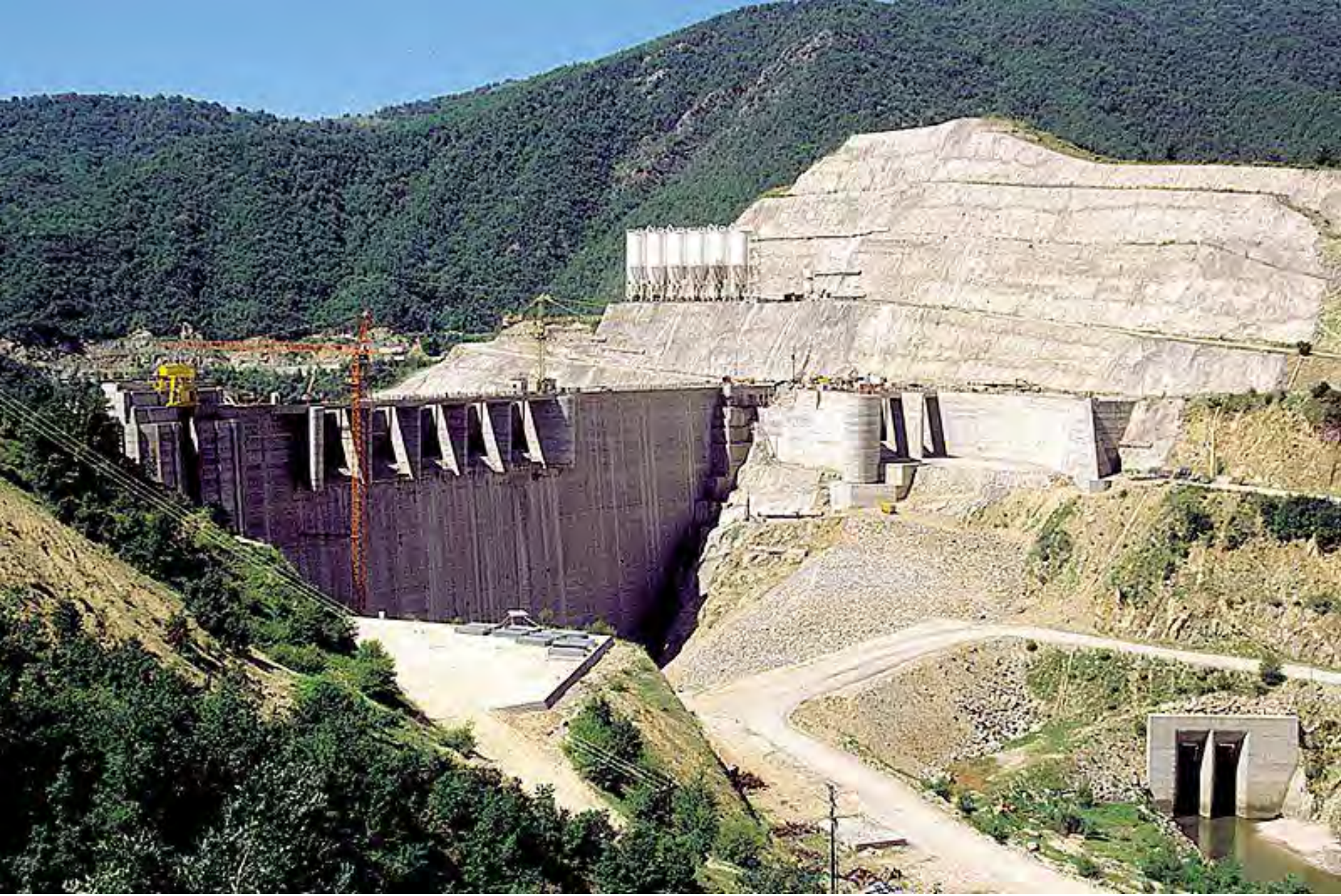
1st Energy Tech Forum,
April 1, 2016

CONSTRUCTION OF PLATANOVRYSSI RCC DAM AND HYDROELECTRIC PROJECT

Dimitrios Papadopoulos
Civil Engineer
ΔΥΗΠ/ΑΕΗ

