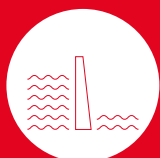




Dams

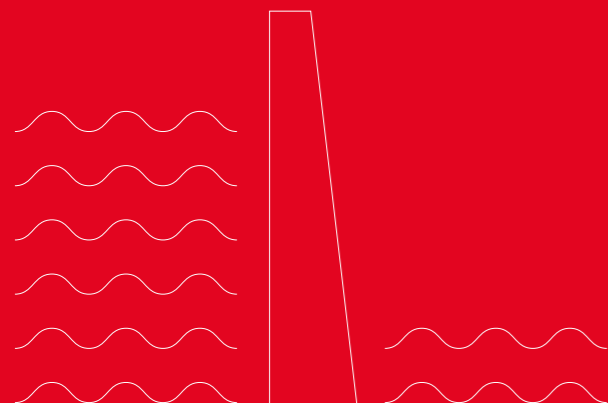


Our geotechnical
solutions for
commercially
sustainable dams



As structures that are anchored in the ground, dams have formed part of the core activity of Soletanche Bachy for almost a century. We bring all our geotechnical solutions and engineering and design capabilities into play to deliver your hydraulic and hydroelectric dam projects, wherever you are in the world.

Soletanche Bachy, the partner for your dam project



Soletanche Bachy, soil expertise to control risks

The stability and safety of a dam's structure depends on the quality of its foundations and the correct handling of the hydro-geology of its bedrock. This is precisely Soletanche Bachy's area of expertise.

As a global leader in foundations, we have longstanding expertise in soil technology and offer the widest range of geotechnical solutions on the market to control the risks of your dam project and ensure its maximal working lifespan.



Soletanche Bachy and dams, a 100-year common history

In its beginnings in the 1920s, the Group demonstrated its competence in building numerous dams in France and North Africa.

Soletanche Bachy has since continued to construct, repair, improve safety, and maintain some of the world's largest hydraulic and hydroelectric installations. This depth of experience allows us to propose the soil technologies that are best adapted to each of your dam projects.

We have
solutions for
each part
of a dam



Penstocks foundations
anchoring

Soil
improvement



Water reservoir
slope stability



Stabilisation and repairs
using grouting



Stabilisation
using anchors



Structural strengthening
using vertical PT anchors



Cut-off wall using
jet grouting



Drainage



Cut-off wall



Water intake
tunnel



Rock
stabilisation



Stabilisation using
vertical PT anchors



Dam
monitoring



Diaphragm wall



Cut-off wall
using grouting



Soil improvement
using jet grouting



Deep Soil Mixing

Our geotechnical solutions to control risks

Through its expertise in design, soil technologies, and project management, Soletanche Bachy can act as a general contractor or specialist subcontractor to carry out all types of dam projects, regardless of scale. The objective is to ensure the durability and profitability of your hydraulic and hydroelectric infrastructure.

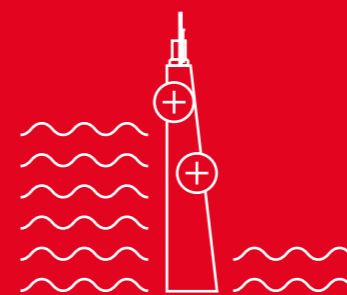
Chacarrillas Dam - Chile

Our offer

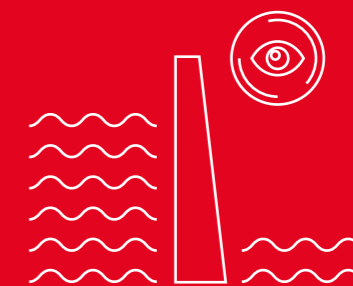
Dams | Soletanche Bachy



New structures



Repair Dam safety



Maintenance Upgrade

Resources

A team dedicated to your project and bespoke equipment designed and manufactured by the Group, to meet your needs.

Innovation

Cutting-edge innovation (digital, Big Data, robotisation, etc.).

Engineering

30 design offices, 200 design engineers worldwide, experts in geotechnics and equipment, plus a materials laboratory.

Safety and environment

A strong safety and environmental culture.

Why work with Soletanche Bachy



We have almost **100 years' experience** in the field of dams, and have hundreds of references worldwide.



We are experienced in operating on **remote sites**, often with difficult access, typical of dam sites.



We offer the widest range of **geotechnical methods** on the marketplace.



