ABSTRACT

The present diploma thesis was performed within the framework of obligations stemming from the postgraduate specialization program “In Earthquake Resistant Design of Structures“. All the numerical analyses were performed with the finite element based program ABAQUS. The aim of the present work is the investigation of the influence of the connectors (inserts and poles) on the response of the columns of the ancient monuments. The two inserts and the pole are used for the vertical connection of the spindles from which the ancient columns are formed of.

Initially in the first chapter we refer to the structural system of the ancient monuments and we describe the various types of connectors (horizontal and vertical).

In the second chapter we try a more systematic presentation of the inserts and poles. In addition we provide information about the experimental procedure (geometry of the samples, loading arrangement, time history of forced movements e.t.c.).The experimental analyses were not performed within the framework of the present thesis. They were existing and their results are compared with the numerical analyses with ABAQUS.

In chapters 3 to 7 we separately investigate the influence of the various parameters (friction, shearing and penetration) witch comprise the final problem.

Furthermore in chapter 8 we tackle the problem in its most complex form in witch all the various parameters coexist.

Finally in chapter 9 we perform the comparisons of the aforementioned analyses and we deduce the final conclusions.