



River Engineering



Improvement Salamonde Dam

Bacia do Cávado-Rabagão, Vieira do Minho (Portugal)

Work Description

Execution of all construction works of the new Hydroelectric Power Salamonde II, which is intended to strengthen power installed in hydroelectric Salamonde, situated in Vieira do Minho, Braga district.

Scope of work

Independent and underground hydraulic circuit with 2.2 km total length, composed of the following elements:

- Water intake in the Albufeira Salamonde;
- Section of underground adduction;
- Section of restitution between the Central and the connection to the balancing chimney;
- Balancing chimney;
- Tunnel Return;
- Restitution in Albufeira Caniçada;
- Downstream channel dug in the bed of the River Cávado;
- Underground Central;
- Building support and substation;
- Access tunnels and attack;
- Heap and diversion of Rio Mau;
- Cofferdams Water Outlet, restitution and complementary flood spillway;
- Complementary Flood spillway with supply and assembly of equipment.



Main quantities

- Earth moving: 765 000 m3;
- Concrete: 130,000 m3
- Steel: 9,100,000 kg

Work Summary

Client	EDP – Gestão da Produção de Energia, SA
Contract Type	Lump Sum
Construction Period	2011 – 2015
Cost	€ 125 000 000,00





River Engineering



Inlatable Weir at Coruche

Coruche (Portugal)

Work Description

Seth completed the work of the Inlatable Weir (river Sorraia) in Coruche. The work of Dam Coruche, launched by the Municipality of Coruche, is part of the Recovery Plan Marginal Sorraia River allowing residents to enjoy a new social facilities, unique features.

The water mirror thus created upstream of the dam enhances the practice of fishing contests and events, recreational motorboats, and other footpaths.

The dam consists of a main body, reinforced concrete, crossing the entire river, and a metal catwalk, a pedestrian extension of 62 meters, which allows the passage from one to the other side.

The indirect foundations of the complex consist of a set of 62 reinforced concrete piles, cast on the ground, with 800 mm diameter and 16 m deep.

The inflatable weir is still complex consists of:

- A house of Control
- A house of Command
- An observation room for fish
- A fish ladder.

Main quantities of work

- Concrete: 3.970 m3
- Rubble concrete: 45 m3
- Shuttering: 974 m2
- Steel: 272.000 Kg
- Acesses: 800 m3
- Excavation: 2.300 m3
- Inflatable sluice gates: Span 1: c/ 30 meters / Span 2: c/ 30 meters
- Diameter: 2,5 meters
- Material: semi-synthetic rubber reinforced with polyester mesh

Architect and Engineer: Hidroprojecto



Work Summary

Client	Câmara Municipal de Coruche
Contract Type	Chave-na-Mão
Construction Period	2011 - 2012
Cost	€ 2.291.885,00





River Engineering



Inflatable Weir at Abrantes

Abrantes (Portugal)

Work Description

As part of a consortium Seth concluded the River Tagus Inflatable Weir job at Abrantes. The job, awarded by the Abrantes City Council, was finalised in 670 working days and it included the design of the project and the construction of what is, to date, the Iberian Peninsula's biggest weir of its type.

One of the goals of this job was to create a reflecting pool upstream of the weir at a predetermined level, allowing the reservoir created between the city of Abrantes and Rossio ao Sul do Tejo to be used for leisure and entertainment purposes.

Fundamentally, the weir comprises a reinforced concrete body with a portico-shaped cross section about 15 metres wide and 200 metres long, with a variable depth of about 6 metres. The superstructure comprises 4 piers 5.5 metres tall that form four spans that can be blocked by means of cylindrical rubber bodies, the first having a perimeter of 1.20 m and the others 3.2 m. The 5th span comprises a reinforced concrete sluice.

Of the complementary organs, attention is drawn to the reinforced fish house (a zigzag labyrinth) located on the left bank surrounding the respective abutment, and to the control room where the equipment required to operate the weir is located (insufflators, valves, electrical installation, automation, emergency generators, plc automated control, etc.). The access roads to the weir are also part of the project..



