

FEATURE OF TECHNICAL SERVICE

Subject	Detailed architectural and structural design of civil works with BIM return of the Thermoelectric Power Station in Armenia Yerevan 250MW Combined Cycle Power Plant (YCCPP2) - Yerevan Capital City		
Carried out by	SGAI S.r.l. di E. Forlani & C.		
Client	RENCO S.p.a.		
Service length	2017 I phase	2018 – on going II phase	
Value of works	I phase € 1'800'000,00	II phase	€ 4'700'000,00
Categories value	E.02 € 1'800'000,00	S.05	€ 1'400'000,00
	S.06 € 700'000,00		

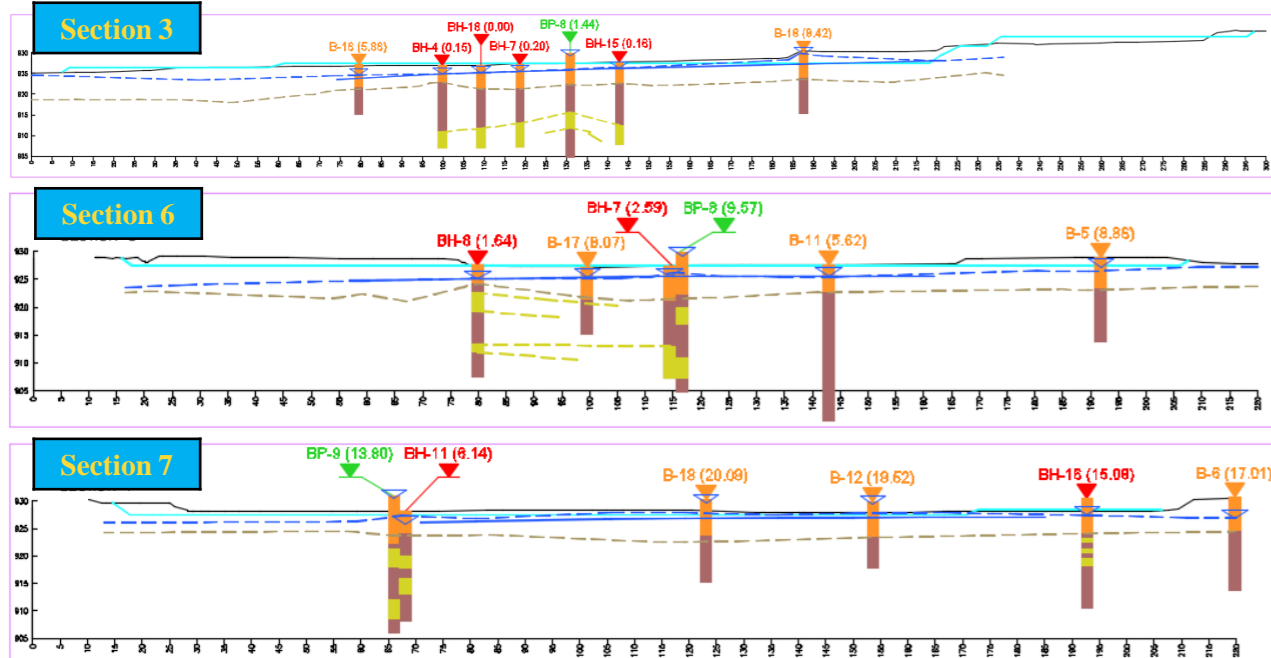
THERMOELECTRIC POWER STATION – Specialist Design: issues and their resolution

As part of the energy production development program, organized by the Armenian Ministry of Energy (MOE), the construction of a new combined cycle (gas and steam) thermoelectric plant is planned in the suburbs of the city of Yerevan, adjacent to another existing plant. The project involves the design and construction, according to the BIM methodology, of numerous buildings for housing machinery and equipment, as well as service structures, technological systems and access roads to the various sectors of the plant.

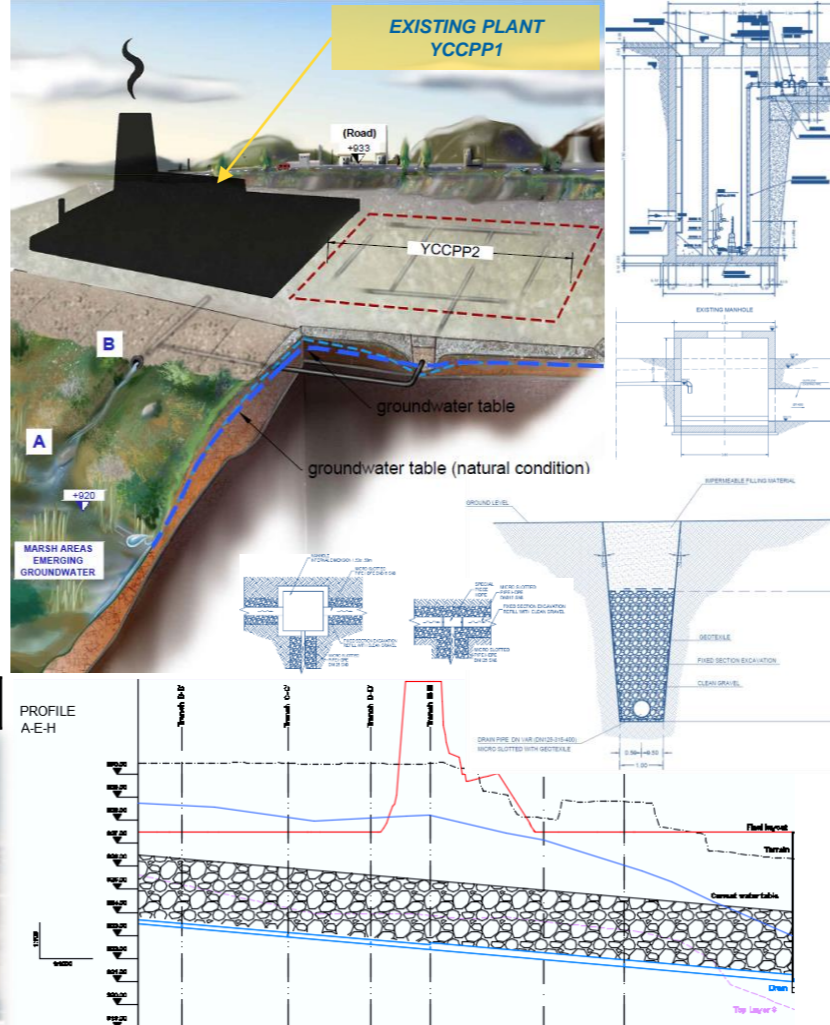
In support of the design, **an accurate geological, geotechnical and hydrogeological campaign was carried out aimed at the lithostratigraphic characterization of the soils on site, the verification of the bearing capacity and the susceptibility to liquefaction.**