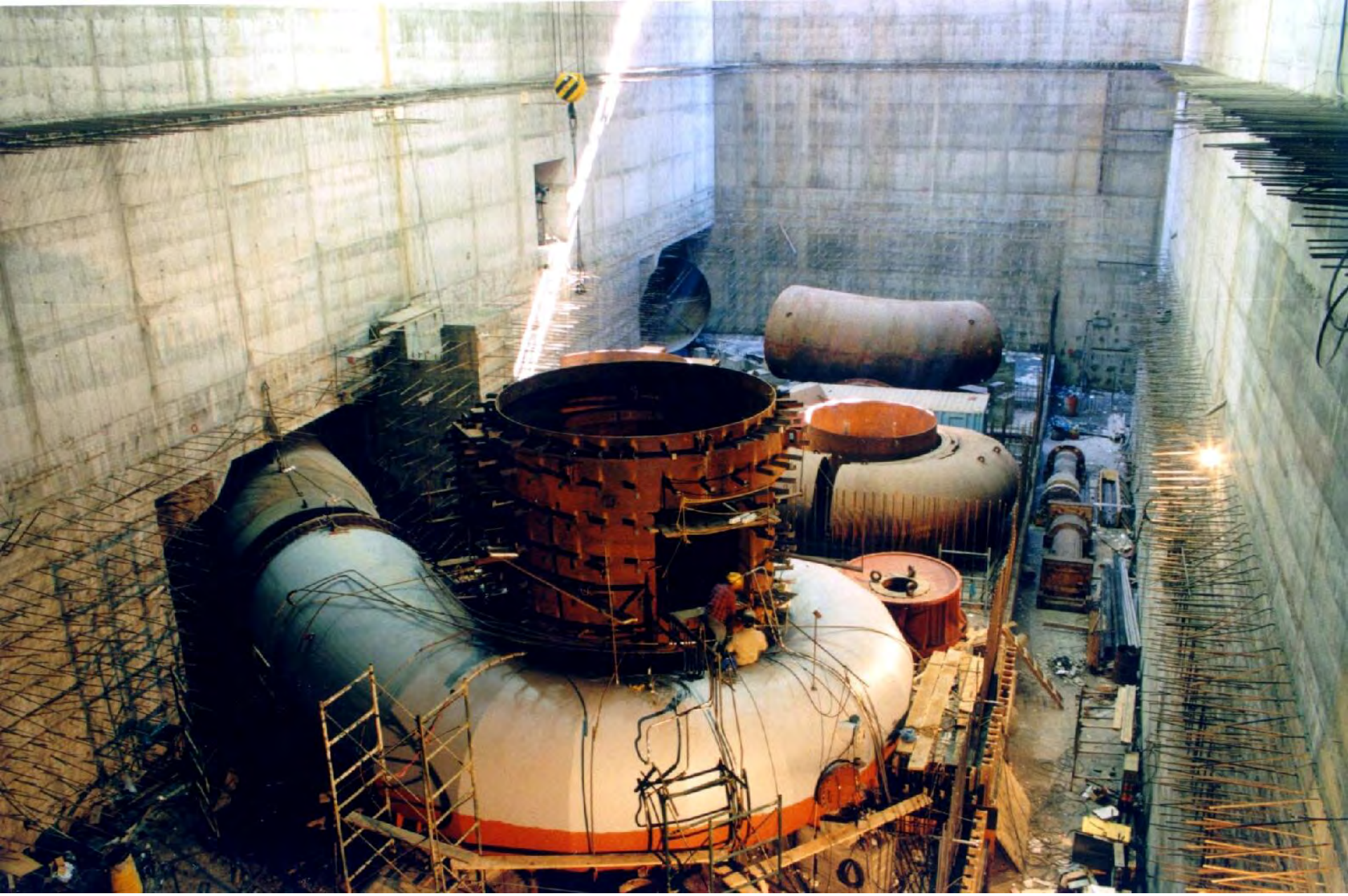


• **Dam, Spillways, Diversion Tunnel Entrance**

- **Dam,(95m high the highest RCC dam in Europe, at the time),**
- **Spillway on the dam body, service Spillway, Switchyard.**