Main quantities of work

- Concrete: 25 000 m³
- Rubble concrete: 5 000 m³
- Shuttering: 9 500 m²
- Steel: 1 500 ton.
- Accesses: 8 800 m²
- Excavation: 16 000 m³
- Excavation in rock: 8 500 m³
- Inflatable sluice gates:
 - Span 1 (weight 2.1 tonnes – thickness 10.8 mm)
 - Spans 2, 3 & 4 (weight 3 x 4.7 tones / thickness – 13.5 mm)

Work Summary

Client	Câmara Municipal de Abrantes
Contract Type	Design/Construction
Construction Period	2004 - 2007 (670 dias)
Cost	€ 9 450 290,00





River Engineering



Rehabilitation of the dams at Arrabalde and Salgadas (1 of 2 pages)

Arrabalde (Portugal)

Inflatable Weir at Arrabalde

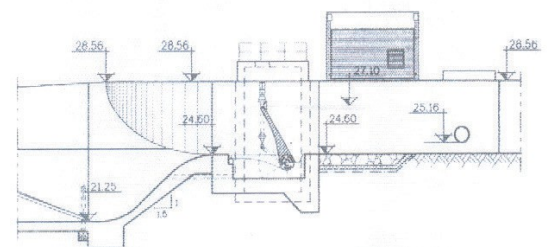
This dam is located approximately 14.3 kilometers to the river Lis, a section located to the west of the city of Leiria next "field of the fair." This hydraulic structure is fundamental part of the irrigation system of the fields of the Valley of Lis. It is through this that creates the reservoir water level necessary to enable the abstraction of water for irrigation.

The rehabilitation of the dam Arrabalde's main goal was to allow the automatic triggering of the two gates, inserted in the body of the dam, and water intakes in order to allow, in accordance with the needs of water and streams and tributaries downstream requested, optimization of their operation.

From the structural point of view, the solution rehabilitation forced the demolition of the old central area of the dam wall and sill, for placement of new gates. This intervention took place, on both sides, with the curtains crimping sheet pile walls in masonry of the dam, to ensure the stability of the work and the surrounding land during the demolition of existing walls and the sill.

The implementation of the new dam, comprised the construction of two side meetings, a central pillar and from two wells, one on each bank, which host the servo motors driving the floodgates.

The work also included the automation of the two water intakes for irrigation.



Main quantities of work

- Type of floodgates – Hinged gates
- Width of the sealed openings - 7,75m
- Height of the sealed opening - 2,50m
- Number of gates - 2
- Threshold quota - 24,60m
- NPA quota - 27,10m
- Platform quota - 28,56m
- Maximum load - 2,5 m.c.a.
- Gate maneuver - At full load
- Cofferdam maneuver - In balanced waters

Work Summary

Client	IHERA - Instituto de Hidráulica, Engenharia Rural e Ambiente
Contract Type	Turnkey
Construction Period	2000 - 2001
Cost	€ 1 920 371,91 (os dois açudes)



River Engineering



Rehabilitation of the dams at Arrabalde and Salgadas (2 of 2 pages)

Salgadas (Portugal)

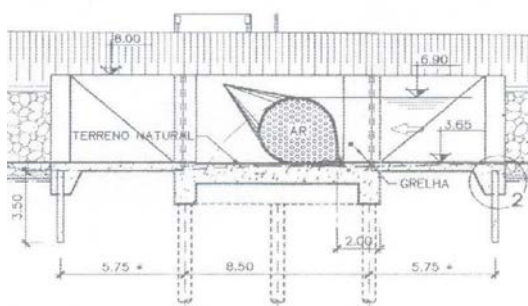
Inflatable Weir at Arrabalde

The dam of Salgadas located approximately 30 kilometers to the river Lys, near Mount Royal, a section of the bed and settled contributes more as a fundamental part of the irrigation system of the fields of the Valley of Lis.

The rehabilitation of the dam's main goal was to replace the existing structure that was obsolete (about 50 years), creating a plan to allow sufficient water supply to the needs of water and flow downstream requested by making water in the left margin.

The work consisted of a "inflatable dam" which broadly comprises a threshold based on eight concrete piles with 60 cm diameter and depth between 18 and 24 meters, in which a chamber is recessed synthetic rubber reinforced.

The rehabilitation also included the automation of irrigation water outlet.



Main quantities of work

- Gate type – Inflatable
- Width of the sealed opening - 7,00m
- Height of the sealed opening - 3,25m
- Slope of the side walls: 1 (V) 1 (H)
- Number of gates- 1
- Threshold level - 3,65m
- NPA quota - 6,90m
- Platform quota - 8,00m

Work Summary

Client	IHERA - Instituto de Hidráulica, Engenharia Rural e Ambiente
Contract Type	Turnkey
Construction Period	2000 – 2001
Cost	€ 1 920 371,91 (os dois açudes)