We have a **local presence** in more than 60 countries, together with a **global expertise**.



We can act as a **general contractor**, in order to complete your dam project from beginning to end.



We are committed to **local employment and respectful working conditions** for our personnel (housing, healthcare...).



We bring specific **expertise** (monitoring, diagnostics, etc.) through our partners with the Soletanche Freyssinet group.

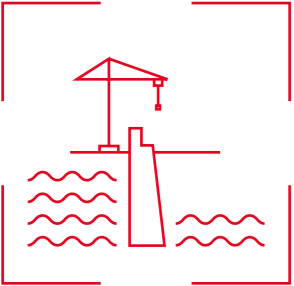
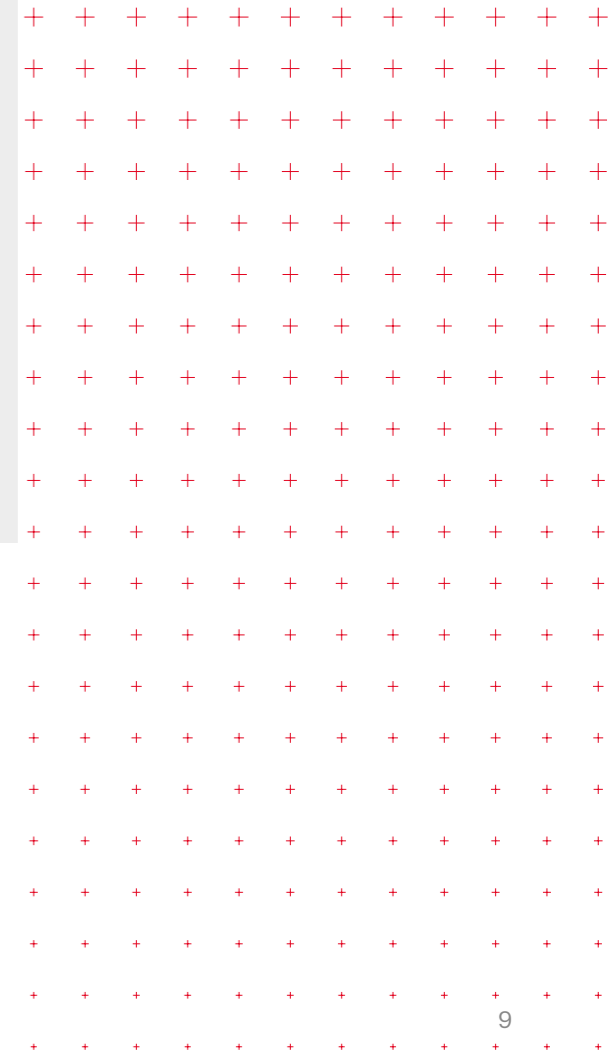
New structures

The global population is continually growing, which has led to a rise in energy needs. It has also become mandatory to better manage resources for irrigation and improve flood control. To meet this new demand, it is essential to build new hydroelectric dams and reservoirs.

Thanks to its expertise in ground technologies, Soletanche Bachy can help you construct new dams on consolidated or improved ground, resulting in lasting, safe structures offering long-term performance.

Our solutions

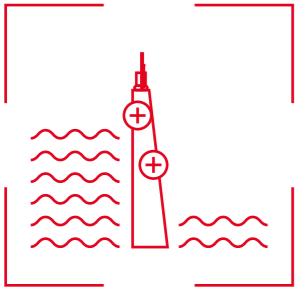
		Drainage and treatment of fissures
Ground improvement	Cut-off walls (diaphragm walls, jet grouting, injections, secant piles, Deep Soil Mixing, etc.)	Dissolution and cracks treatment
Water intake tunnel	Contact grouting	Upgrade of overfalls
Surveillance, analysis, monitoring	Project management	Help with financing



Our strong points

- Geotechnical expertise
- Methods
- Equipment
- Design

Repair Dam safety



Many existing dams are now more than 50 years old. Their structure and the ground upon which they are built have undergone major stresses and are now exhibiting significant faults. As a result, their stability and safety are compromised, their performance is reduced, and their operating costs are increasing.

Soletanche Bachy applies its geotechnical expertise to repair, consolidate, and waterproof your dams with minimal impact on their daily operations, with the goal of enhancing safety and profitability.