- **Power Intake structure, wedged at the d/s face. Spillway in operation**

•the Powerhouse, on the dam toe, under the dam spillway



•Two 50 MW Francis turbines

•2 Plunge pools, Stilling Basin, Tailrace channel, auxiliary RCC retaining wall, access and service roads and appurtenant structures.

•Bottom Outlet system, with a Howell Bunger valve.

•**Fly Ash hauled from Ptolemaida to Nestos**

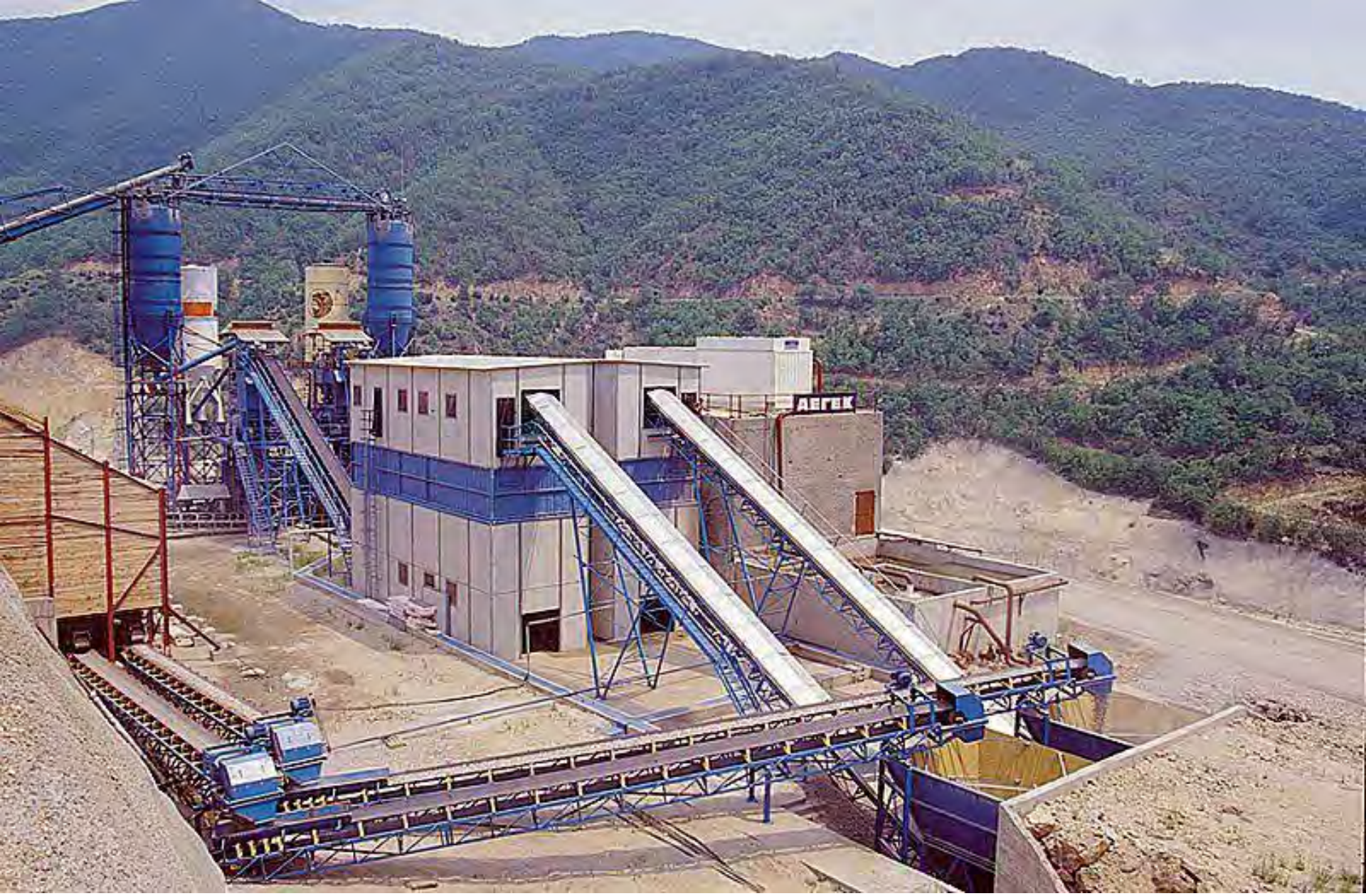
- **Large scale use of high lime lignite Fly Ash**
- **<u>for the first time in the world!</u>**

