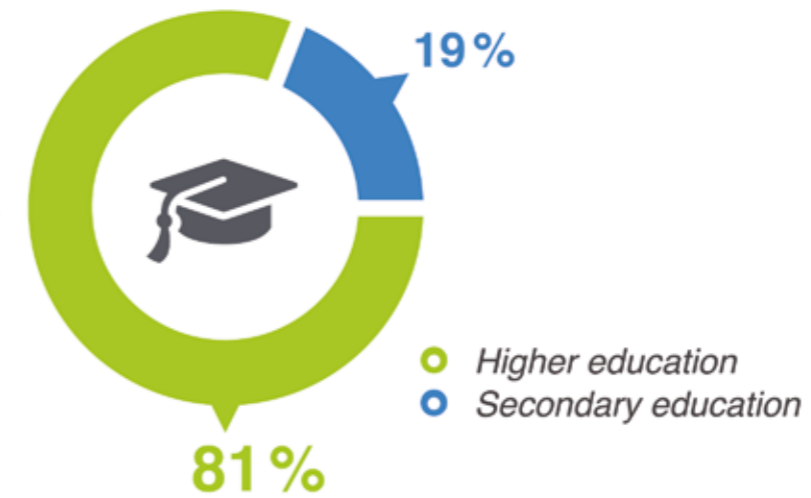
## Total number of the personnel of the Institute



> **600** people

> **40** different profiles

*The percentage of the Company's personnel by education level*



*The percentage of the Company's personnel by activities*

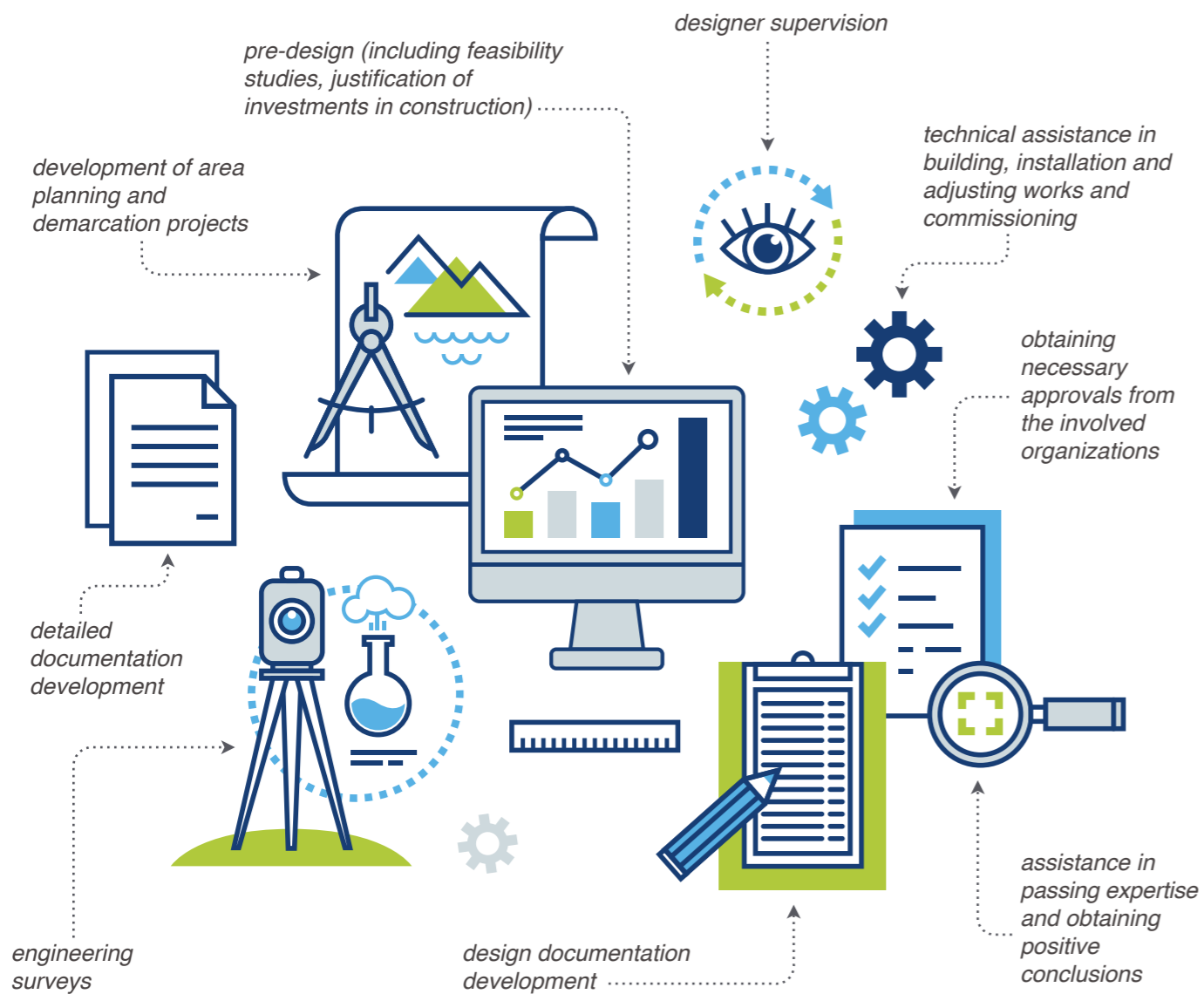




## Basic types of the performed works

We are a modern, dynamically developing, design and survey institute which is one of the leaders in integrated design of the Russian transport infrastructure facilities.

*We perform all types of design and surveying works for construction, reconstruction and other design activities such as:*



## Urban development and cadastral works

Our specialists are highly qualified professionals (architects, engineers, urban planners, cadastral engineers, lawyers specializing in the field of urban planning) who perform a range of works on area planning: from the development of urban planning documentation to obtaining building permits.

Area planning projects are developed in order to determine elements of a planning structure, boundaries of communal areas and zones of capital facilities, characteristics and sequence of proposed area development.

Demarcation projects are aimed at determining positions for formed and changing boundaries.

*For this purpose the following works are performed:*

1. preparation of the area planning documentation necessary for creation of capital facilities, including establishing red lines, boundaries of communal areas and zones of the planned facilities;
2. cooperation with the federal administrative authorities and the government authorities of the constituent entities of the Russian Federation in:
  - preparing area planning documentation;
  - harmonizing documentation;
  - conducting preparatory activities associated with withdrawal of land plots for government needs and transfer of lands from one category to another;
3. a legally correct complete record of design solutions of area planning documentation;

4. organization and control of execution of the cadastral works regarding ground areas, capital facilities, use-restricted zones, etc;
5. organization of public hearings (public speaking, presentations, publications);
6. handling of appeals from land owners and lessees.





## Engineering surveys

*Our specialists perform a full range of topographical, engineering-geological and environmental surveys of any complexity.*

### Topographical survey

The most advanced technologies are used for surveying works: laser scanning (surface and aerial), modern methods of aerial survey. Land survey is performed with the optical and satellite-based devices.

Topographic survey is carried out in the scale of 1:200 — 1:25000. By means of the airborne laser scanning, digital terrain models and 3D-object models are produced.

*The materials of aerial surveys are used:*

- to create orthophoto plans;
- to provide situation monitoring;
- to create high-resolution images;
- to survey railway stations and hubs;
- to certificate railway tracks.

Altimetric survey networks, points and boundary marks are placed using GPS and GLONASS. The Institute also performs cameral and field works on tracing railways and roads, geodetic survey of facades of buildings, survey of underground constructions and land cadastral works.



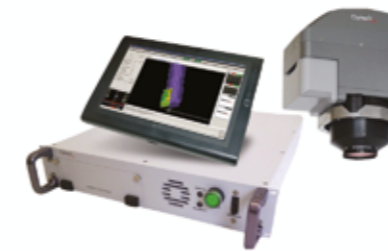
*ORION-M-300 Airborne Laser Scanner. Its performance and accuracy parameters meet the highest operational requirements*

*We possess the Russia's most advanced survey system Optech.*

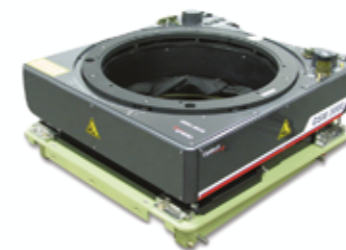
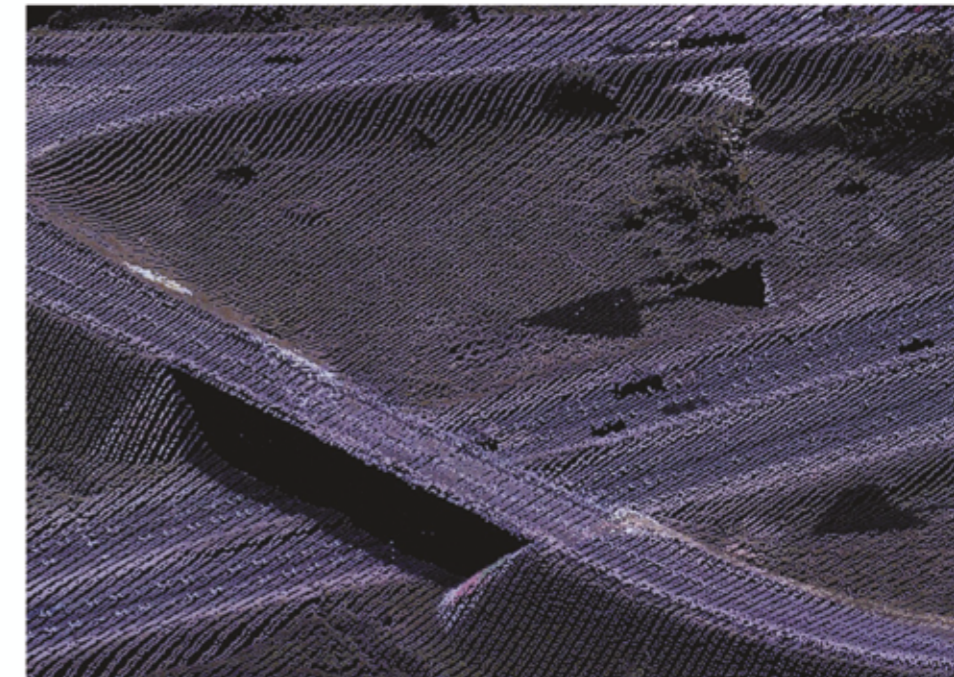
This equipment which is unique for Russian design institutes allows us to perform the full range of topographical surveys by means of airborne laser scanning and aerial photography. Such equipment is particularly effective for surveying long mileage facilities (tens and hundreds of kilometers).

The uncertainty of height measurements is no more than 10 cm and from 2 to 30 cm depending on the flight level.

