Most of the constructions of the cement industry are subjected to extreme loading conditions that must withstand during their useful life and, therefore, the risks of failures and collapses due to design or construction errors, or to degradations of their constitutive materials are high. The implications of structural failures in operational and maintenance costs of cement plants may be very severe. In this work, after a brief discussion of the structural design criteria that characterized some relevant and risky structures and foundations of cement plants facilities, such as storage buildings, process towers and dynamic equipment foundations, cases of real structural failures and collapses in the cement industry are presented and the strategies for their design solutions are discussed.