

İMPOYAPI CONSTRUCTION ENGINEERING TRANSPORTATION MINING IND. TRADE CO. LTD.



Company İntruduction Catalog

Construction . Engineering

Transportation . Mining



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INTRODUCTION

Company Profile

İMPOYAPI CONSTRUCTION ENGINEERING TRANSPORTATION MINING IND. TRADE CO. LTD. which has adopted professionalism, innovation, change and sustainability as its main values, has been sustaining its existence in the construction industry since 2011. It has started in the construction industry with the construction of public buildings, and together with its experienced staff, its developed machinery and strengthening financial structure it has expanded to the road, highway, structure, bridge and viaduct construction as well as precast building elements and floor technologies markets. İMPOYAPI has adopted a professional quality understanding which has been certified through the ISO 9001 Quality System Certificate, the OHSAS 180001 Occupational Health and Safety Management System Certification and the ISO 140001 Environmental Management System certificates and has thus enabled an integrated system infrastructure. İMPOYAPI CONSTRUCTION has acted sensitively to environmental and cultural issues and supported social aid activities and internships since its establishment and continues to invest in the future today.

Our company is majorly active in 3 areas:

- 1- Construction
- 2- Engineering
- 3- Production

Vision and Mission

Our mission is to contribute to our country's economy through prestigious projects on national and international platforms, with our professional crew and our values of integrity and quality. We aspire to make long-term plans for the benefit of our company, our stakeholders and our world and strive to act accordingly.

Our vision is to be a leader in our area of specialization and to continue our activities as a reference group of companies.

Our hope is,

- that mutual complacency is generated by our staff and company
- that İMPOYAPI CONSTRUCTION comes to life through the success of our stakeholders
- that civil society sees us as a responsible respondent.

1- CONSTRUCTION

A. ROAD AND BRIDGE CONSTRUCTION



İMPOYAPI CONSTRUCTION has been serving in the construction sector since 2011, having started with asphalt and road construction projects and moved on, through its gained experience, professionalism and high-tech, to geology and drilling as well as landscaping and environmental arrangement projects.

İMPOYAPI CONSTRUCTION has especially changed the approach to road and bridge construction works abroad, accomplishing to make a name for itself by actualizing many "first"s in its projects, by harmonizing human and nature. The "İMPOYAPI STANDARD" continues to be synonymous with "high quality". From design to completion, each step of production for every project, including infrastructure and landscaping projects, has the İMPOYAPI signature and every project is completed with an uncompromised understanding of quality, in accordance with the "Integrated Management System" certificates.



Baku-Russia Highway Bridge Construction Works (132 + 700-192 + 240 km)

Agcay Bridge Construction Works 152+639 km (4 Apertures)

CagacukCay Bridge Construction Works 148 +126 km (3 Apertures)

QudyalCay Bridge Construction Works 157+842 km (4 Apertures)

Qusarcay Bridge Construction Works 166+954 km (2 Apertures)

VelveleCay Bridge Construction Works 144+939 km (3 Apertures)



B. Prefabricated Concrete Element Production Plants



Prefabricated concrete elements are nowadays used in almost all areas of life. In developed and industrialized countries, prefabricated concrete construction elements are commonly used in building and railway construction projects. There are many advantages in using prefabricated concrete constructions during a project. These advantages are in short: the reduction of total production costs, faster completion of a project, the maintenance of quality and enduring construction elements, the reduction of material waste, increase in modularization and standardization possibilities and a serious reduction in possible work accidents that could occur in the worksite.

Our company produces and completes many turnkey projects, especially in prestressed concrete. The areas of activity of our company are as following:

- Prestressed Concrete Outline Traverse Production Facilities
- Prestressed Concrete Bridge Beams Production Facilities
- Concrete Cable Channels, Flooring and Concrete Paving Production Facilities
- Concrete Pucker Pipe Production Facilities
- Concrete road barriers Production Facilities
- Concrete road barriers Production Facilities
- Concrete Electric Pole Production

All turnkey projects completed by our company are carried out in collaboration with business owners in all steps of the project, including pre-production, during production and post-production. Through this act of disclosure and cooperation, business owners will be able to do their planning on strong foundations and thus possible future location-based problems can be prevented. Furthermore, the production will be examined in certain periods of time after the project is completed, in order to maintain quality, showing that our company is behind its work all the way.