Our solutions

Cut-off walls
(diaphragm walls, jet grouting, injections, secant piles, etc.)

Dissolution and cracks treatment

Stabilisation using ground anchors

Water intake tunnel

Drainage and treatment of fissures in the structure

Contact grouting

Upgrade of overfills

Surveillance, analysis, monitoring

Project management

Help with financing

Our strong points

Agility and swift intervention

Flexibility

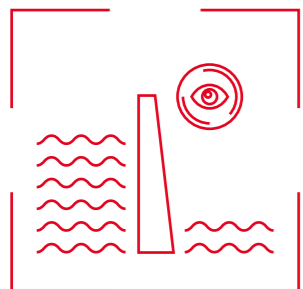
Monitoring

Innovation

Methods

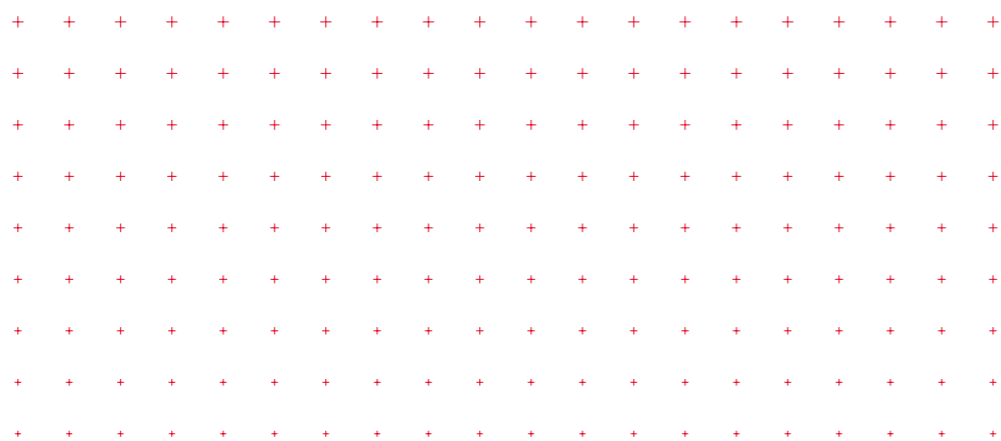
Equipment

Maintenance Upgrade



With ageing structures, and increasing domestic demand for water and electricity, existing dams are reaching saturation and it is not always possible to construct new ones. The solution is to extend their operational lifespan by increasing their capacity whilst ensuring their maintenance.

Soletanche Bachy draws on its expertise in the areas of soil technology and water management to maintain, upgrade, modernise, and increase the storage capacity of your hydroelectric dams. We can also watch over any changes in the structure through our monitoring service.



