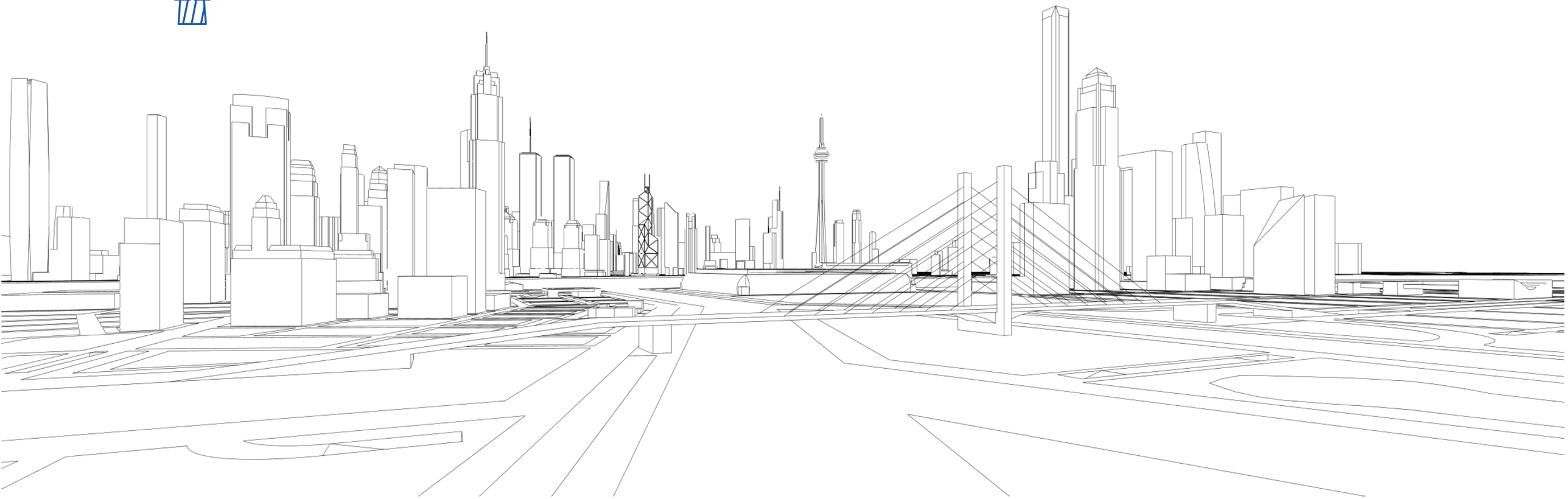


INSTITUTE OF PRESTRESSING TECHNOLOGIES

Moscow, 2020

/ GENERAL

JSC IPT (Institute of Prestressing Technologies) is a Russian engineering organization which focuses on application of prestressing of building structures.

The main activities are carried out by and home laboratory

- **Design Department**
- **home Laboratory**

The core value of the Institute **is highly qualified engineers with experience in the field of structure prestressing.** Along with modern software and equipment, it can for sure solve any engineering issues associated with design and construction of prestressed structures for various purposes.

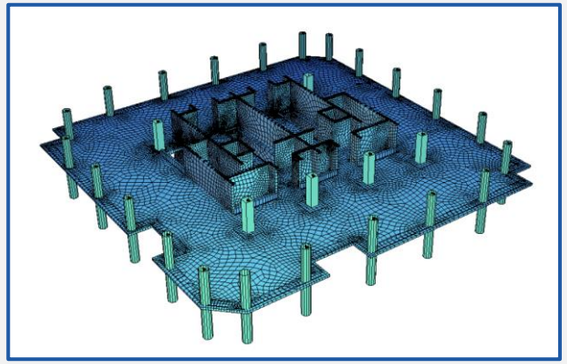
We are the only organization in the Russian Federation and neighboring countries that has occupied the specialists in prestressed structures **in all areas of construction:**

- **bridge and hydraulic engineering facilities**
- **industrial and civil facilities**
- **nuclear construction**

