

From "*De la pression des terres, et des revêtements*" to the seismic analysis of retaining structures

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In his *Essai*, Charles Augustin Coulomb showed that the earth pressure on a retaining wall can be calculated through a maximisation of the force obtained by considering equilibrium equations and compatibility with the strength criterion. This approach is still of practical relevance in some design situations and, more importantly, its basic assumptions paved the road for the numerous successive developments that allow us to consider, among other factors, the changes in earth pressure induced by the seismic forces.

In fact, a modern approach to the seismic design of structures entails the evaluation of their performance under different shaking intensities. This lecture intends to show that the basic ingredients of the Coulomb's analysis, that is, equilibrium and strength compatibility, can be used in a rational way not only to predict limit values of the earth pressure, but also to evaluate the actual seismic performance of several types of retaining structures.