



Construction Intelligence

IRRIGATION WORKS



Azerbaijan



TAKHTAKORPU RESERVOIR AND HPS



The customer was the Republic of Azerbaijan "Melioration and Water Industry" OJSC.

One of the most topical projects today, which was commissioned by "Melioration and Water Farm" OJSC, is the construction of strategically important water supply for the cities of Baku, Sumgayit and the entire Absheron peninsula of the Tahtakorpu hydroelectric complex, worth several hundred million manat. In addition to the main task of improving water supply - along the way, the construction of a hydroelectric complex will increase the additional energy potential of nearby areas.

The reservoir of the hydroelectric complex is located at 32 km of the new canal Velvelechay-Jeyranbatan, on the territory of two districts - Shabran and Siyazan, on the tip of the southeastern ridge of the large Caucasus Range. Elevations range from 50 to 250 meters. Hydroelectric station site is located five kilometers west of the Shabran-Siyazan highway.

Earthen dam with a central clay core and gravel-sand prisms with a length of 1180 m along the ridge was designed with a 750 m wide base. About two and a half tens of millions of cubic meters of soil were poured into the body of the dam. The 135.5m high reservoir with a capacity of 218.9 million cubic meters of usable volume (total 268 million cubic meters) is one of the highest and largest in Europe. Hydroelectric complex main structures` include an earthen embankment dam, an energy path and an emergency spillway. The lined tunnel with a length of 500m and a diameter of $D = 4\text{m}$ with a water consumption of $40\text{kub} / \text{s}$ is completed by the building of a hydroelectric power station of 25 MW with three units.















VELVELECHAY-
TAHTAKORPU CHANNEL



The customer of the project is "the Land Reclamation and Water Management" of the Republic of Azerbaijan; the project was financed by the State Oil Fund of the Republic of Azerbaijan, the Saudi Development Fund, the Islamic Development Bank, and the OPEC Fund.

This channel is gravity one and alternative for Samur - Absheron Channel (SAC), from which the water is fed to Jeyranbatan reservoir by the pump stations.

The purpose of the channel construction is to improve water supply to Baku, Sumgayit cities and Absheron Peninsula, as well as for irrigation. The main channel Velvelechay-Takhtakorpu water through the main structure in the Ceyranbatan reservoir - the Takhtakorpu, starting from Samur - Absheron channel. The maximum water flow of the channel is $Q_{max} 75m^3/sec$.

The project includes the construction of a canal:
with a length of 31.2 km (km0+000-км31+200);
2 tunnels with a total length of 3500 m;
Overflows under the canal - 31 pcs;
Bridge crossings - 10 pcs;
Drain tunnels - 5 pcs.











CHANNEL TAHTAKORPU
– JEIRANBATAN



The customer of the project was "Land Reclamation and Water Management" OJSC of the Republic of Azerbaijan, consultant - "Temelsu international engineering services". The project itself was financed by the State Oil Fund of the Republic of Azerbaijan. This channel is also gravity one, and exceeds the length of the Velvelechay-Takhtakorpu channel almost 3 times.

And the maximum water consumption of the channel is $Q_{max} 40 \text{ m}^3/\text{sec}$.

Technical parameters of the project:

Length 110 km (km0+000-110+000);

1 tunnel with length of 1200 m;

Conduits 4 pcs. with length of 14 km;

Overflows under the canal - 150 pcs;

Overflows over the canal - 50 pcs;

Bridge crossings - 57 pcs;

Drain tunnels - 12 pcs;

Aqueducts - 2 pcs.









NEW CANAL OF ARAS
RIVER - HEADWORKS



The customer was "the Land Reclamation and Water Management" OJSC of the Republic of Azerbaijan.

A new river canal was designed in 2010 to relieve the existing river canals of the Aras and Kura rivers during the high floods. The course is an earthen canal with a total length of 130 km and a width of 200 m at the beginning of the route and 100 m after the 5th km. Water flow in this canal will be carried out through headworks located on the right bank of the Aras River, 800 m upstream of the existing Bahramtapa waterworks facility.

The headworks is of 16-span open gateway controller (16x5,0 m), designed to permit maximum flow of $Q=700\text{m}^3/\text{sec}$. The construction is equipped with 16 deep roller gates DR-85 5,0x3,5-6 m and a motor highway bridge-crossing.

Several weirs were built at the intersection of the new canal with other watercourses: Three-point guniting concrete drain tunnel 3x (4,0x3,5) on the existing canal named after Azizbayov for flow of $Q=70\text{m}^3/\text{sec}$. with total length of 448 m;

Two-point metal conduit 2xD=2000 mm on the existing canal P-2 for the flow rate of $Q=8,68\text{m}^3/\text{s}$ with a length of 170m; combined conduit for the flow rate of $Q=1,0\text{m}^3/\text{sec}$ (D=1200mm) with a total length of about 125m.

The construction start date is 2010, and the construction period is 1 year.









RESTORATION OF THE INTER-FARM
IRRIGATION NETWORK AND
CONSTRUCTION OF A SUMP OF THE
SAMUR-ABSHERON CANAL HEAD
STRUCTURE



Customer: "Land Reclamation and Water Management" OJSC in the Republic of Azerbaijan

The sinker is built on the right bank of Samur River next to the existing structure, which after the 60-years of operation has become unusable.

The new sinker consists of 4 main parts:

forebays ($Q=70 \text{ m}^3/\text{s}$)

8th antechambers ($Q=9.14 \text{ m}^3/\text{s}$)

clearing devices ($Q=64 \text{ m}^3/\text{s}$)

catchment basin ($Q=64 \text{ m}^3/\text{s}$).

The sinker is flushed hydraulically. The intake end is equipped with 48 plane gate with hydraulic power. When the normal flow rate is supplied to the sinker ($Q=70 \text{ m}^3/\text{s}$), 7 sinker chambers alternately work for sedimentation, and 8 chambers - for washing. If the flow rate is less than the normal one, part of the chambers can be excluded from the work or all the chambers can work with reduced flow, which will increase the level of water clarification.

All designs of the sinker are made of monolithic reinforced concrete of B25, W6, F100 categories, reinforcement of periodic profile of A-III category according to GOST 5781-82*.

Construction start date - 2004. The construction period was 2 years.





