

FEATURE OF TECHNICAL SERVICE

Subject

Re-evaluation of the **seismic safety** of the **dam body** and **ancillary works**, included **investigations** on reinforced concrete structures and relative **laboratory tests**, **final** and **executive design** drafting, **safety coordination** during desing phase of the **extraordinary maintenance interventions** of the **Furore dam** in the territory of Comune di Naro (AG).

Carried out by

SGAI Srl di E. Forlani & C. group leader envoy of A.T.I. (22%)

Client

Regione Siciliana

Service length

2020-2021

Value of works

€ 14.851.335,81 (S.05 - € 14.291.335,81 e S.04 - € 560.000,00)



FURORE DAM – Methodological approach

This service was approached in two phases. In **Phase 1**, all possible **alternative design solutions** were identified and analyzed and the **feasibility document of the design alternatives** was drawn up with the **evaluation of each alternatives** from a **qualitative, environmental, technical** and **economic** point of view to be submitted to the prior assessment of the Infrastructure and Transport Ministry - General Direction for Dams and the competent peripheral office.

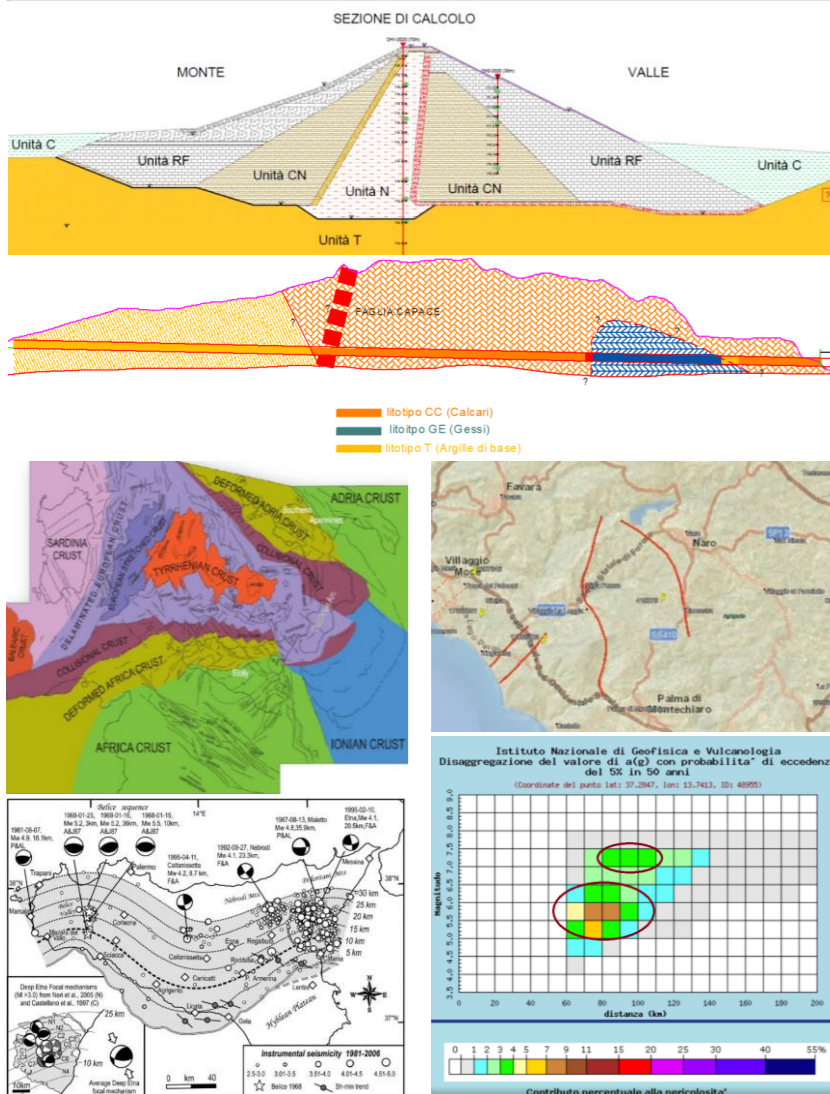
In **Phase 2** on the basis of the opinion and prescriptions issued by the Ministry the preliminary design was drawn up, developing the solution deemed most suitable for the achievement, compatibly with the criticalities that emerged from the seismic re-evaluation analyzes, of **reservoir full operation** in static and seismic conditions of **Ultimate Limit States** and **Serviceability Limit States** provided by current **legislation for existing dams**. Subsequently we proceeded with the **design and coordination of safety in the design phase, final/executive design** for **structural consolidation** of the Guardhouse and stabilization of the neighboring slope and for the safety of the rocky ridge to the right of the dissipation tank against falling rocks. The study was developed starting from the definition of the **survey plan**, the documentation of **geognostic, geophysical** and **structural surveys**, verification of the **seismic vulnerability** of the guard house and **slope stabilization** interventions. Later the seismic safety reassessment analysis was carried out starting from a general framework with the relations: **geological and geotechnical, interpretative of structural investigations** and the **seismotectonic study**. In the same context, seismic checks were carried out on: **dam body, surface discharge** (chalice structure), **metal walkway, dissipation tank, bottom drain tunnel, subsidiary tunnel** (and relative well access) and **well access to the drainages tunnel**. Finally, the final design was drawn up for the **structural consolidation of the guard house and stabilization of the neighboring slope**.