•The Milling Plant and truck silos, at Ptolemaida.


•The Mill.

•**The silos on site.**

•**Aggregate production.**



•**Mix and Batch plant.**

- **RCC conveyance with**
- **belt conveyors,**
- **intermediate hoppers,**
- **the innovative drop pipe.**
- **Placement and curing of Leveling concrete**

Contractors AEGEK of Greece and ASI.RCC of USA devised and made this pipe conveyor work, perhaps because,

- **The pipe was always full, thus allowing for smooth flow.**
- **The pipe was always filled with gravel before RCC.**
- **Pipe feed was supported by intermediate hoppers or bins.**
- **Operation was complete with a powerful end sluice gate controlling RCC flow and**
- **A truck mounted belt conveyor to feed the trucks on the fill.**

The pipe was thoroughly tested during full scale trials before approval.

•**Truck mounted belt conveyor, end sluice gate.**

•**Foundation, Clean-up.**

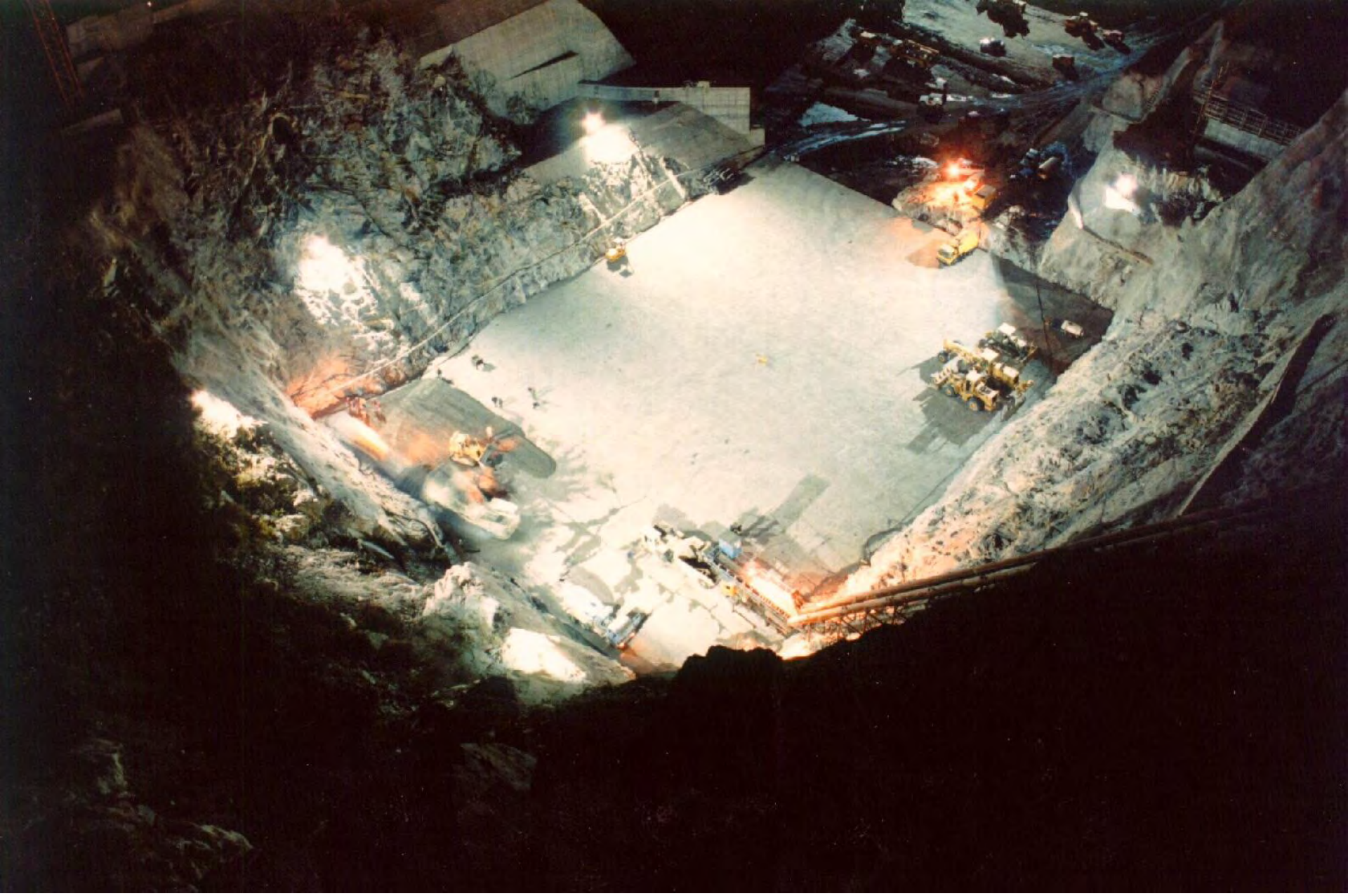
•Leveling concrete placement.

•**Leveling concrete pumped, at 7cm slump (here), 100+225 (C+F).**

•Leveling concrete Cylinder specimens, on a vibrating table.

• (Same table and method for RCC lab samples).

•Leveling concrete curing.



•October 10, 1996: the first RCC layer.

•50+225 (C+F), 20 sec VeBe,

• 285 kg/cm2 characteristic compressive strength.

- **RCC placement of 430,000 m3 lasted only 12 working months. (excluding 4 month summer break).**

•RCC placement. Truck unloading.

•RCC placement.

•Dozer ready to spread.

