

ABSTRACT

Seismic vulnerability assessment of reinforced concrete (RC) existing structures can be performed through the use of reliable tools this is in order to reduce damages in case of an earthquake event. Within this study, major parameters that have an influence on the seismic behaviour of RC buildings are identified with their weighting factors for the three considered vulnerability classes. A vulnerability Index (VI) is then calculated allowing the classification of the studied structure according a developed scale. Based on Algerian seismic feedback experience DPM (Damage Probability Matrices) are elaborated. A continuous formulation of these matrices enables the determination of semi empirical vulnerability curves.

A program called PV (Program of vulnerability) is elaborated in Delphi. This program contains two modules: PVC (Program of Vulnerability curves) and VIP (Vulnerability Index Program). The first one gives the mean damage ratio of a structure and the second classifies the structure according its seismic vulnerability.

A comparison with RISK-UE curves shows that our curves are more conservative.

Key words: Vulnerability index, earthquake, reinforced concrete, structures, damage probability matrices, vulnerability curves.