Our pre-project activities are as following:

- a) We complete feasibility studies on the area where the site will be built
- b) We prepare the infrastructure, superstructure and master plans necessary for the installation of the production site, as well as the cost analysis
- c) During the production site installation process following preparations are done about concrete:
 - The analysis of crushing and screening facilities near the production site for the aggregates used for the concrete (its distance to the building site, price and quality comparisons, laboratory tests)
 - The analysis of the cement used for the concrete and pre-trial in laboratory environment (where the cement should be acquired from, the analysis of quality documents etc)
 - The analysis of chemical additives used for the concrete and pre-trial in laboratory environment (laboratory tests in order to define the additives and its quantities)
 - The water used for the concrete should also be tested.
- d) We analyze and report the technical conditions and standards of the prefabricated elements according to their field of use (railways, highways etc)
- e) We decide the organizational scheme and decide on the number of personnel in the production site and their responsibility charts
- f) We prepare the quality control documents and laboratory test documents to be used in production
- g) We organize and deliver all necessary reporting documents for the production

B.1-Azerbaijan Xacmaz Prestressed Concrete Bridge Beam Production Plant



Bridge beams are elements used for byroad projects, which use high-strength concrete and prestressed technology in order to surpass large apertures. Prestressed bridge beams can be produced in different sizes and cuts according to the bridge's technical properties. They are intermittently or adjacently assembled on bridge piers. The advantage of it being prefabricated is the short duration of the construction process.

For this facility built in the Xacmaz region of Azerbaijan our company has completed:

- All drawings and construction work of the infrastructure and superstructure projects
- The assembly and activation of all electronic and mechanical installations;
- The design, manufacture and installation of the mold and hydraulic systems;
- The manufacture and installation of gantry cranes;
- The preparation and laboratory analyses of concrete prescriptions;
- The personnel training and organization charts;
- Production cost analyses;
- The quality control tests and reports; and
- Concrete central revisions.

General Characteristics of the facility;

- The prestressed beam production mold has been designed as 108 meters long and can produce beams in 4 different lengths (90-120-140-170mm) due to its special design. The mold has a hydraulic system that can open to 2 sides.
- The total production and assembly process of this project lasted 60 days.
- This facility can produce a maximal of 3 35 meter long prestressed bridge beams.
- The stretching unit headers have been designed by our engineers to endure a 1000 ton heavy load in total.
- It is the 3rd prestressed bridge beam production facility in Azerbaijan.



B.2-Azerbaijan Railways Prestressed Concrete Turnout Production Plant



The production capacity of this facility we have built in Azerbaijan is 300 running meters per day. The system consists of four 75 meter-long production molds within 2 mainlines. It is the first and only single shear traverse production facility in Azerbaijan.

Facility Technical Information

Production Line

The two production lines have the capacity to produce 300 meter-long shear traverses a day. Besides the hydraulic cylinders used for stretching within these production lines, there are equipments to take the concrete in the mold out. The lifting and turning arms included in the line are connected to a hydraulic unit and is controlled by a panel at the end of the lines. These arms first lift the concrete block within the mold and then turn them on the roller conveyor in the middle of the line, and thus ready them for cutting.



Stressing Equipment

Four cylinders function within the stressing process. These cylinders are specially designed, their vertical directions intersecting with the line, and have a 300 bar stressing force.

The hydraulic stressing process is done through the control panels at the end of the lines. With only one press of the button the equipment starts an automatic pre-stress process, and then waits for 3 minutes in order to enable the personnel to make the last controls, after which it completes the process with a final stressing procedure. During this process, the elongation of the prestressed wires are transferred to the registry panel through a device on the cylinders. These are automatically saved, thus completing the control procedure of the prestressed wire's elongation. The stressing and elongation data is saved into the on a recording device on the control panel. This way production errors are minimized, and any problem that might occur in the future will become traceable. There are 2 LCD screens on the control panel. One of these screens monitor stressing values and act as an instant dashboard, while the other instantly records processes and present them as graphics.



THE POWER SUPPLY

The equipment shown on the side picture has been specially designed for these lines and provide power for tools that will move on the line, such as concrete casting machines. This line is present on the whole casting line.



CONCRETE CASTING MACHINE

The concrete casting machine ensures that the concrete coming from the concrete central is poured into the mold swiftly and precisely, as well as providing concrete vibration within the mold. There are 2 running motors on the casting machine. Also, there are 2 bottle vibrators to ensure the vibration of the concrete cast inside the mold and a cylinder vibrator to ensure surface smoothness after the casting. The machine can be run manually and automatically and also has speed adjustment. Furthermore, there are external vibrators so that there is no concrete left in the pail and so that the concrete spreads evenly. An LCD monitor to provide automation on the machine is also present.