The studies conducted revealed the presence of aggressive waters at the construction site, with groundwater levels such as to affect the elevation of the project foundations. To avoid deterioration of the works, **a network of drainage trenches has been studied and executed for the reduction of groundwater levels and the removal of aggressive waters**, by means of micro-slotted pipes covered with dry draining material. The filling material is wrapped in geo-membranes, with the function of filter and separation from the surrounding soil, in order to avoid clogging and loss of effectiveness of the draining trench. The system consists of two main branches that form a ring around the central part of the plant area. The typical section of the trenches provides an excavation of about 4m deep and a bottom width of 1m. On the North-West side, a pumping station has been set up to make it possible to drain and remove the water in the exhaust manifold.

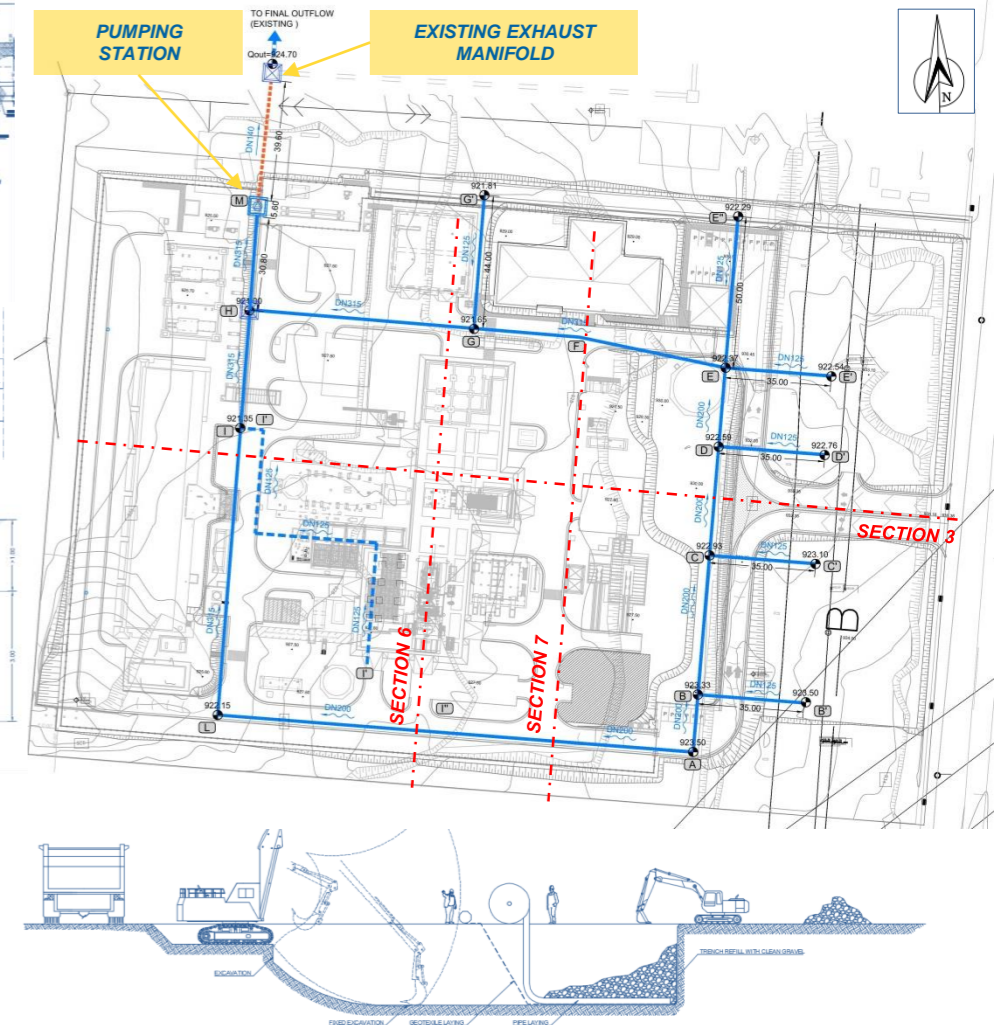
Groundwater level and trial pit on different alignments



Construction details and stages



Plan of the water drainage system



Aerial view of the infrastructure during the works



Drainage trenches: reduction of groundwater and removal system of aggressive waters



ENERGY, OIL AND GAS