The experience of Infiernillo 0 Bridge

INTRODUCTION

The problem

LGIDC was responsible for the monitoring to CONTROL the movements in order to know if the ROTATION VARIED, STABILIZED or TENDED TO DECREASE, providing, if necessary, a rehabilitation project. Displacement transducers (TH), accelerometers (AV), INCLINOMETERS (CC) and temperature sensors (TP) were placed at the bridge.

RESULTS

EVOLUTION OF BOUNDARY CONDITIONS

Behavior of pile was analysed during several months, being able to distinguish the following milestones:

- 07/10/2013: STANDARD DAY in which the level of the dam was minimal.
- 09/20/2013: STORMY DAY under the influence of MANUEL AND INGRID hurricanes and the dam draining.
- 09/22/2013: Manuel and Ingrid hurricanes return to land (the stormy weather is reactivated) and the DAM reservoir reaches MAXIMUM LEVELS, continues discharging.
- 09/26/2013: hurricanes weaken but the dam continues. DISCHARGING. The stability of the water flow is not achieved.
- 11/1/2013: the STABILITY of the water flow is achieved.

DISCUSSION

Once reduced water level and pushes on the pile, it returns to head upstream. This SPEED is 0.005 mrad / day.

STATISTICAL CONTROL METHODS

When analysing all the data of the registered rotations until November 26th 2013, the existence of a trend in the increase of the transverse turn of the pile upstream was observed. Thus, during the days of the dam discharge the pile tended to reduce their inclination effect of the thrust of the water because the thrust opposed his growing inclination.

RESULTS

The actions to which the pile is subject are critical (right under the reservoir) and far from a recovery in the rotations of the pile, it continues with its initial trend, rotation towards upstream.

As a result of the data obtained with the monitoring, LBG IDC performed the project corresponding to the underpinning of the pile.