WIRE STRESSING AND WIRE HEADING MACHINE

These are some of the most important machines used in production, because as stressing for 75 mt is done in a single procedure, it is necessary for the prestressed wire's lengths to be even and stable. The machine provides that the prestressed wires that come in a coil are automatically cut evenly and in the desired length, through its PLC screen. The blow molding machine ensures that the prestressed wires connected to the stressing plaques are blown, so that they do not come about from the plaques.



CUTTING MACHINE

On the cutting machine there are sensors that automatically identify the cutting points. While automatic cutting minimizes staff errors, it is one of the main factors increasing production speed. At the outlet of the cutting machine there are 3 compression pistons, one of them on top and two of them on the sides. These pistons fasten the concrete block during cutting and its vibrations prevent fractures. The cutting machine is designed so that it can operate of future possible capacity increases and added lines. The running unit on the machine enables switching between the lines and are fastened then they come on the processor line. The roller conveyor on the production line can be controlled through the automation on the cutting machine and thus the concrete block can be pulled automatically on each cutting procedure. The PLC screen on the cutting machine enables the intervention to cutting speed, blade speed and similar processes.



WORKERS TRAINING

The assembly and startup of the system is done by our crew. In order for the facility to operate and to be managed after the installation is completed, we provide training in critical points about production and traverse production with our factory staff consisting of one engineer and three from the production crew.

We also provide training in the production of concrete prescriptions, the raw materials used, in traverse cost analyses (aggregate selection, cement selection, prestressed wire technical analysis) and similar technicalities in the main activity fields of the factory. Basic training and workshops are carried out by our personnel and we take it upon ourselves that the training process is as short as possible and that production starts as soon as possible.

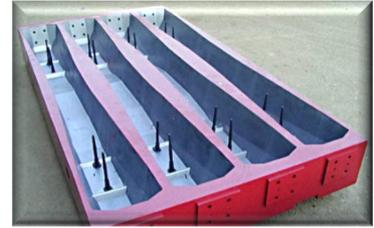


B.3-Prestressed Concrete Mainline Sleepers Production Plants



The Karousel Method Sleeper Production is a method that enables production that could go on for 24 hours through a circular loop.

Production is made with the help of sleepers moulds and each production mould has 4 traverse production compartments. Through the plaques located on the molds the sleeper type, its mould number, its production date, from which section the mold was produced and for whom it was produced can be monitored and this allows the long-term traceability of the sleepers.



These 4 sections process stretching through production assisting equipments such as prestressing reinforcement, stressing plates, bolts and tie-rods, nuts and tie-rods. Each sleepers is applied stressing related to the railway axle and project cargo.