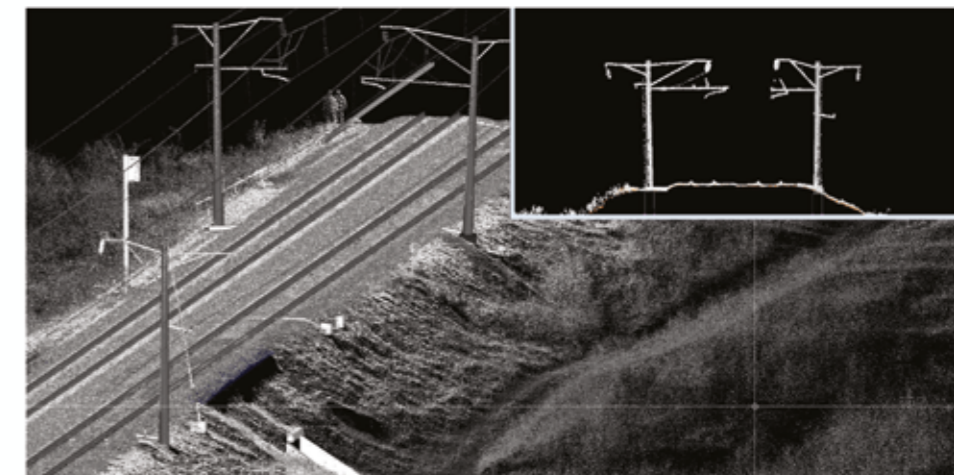
The speed of data collection is about 120 square kilometers per hour. In comparison with ground survey, the costs for aerial survey are reduced by 20 times (this difference is significantly increased in inaccessible or dangerous areas).



*CS-10000 High-Resolution Digital Aerial Camera equipped with 80-Mpixel sensor*



*GSM-3000 Gyro-Stabilization Mount*





## Engineering-geological survey

*In order to determine physical and mechanical properties of all types of soil and to test chemical composition of ground water by means of crawler drilling rigs and wagon drills, the following works are performed:*

- drilling wells for different purposes and soil sampling for laboratory analysis;
- engineering-geological survey at any scale;
- exploration of borrow pits and drainage soil;
- soil field testing: core penetration test at the depth of up to 20–40 m, soil tests with a pressuremeter, dilatometer, stamp, including electrodynamic testing and testing for underground water inflow;
- stationary monitoring of ground water regime;
- geophysical surveys (seismic survey, geoelectric survey, magnetic survey, radiometric survey).

*Our engineering-geological laboratory is accredited by “Mosstroycertification” until July 25, 2020.*

The laboratory is equipped with modern testing, measuring and supporting equipment and performs the whole range of tests for determining constitution and properties of soils and natural waters, and forecasting their potential change during construction works and operation of the designed facilities



## Engineering-environmental survey



*Scientific attitude and detailed study of areas peculiarities allow us to perform:*

- sampling of soils, surface waters and bed sediments;
- survey of vegetation and fauna;
- measurement of noise and vibration levels, electromagnetic radiation;
- radiological studies;
- measurement of air pollution and noise impact by means of modern specialized software package “Ecolog”.

In cooperation with local authorities, the Institute holds public discussions with the residents of the settlements and districts which will be affected by the construction works. The purpose of these discussions is to inform the public about the impact of projects on the environment and about the protection measures which will be taken.



## Design of linear transport facilities

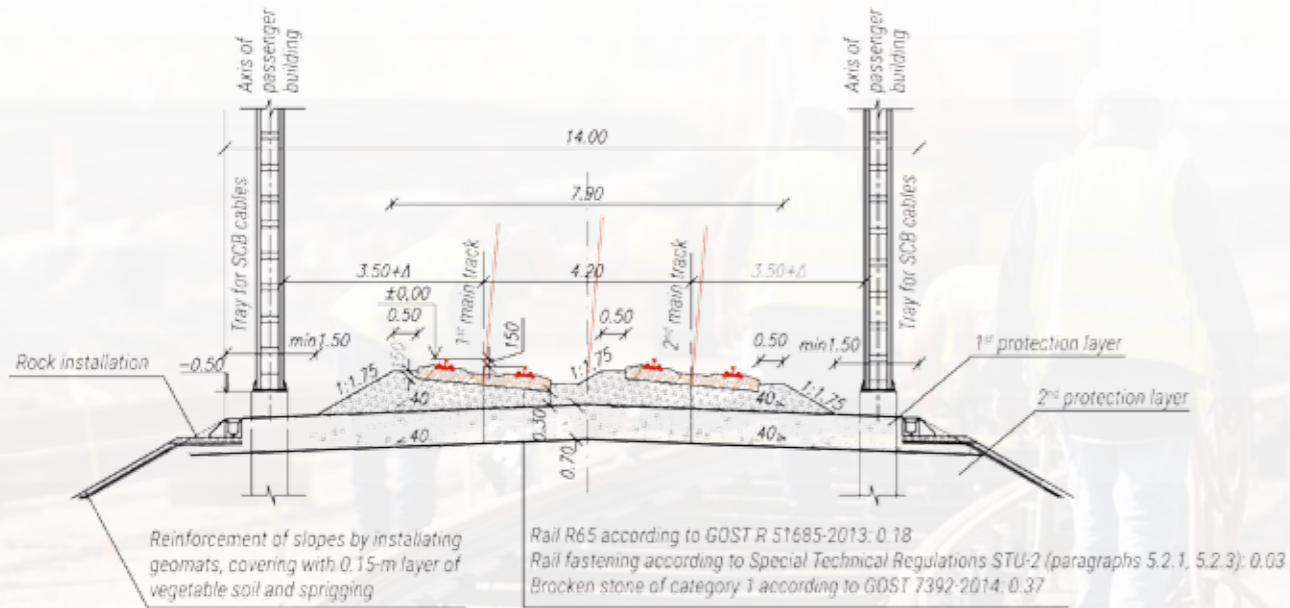
The Institute performs design works using Digital Elevation Model technologies and digital ortho-rectified aerial images of configurable resolution which reduce the design period.

We develop:

- alternative positions of linear facilities considering all natural and territorial limitations; optimal variants based on engineering and economical comparison;
- roadbed designs for railways and motor roads including standardized and individual designs;
- superstructure designs for railways;
- road pavement using modern advanced materials.



Non-public rail track



The design of a track superstructure on a roadbed in a bend of road for speed of above 200 km/h



Design projects for public and non-public rail tracks, in particular:

- construction of new railway sections and reconstruction/improvement of existing ones including the construction of additional main tracks;
- construction of new approach and crossover tracks and reconstruction/improvement of existing ones.



The Institute also develops projects for construction/reconstruction of all types of roads from highways to road networks of urban and rural settlements.



## Design of railway stations and hubs

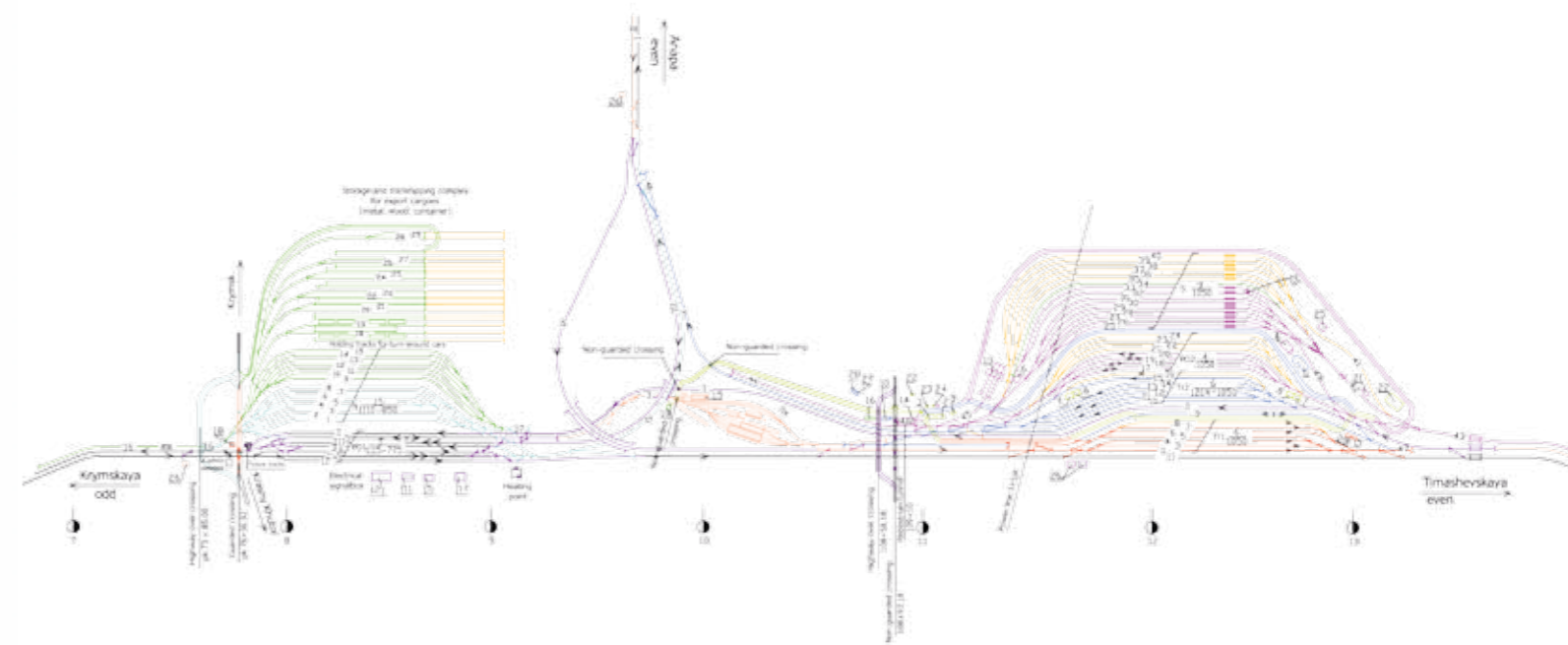


Scheme of Volgograd Railway Hub

The specialists develop complex projects for construction, improvement and reconstruction of railway stations and hubs of all types:

passenger stations, coach yards, terminal yards, intermediate depots, port terminals, freight and border crossings on public and non-public rail tracks including tracks with different gauges:

- general plans of railway hubs development;
- projects of warehousing, transloading and cargo terminals for all types of freight including containerized, break-bulk, bulk, liquid, packaged and others;
- designs of the second (third and fourth) main tracks, access roads to industrial enterprises, locomotive and carriage facilities, organization of the traffic during construction works.