DESIGN GENERAL

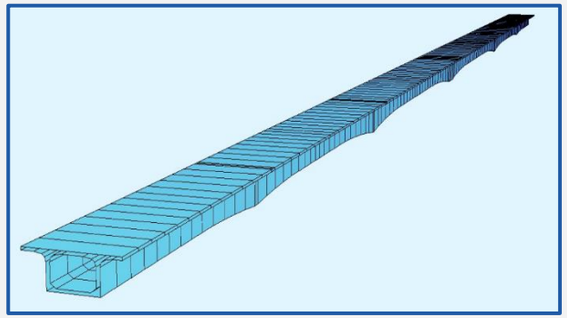
Design Department will take on the following for you:

- pre-design work and search for effective design solutions in terms of prestressing;
- development of design and working documentation of buildings by prestressing structures;
- field supervision of construction of prestressed structures;
- independent design calculations (as an examination of a third party);
- development of process regulations for tensioning and grouting of prestressing systems;
- development of process regulations for manufacture of prestressed structures.



For over 13 years we have been applying prestressing in the following areas of construction:

- **civil construction**
  parking, parking lots, shopping centers, office buildings, hotel complexes;
- **industrial construction**
  cement silos, sugar silos, silos of other bulk materials, containments of nuclear power plants, storage tanks for liquefied gas (LNG) and water, sump tanks for liquids;
- **transport construction**
  bridges, overpasses, crosswalks.



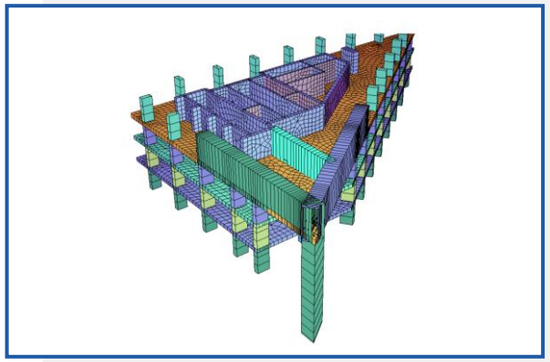
DESIGN GENERAL

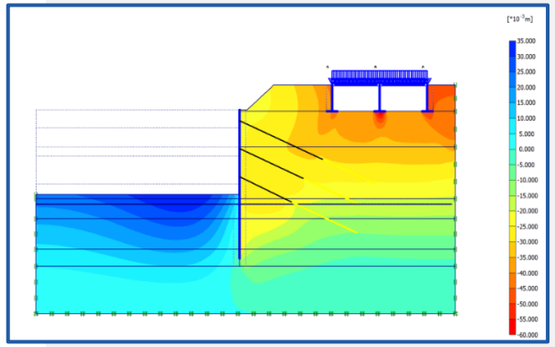
We know exactly how to consider different complex factors when designing prestressed structures, such as loss of prestress because of deformation of anchors, relaxation of modern stress-relieved strands, constrained creep and shrinkage of concrete.

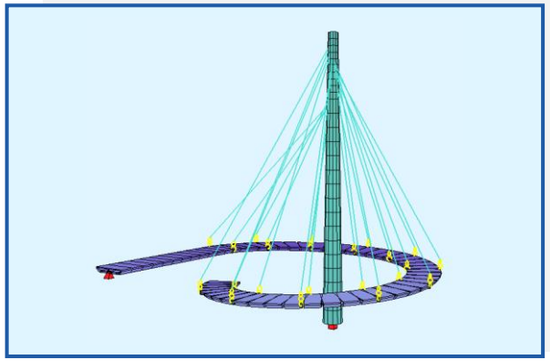
Our employees **take training courses on the regular basis and work with licensed and certified programs** with the help of which they offer you the following calculations:

- calculations of prestressed structures
  in SOFISTIK and MIDAS IT programs;
- calculations of foundation pit fencing with prestressed
  ground anchorage and geotechnical calculations to assess the impact of construction on existing structures
  in Plaxis program;
- calculations of steel and reinforced concrete structures
  in SCAD Office program.