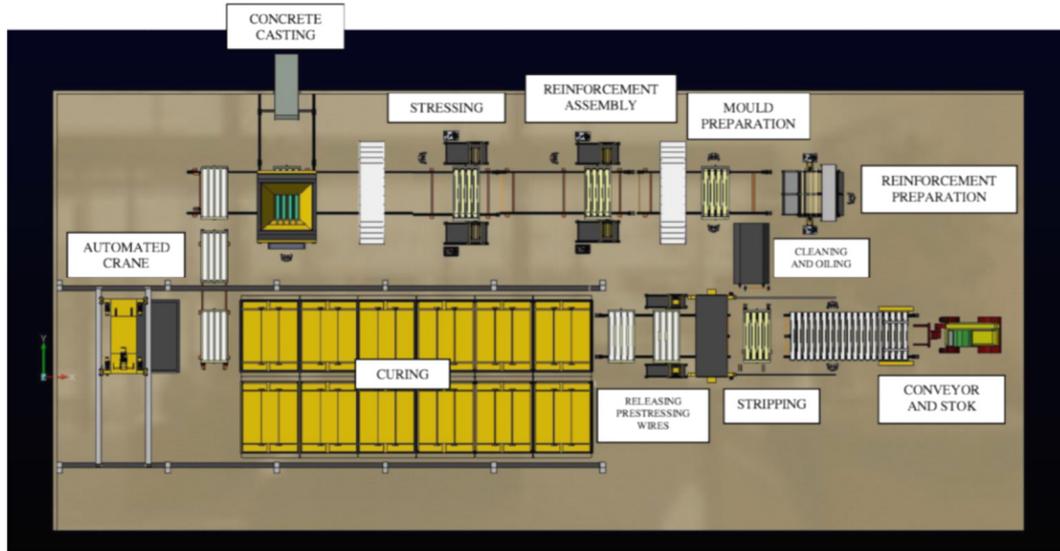


After the stressing procedure is completed, the production molds manufactured by the conveyor are led to the concrete casting section. When the sleeper moulds are ready for production, the production operator can use the communication system on the command panel to request concrete. The concrete is poured into the sleeper mould in 3-4 stages within 1-1,5 minutes and thin 2-staged vibration is applied on the mould.



After the concrete casting procedure is completed the moulds are turned into a vapor cure that automatically opens and closes. The temperature in the vapor halls are recorded through a digital and printing system. Also, the inner temperature is identified by an electronic measuring device. Once the system identifies that the pressure resistance for a 150 mm² cube sample sleeper subjected to the vapor cure is min. 45 N/mm², prestressed steel reinforcements are transferred to the concrete. The sleepers, which are taken out from the mould through and automated system, are put on a carrying line. After their date of production is inscribed, they are sent to the temporary stock line and then to the stock field. The machines used during production can be turned to full automatic or semi-automatic.





Machines and Molds Used in The Karousel Mainline Traverse Production Facility;

- PRODUCTION MOULDS
- REINFORCEMENT PREPARATION MACHINE
- PRESTRESSING MACHINE
- STRESSING MACHINE
- CONCRETE CASTING MACHINE
- AUTOMATED CURING CRANE
- CURING ROOMS
- CURE MACHINE AND CONNECTION PIPES
- RELEASING PRESTRESSING WIRES
- STRIPPING
- MOULD CLEANING AND OILING MACHINE
- CONVEYOR
- STOCKING MACHINE



LABORATORY

An laboratory within the facility's 100-150 m2 indoor area or in an adjacent building is necessary in order to check whether the sleeper quality is fitting to the TS EN 13230 standards and in order to make R&D studies when the need arises. The personnel working in the facility need to be familiar with the EN 13230 quality standards and they also need to be experts on concrete. Aggregate, cement, water, concrete chemicals and prestressed rod sample tests also need to be done at certain time intervals in this laboratory.

Sleeper Test Equipment Used in the Laboratory

- A Static Test Press is one of the most important test equipments. Force is applied statically at certain intervals specified in the EN 13230 standards on the Sleeper Ray Aging Surface in order to check for fractures.
- Sleeper Rail Seating Surface Shoulder Width Measurement Device
- Sleeper Rail Seating Between-Surfaces Measurement Device
- Sleeper Rail Seating Surface Inclination And Torsion Measurement Device



B.4-Cable Channels, Concrete Paving, Culvert Pipe, Water Troughs Production Plants



Cable Channels, Concrete Paving and Border Production Facilities

This facility we have built in Sakarya was built in order to produce the prefabricated concrete cable channel used in the Istanbul-Ankara speed rail line.

Our company has provided:

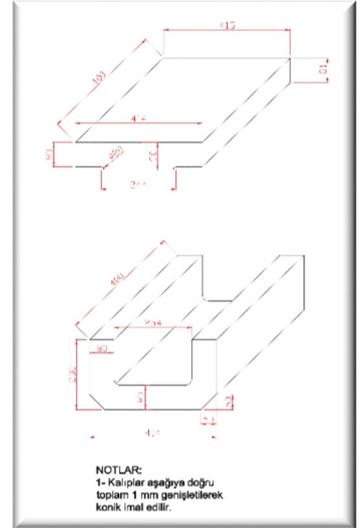
- The project design,
- The preparation of the site plan,
- The steel construction drawings,
- Concrete laboratory tests, analyses and prescriptions,
- Training.

The concrete paving border and cable channel concrete is poured as 0 slump and is formed by pressing.

The facility has a production capacity of a 1 km long cable channel from 1000 m² stone in one shift.

The indoor area of the facility is 2400 m².

The cable channel admissions are tested by the governmental railway company and by consulting firms before each shipment.



Culvert Pipe, Water Troughs Production Plants

İMPOYAPI provides project design, quality control, assembly, business reception, personnel training and after-sales service and maintenance for all elements of the pursued pipe facilities, as specified below.