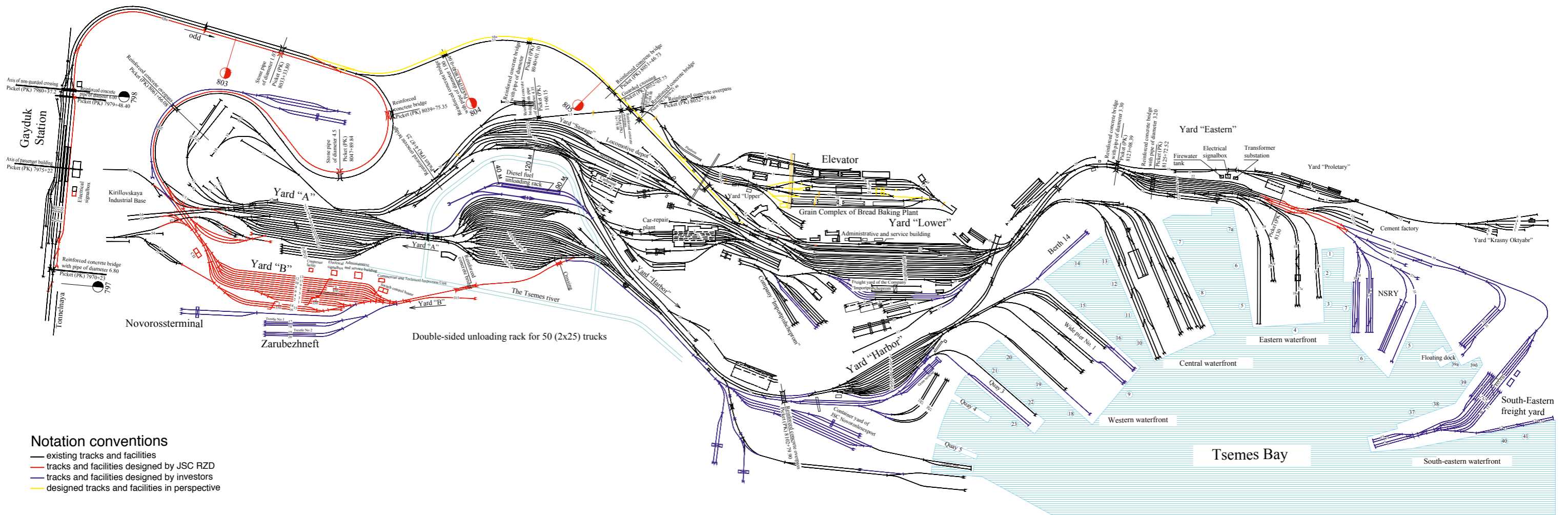
Our specialists carry out calculations of:

- freight traffics according to types of cargo and directions, volumes of local freight operations, volumes and structure of passenger traffic and so on;
- car traffic volume, grade separation and supervision over the operation of local stations, the volume of freight and passenger traffics;
- line carrying capacity (including required and available carrying capacity);
- diagrams of carrying capacity completion and traffic capacity augmentation.



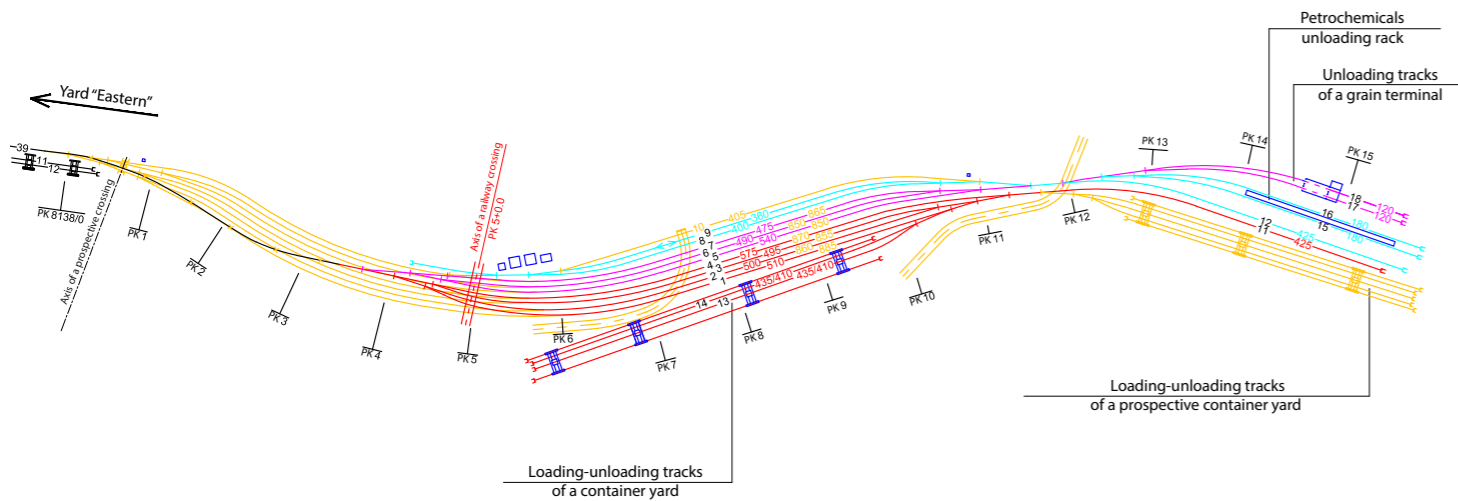


Prospective development of Novorossiysk station in terms of transportation volume of up to 37.7 mln tons per year





Layout of South-Eastern cargo area of Novorossiysk port  
(total cargo turnover of 8.5 mln tons per year)



Bridge over the Oka river  
with the arched reinforced concrete spans

## Design of artificial structures

The Institute performs the full range of design works for construction and reconstruction of railway and highway bridge crossings, road junctions, tunnels, underground structures for various purposes

### Types of designed facilities:

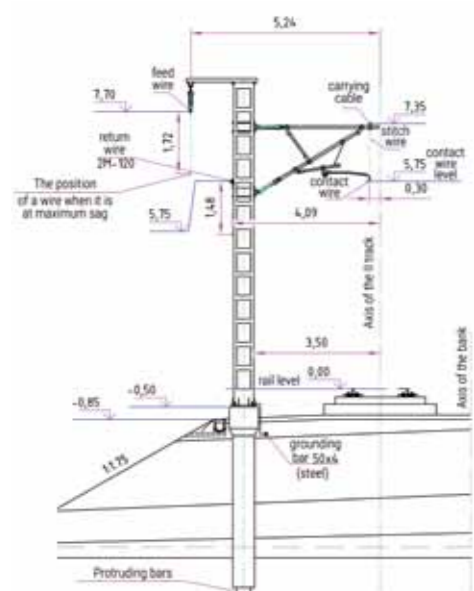
- large and small bridges (steel-reinforced concrete, reinforced-concrete and metal ones with both standardized and custom-made superstructures);
- viaducts and overpasses;
- pedestrian bridges;
- pipe culverts of various cross sections;
- tunnels;
- metropolitan facilities;
- underground facilities (parking areas, various underground parts of buildings);
- utility systems constructed by both open and closed methods (microtunneling, tunneling): utility, sanitary and storm sewers and utility vaults constructed by the method of microtunnelling, tunnels for laying pipes of an oil and gas complex through natural and artificial barriers, etc.
- retaining walls including for:
  - bridge approaches;
  - landslide protection;
  - facilities in the highlands;
  - embankments and bank protections.





## Design of electrification and power supply systems

### Power supply systems for transport infrastructure facilities



*The Institute performs the full range of design works:*

- design of electric power supply and DC and AC electrification of train traction on new and reconstructed railway sections (including all calculations);
- design of new DC and AC traction substations and reconstruction of the existing DC and AC traction substations of up to 220 kV;
- design of devices of the catenary system on new and reconstructed railway sections;
- rearrangement of the catenary system in the areas intersecting with engineering structures;
- telemechanics of devices of railway electrification and electrical power supply;
- automation of technological processes and dispatching of different technological systems;
- design of longitudinal electrical power supply systems of non-traction energy consumers on railways;
- design of relay protection, automation and control of transformer substations and power lines of up to 200 kV;
- design of outdoor lighting.

## Power supply systems for facilities which are not related to transport infrastructure

*We provide the full range of design works:*

- design of overhead and cable power lines with voltage of up to 1 kV, 6-10 kV, 20 kV and 35 kV;
- design of overhead and cable power lines with voltage of up to 220 kV in the areas intersecting with engineering structures and natural obstructions;
- design of indoor and outdoor transformer substations with voltage range from 6-10 kV up to 220 kV (KTPO, KTP, KTPG, KTPB);
- design of relay protection, automation and control of transformer substations and power lines of up to 200 kV;
- design of outdoor lighting;
- design of power equipment for industrial, administrative, residence, service and amenity buildings;
- automation of technological processes and dispatching of different technological systems.





## Design of railway automation and telemechanics systems

*The specialists of the Institute design all kinds of modern automation and telemechanics systems for railways.*



*They have extensive experience in the reconstruction and improvement of any current railway automation and telemechanics systems being in operation.*

### Types of designed systems:

- relay, relay processing and microprocessor interlocking systems “Ebilok-950” and “EC-EM” of JSC “Radioavionika” and others;
- auto-blocking systems: decentralized relay auto-blocking systems, auto-blocking systems with audio frequency track circuits and centralized equipment deployment, microprocessor auto-blocking systems with mobile block-sections integrated in microprocessor centralization;
- crossing and tunnel signalization;
- power supply for automation and telemechanics systems;
- linking to centralized traffic control systems “Setun”, “Dialogue”, DC-YuG with RKP and KP “Krug”, “Trakt”, “Setun” and systems of technical diagnostics and monitoring of automation and telemechanics systems based on APK DK and ADK SCB;
- linking to relay and microprocessor systems of humps automation;
- Automatic train braking system SAUT-CM and SAUT-CM/NSP;
- key interlocking of railway points and signals;
- notification system alerting rail workers when a train is approaching work area.

## Design of communications systems

*The Institute develops all types of communications systems used for railways and motor roads, metropolitan, oil and gas pipelines, in cities and settlements.*

### Main types of projects:

- new communications lines (cable, fibro-optic line for any type of equipment buried and installed on transmission towers);
- reconstruction of fibro-optic lines using new dense wavelength division multiplexing technology DWDM;
- SDH communications networks;
- engineering communications:
  - digital networks (operational telecommunication, general-purpose telephone network);
  - digital train radio systems;
  - radio communication of hectometer and meter wave bands (GSM-R and DMR standards);
  - fleet digital two-side loud-speaking communication system;
  - general-purpose and operational data communication networks;
  - broadband wireless access system;
  - network clocking systems;
  - Signalling System No. 7 networks;
  - integrated monitoring and administration network;
  - centralized network for recording corporate talks and video information;
  - time standard system;

- audio and video conference call systems;
- transportation management systems based on GPS/GLONASS;
- stationary and mobile radiotelephone networks;
- corporative communication systems, private-branch industrial communication automatic telephone systems, data transmission networks and local area networks;
- access nodes for different communication networks;
- reconstruction of telegraphic network;
- power supply systems for communications objects including diesel power units.

*Besides communications systems the Institute design security systems of any scale and complexity, including integrated safety control systems that make part of:*

- video surveillance;
- security and fire alarm system;
- access monitoring and control system;
- presence-detecting and anti-intrusion protection systems;
- process safety systems;
- information security system, etc.