Development of working documentation in specialized programs Tekla Structures and Nanocad Zhelezobeton (Reinforced concrete) using our own software projects **allows us to obtain high-quality products at the modern level.**







EXAMPLES OF FACILITIES

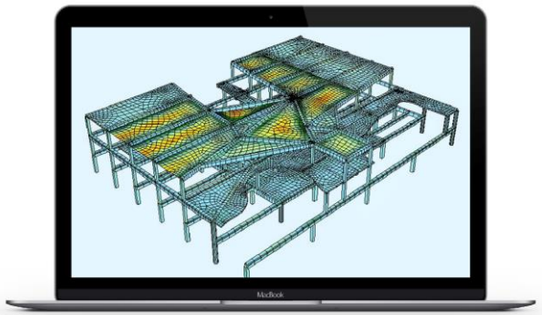
SHOPPING COMPLEX OF MORE THAN 250,000 m²

Leningradskaya region, Novoselje villiage

Developed

JSC Institute of Prestressing Technologies

- **Modelling and calculation of complex geometry**
- **Prestressing with post-tensioning - reinforced concrete spans up to 24 m, corbel up to 5 m**
- **Prefabricated and monolithic floors**
- **Elastic base**
- **Analysis of the stages of installation with regard to creep and shrinkage of concrete**



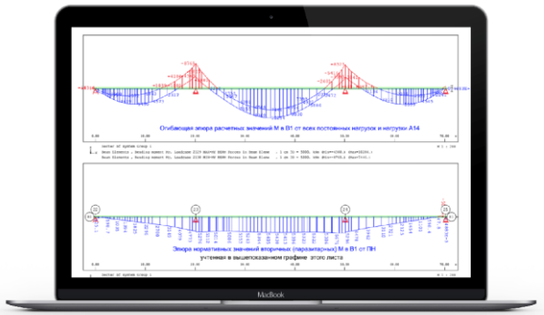
ROAD OVERPASS

Domodedovo Aeroport

Developed

JSC Institute of Prestressing Technologies

- **Independent calculation as a third-party examination**
- **Variable section of longitudinal and transverse girders**
- **Analysis of the stages of installation with regard to creep and shrinkage of concrete**
- **Prestressing with post-tensioning at different stages**



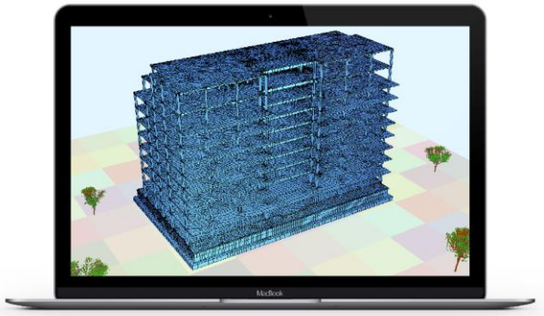
OFFICE BUILDING

Moscow

Developed

JSC Institute of Prestressing Technologies

- **Modelling and calculation of complex geometry**
- **Analysis of the stages of installation with regard to creep and shrinkage of concrete**
- **Prestressing with post-tensioning at different stages**
- **Spans up to 17 m**
- **Elastic half-space**

