

## ABSTRACT

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The title of this dissertation is : Seismic Risk Assessment of Thessaloniki' s Port.

The term “Seismic risk” expresses the range of the potential losses, not only due to direct , but also due to indirect effects of an earthquake. In order to determine the seismic risk of an existing structure or facility, the seismic hazard and its vulnerability are needed to be determined.

The present dissertation consists of eight chapters. Their structure and contents are as follows :

Chapter 1, consists of general, technical and operational, characteristics of port structures and facilities. It also gives a summary of seismic effects on harbors and ports that have been observed till today

. Chapter 2, consists of general definitions of the terms “seismic risk” and “vulnerability” of an existing structure. It also presents the general methodology that have been applied for the estimation of seismic risk of lifelines and utilities.

Chapter 3, provides a general view of the articulation of OLT (Organisation of Thessaloniki's port) and the services that are provided. Other building and operational structures are presented, as well as information on equipments and their use.

Chapter 4, consists of the general methodology that have been applied for the imprinting and recording of the port's utility systems and their infrastructures , that are considered to be under seismic danger. Technical and operational characteristics that are considered to be important for an estimation of the importance of their role in the system, as well as an assessment of their vulnerability, are recorded to the Data Base created for this reason, using a GIS computational system.

Chapter 5, provides a classification and hierarchy of harbour infrastructures in period of regular use, crisis and re-establishment. Appropriate functional, economic, social, and cultural criteria are used for this purpose, while, at the same time, the corresponding thematic maps are created and mentioned.

Chapter 6, provides a selection of suitable seismic script, based on the results of Mjkrozwnjki's of Study Thessaloniki, while at the same time suitable thematic maps on the region of port, with the essential parameters of seismic movement for the assessment of seismic vulnerability (PGA, PGV) are created and mentioned. Moreover, the collected geotechnical elements from the region are presented and are evaluated proportionally, in order to estimate the permanent ground displacements due to liquefaction phenomena.

Chapter 7, provides an estimation of the expected level of damage for each port element exposed in seismic danger, while suitable vulnerability models are been used.

Finally chapter 8, provides with the final conclusions.