

Application of Seismic Isolation in China

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SUMMARY

China is a strong seismic country with frequently earthquakes every year. Some buildings and bridges with isolation was performed very well to successfully experience the very strong earthquakes, especially in Wenchuan Earthquake on 5.12 2008. After experience of some tragedy earthquakes, the isolation technology has been very speedy developed and more widely been used in many field of construction and facilities.

This presentation briefly introduces the recent research, testing, analysis, design and application on seismic isolation for structures and facilities in China.

There are over 3500 buildings and 100 bridges using isolation in China until 2012. Many new isolation projects are designing and constructing now. The application ranges of isolation in China mainly include buildings, bridges, space and complex structures, historical relics 、 LNG tanks and industry facilities. There are some typical application examples, such as the world largest isolation airport terminal building with 500,000 M² floor areas, the world greatest group of isolation houses including 94 buildings (4-6 stories) with Floor area 280.000 M², the world longest isolation bridge with 26 km length crossing the sea, and hundreds of school buildings using isolation technique to retrofit for satisfying anti-seismic requirement in China. The seismic isolation application on nuclear plants is designing now.

Some new isolation systems have been established in recent years by a great number of tests, analysis, design and application, such as Stories Isolation System (isolators located on the middle height instead of only on the base), 3D isolation system (isolate horizontal vibration, also isolate vertical vibration), Hybrid Isolation System (rubber bearing add slide bearings), Isolation Retrofit System (for existed buildings or bridges). These new systems give a wider way to use isolation and promote the speedy development of isolation technique in China.

The presentation also introduces the new Chinese design codes in 2010 for structures with seismic isolation, and the national standards of products for isolators.

In order to satisfy the requirement of isolation application on the rural area, China has develop another new isolation system with isolation rubber block, which is low cost, needs not complex design and very simple for construction, very suitable to be used to build the isolation houses (1-4 stories) in the widely rural area in China.

More and more to use Isolation technique has become a strong tendency, the seismic isolation system will become the one of the main structural system in seismic areas in China!