DAM FEATURES

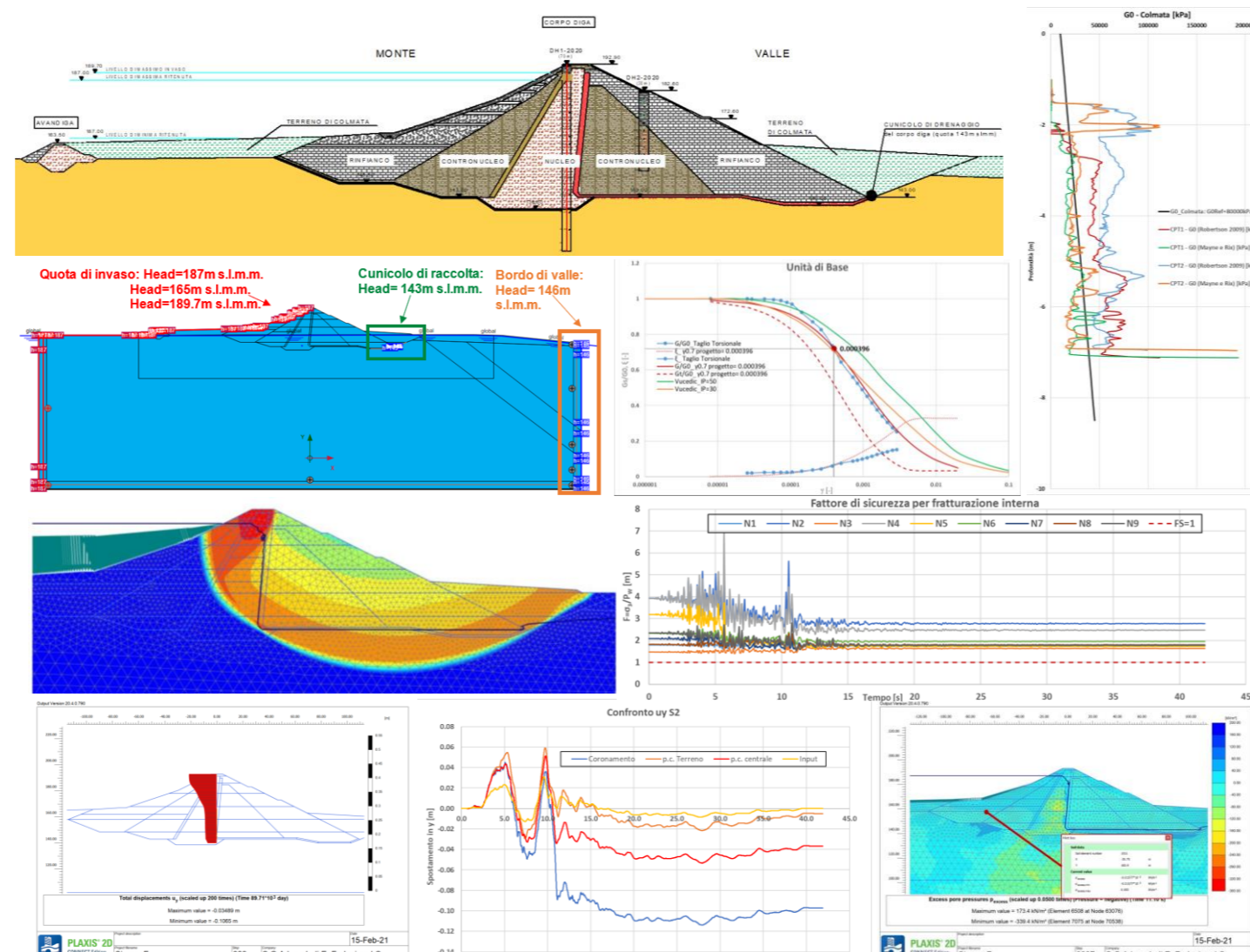
The dam is in **loose materials type** with a **sealing core** inclined upstream, with a height of **53.90m**, and subtends a water mirror with maximum surface area of **0.61km²** (maximum reservoir height), with a maximum capacity of **8,59Mm³**. The central core was made of silty clay, for the expected height up to the altitude of **191.40 m.a.s.l.**



Geology, Geotechnics and Seismotectonic study



Seismic re-evaluation of the dam body - Geotechnical modeling



Structural Modeling