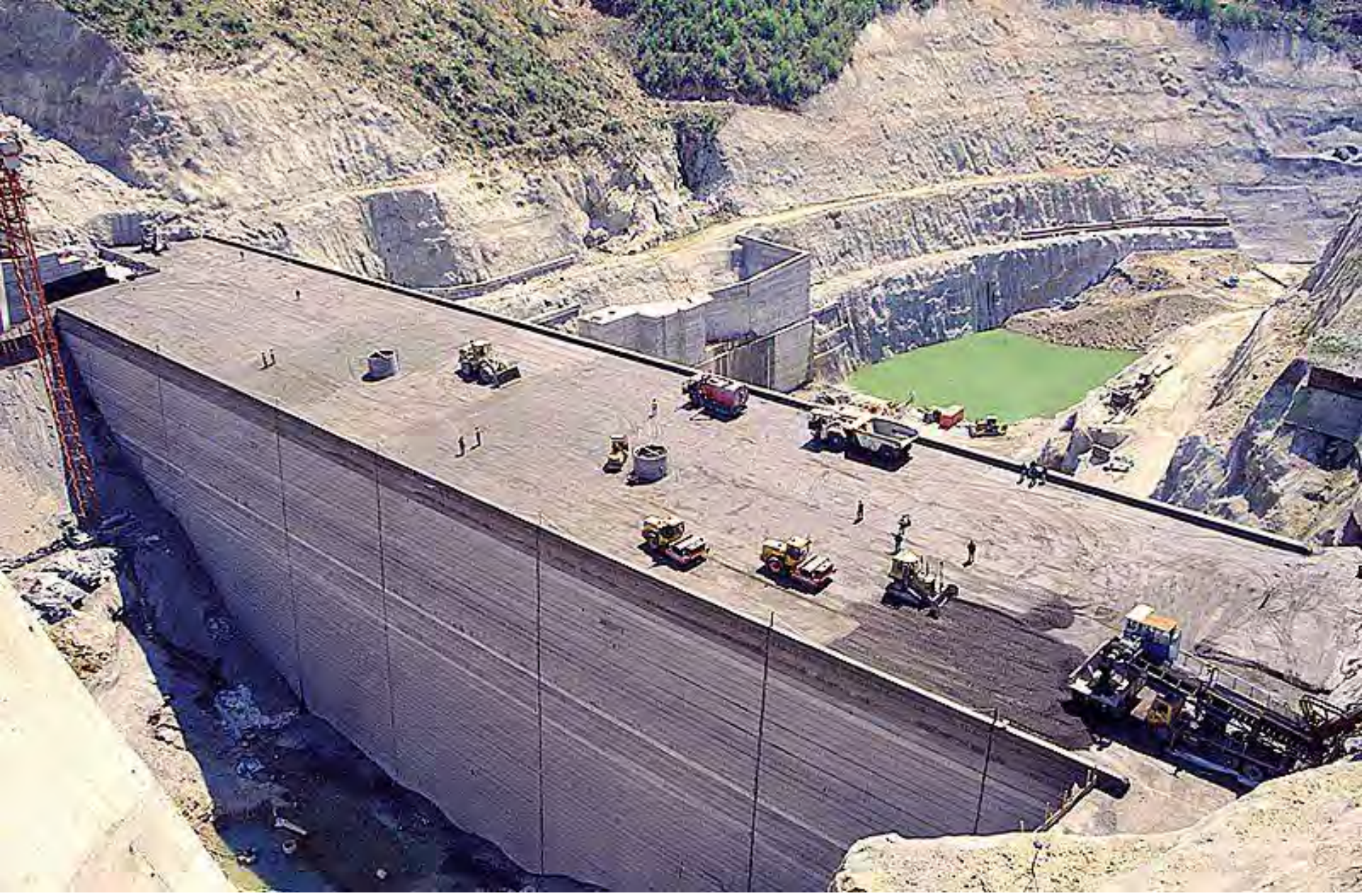
•**The Roller.**

- **Bottom galleries roof level.**
- **Prefabricated slabs for the walls and roofs of the tunnels**

