CERTAIN ASPECTS CONCERNING THE INDUSTRIAL IMPLEMENTATION IN SEISMIC ZONES

by

RODICA MUSCAN[x)]

SUMMARY

The paper presents some specific aspects of macro and micro territorial planning optimization of industrial platforms situated in seismic zones. In this sense the seismicity problems have been correlated with the technological processes being taken into account the social, economical, ecological consequences, in case of some important damages.

The risk of a seismic shock in the industrial zones must be investigated accordingly to the problems resulted in case of damages which bring successively losses as a consequences of the interdependence between different industrial branches, essential sometimes.

The decision of macro and microterritorial planning regarding the implementation of industrial buildings is based on a complex and dynamic concept and bring together the most distant scientific fields such as architecture, seismology, ecology, sociology, pshychology, a.s.o.

There are synthetically presented some of the main aspects involved in the complex design concept of industrial platforms situated in seismic zones.

A. MACROTERRITORIAL PLANNING CONCEPT

The main factors taken into account at the territorial planning as a whole - macroterritorial planning - in order to locate the industrial zones are the following:

1. The seismic characteristic of the zone. It must be analysed:

- the intensity degree or seismic risk depending on the seismic zoning map correlated with the geological map as well as statistic information obtained in situ about zone which have conduced to the improvement of data upon the territorial seismicity.
- the frequency of intensive shocks, the recurrence interval, magnitude estimation, the seismic active and potential active zone delimitation.
- the type of earthquakes which are characteristic for a zone (of surface, of depth, landslides, soil liquefaction, basic causative mechanism, spectral and cinematic composition e.s.o).

---

x) Designer architect, associate assistant at the Faculty of Architecture and Urbanism, Bucharest.

equipments, height storing places.

- the spatial organization of volumes, pursuiting an equilibrated geometry, a clarity of architectural forms a.s.o.
- the architectural appearance resulted from the use of various materials with different construction methods (prefabrication, typification) the modulation of space in the view of industrialization of the component parts and to assemble them in complex units with civile or industrial functions of the platforms.

3. Dynamic interaction between structural and nonstructural elements with dissipative and inertial function during seismic motions. A special attention must be paid to the following aspects:

- the determination of dynamic properties of nonstructural elements by laboratory tests regarding the energy absorbtion, optimum association diagram between strengh and ductility for various materials.
- the analysis of interaction between structural and nonstructural elements and the solution for the design of the construction details, for aseismic joints by flexible or stiffness connections.
- adequate materials of nonstructural components for certain types of chosen structures.
- aseismic designing measures for some nonstructural components (including them in building code requirement) which may also caused casualities, components which are used at space enclosures, at partititions in buildings. The inadequate arrangement of this elements may contribute to the collapse of a construction even though they are not intended to, because of the participation at the deformation of the structural components, at the eccentricity of mass centre against stiffness centre with torsional effect, unfavourable for the stability of the structure.

In case of nuclear power plants, an efficient aseismic design of nonstructural element must takes into account the fact that seismic induced malfunction is not necessarily synonymous with structural failure, but includes all of the effects that may result from the vibratory motion associated with the earthquake.

Although, the above-approached problem is an extremely complex, vast and essential one, the limited area has permited only a synthetic discussion of certain aspects.

However, it must be emphazised the less encouraging fact, that most of researches publications and building codes refer especially to the problem of seismic response analysis of structures and less to the whole problems involved by urban and industrial territorial planning.

Lessons from the past earthquakes have shown us that the most important losses have often been generated by those aspects mentioned in this paper and not allways by a more or less accurate aseismic calculation of a structure.