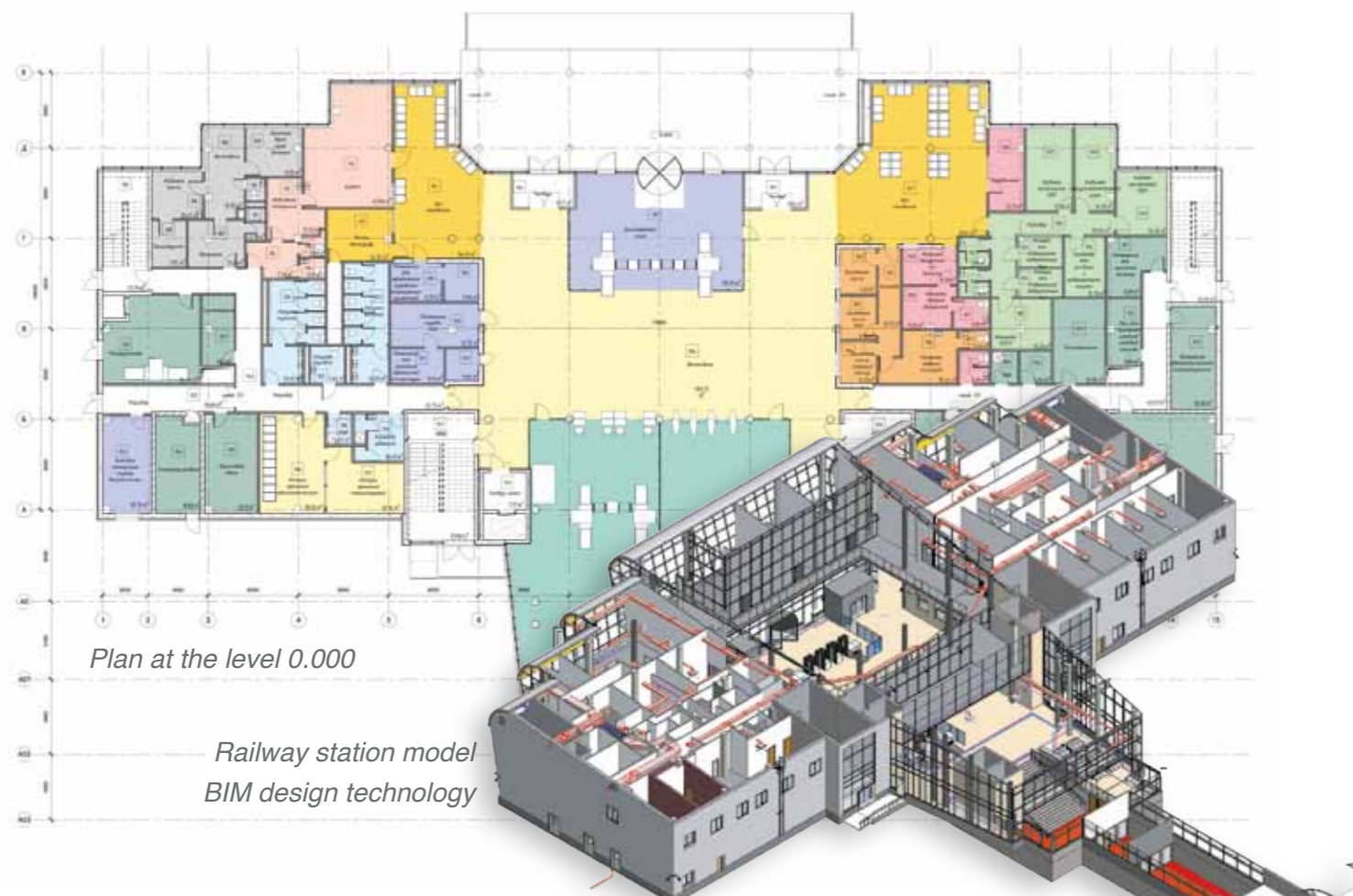
## Development of urban planning, architectural and design solutions

The Institute develops projects for construction, reconstruction and repair of residential, public, transport and industrial bulings and facilities.

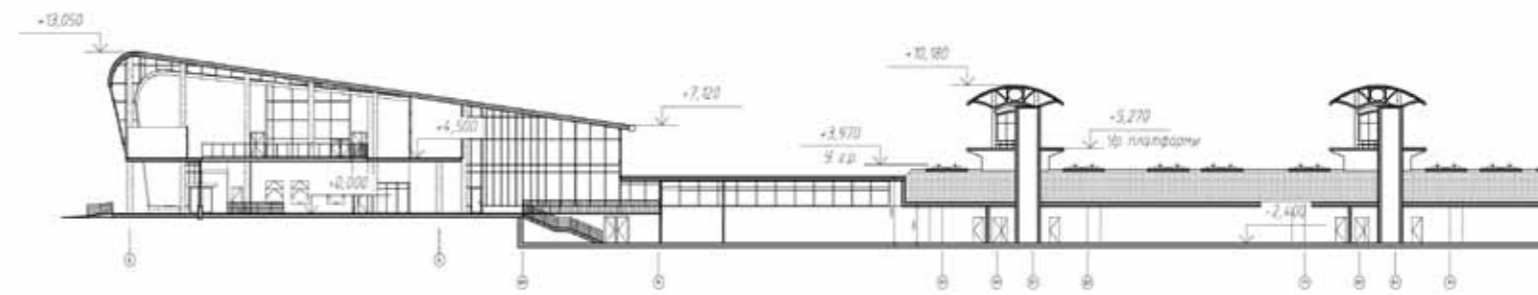
### Main tasks:

#### Architectural solutions

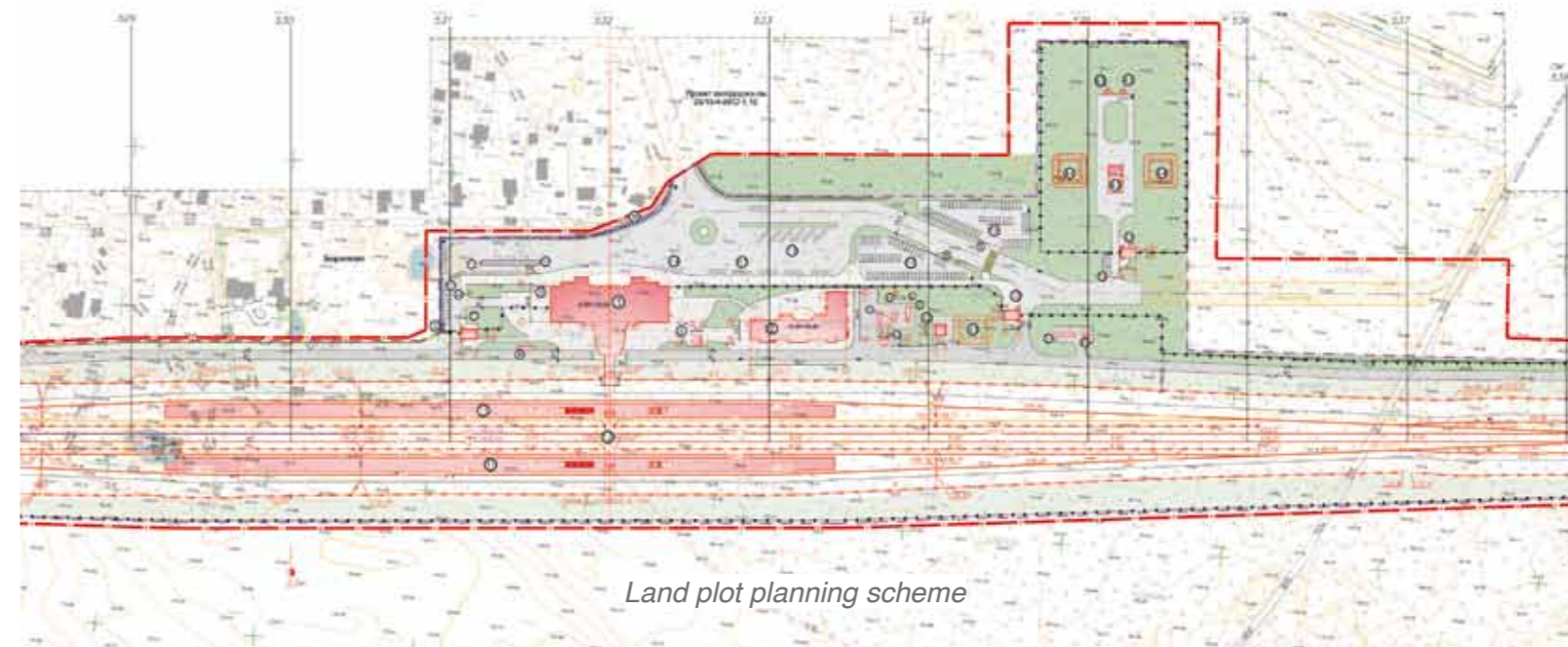
- urban planning solutions;
- design of city blocks and settlements;
- architectural and space planning solutions;
- facade solutions and passports of colour appearance;
- 3D modeling, photorealistic renderings and video clips of groups of buildings, separate buildings and interiors;
- interior design.



Elaboration of the design documentation sections using Noginsk station as an example. A facility of HSR 2



Profile drawing of a concourse with awnings



Land plot planning scheme







*Transport Interchange Hub  
Delovoy Center in Moscow*

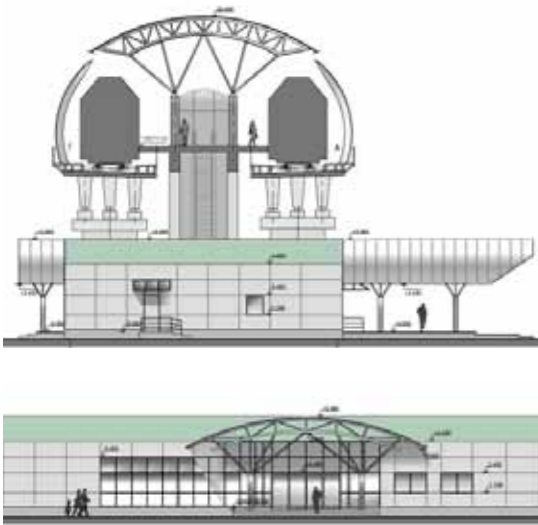
## Development of technologies

- for operation of transport hubs and railway stations;
- for access control systems, automated systems of payment, control and registering, ticket terminals and offices;
- for public catering establishments (cafes, restaurants, canteens, etc.);
- for public facilities (kindergartens, secondary and higher educational institutions, sports facilities, health facilities, etc.).



*The interior of Esto-Sadok Railway Station*

## Design solutions



- proportioning of structures and buildings using finite element software;
- design of reinforced concrete structures (precast, monolithic);
- design of metal structures;
- design of structures in difficult geological conditions;
- design in areas of seismicity from 7 to 9 points;
- design in mountainous areas.