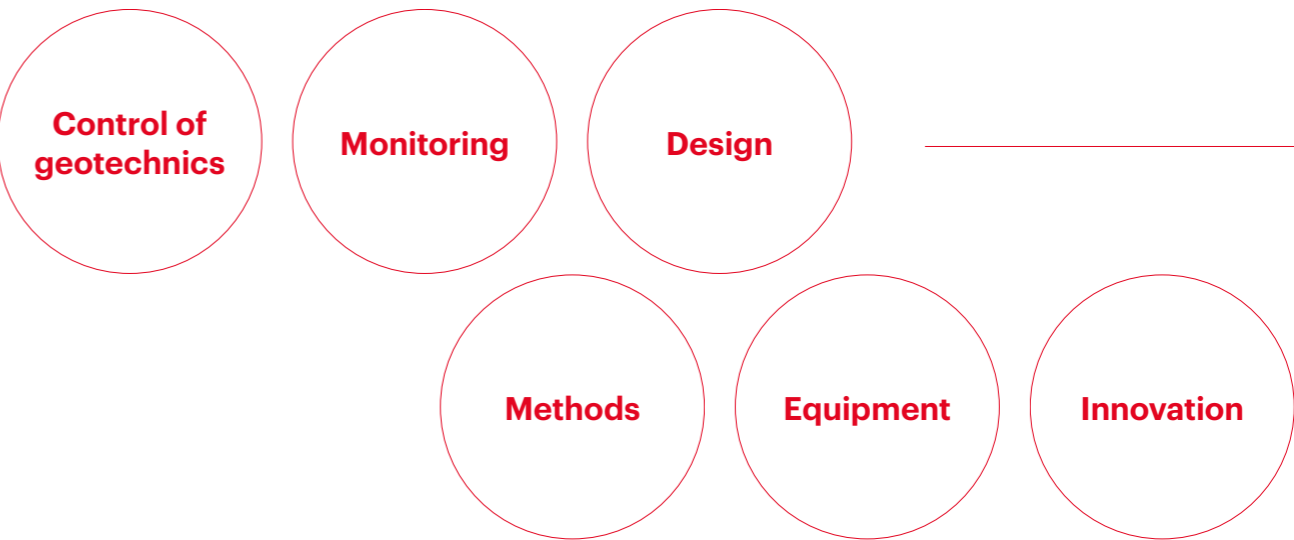
Our offer

Dams | Soletanche Bachy

Our solutions

		Increase in capacity	Increase in height	Surveillance, analysis, monitoring
Dissolution and cracks treatment	Treatment of fissures in the structure	Drainage	Cut-off walls (diaphragm walls, jet grouting, injections, secant piles, etc.)	Contact grouting
Upgrade of overfills	Project management	Help with financing	Stabilisation using ground anchors	

Our strong points



Our services

Angostura Dam - Chile

Our offer

Dams | Soletanche Bachy

Equipment designed and manufactured in-house, adapted for each project

We have a large fleet of Hydrofraise®, KS grabs, drilling machines, Cutter Soil Mixing rigs, tunnel boring machines and digital grouting systems **available at all times, anywhere in the world.**

Soletanche Bachy has its own equipment division which designs and manufactures most of our machines and operating software. This means **we have full control over the equipment we deploy for your dam projects.** And to better adapt to your needs, we produce tailored machines according to the specifics and constraints of your projects.

Innovation for your projects

Soletanche Bachy was behind several major technical advances, such as the Hydrofraise®, and the “tube à manchettes”, and is **continually striving to improve its methods, techniques, and machines to face new challenges and anticipate those you will encounter tomorrow.**

We are exploring new digital and robotic technologies to enhance our performance. We recently developed a Big Data platform to collect, sort, and analyse data from our work sites to improve our performance.

A worldwide network of specialist engineers

With Soletanche Bachy, you have the peace of mind of **working with the world's largest network of specialist engineers in geotechnics.** Our experts can work on all aspects of your projects, from choice of method, through design, surveying, scheduling, and materials.

This cutting-edge expertise, in conjunction with our 30 in-house design offices, allows us to propose variants from the design phase of your projects.

A strong safety and environmental culture

At Soletanche Bachy, safety is part of daily life on our work sites, offices, and on the road, covering organisation, equipment, methods, and techniques. **We observe strict health and safety rules at all times, and are continually working to improve our practices** to attain excellence.

Regarding the environment, we are focused on reducing our carbon footprint via a reduction in our consumption of fuel and cement, and through improved recycling of our waste.

Over
500 dams
completed
worldwide

Selection of
recent projects

News structures

- A** Richland Creek Reservoir, United States
- B** La Yesca Dam, Mexico
- C** Antamina mining complex dam, Peru
- D** Candelaria mine embankments, Chile
- E** Chacrillas Dam, Chile
- F** Subansiri Lower Dam, India

Repair / Dam safety

- G** Wanapum Dam, United States
- H** Prairie du Sac Dam, United States
- I** Wolf Creek Dam, United States
- J** Boone Dam, United States
- K** Ituango Dam, Colombia
- L** Wimbleball Dam, United Kingdom
- M** Illsee Dam, Switzerland
- N** Lake Nyos Dam, Cameroon

Maintenance / Upgrade

- O** Gilboa Dam, United States
- P** Waitaki Dam, New Zealand

New structures



- 640-metre grout curtain with a maximum depth of 42 metres.
- 381-metre plastic concrete cut-off wall with a maximum depth of 29 metres.

38-metre-high, 1,265-metre-long earthen gravity dam

Tarrant Regional Water District

Brad Cole Construction

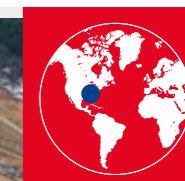


- The largest hydroelectric project ever undertaken in India.
- 18,000-sq. metre cut-off wall built from galleries with restricted headroom.
- Use of a compact containerised Hydrofraise® specially designed for the project.

116-metre-high, 264-metre-long concrete gravity dam

National Hydroelectric Power Corporation

JV BGS-SGS-SOMA



Chacrillas Dam · Chile

- Grout curtain (39,800 lm of drilling and 3,120 cu. metres of grout and mortar).
- Development of special platforms to work on slopes of up to 40°.

