Hydric Works

Colorado River - Santa Rosa Aqueduct

The Project

Client
Secretaría de Obras y Servicios Públicos de la Provincia de La Pampa

Location
Santa Rosa, La Pampa Province
Argentina

Period
2001 – 2004

Participation
Skanska LA: 50 %
Techint: 50 %

The province of La Pampa suffers from a total lack of superficial water courses and permanent lakes and important limitations on the underground hydric resources in a climate where the arid and semi arid regions prevail.
Therefore, the Government of La Pampa designed Skanska LA, in consortium with Techint, to perform the detailed engineering, material and equipment procurement, civil works, assembly, electric system main works, intake works and pre operative services for the start up of an aqueduct that runs from the Colorado River to Santa Rosa City (capital of La Pampa). The aqueduct, along together with the underground hydric resources and the rains, shall allow a more efficient usage of the water and satisfy the fresh water demand for stockbreeding, irrigation and industries.

Intake Works
This work is located 100 m far from the mouth of the Desaguadero-Salado river. It is a type of free intake, on the left margin of the river with a 10 m opening divided into six parts where it is located the spillway, barriers and closing floodgates, the sedimentary deposits and the bombs of the Pumping Station 1 (PS1).

Pumping Stations
5 pumping stations were constructed at the main duct, all indoors with six groups of electrical pumps.

Fresh Water Plant
It is located in a plateau at 3800 m from the intake and 40 m high from the same. The plant has a capacity to obtain a maximum fresh water flow of 1,92m^3/s through three treatment modules, comprised by: a charge chamber, vertical axis flocculators, horizontal flocculated water pre distributor, laminar settler, quick filters, control gallery, laboratory, softening plant, chlorine gas dosage building, reserve cisterns, electromechanical and measuring equipment and installations and offices.

Main Piping
The main aqueduct runs between Pichi Mahuida and Santa Rosa.
The pipes of the main duct is made of plastic reinforced with fiber glass (PRFV).
The project contemplated 9,2 km. to complete the existing piping of 1.200 mm of diameter and 142,3 km. for the installation of the new piping of 1.100 mm of diameter.
Singular crossings: Curacó River crossing, Route 9, Unanue Route and Route 14.

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Valves Installation
Compensating chambers were constructed along the aqueduct network. There were also installed: pressure regulator valves, flow regulator valves, air valves, drainage valves, section valves, flow, volume, pressure and cistern level gauges.

Cisterns
The cisterns are located next to the main duct at the Pumping Stations: the main cistern 1 (CP1) at the highest point of the trace (prog. 42000 m) with a storage capacity of 7500m^3; another one, at the Prog. 338.800 m ; and one at the end of the aqueduct (General Pico), where there were also installed chlorine batchers.
Smaller cisterns were also installed such as the C2 (next to the fresh water plant preceding the pumping station 2) with a capacity of 2500m^3. Or the C5 located at Colonia Santa María with a capacity of 5000m^3.

SCADA control system
The system consist on the communication infrastructure comprised by a fiber optic network (595 km) that accompanies the aqueduct and telephone network, the control and command center located at Santa Rosa and the remote control centers. This system allows to know in real time the water levels on the reservoirs where the aqueduct system unloads, the volumes and flows delivered to each one, the levels of the cisterns and chambers, and the setting and stopping of the pumping units of the main and secondary elevating stations.

Work size:

Total length:	156 Km.
Reinforced concrete:	8.600 m^3
Filling concrete:	3.500 m^3
Piping:	750 Tons
Industrial buildings:	2.200 m^2
Offices and housing:	1.500 m^2
Electric Cables:	136.000 m
Instruments:	165 un.
Excavations and filling:	810.000 m^3. □

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