*Line of turnstiles  
in Leningradsky Terminal in Moscow*

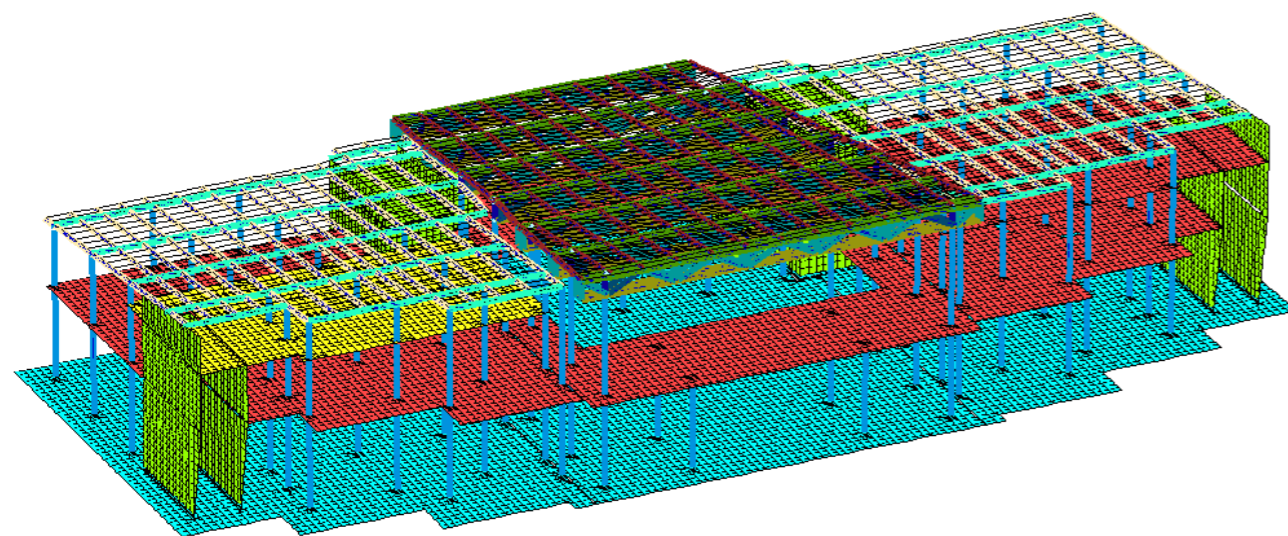
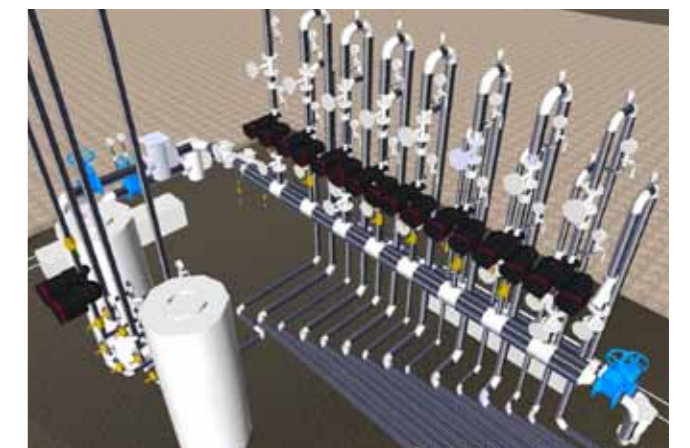


*A platform in Kievsky Terminal  
in Moscow*

## Design of engineering networks and systems

*We develop detailed designs for all types of engineering networks and systems performing all necessary calculations*

- heating, ventilation and conditioning;
- boiler houses and heating networks;
- power supply, lighting;
- water and sanitation;
- low current systems and communication;
- waste treatment facilities;
- automation, dispatching systems, accounting and management systems.



*3D technology of designing the element model  
of the building of Noginsk station*



## General layout and urban land improvement

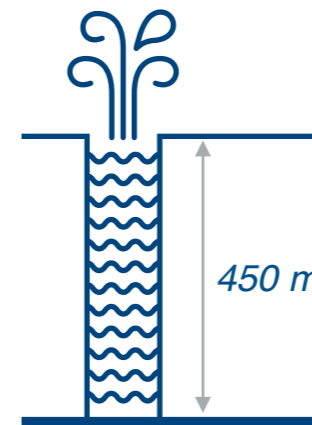
- functional and planning solutions for building facilities;
- general layout;
- vertical land leveling;
- urban landscaping including pavements, cycle paths, small architectural forms;
- transport service for facilities (internal development roads) and linking to the existing transport infrastructure.



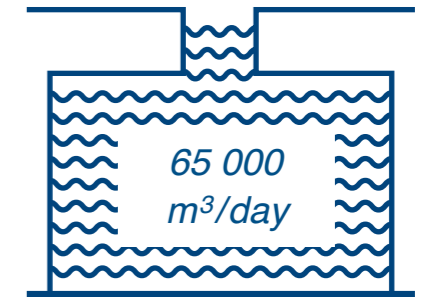
General layout of a residential complex in Sergiev Posad

## Hydrogeology

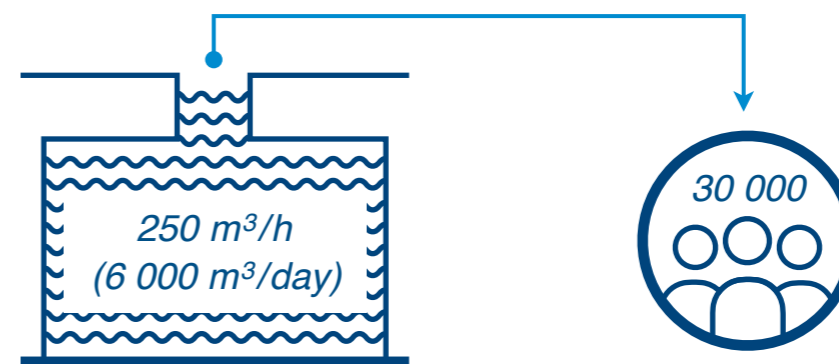
Highly qualified staff and available specialized equipment and machinery (own drilling and transport equipment intended to drill exploration and operational wells of various diameters and depths) provide reliable and valid data obtained from surveys, studies, estimations of reserves and during designing water supply from groundwater for both transport infrastructure and local facilities for different purposes.



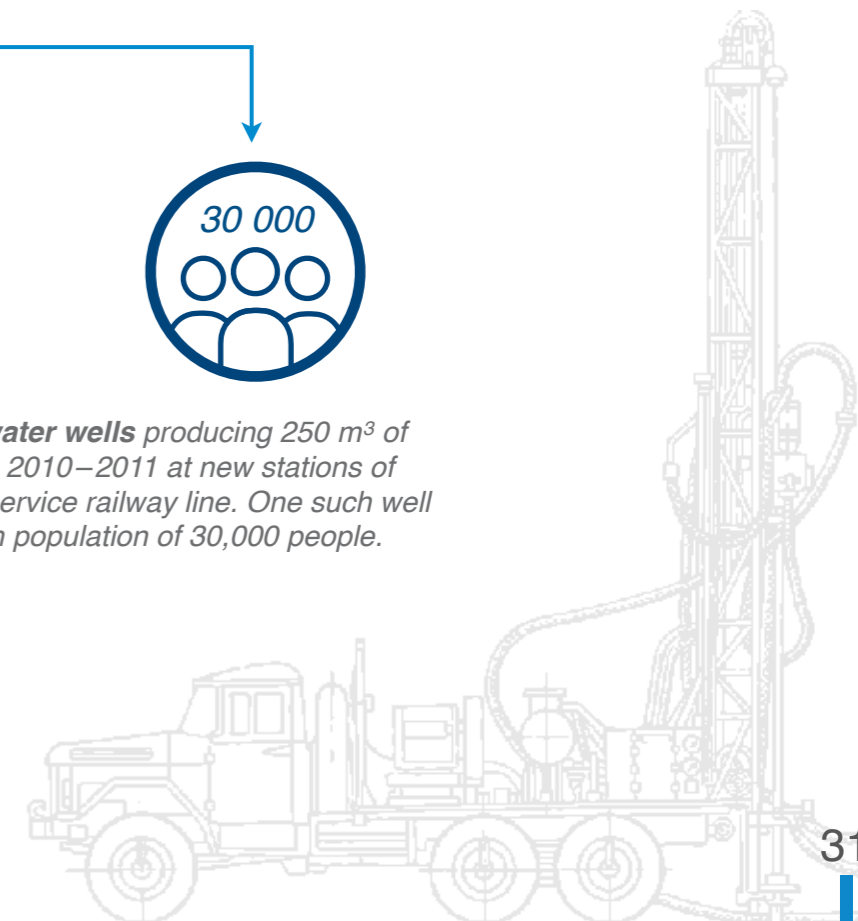
The deepest exploration blowing water well drilled in 1997 at Babayurt railway station of the Kizlyar-Karlanyurt railway line in Dagestan.



The largest groundwater resources approved by the Federal Agency for Subsoil Use (Rosnedra) in 2011 for the Verkhneadlerovskoe Groundwater Deposits providing water to the population of Adlersky City District of Sochi and Olympic facilities.



The highest-producing exploratory water wells producing 250 m<sup>3</sup> of water per hour (6000 m<sup>3</sup>/day) drilled in 2010–2011 at new stations of Olympic facilities on the Adler — Alpina-Service railway line. One such well is able to provide water for a town with population of 30,000 people.





## Design of specialized works

*The Institute designs blasting and hydro-mechanical works.*



### *The scope of application of blasting works:*

- extraction of rock and crushed stone in mines;
- construction of cuts, trenches, ditches, processing areas and sites for bridge abutments and foundation pits of various configurations in rocky and permafrost areas;
- creation of pipeless drainage systems by the blasting method for dewatering rock masses and preventing icing, demolition of the reconstructed bridges, setting of embankment on the mineral floor of a bog, formation of camouflet cavities under bridge abutments;
- demolition of buildings, wrecking of foundations, metal bearings and metal constructions in the conditions of dense urban development;
- explosive cutting of metals (including disposal of carcasses of ships and airplanes);
- widening of cuts for the second rail tracks and motor roads in rocky and permafrost areas;
- dredging of water areas, clearing of bottoms of water bodies, trenching into the seabed.

### *The most important areas of application of hydro-mechanical works:*

- embankment for: roadbed of railways, motor roads, regulating structures, sites, dams; preparation of territories for building residential areas and industrial plants; arrangement of recreation areas;
- dredging and clearing water bodies; construction of navigable and irrigation canals, water areas of river and sea ports, drainage systems;
- restoration of wastelands, ravines and gullies, floodplain, wetland and flooded areas, shallow water bodies.



## Construction Management Plans and Estimate Documentation

*Our specialists (including in dredging and blasting works) have extensive experience in passing internal and government expertise of the developed documentation and develop Construction Management Plans and estimate documentation for any facilities, in particular:*

- linear facilities of transport, energy and communications infrastructure: railways, motor roads, power transmission lines, communications lines, fibre-optic lines etc.;
- areal facilities: facilities of transport infrastructure (stations, railroad complexes, transport interchange hubs, depots and other) and industrial and civil facilities;
- artificial structures of various types and purposes (bridges, overpasses, viaducts, culverts and pedestrian tunnels).

Construction Management Plans reflect technologies and aspects of organization of construction meeting the customer's requirements regarding optimization of the terms of construction works that are performed using advanced technologies, methods and techniques of work organization.

Estimate documentation (local cost estimates, facility cost estimates) is prepared according to federal, regional or administrative railway estimate standards at customer's request.

The estimate documentation we develop (according to customer's requirements) determines the optimal cost of construction, reconstruction, improvement and modernization of enterprises, transport facilities, buildings and structures, and also cost of repair and commissioning works in the territory of the Russian Federation.





**Notations:**

- Geological and engineering surveys
- Aerial photography
- Development of projects for locomotive and carriage facilities
- Water supply
- Design of signaling, centralization and blocking devices and communication systems
- Urban development
- Complex projects for construction of railways and motor roads
- Design of artificial structures
- Design of electrification and power supply systems



## Most Important Projects

### 1945 – 1966

The Institute became the largest one in the system of the Ministry of Transport Construction in terms of the volume of performed works which is three times higher than the average volume of the performed works of all other institutions combined. The Institute was the general design organization of some facilities: main railway tracks, stations, railway terminals, water supply systems, railroad car facilities, hydro-mechanical and blasting works, etc. Furthermore, the Institute designed transport infrastructure for development of wild and derelict lands in Kazakhstan, Siberia and the European part of the country and developed the project of railway bridge crossing to Sakhalin island.

### 1941 – 1945

Participation in the national defense: during the war the Institute developed designs for reconstruction of about 4,000 km of railways, 12 junctions (including Stalingrad, Bryansk, Smolensk), 243 stations, 38 depots, 120 large bridges, 620 medium and small artificial structures, 150 water points, 30 passenger stations.