Structure

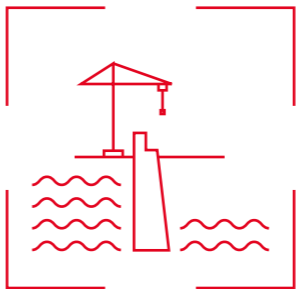
102-metre-high, 320-metre-long earthen gravity dam

Owner

Dirección de Obras Hidráulicas

Main contractor

Soletanche Bachy Chile



La Yesca Dam · Mexico

- The world's second-highest rockfill embankment dam.
- Soil improvement and sealing by jet grouting.
- 460 cu. metres of grout to seal seepage (5,650 lm of drilling).

Structure

208.5-metre-high rockfill gravity dam

Owner

Comisión Federal de Electricidad

Main contractor

ICA

Candelaria mine embankments · Chile

- Plastic concrete cut-off wall and drainage wall.
- Grout curtain built from the mountainside (40 km of drilled injections down to 70 metre depth).
- 358-metre micro-tunnel in partnership with Bessac (Soletanche Bachy's specialised subsidiary).

Structure

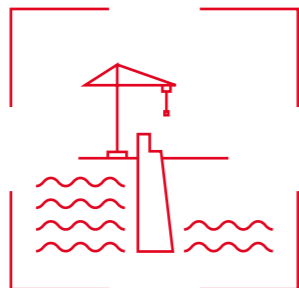
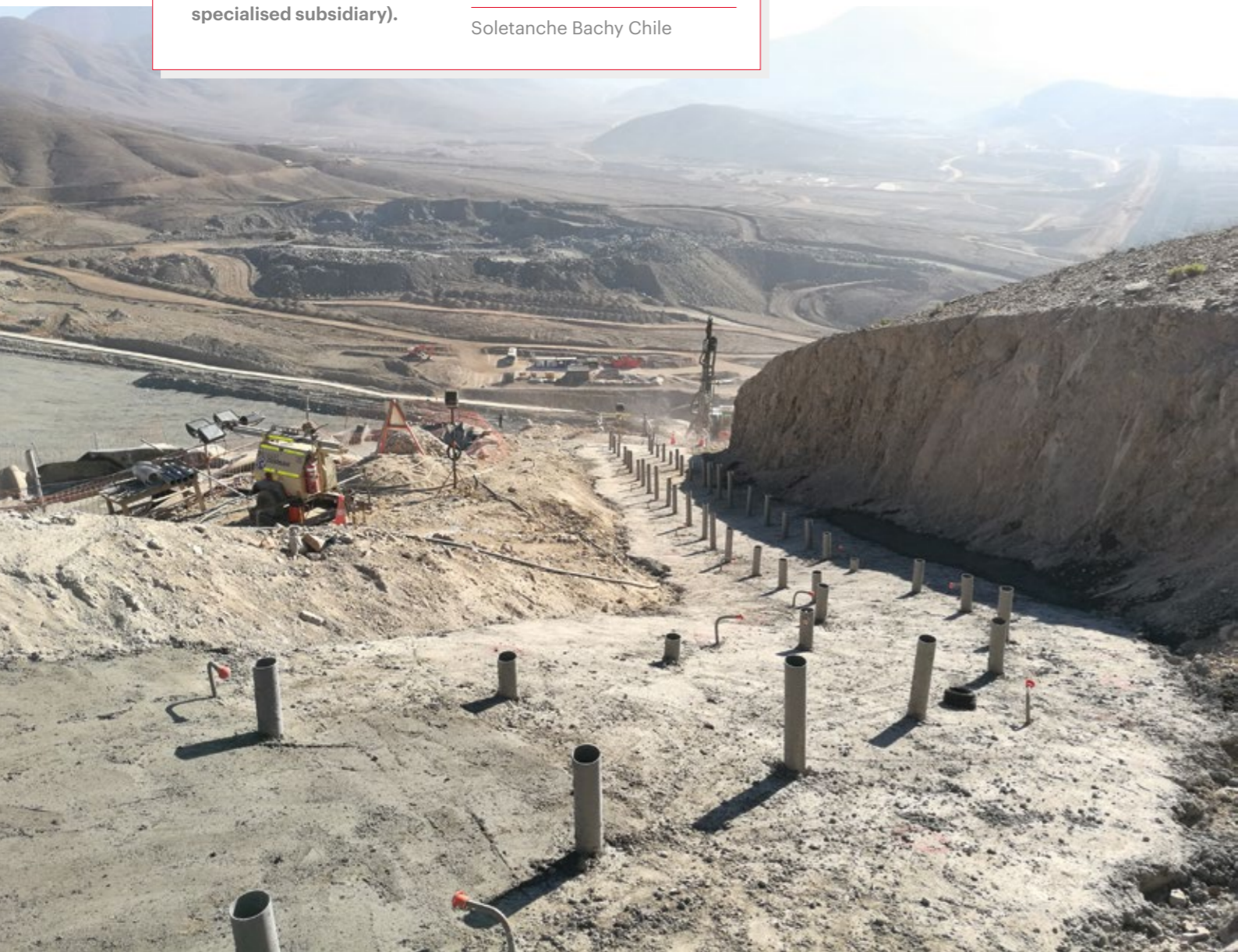
90-metre-high earthen gravity embankments with a 2-km crest