- Concrete pipe machines in different types and capacities: \varnothing 150 mm- \varnothing 3600 mm diameter and sizes up to h=500mm l=4000 mm.
- Chimney bases, concrete chimneys machines
- Fork pipe and elbow machines
- Border machines
- Parker machines
- Concrete station
- Aerial mortar transport and distribution systems
- Concrete bunkers and conveyors makers



B.5-Aggragate Crushing and Screening Plant



Our company continues its activities, aiming to maximize quality and general productivity and to minimize the cost and duration of maintenance in crushing and screening facilities.

With the young and dynamic staff of IMPOYAPI we ensure that we take care of our customers' needs of:

İhtiyaçlarını belirleme

- Identification of necessities
- Development
- Design
- Quality
- Assembly and Disassembly
- Business purchases
- Revision
- Staff training
- After-sales service and maintenance services.

Within the scope of turnkey projects, we also offer services such as:

- Construction
- Electricity (power transmission line and transformer plant)
- Dust reduction and plumbing
- Laboratory and quality services and reporting.

It must be remembered that the quality of materials extracted from crushing and screening facilities is also affected by the cement and amount of additives. Therefore, our staff does the material's quality tracking not only based on the amount of material obtained from the production, but also in relation with the benefits in different areas of usage.



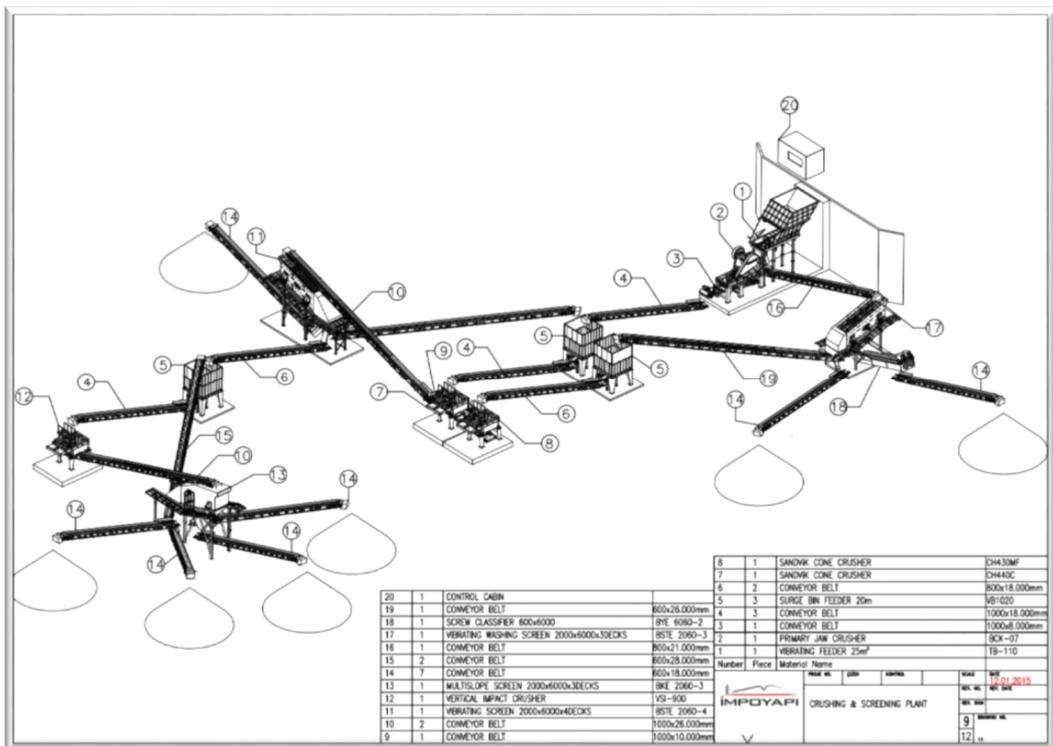
Below you can find a crushing and screening facility and its technical properties we have designed and are still constructing in Azerbaijan.

This system has been designed to obtain 0-5 mm materials from 50%, 0-7mm and 7-20 mm washed materials from 30%, 5-12mm,12-19 mm and 19-25 mm side materials from 20% of 400 tons of material to be fed by the creek per hour.

