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Title : 'Parts of city can't face quake of 7.5 intensity'

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A recent seismic hazard study reveals that structures built in parts of Mumbai and Navi Mumbai are not equipped to face earthquakes of or above 7.5 magnitude on the Richter scale due to soil conditions.

The study states that structures run the risk of being razed to the ground because the soil here is marine clay . Also, major parts of Mumbai and Navi Mumbai are developed on reclaimed land and lands filled up with soft material, making it vulnerable to increase the earthquake from bedrock level to ground level, causing major damage to a city.

Mumbai region is classified as a Seismic Zone III region, which means an earthquake of up to magnitude or intensity of 6.5 on the Richter scale can be expected. However, the study shows that some locations in Mumbai and Navi Mumbai, due to soil conditions, can fall under seismic zone IV and could suffer an earthquake of higher magnitude of 7.5 or above on the Richter scale.

This study comes at a time, when the state and Centre have announced grand plans to develop the Mumbai Port Trust region and the development is underway in several places in Navi Mumbai, including the JNPT area. The study was conducted by professor Deepankar Choudhury from IIT-Bombay's civil engineering department and his former PhD research scholar and PWD engineer Dr Sarika Desai. "Site-specific studies conducted for soil liquefaction reveal that JNPT and Mumbai Port Trust have typical marine clay and the soil can flow like water at shallow depth," says Choudhury. Therefore, structures in JNPT or Mumbai Port Trust area can be at a serious risk of being razed to ground if there is an earthquake of high intensity due to the marine clay soil. "Even places like Bhandup, Borivli, Dahisar, Malad and Bandra with soft soil can be subjected to such liquefaction for earthquake of high magnitude," says Choudhury.

"We also studied the Peak Horizontal Acceleration (PHA), a measure of earthquake acceleration on the ground, (in layman terms show how hard the earth shakes in a given geographic area), and found that it increases steadily from relatively low to high seismicity from the central to southern and northern parts of Mumbai region... Therefore, there is need to relook at the classification of earthquake zones entirely for Mumbai and Navi Mumbai," Choudhury said.



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Prof Deepankar Choudhury

Photo for representational purposes only

FINDINGS OF THE STUDY

➤ The study also published in the journal of American Society of Civil Engineers deals with identification of seismic hazards and study of soil conditions in Mumbai and Navi Mumbai region.

➤ It points out that Mumbai and Navi Mumbai are in 'seismic zone III' but soil and rock conditions vary extensively from soft to stiff and hard type of material below



ground surface and will not be able to withstand higher intensity earthquake.