Owner

Lundin Mining

Main contractor

Soletanche Bachy Chile



Antamina mining complex dam · Peru

- 30-metre-deep plastic concrete diaphragm wall.
- 50-metre-deep grout curtain below and on either side of the dam.

Structure

Retention dam

Owner

Compañía Minera Antamina

Main contractor

Soletanche Bachy Perú –
Soletanche Bachy Chile



Repair Dam safety



Ituango Dam · Colombia

- Definitive consolidation of the emergency increase in height.
- 38-metre long and over 500-metre long cut-off wall (excavation of 20,000 cu. metres).
- 24/7 work to comply with emergency timescale.

Structure

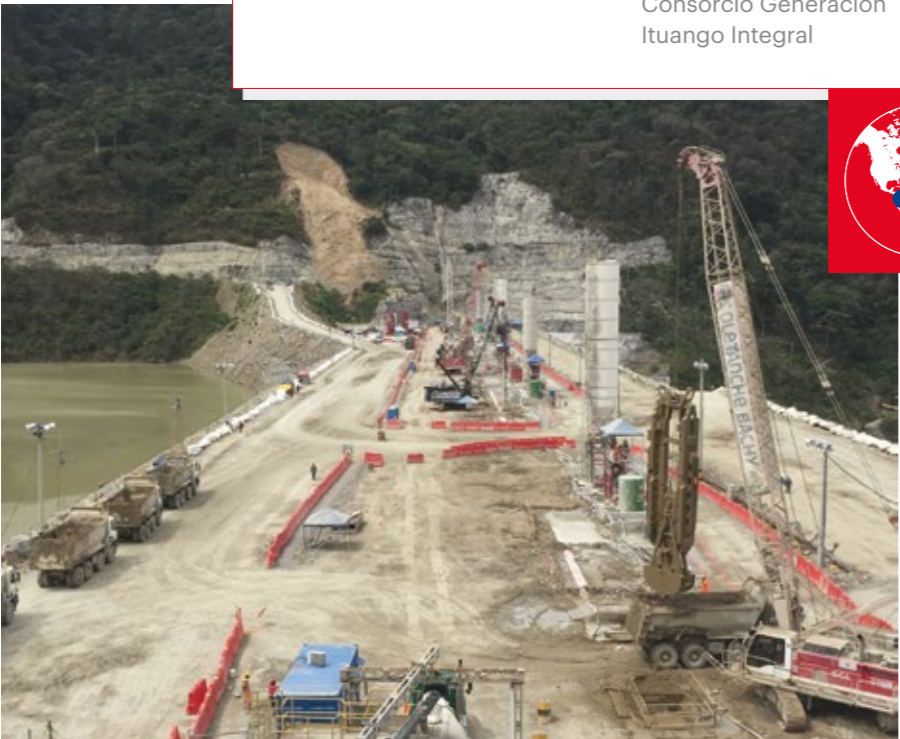
225-metre-high, 550-metre-long earthen gravity dam

Owner

EPM

Main contractor

Consorcio Generación Ituango Integral



Our references

Dams | Soletanche Bachy



Wanapum Dam · United States

- Repair of cracks in the body of the dam.
- Installation of post-tension anchors, drains and cement grout injections.
- Drilling, grouting and anchor tensioning performed underwater by divers equipped with remote-controlled cameras.