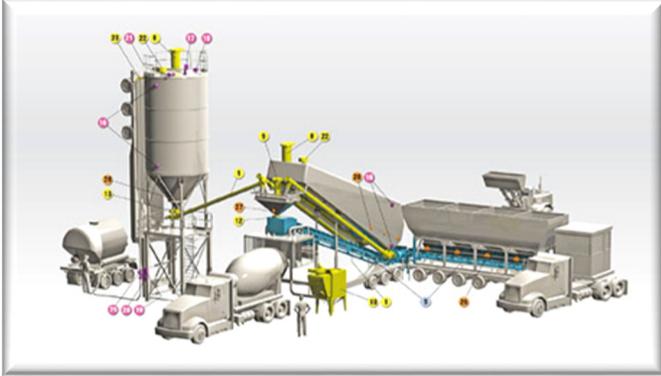
There are 5 crushers within the system, one being a vertical shaft crusher and two of them being cone crushers.

After putting materials higher than 50 mm's through the jaw crusher in the first feed, they are transferred to the CH 440. Materials lower than 50 mm's are sifted through the first sieve (primer sieve). From there, 0-7 natural sand and 7-20 mm drainage material is acquired and sifted through a sieve washer. The sieve material (above 20 mm's) is directly transferred to the CH430 chronic crusher. The material obtained from the two chronic crushers are sent to the second 4-deck sieve (the secondary sieve). The 0-5 mm product is then separated and the 5-25 mm material is sent to the vertical shift crusher. The 25 mm sieve material is recycled in CH430. The material coming out of the vertical shift sieve is sent to the 3rd sieve (the product sieve) and 0-5, 5-12,12-19 and 19-25 mm materials are obtained. In order to acquire the desired percentage of materials, we send 50% the material higher than 0-5 mm to the vertical shift crusher to be recycled.

With this method we aim to gain productivity of more than 90% of the raw material.



B.6-Concrete Plant Installation, Maintenance, Repair, Assembly, Disassembly and Technical Support Services



The most important part of the production facilities we produce as IMPOYAPI are the concrete plants. It is a well known fact that, especially in prestressed concrete, the water/cement ratio directly affects the quality of the output products, such as cable channels, concrete poles, concrete pipe and tubes. In these kinds of production, fluctuations in concrete quality can cause big losses. In order to prevent this, our company produces solutions to minimize human error in production as well as traceability (by ensuring that all information is measurable and recordable).

Considering that production facilities are constantly active, it is a fact that raw material consumption rates are close to prescription rates directly affect production costs. Therefore software improvements our company does on current facilities cause businesses to use their resources correctly and this directly affects costs.

Furthermore, our company provides maintenance and repair services to nearly 20 facilities all around Turkey, as well as 24-hour failure intervention support.

The service our company provides is as follows:

- Offering practical and effective solutions to meet the needs on all levels
- Ensuring the correct use of business resources
- Helping establishment save up on purchase costs
- Offering a safe cost analysis after installation (through measurability and traceability of all information)
- Offering quality and calibration services in concrete Works
- Providing periodic and protective maintenance services after installation
- Giving assembly and disassembly services for concrete facilities
- Offering infrastructure services for stable or mobile facility installations, if wished for (construction, electricity, plumbing, laboratory etc.)



C. Industrial Construction



The use of steel structures in industrial constructions meets the architectural needs most appropriately. Large apertures, local-variable definitions and variable load sizes are some of the main reasons why steel is preferred as the main structure of industrial constructions.

- The undeniable advantage of large apertures can especially be seen in industrial constructions
- The production and assembly of these are much faster than alternative construction methods. That is why there is no delay in the planned process; the structure comes to life on the date that was set at the start of the project.
- It is resistant to earthquakes. The advantages of mass weight, combined with IMPOYAPI's strength in design and its quality management, offer a great advantage to structural steel systems compared to alternative structural methods.

Our company provides a full building design and turnkey construction working model. Besides this, it has also completed many storage building, gas station, vehicle inspection stations, cement silo roofs and hospital construction projects' design and construction.

C.1- TÜVTURK Vehicle Inspection Stations Construction and Repair Works

TÜVTURK is the only company authorized in periodic vehicle inspection, and is an expert in its field due to its vast experience in vehicle inspection it actualizes in accordance with international standards, always aiming to improve overall traffic and vehicle safety.

In this context we construct stations and undertake their repair and maintenance when needed in all regions of Turkey.