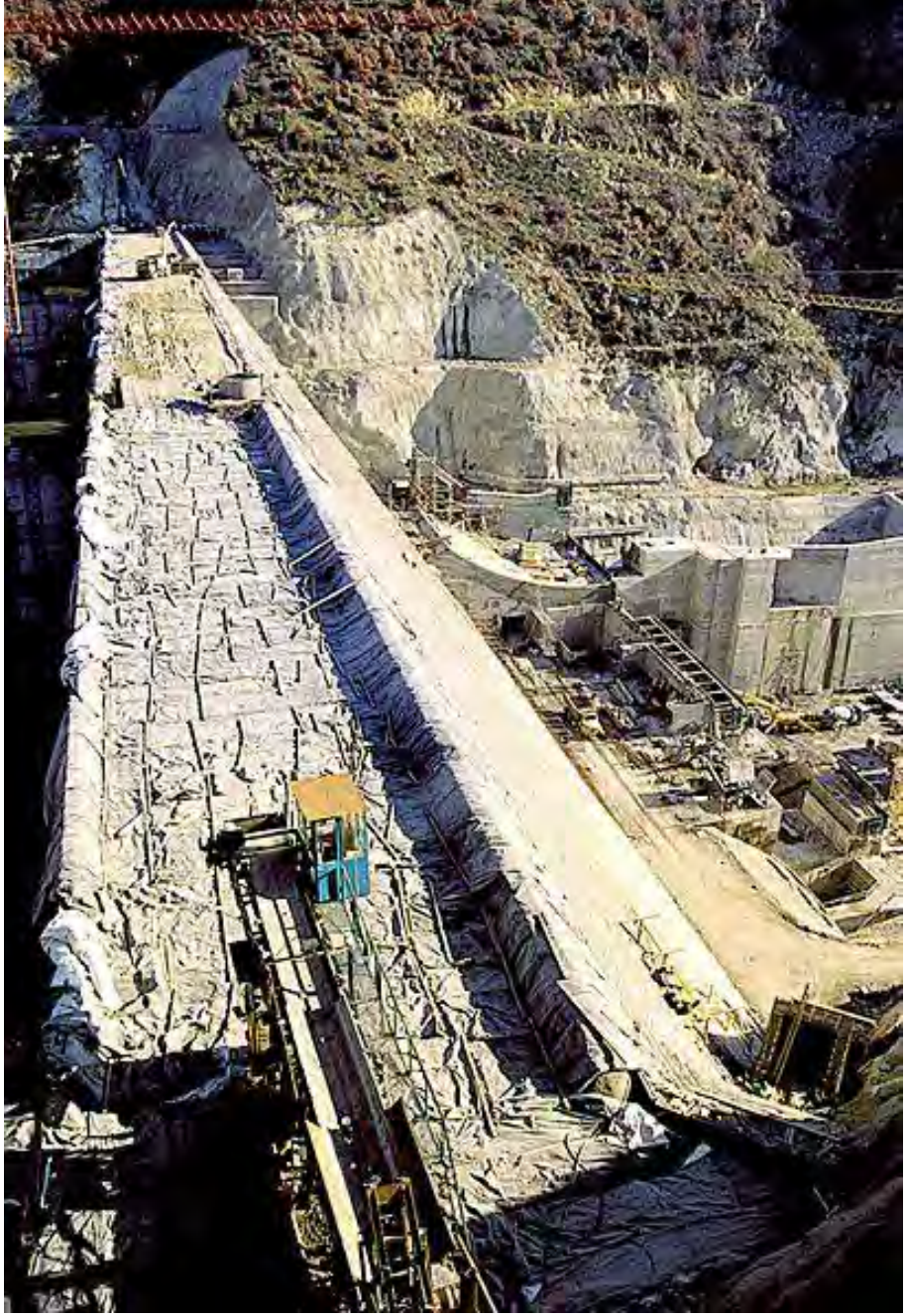
•Slip forming facing elements.
(140+175 (C+F), 2 to 3 cm slump).

•The slip form paver

•Slip forming facing elements.



RCC placement.



protection during a winter break.

RCC testing (nuclear densiometer).

•**Direct**
tensile strength tests.

•**Slant shear testing (Brazilian or indirect tensile strength).**

- **Coring to check in-situ cohesion, lift bond and strength.**


9,93 - 13,62
181
180
179
178
11,14
177
176
175
174
12,38
173
172
171
170

•**RCC cores**

•**Fabrication of joints. (Inserting separating steel blades).**

•Joint detail

at upstream facing element

-Test fill (hence opening that wide).