Structure

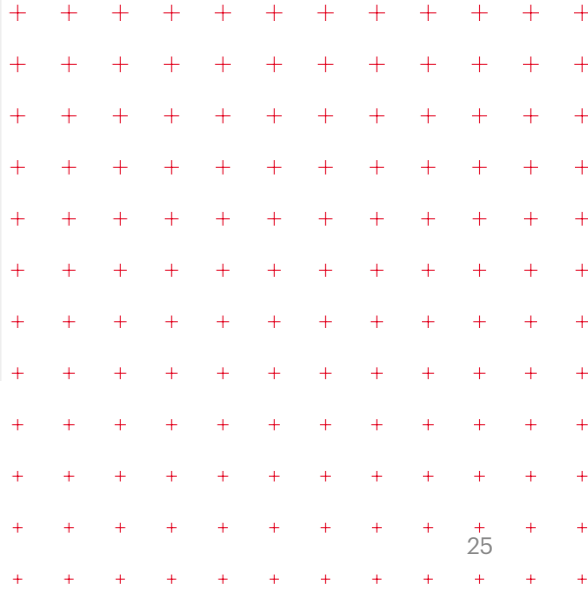
56-metre-high, 2,500-metre-long concrete dam

Owner

Grant County Public Utility District

Main contractor

JV Kuney Construction – Robert B. Goebel





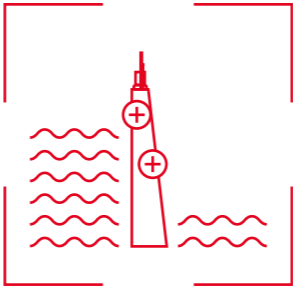
Wolf Creek Dam · United States

- 91,000-sq. metre cut-off wall, which combines secant piles and Hydrofraise® panels.
- 52,000-sq. metre, 1.8-metre thick, 85-metre deep diaphragm wall.
- 2013 Deep Foundation Institute Award.

Structure
79-metre-high, 1,748-metre-long earthen gravity dam

Owner
U.S. Army Corps of Engineers (USACE)

Main contractor
JV Treviicos-Soletanche (TSJV)



Our references

Dams | Soletanche Bachy



Prairie du Sac Dam · United States

- Installation of 1,000 micropiles and 250 anchors.
- 1,165 cu. metres of excavation within a gallery.
- Construction of a 425-metre concrete transfer beam.

Structure
Concrete dam

Owner
Wisconsin Power & Light

Main contractor
Nicholson Construction

Illsee Dam · Switzerland

- Upgrade to seismic standards and anchoring reinforcement.
- 67 post-tensioned anchors (with an ultimate tensile strength of 725 tonnes) and 91 GEWI 50 mm nails.
- Personnel and supplies transport by cable car and installation of the anchors by helicopter (works conducted at an altitude of 2,300 metres).

Structure
25-metre-high, 270-metre-long concrete gravity dam

Owner
Argessa c/o ReLL Dienstleistung

Main contractor
PraderLosinger – Imboden – Evéquoz – Dénériaz joint-venture





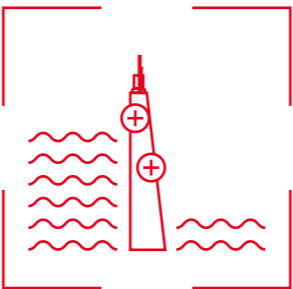
Boone Dam · United States

- Cut-off wall using secant piles (255-metre length and 50 metre depth).
- Drilling in very hard rock (250 MPa).
- Reinforcing of the earth embankment using drilling and grouting.

Structure
51-metre-high, 550-metre-long earthen gravity dam

Owner
Tennessee Valley Authority (TVA)