Aksaray P1T1

Confined Space : 800 M2

Total Construction Area : 1700 M2

Nigde T2

Confined Space : 910 M2

Total Construction Area:1810 M2



Sakarya P4T2

Confined Space : 1400 M2

Total Construction Area : 2100 M2

Tokat Turhal T1

Confined Space : 710 M2

Total Construction Area: 1510 M2



İzmit P4 T2

Confined Space : 1400 M2

Total Construction Area : 2100 M2

Bolu P4 T2

Confined Space : 1400 M2

Total Construction Area : 2100 M2



2- ENGINEERING

Our company performs continuity, lateral loading, static loading and dynamic loading tests in Turkey and Azerbaijan's bored piles. You can find more information about these tests below.

A. Pile And Jet grout Integrity Tests

The pile integrity test enables the check up of all jet grout colons and bored piles. This way, problems related to the production's location can be identified without having to open up the ground. The integrity test is a fast and low-cost method in identifying problems. Compared to slower and more expensive methods such as core drilling, trenching survey and loading tests, the integrity test offers a faster and cheaper solution. This experiment is conducted by hitting the top of the pile or jet group colon with a little hammer and measuring the reflection signal with an accelerometer placed on the top of the pile or jet grout colon. The pile's response can immediately be seen on the screen and can be stored in the hard drive for analysis.



Baku-Russian Highway Qusarcay Bridge



Göyçay-Ucar Road 17+610 km

B. Pile and Jet grout Static Loading Tests

The pile static loading test is a method used on piles constructed -or which are planned to be constructed- on grounds or rocks in order to identify the carrying capacity of the piles. After deciding on the pile the experiment will be based on, the drawing pile or anchors around which they will be place are produced. The concrete in cast in-situ piles should be at least 7 days old and the concrete endurance will reach twice the force of the maximum stretching during the experiment. The assumptions used in the analysis give different results in design methods and their sensitivity is not at the desired level, which is why a pile loading test is recommended for the pile structured design.



Bakü-Rusya Highway 17+610 km

C. Pile and Jet grout Dynamic Loading Tests

This experiment is used in order to analyze the capacity of the pile, by applying dynamic weight to the pile. For the dynamic pile test, a certain amount of bulk is axially dropped on the pile and the created deformations are measured. Another advantage of this test is that it also provides data of ultimate pile resistance and structure endurance, as well as proof for the used deformation range.

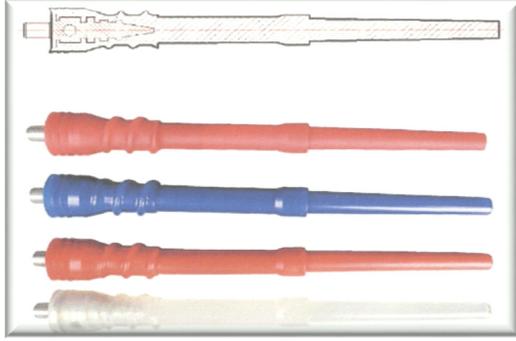


3- Production (Sleeper Technology)

As IMPOYAPI, we manufacture steel and plastic materials resistant to high strength to be used in traverse productions in our facilities located in the Bursa Gemlik Free Area. We serve with the principle of providing high quality material for low costs to our customers from all around the World.

A. Byproducts Used in Sleeper Production

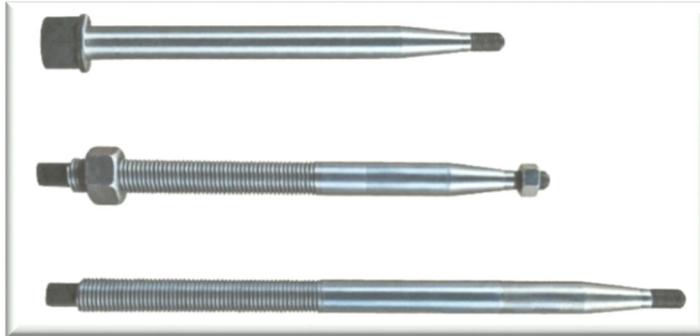
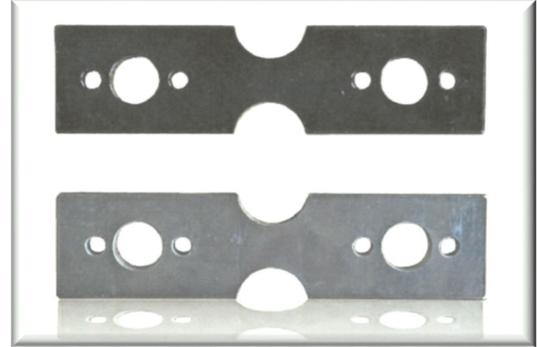
A.1-Dowelholder :



- Production fit for the traverse manufacturers needs
- Long durability
- Our production is done in hot runner molds in order to prevent air gaps that could occur during injection.
 - In order not to experience any problems in the anchor's inclination, our metal guides were specially designed by our engineers.
 - The polyurethane raw material of the anchor holder is being imported from Europe and is the most fitting choice in accordance with traverse manufacturer's production methods.