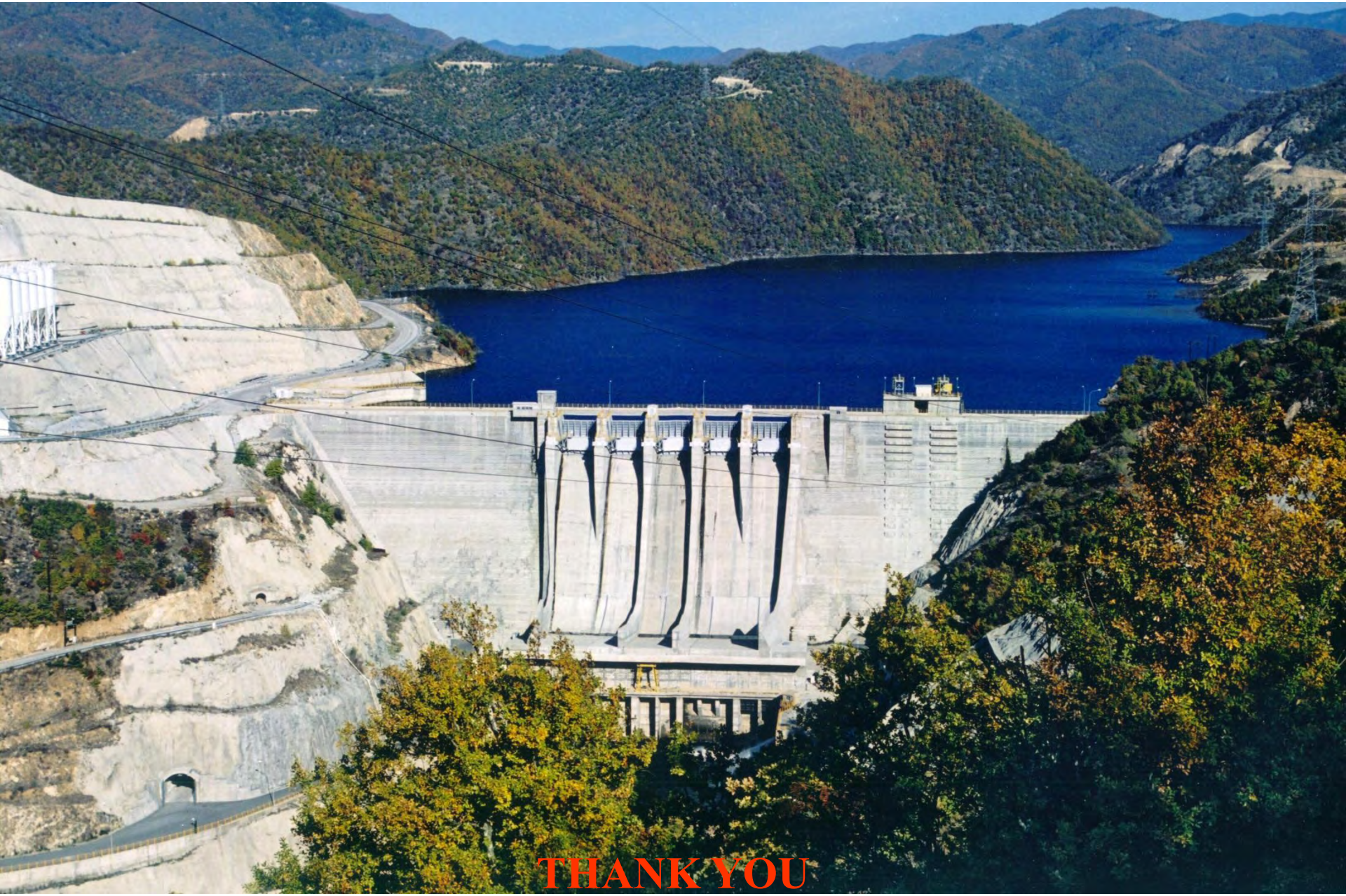
•Thermocouple Terminal Units.

•**Joint sealing (CARPI S.A.)***

- **Joint sealing at dam toe.***

- **Joint sealing at u/s dam toe - finished**

- Joint sealing
- at upstream face
- – finished.*



*Courtesies:-PPC/DAYE-Dr. M.R.H.Dunstan- AEGEK-CARPI S.A.