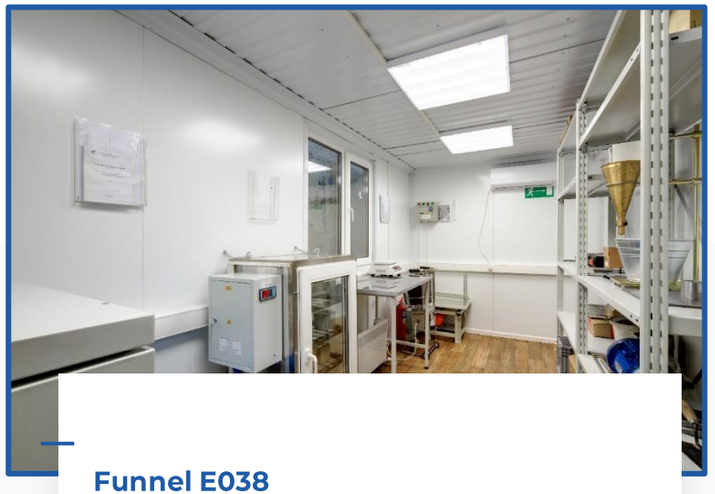


LABORATORY SERVICES

The construction testing laboratory of JSC IPT is accredited in the national Federal Accreditation Service Rosakkreditatsiya". It also has the accreditation certificate of Association of Analytical Centers "Analytika", which is a full member of the international organizations ILAC and APLAC.

Laboratory of JSC IPT performs the following types of tests:

- testing and selection of the composition of concrete and grout;
- testing of construction reinforcement and strands;
- equipment calibration;
- video inspection of ducts, pipelines, wells;
- testing elements of prestressing systems.



Funnel E038
Funnel E038 allows us to determine fluidity of mortars, cement slurries, and grouts according to EN 445.

01 SELECTION OF CONCRETE AND GROUT COMPOSITION

The construction laboratory is equipped with all necessary equipment to select concrete and grout.

The composition is selected and tested both by Russian standards and by foreign ones. In particular, the grout is selected according to the requirements of regulatory documents for prestressed concrete structures (SP 46, EN 445, 446, 447).

When the components, which name and percentage are necessarily indicated in the Concrete Mix Design, have been selected, the specialists of the Institute feature physical and mechanical properties of the grout.

LABORATORY SERVICES

— **Test climatic chamber of the heat-cold class (HCC)**
This type of equipment allows us to determine frost resistance of both the grout and various types of concrete.

— **Cameras for normal hardening and wet storage of samples**

HCCs are designed for hardening and wet storage of concrete samples, grout and mortar.

— **Thermostat bath VT-1**
Designed for thawing concrete samples during temperature tests for frost resistance of structural heavy, light and dense silicate concrete during freezing according to accelerated and basic methods.

02 Testing of construction reinforcement and strands

Electromechanical Testing Machine Zwick and Universal Hydraulic Tester Metrotest

allow highly accurate tensile and compression tests of strands, building reinforcement, coupling joints, various metals (forgings, stampings) of concrete and grouts.

LABORATORY SERVICES

Unlike most laboratories, we perform tests of stands for relaxation and corrosion resistance, as well as tests of sheathing strands (monostrands) at the unique stands of our own designs.

03 Equipment calibration

Institute of Prestressing Technologies calibrates hydraulic tensioning jacks, which is mandatory according to the requirements of SP 46.13330.2012. During operation the jacks should be calibrated at least once every 12 months, as well as each time after maintenance and repair. Equipment should be calibrated if it has been stored for more than 6 months.

The specialists of the Institute perform calibration with the accepted and calibrated devices of accuracy class 0.2 in accordance with the requirements for calibration tools.

Calibration is carried out strictly according to the developed program and equipment calibration procedure providing a full set of reporting documents.

Hydraulic equipment for testing piles, moving and lifting equipment and structures is to be calibrated as well.

LABORATORY SERVICES

04 Video inspection

Institute of Prestressing Technologies provides video inspection services for ducts, pipelines, and wells. Video inspection is one of the widely used modern diagnostic methods which makes it possible to determine the status of both trunk utilities network and local network.

Remote Video Inspection allows to:

- find damages, displacement along the length of pipelines;
- find defects in the joints of pipelines determining exact location of the damage;
- Make a foto and video record of the defect.

The unique video inspection system used by the IPT specialists makes it possible to observe and diagnose the processes inside ducts, pipes, wells, water wells, etc. The equipment for such works is a high-resolution portable video camera that transmits an image to a specialist's monitor, as well as a pushing cable for reliable, simple and quick trouble-shooting. Thus, this system allows a complete inspection by conservative methods maintaining integrity of the inspected objects of various configurations.

CONTACTS

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