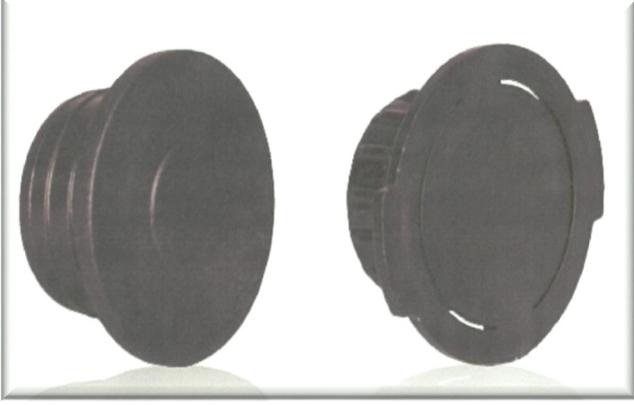
A.2- Anchor Plate

- The template plates are manufactured in our facilities in Bursa.
- The template plates can be covered with a second process, on demand.
- Our production capacity for template plates is 600.000 pieces/month



A.3- Tie –Rod ve Bold

- The tie-rod and bolts are manufactured in our facilities in Bursa.
- The raw material used for tie-rod and bolts are very important as these are subject to high stretching due to their areas of use.
- The raw material used undergoes three different processes so that the material reaches the desired hardness.
- These procedures are done very sensitively by our quality control team.

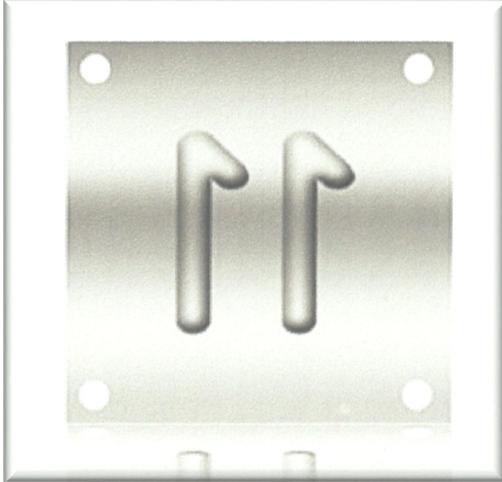


A.4- Plastic Dowel Cap

- These are used for Sdü 25- Sdü27 type anchors on shear or mainline traverses waiting unassembled in stock or on the worksite so that no strange substance enters their holes.
- We manufacture 3 types of plastic covers, 2 types as anchor covers and 1 type for traverse stretching holes.

A.5- Plastic Wedges

- These are used between tie-rod and bold holes as well as mold heads and the stretching holes on the end.
- The polyurethane raw material used in the production of plastic wedges is imported from Europe.
- The high quality of the important raw material plays an important role in the durability of the product



A.6- Date And Mould Steel Plate

- Mold plates are manufactured according to the needs and wishes of the customer.
- The mold plates' sides are beveled in order to decrease the concrete sticking surface with a second procedure.

B. Sleepers and Rail Fastenning Materials



B.1-Dowel



- These are left inside during the production of traverses and help connecting the rail and the traverse after production. Four are needed for each traverse.

B.2-Angle Plate



- * These are used to decrease the pressure on the traverse rails' inclination surfaces and to obtain a good seating surface. A big part of the bulk is carried by angle plates.

B.3-Screw



- The function as a lock between the rail and the traverse.

B.4- Tension Clamp



- The tension clamp creates tension between the bolts and the triphones in order to prevent them from loosening and unraveling.

B.5-Seled



- Seled neutralize the electrostatic charge between the rails and the train. They are very important among the fasteners.



İMPOYAPI İNŞAAT MÜHENDİSLİK MADENCİLİK TAŞIMACILIK SAN.TİC. LTD.ŞTİ
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