### 1931 – 1941

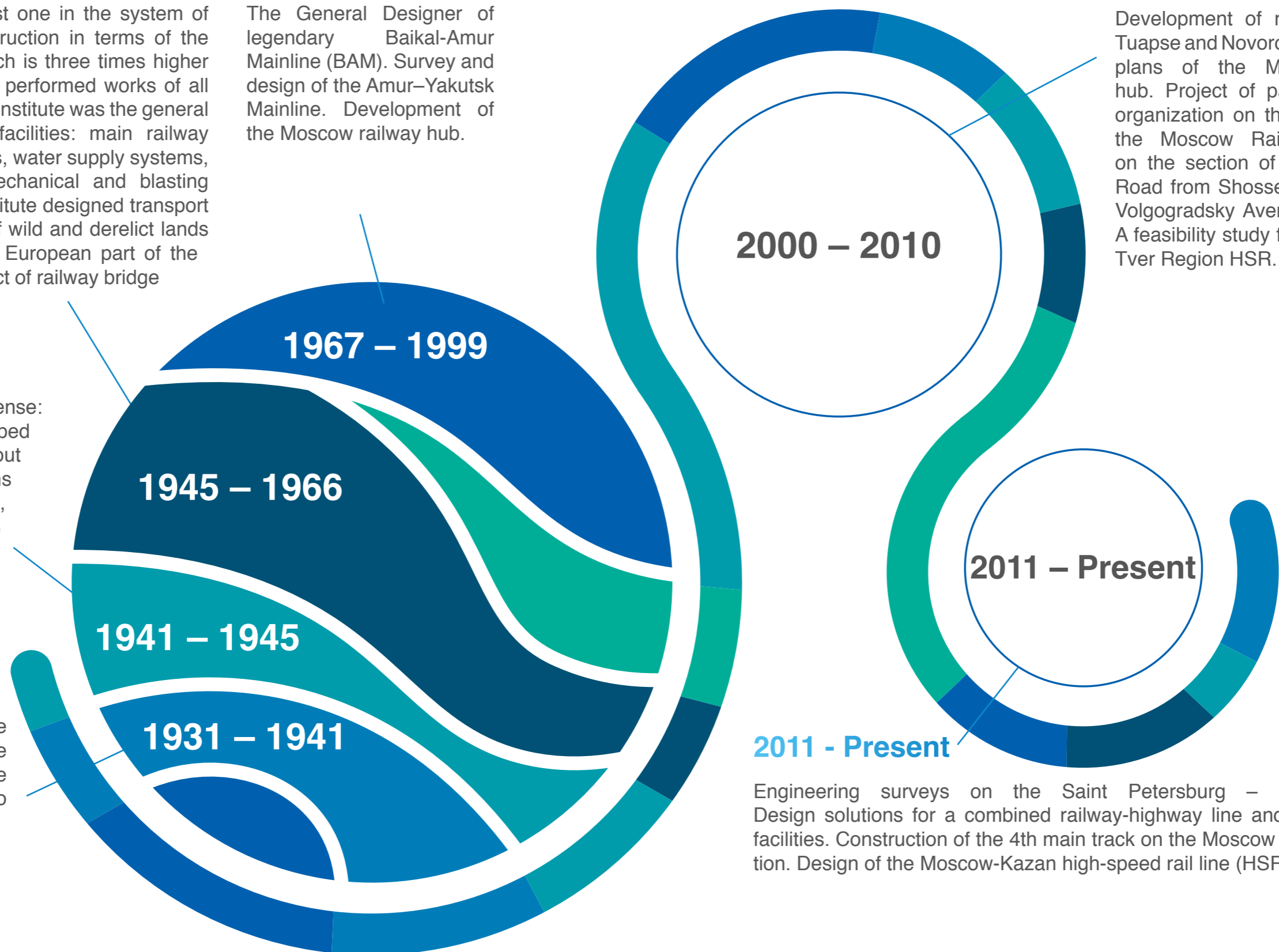
Active participation in the formation and development of the railway transport industry of the USSR, design of Moscow metro stations.

### 1967 – 1999

The General Designer of legendary Baikal-Amur Mainline (BAM). Survey and design of the Amur–Yakutsk Mainline. Development of the Moscow railway hub.

### 2000 – 2010

Development of railway hubs in Tuapse and Novorossiysk. General plans of the Moscow railway hub. Project of passenger traffic organization on the Little Ring of the Moscow Railway. Facilities on the section of the Third Ring Road from Shosse Entuziastov to Volgogradsky Avenue in Moscow. A feasibility study for the Moscow-Tver Region HSR.



2000 – 2010

2011 – Present

### 2011 - Present

Engineering surveys on the Saint Petersburg – Moscow HSR. Design solutions for a combined railway-highway line and other Olympic facilities. Construction of the 4th main track on the Moscow - Kryukovo section. Design of the Moscow-Kazan high-speed rail line (HSR-2).



HISTORY



*Kropotkinskaya Metro Station*



*Railway station in Lugansk (Voroshilovgrad)*

Specialists of JSC “Mosgirotrans” have made a major contribution to the architecture of the Moscow Metropolitan. These and many other facilities, in one way or another, are related to the name of a three-time laureate of the State Prize of USSR Aleksandr Nikolaevich Dushkin.

Railway stations, administrative and residential buildings, polyclinics, hospitals, institutions, post offices and sports facilities built under our projects reliably function and most of them, responding to the high architectural requirements, adorn streets and squares.



*Mayakovskaya Metro Station*



*Ploshchad Revolyutsii Metro Station*



*Railway Station in Kharkiv*



*Kazansky Terminal in Moscow*



*Railway Station in Simferopol*



*Novoslobodskaya Metro Station*



*Avtozavodskaya Metro Station*



*Railway Station in Sochi*



*Paveletsky Terminal in Moscow*



*Railway station in Esto-Sadok*

A.N. Dushkin was a master of transport architecture, originator of new form of metro stations: “Kropotkinskaya”, “Avtozavodskaya”, “Ploshchad Revolyutsii”, “Mayakovskaya”, “Novoslabodskaya”.





Central Children's Store "Detsky Mir"



## Projects developed for Olympic Games in Sochi (2014)

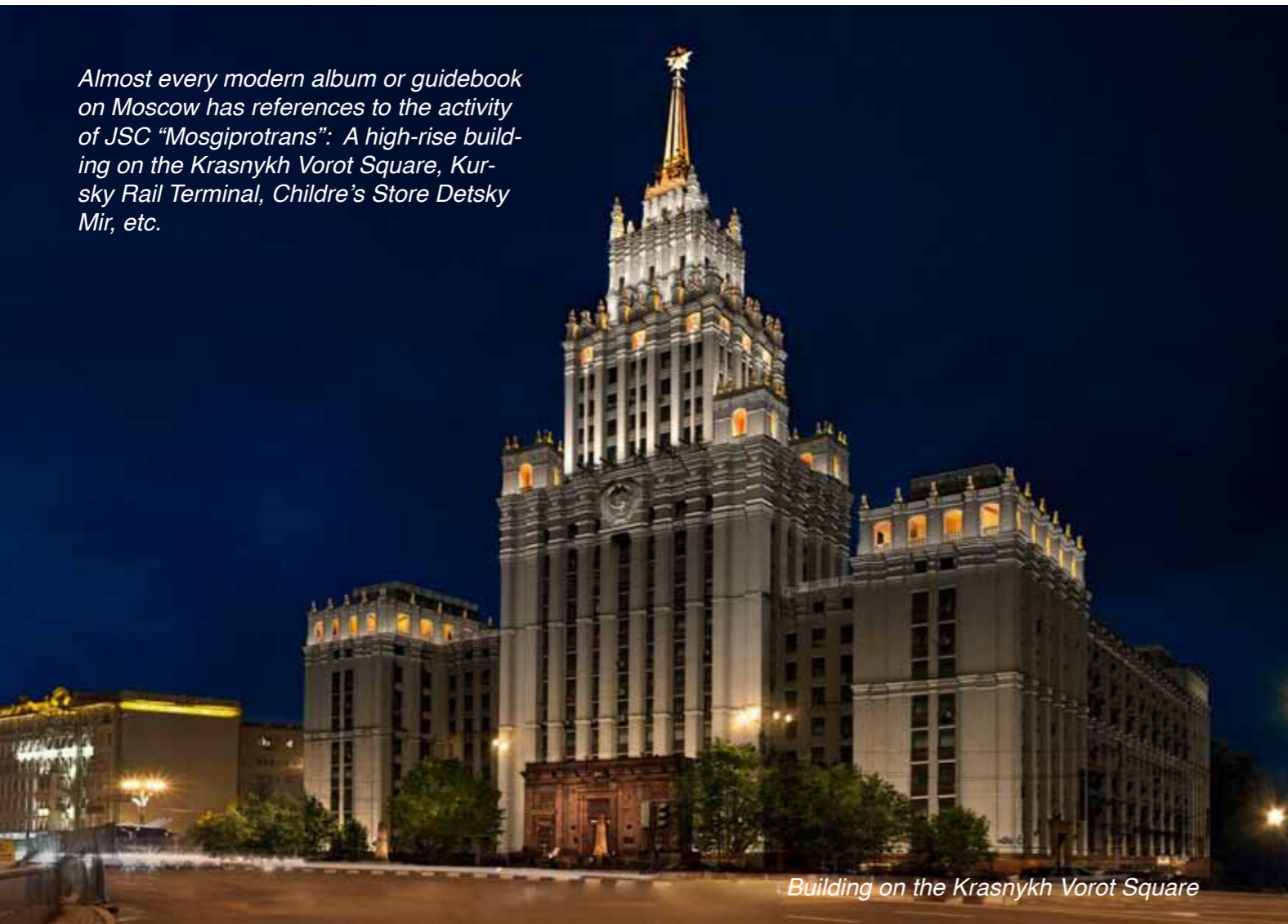
New projects:

- development of railway stations in Sochi, Adler;
- construction of the railway station "Imeretensky Resort"
- transport hub with railroad complex "Esto-Sadok" of the North Caucasus Railway
- a combined highway-railway line Adler - ski resort "Alpina-Service" built according to our main design solutions for the Winter Olympic Games in Sochi provided the transportation of spectators and participants from Adler to the sports facilities of Krasnaya Polyana.

