

# The EC1 and the new Italian code on actions

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## THE EC1 AND THE NEW ITALIAN CODE ON ACTIONS

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Luca Sanpaolesi is involved in Structural Engineering studies, with particular regard to Actions. He has participated, since the beginning, to the development of the Eurocodes, in a first phase under EEC and in the second phase under CEN guide.

In EC1 works he has been Convener of the Project Team on Snow Loads and member of the PT on Traffic Loads on road bridges. In Italy is involved in preparing codes on Actions.

### Summary

One of the main problems of the ENV phase of the EC1 code on Actions, is the difficulty to conciliate, in each country, its NAD with the national code and the EC1 itself, being the designer free to employ one of this codes.

Italian code has already been updated and made as similar as possible to the EC1, so that it is no admitted alternative use of the European Code.

In the following, since it seems to be interesting in the author's opinion, it will be illustrated the normative criteria adopted in Italy.



The analysis of the new Italian national code on Actions seems to suit very well the scientific purpose of the IABSE Delft Colloquium on Action on Structures, since it outlines a new way to take a first step towards the European harmonization of Eurocodes.

It is well known that during the ENV phase of Eurocodes, the national Authorities of each member State, charged to prepare the national codes, allow, in theory, the alternative use of each EC, completed by the NAD and anyway supported by the national code, that is to be considered the principal rule to follow. This way of proceeding has been observed in almost all European countries for the application of the first EC and, in particular, for the ENV-1992-1 "Concrete Structures" and ENV-1993-1 "Steel Structures".

Nevertheless this philosophy, which makes the designer able to select the code to be adopted in designing a structure, seems not to be applicable to the Eurocode on Action on Structures, since it seems not possible to let the Engineer select between code provisions which will lead to different loads to be applied on the studied construction.

It is important to underline the fact that codes on actions do not give rough load values, but furnish the design criteria, which enclose a great number of considerations, so that through an adequate, more or less complex, design procedure the design loads are fixed.



It is so explained the reason for which it is not possible to charge the Engineer to decide the action values to be applied on structures.

On the other hand it is completely reasonable that an Engineer could design his structures not necessary with reference to the provisions of the EC2, for concrete structures, or EC3, for steel ones. The results of such different design procedures might perform adequate and equivalent safety levels.

The author of this paper put in evidence the problem in the TC/250/SC1 meeting held in Paris the 28<sup>th</sup> - 29<sup>th</sup> April 1992 by proposing a motion about the elimination of the ENV phase for the Eurocode on Actions, introducing directly the EN phase.

The purpose was discussed but it was decided not to introduce such a variation, since the committee retained not to exclude the temporary phase of the EC1, typical of the ENV.

Now, however, the problem is again actual and it have to be faced in each country.

On the other hand it has to be remembered the favourable fact, regarding the adoption of the ENV-1991-2, that the snow and wind load maps provided by EC1 and the national code ones of each country were the same. In fact it is well known that during the EC1 studies, since it was impossible to elaborate in a few months the new European maps of snow and wind loads, it was decided to go back to the national load maps of each member state and to introduce these ones into the EC1.

In collecting national load maps it was requested, to each National Competent Authority to furnish sounded data elaborated with homogeneous criteria, such as the return period. Each country, among which Italy, participated often updating and improving the national map.

In Italy designing codes and therefore even the code which defines the action on structures, are mandatory and published on the Official Journal of Italy, so that they achieve an extremely important role and it is not possible to derogate from them in any case.

Italian Authorities, charged to prepare the national codes, once verified the inopportunity to make the designers use alternatively European or national codes on actions, since mandatory codes exist, and the availability of the ENV-1991-2 which encloses national wind and snow maps, decided to introduce a new national code on action which could substitute the previous and quite obsolete one. The new code should have been taken into account the new wind and snow load maps, updated during the elaboration requested by CEN when they were introduced in EC1.

Thus the new Italian code on action on structures, with particular reference to buildings, has been arranged following the general EC1 criteria and philosophy in fixing the parameters to be used in loads determination. Only few secondary modifications have been made in order to simplify the application and the practical use of the code and to better suit specific national situations.

The new code, recently published on the Official Journal of Italy, is now mandatory so that, without the NAD's publication, it is fulfilled the desired objective that is to allow the only use of a code as similar as possible to the ENV-1991-2 one, excluding any alternative possibility.

It has seemed useful, in the author's opinion, to illustrate the criteria adopted in Italy to achieve, in practice, the application of the ENV-1991-2.