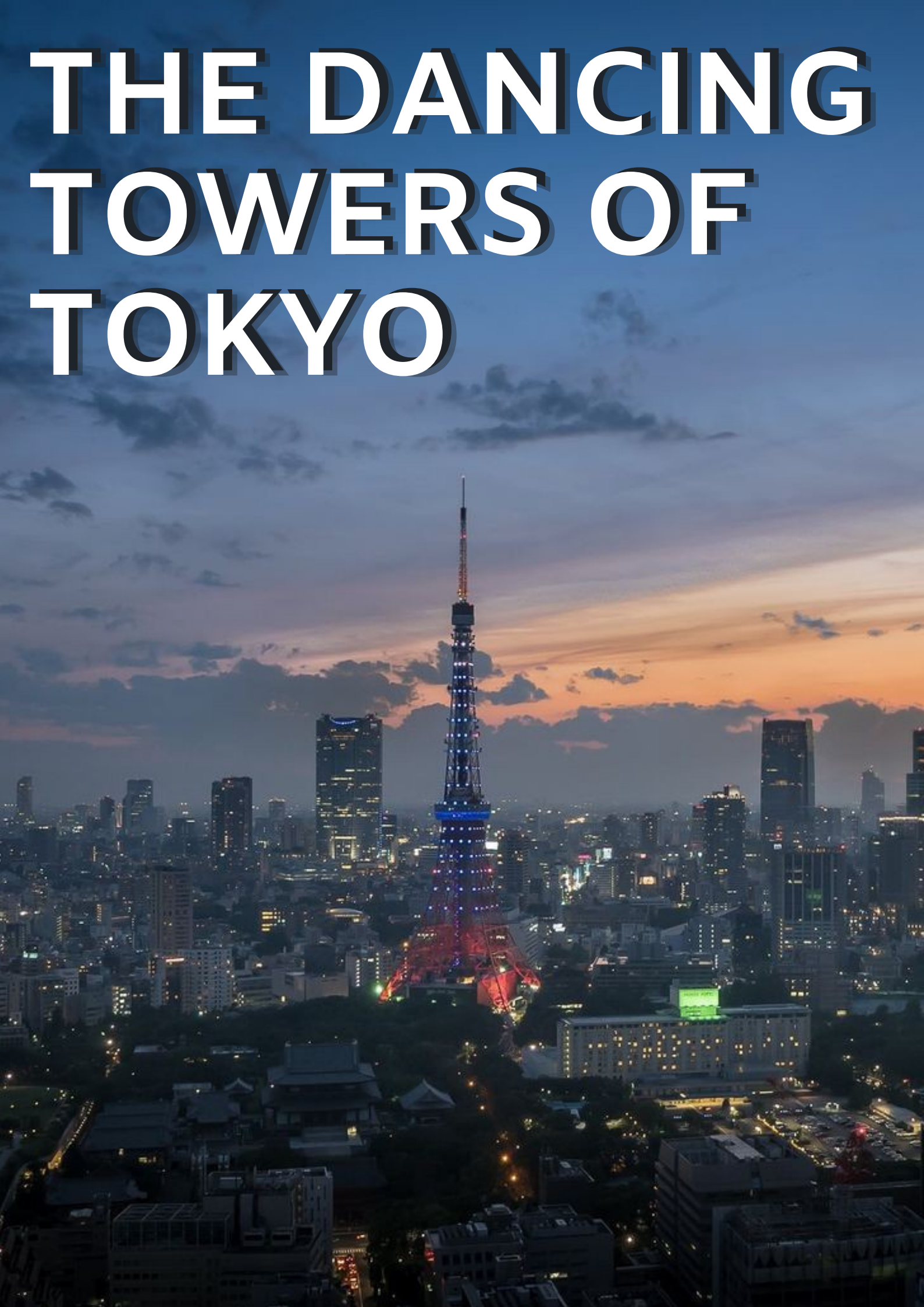
THE DANCING TOWERS OF TOKYO

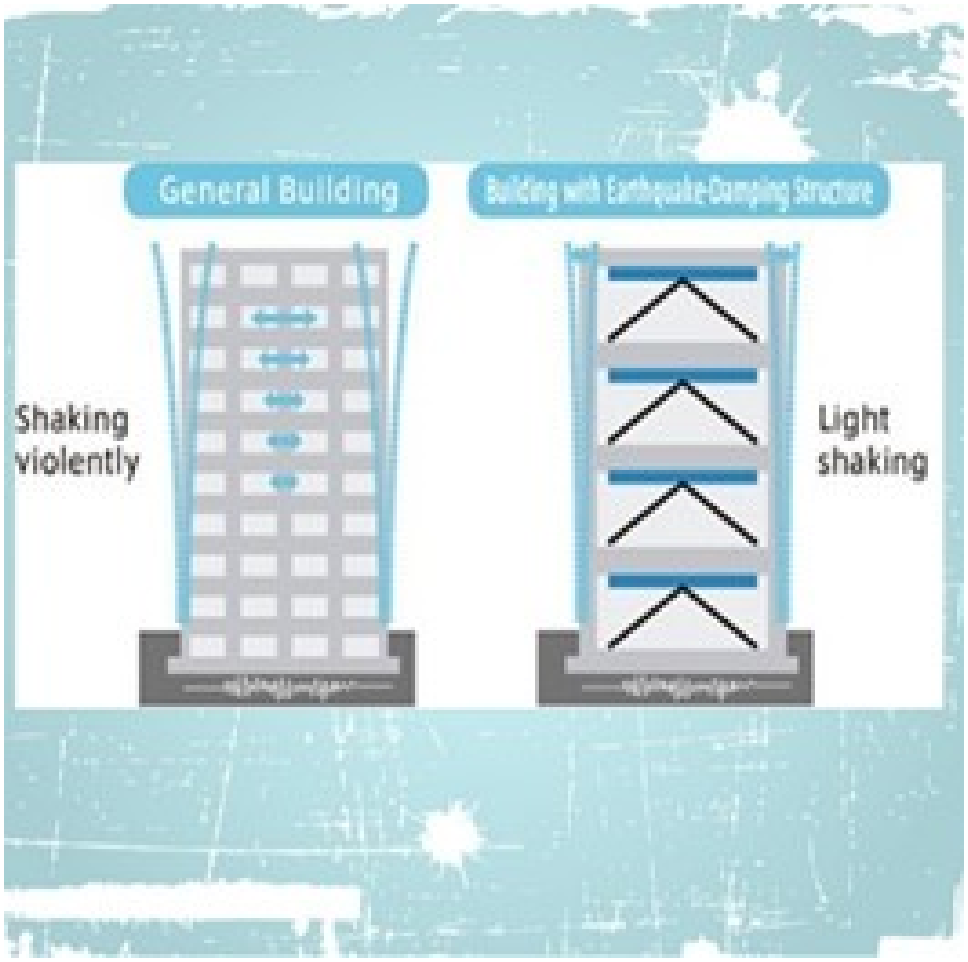


“Standing on the 52nd floor of the Mori Tower in Tokyo, I felt a slight tremor blow my feet. Before I could even begin to register what was going on, the PA system came to life delivering the following message in various languages, “There has just been an earthquake. Stay calm, seek refuge under a table and keep away from the windows.” All the people around me calmly walked away from the windows, formed a group and knelt down on the opposite side. That is when I realized, experiencing earthquakes wasn’t uncommon amongst the public of Tokyo.”

The bustling city of New York may not be the only concrete jungle one will come across. The towers in Tokyo loom over the city as if looking upon all that is happening in the city, creating a sense of security to those living within.

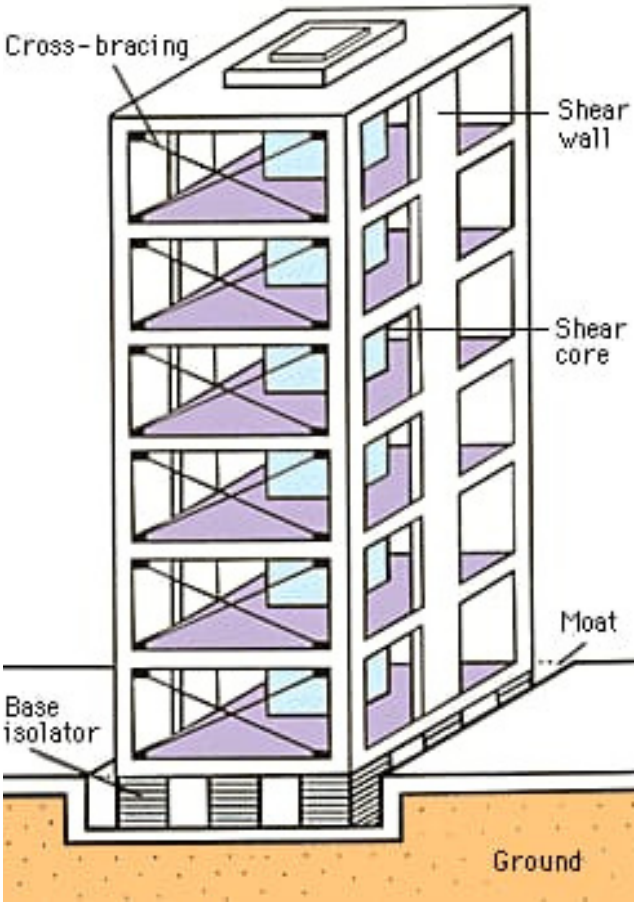
But these silent guardians become the city’s biggest liability during earthquakes. The Tohoku earthquake in 2011 was titled “the world’s costliest natural disaster”, as it shattered Japan’s nuclear industry along with thousands of buildings. So, how did Japan combat this problem?

Increasing the flexibility of the buildings was of utmost importance.There are two levels of resilience that the engineers have to meet.



The first one is that a building must be able to withstand smaller earthquakes without needing repairs later as it is not feasible to perform repairs after each hit. And the second one prioritises reducing human casualties as preserving the buildings is no longer the goal.

Shock absorbers are installed at the base of the buildings by the process of Seismic isolation.These shock absorbers are simple blocks of rubber about 30-50cm thick to resist the motions of the earthquake. The building columns sit on these rubber pads. Devices called “dampers” are incorporated between alternate floors of the building. It resembles a bicycle pump but is filled with liquid instead of air,on compression of the pump, it pushes against the liquid. It doesn’t compress very much but it will move a little bit. That process can reduce the vibrations within the building.



The designers and engineers have to work together so that neither one has to compromise in design or structure of the majestic towers. An example of modification of design to aid structure is using mesh structures to help prevent the building's supports buckling.