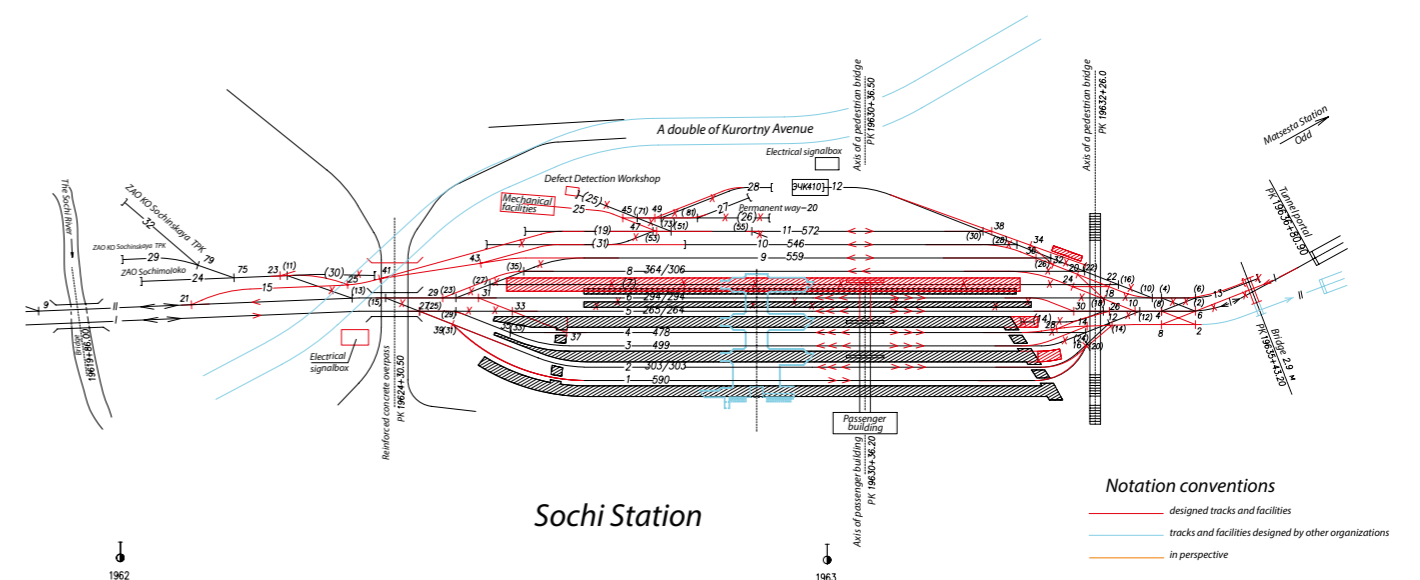


Railway station in Esto-Sadok

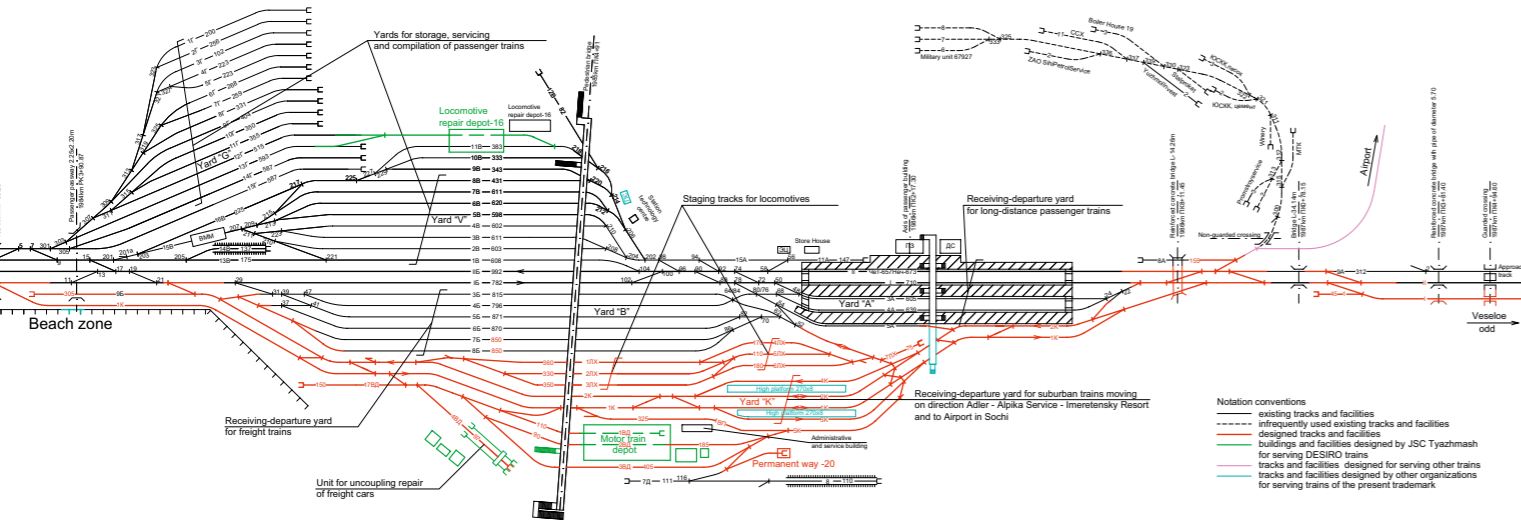
Almost every modern album or guidebook on Moscow has references to the activity of JSC "Mosgirotrans": A high-rise building on the Krasnykh Vorot Square, Kursky Rail Terminal, Childre's Store Detsky Mir, etc.



Building on the Krasnykh Vorot Square

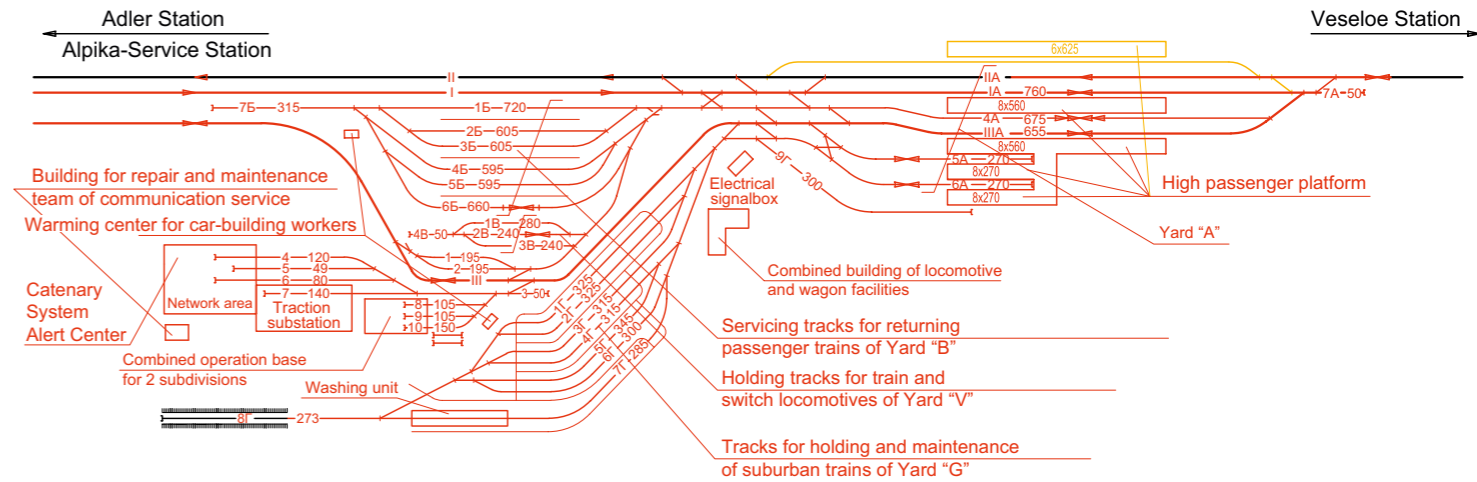






**Adler Station**

To reach design seized during the Olympic Games, the reconstruction program for Adler station involved construction of an additional receiving-departure yard for suburban traffic with two high passenger platforms 270-m long and 8-m wide, and two main tracks adjoining the existing ones in heads of set of sorting sidings "A" and "B" under volumetric scheme. The technology of station operation was developed for period of the Olympic Games and target years taking into account a crossover track adjoining to the airport "Sochi".



**Imeretensky Resort Station (Olympic park) includes passenger terminal and coach yard:**

- 5 receiving-and-departure tracks for suburban and long-distance trains ;
- storage and servicing yard for returning long-distance train (during the Olympic Games it was used for suburban trains: "Desiro" ("Lastochka");
- storage and servicing yard for suburban trains which was used during the Olympic Games and is used at present;
- 3 staging tracks for electric locomotives uncoupled from long-distance passenger trains;
- staging tracks for work trains and single carriages of the diagnostic center.



Adler Station



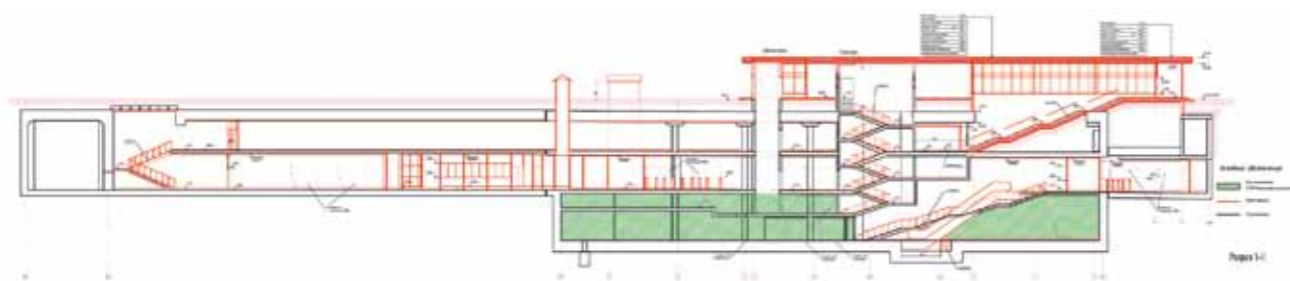
Imeretensky Resort Station (Olympic park)



JSC Mosgiptrans was one of the originators of the project of the Europe's largest transport hub "Moscow Central Ring" and performed one of the most complex and interesting tasks: elaboration of the General Scheme for the hub and also designed the halt platforms Delovoy Tsen-ter, Kutuzovskaya, Luzhniki, Ploshad Gagarina.



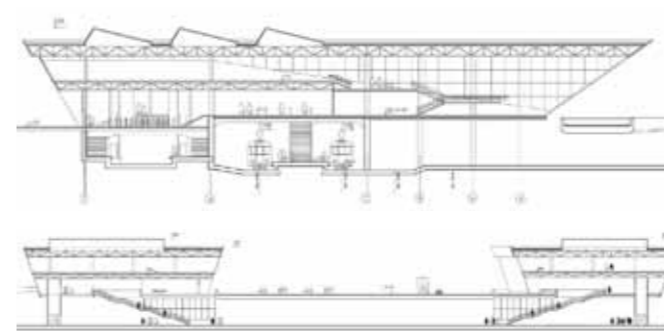
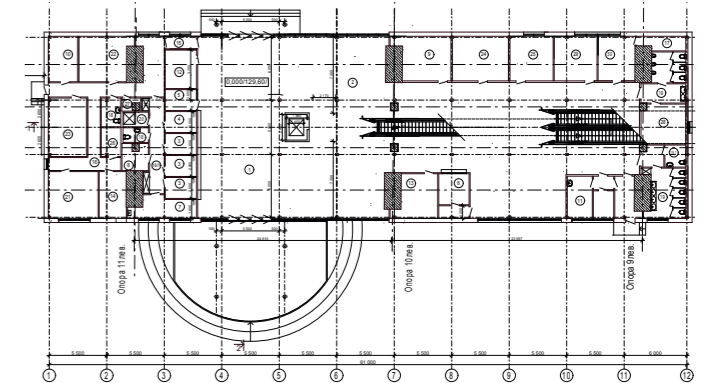
"Moscow Central Circle"



