

# **Assesment of the harmful effects of road salt on the structural state of the bridges in the Principality of Andorra.**

J.L. González Brunat  
AUREA Enginyeria, Principat d'Andorra.  
[jlgb@aura.ad](mailto:jlgb@aura.ad)

## **ABSTRACT**

The roads in the Principality of Andorra are subjected to rigorous conditions of cold and snow over several months a year.

During these months, and with the aim of guaranteeing road safety, large quantities of road salt are spread on the roads. These salts constitute a source of free chloride ions which affect our structures and subject them to processes of chloride aggression which favour the process of localized corrosion in the reinforced steel bars and other metallic elements.

The article identify the main process factors and presents the results obtained from the campaign to control chloride penetration and concrete carbonation which has been carried out by the Andorran Government during 2013. The campaign has studied eight bridges. All of them are aged from ten to forty four years old and are located in main roads from 900 to 1500 m of elevation.

The results obtained have led to a better knowledge of the state of the development of the pathology in the bridges studied. In addition to this, platform designs and concrete design parameters have been identified as key factors in order to prevent pathology evolution.