Main contractor
JV Treviicos-Nicholson Construction



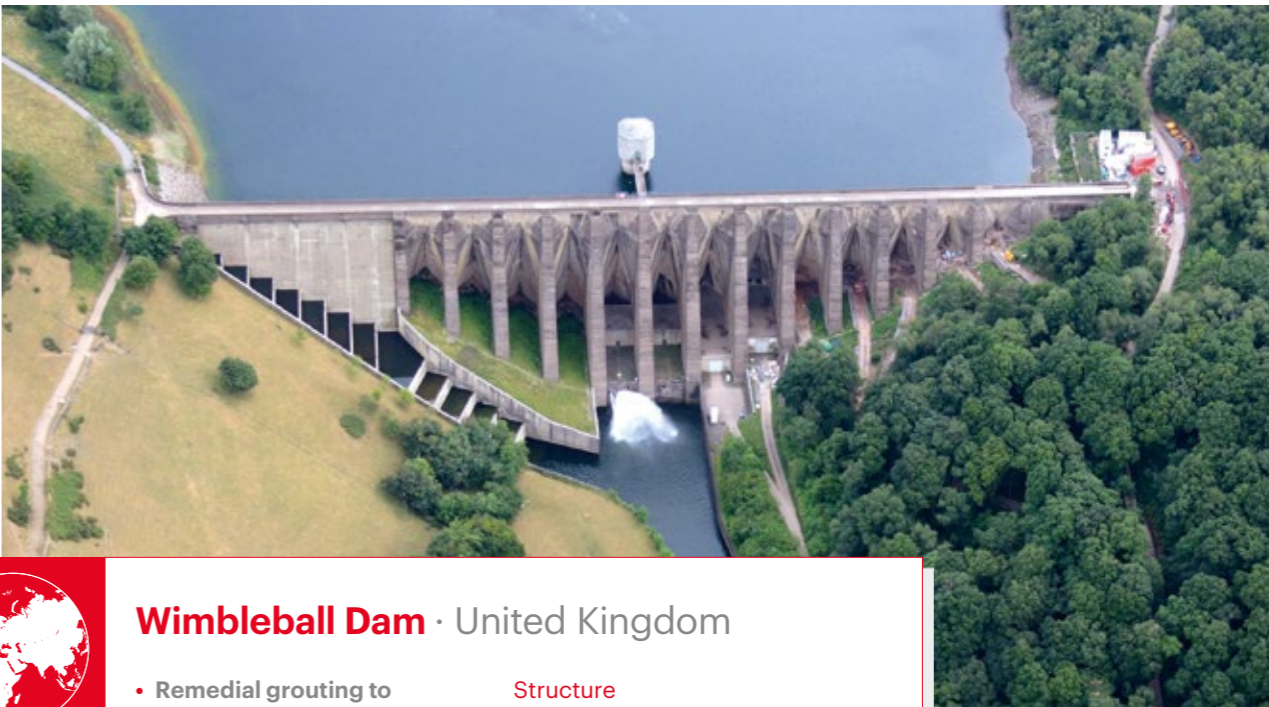
Lake Nyos Dam · Cameroon

- Double jet grouting barrier (10,500 lm) to help stabilise the structure and prevent erosion.
- Project carried out in a particularly isolated area at a high altitude.

Structure
40-metre-high natural embankment

Owner
Cameroon Ministry of Economy, Planning and Regional Development

Main contractor
Soletanche Bachy – Razel joint-venture



Wimbleball Dam · United Kingdom

- Remedial grouting to address seepage through the dam foundations.
- Grout curtain, which involved more than 6,000 metres of drilling and the injection of 870 cu. metres of grout using GIN method (80 metre depth).

Structure
49-metre-high, 300-metre-long concrete buttress dam

Owner
South West Water and Wessex Water

Main contractor
Bachy Soletanche



Maintenance Upgrade



Our references

Dams | Soletanche Bachy



Gilboa Dam · United States

- Stabilisation of the dam.
- Installation of 79 post-tensioned multi-strand anchors (up to 1,000 tonnes) with lengths ranging from 30.5 to 73 metres.

Structure

55-metre-high, 213-metre-long earthen gravity dam

Owner

New York City Department of Environmental Protection

Main contractor

Nicholson Construction

Waitaki Dam · New Zealand

- Improvement of drainage system.
- Refurbishment of groundwater drains and drilling to set up instrumentation.
- Work carried out from galleries with a maximum width of 1.2 metres and a maximum height of 1.9 metres.

Structure

48-metre-high, 542-metre-long concrete arch dam

Owner

Meridian Energy

Main contractor

March Construction



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Build on us



SOLETANCHE BACHY

Soletanche Bachy is a world leader in foundations and soil technologies, operating in 60 countries via a network of 80 subsidiaries and branches. The Group delivers the full range of geotechnical processes and provides innovative, effective solutions as either a lead or specialist contractor for turnkey projects with a geotechnical focus or specialist works.

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