

Abstract Details

Title: Study of Wind Force on a High Rise Structure by using Davenport's Gust Factor Approach

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Abstract: Any high rise structure can vibrate in both the directions of along wind and across wind due to the flow of wind. Modern high rise structures designed to satisfy lateral drift requirements, still may vibrate excessively during wind storm. These vibrations can cause some threats to the High rise structure as buildings with more and more height becomes more vulnerable to vibrate at high speed winds. Sometimes these vibrations may even cause discomfort to the occupants even if it is not in a threatening position for the structural damage. That's why an accurate knowledge of building motion is an essential prerequisite for serviceability. There are two approaches to find out the Response of the High rise structures to the Wind loads. One is Analytical approach given by Davenport and mentioned in the IS 875: part 3 -1987 is used which is only legit to a regular shape building but for an irregular shaped building we use wind tunnel testing method. This thesis deals with the analytical studies carried out on a high rise structure named IREO VICTORY VALLEY TOWER - C going to be built in SECTOR 67, GARUGRAM, HARYANA which is 147m in height, consists 41 floors. The experimental results have been projected to estimate the full scale values by using appropriate scaling laws. The analytical values in the along wind direction have been obtained using the Davenport's 'Gust Factor Approach'(1967). The building is tested in a boundary layer flow corresponding to terrain category - III, as defined in IS: 875-part-3, 1987, ($\alpha= 0.18$ as per IS: 4998) at a wind speed of 38 m/s at model top for standalone situations.

Keywords: Wind Force, High Rise Structure, IREO Victory Valley Tower.