Ploshchad Gagarina station



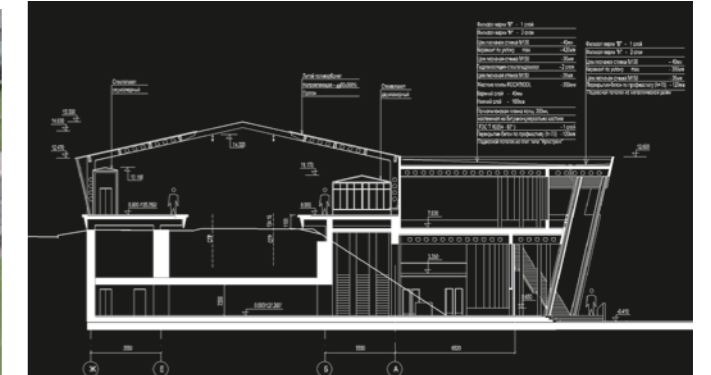
Delovoy Center station



Kutuzovo station



Luzhniki station



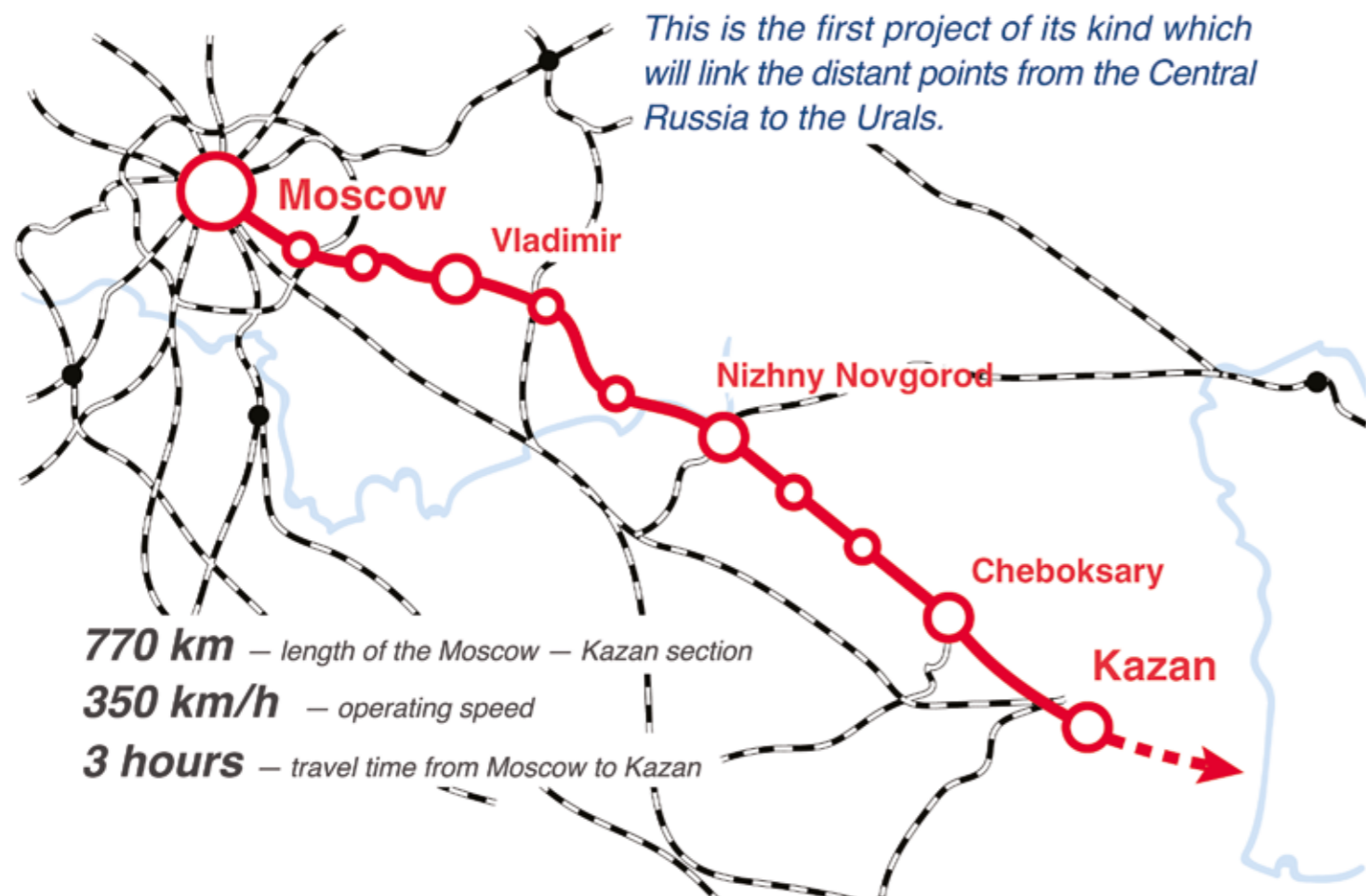
*We also took part in designing:*

- construction of the IV main track on the Moscow — Kryukovo section;
- servicing depot for high-speed trains Sapsan in Moscow;
- reconstruction of the line Saint Petersburg — Moscow for high-speed trains Sapsan (Moscow — Balagoe section);
- justification of investment for HSR 3 Moscow — Center-South.





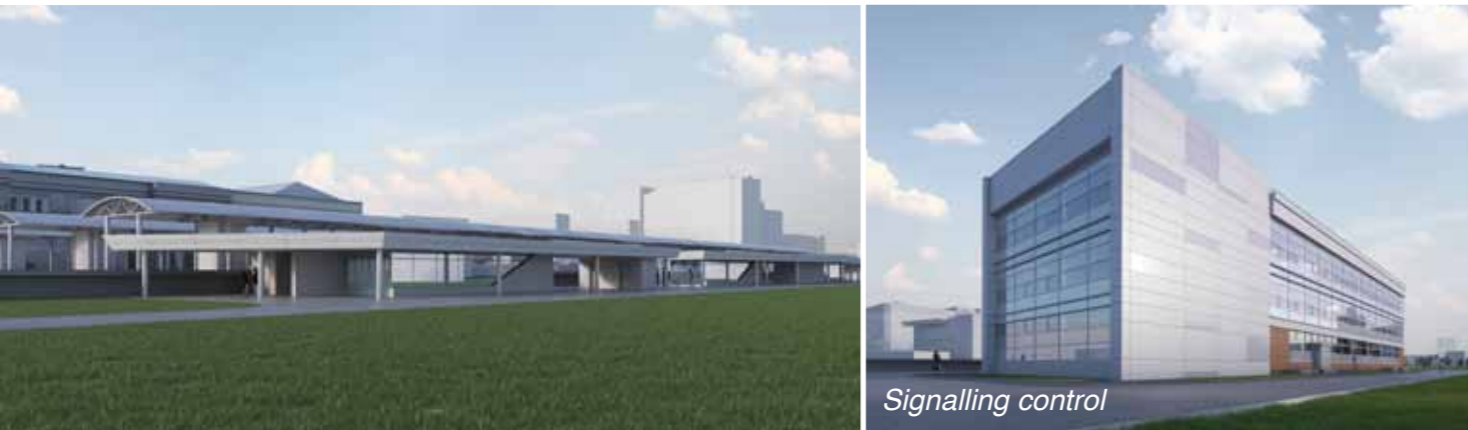
## Design of high-speed rail line HSR 2 Moscow — Nizhny Novgorod — Kazan



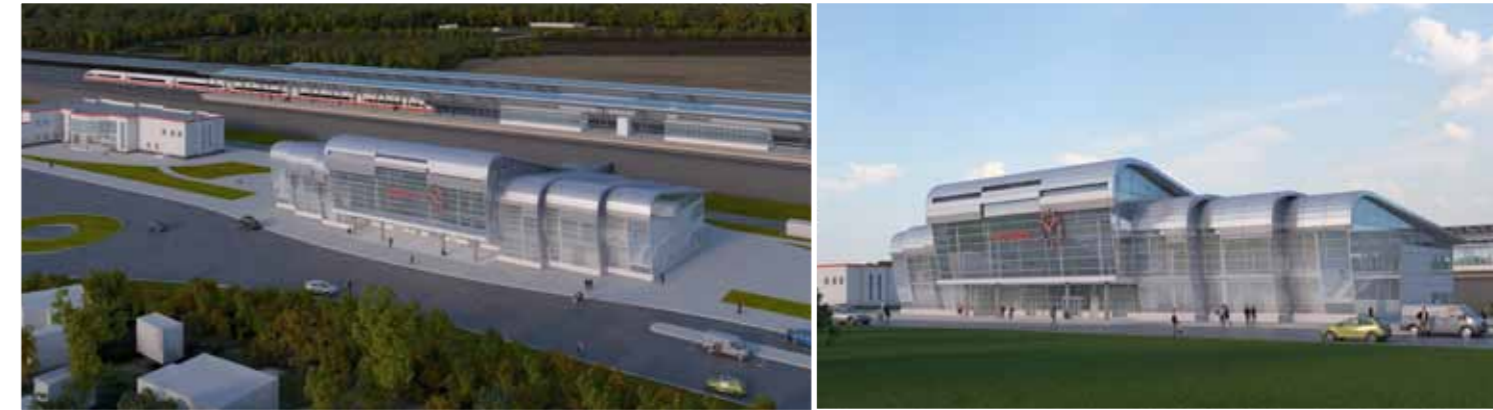
*High-speed rail lines with gauge of 1520 mm is absolutely new project:*

- **Ballastless railway track** provides the “wheel-rail” interface at the speed of up to 400 km/h upon the given geometrical parameters of a railway track and at the specified comfort level.
- **Roadbed** meets the requirements for strength, stability and deformability of a roadbed considering the vibrodynamic influence of trains while minimizing costs.
- **Unified designs of artificial structures.** Technical solutions for unified artificial structures are developed. These innovation solutions include designs for a HSR section for operation at speed of from 200 km/h up to 350 km/h.
- **Contact system CS-400:**
  - a contact network made from super alloys “copper-magnesium” or “copper-chromium-zirconium”;
  - aerial crossings equipped with additional catenary which do not cross wires;
  - foundations in the form of bored piles, the bearing and supporting structures of high rigidity, cylindrical compensators with plain bearings and so on.
- **Innovative railway stations.** The unique architecture creates images of modern multipurpose centers forming part of transport interchange hubs providing comfort and efficient movement of passengers between various types of transport.
- **Rolling stock** (freight and passenger). The designed train will operate at speed of 360 km/h, and during the testing it will accelerate up to 400 km/h. The designed trains will be able to operate on both lines with constant and alternating current.





Signalling control



Noginsk VSM Station



Moskva-Kurskaya Passazhirskaya Station



Vladimir VSM Station



Orekhovo-Zuevo VSM Station



Dispatch Control Center

Petushki VSM Station





*Kovrov VSM Station*

*Gorokhovets VSM Station*



*Administrative – technical building of the Gorky Railway in Nizhny Novgorod*

*Dzerzhinsk VSM Station*

*Airport VSM Station*



*Kstovo VSM Station*

*Niva VSM Station*

*Polyanki VSM Station*



*Railway Junction Kazan-2 VSM*

*Cheboksary VSM Station*

*Pomary VSM Station*





The following video materials are available on the Institute’s website:

- History of Mosgirotrans.
- Mosgirotrans — More than 85 years of successful work!
- Innovations of the Moscow — Kazan HSR.

