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Engineering Power

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Earthquake Engineering in Croatia

The development of contemporary earthquake engineering in Europe began after the catastrophic earthquakes in Agadir, Morocco, in 1960 and in Skopje, Macedonia, in 1963. The European Association for Earthquake Engineering was founded in Skopje in 1964 and today numbers 28 members – national societies of European and non-European Mediterranean countries. The Croatian Society for Earthquake Engineering has a tradition of 35 years and is systematically monitoring world achievements. It promotes the engagement of Croatian scientists in European science through their participation in European and global conferences. In addition, it is active in introducing the most recent ideas and knowledge in the practice of design and building in Croatia.

The most recent disastrous earthquakes inTurkey (August 1999), with tens of thousands of victims, and then those in Greece, are a warning that there are many things in this area that we must overcome to achieve a socially acceptable level of protection of human lives and to minimise the material damage of buildings. This relates to both design and construction, as well as to the selection of adequate and high-quality materials and the supervision and the maintenance of buildings. It seems that everyone will learn from the consequences of the earthquakes in Turkey about inadequate constructions and concepts, but also about the necessity to concentrate on a higher quality of construction.

The experimental work of Croatian scientists is particularly focused on built constructions. The mechanical properties of masonry, brickwork, porous concrete and stonework during earthquakes have been studied. Theoretical research includes the behaviour of different types of buildings made of reinforced concrete or their elements during earthquakes, as well as the behaviour of bridges. In the case of steel conctructions, the behaviour of containers for liquids has been analysed.

In the practical implementation of theoretical findings, Croatian scientists have encouraged the design of reinforcements for buildings damaged in earthquakes, particularly those belonging to the cultural heritage that are built of stone and which are used for different purposes: housing, business, museums, churches, monasteries and bell-towers. There are plans in Croatia to build around 2,000 km of highways and the construction of large bridges in earthquake areas is, therefore, of particular importance. The use of modern computer programmes in the calculations of constructions is extensively applied and well-established.

The experience of several generations of engineers is based on their own observations and on the damage of buildings and other objects in their immediate surroundings. Croatia is located in an area of potentially strong earthquakes, which recur several times during the existence of buildings.

In the area of legislation, the adoption of the entire system of contemporary European norms for the calculations of constructions (EN 1991 to EN 1998) is underway to substitute the existing Croatian norms. A part of the system is the norms of construction in earthquake areas. The Croatian Chamber of Architects and Engineers in Construction was founded only recently, and we hope that this will encourage the free movement of products used in construction and the participation of Croatian engineers in the European distribution of work in design, construction and supervision.

The Academy of Technical Sciences of Croatia supports the engineering field by encouraging professional discussions of technical (civil engineering) and natural (seismology and geology) sciences, convinced that such discussion will contribute to a better understanding of different professions and to technical progress.

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