

Chart-4: Variation of story drift in X & Y direction for building with varying slope angle for wind speed 47 m/s for step back building and step back set back building

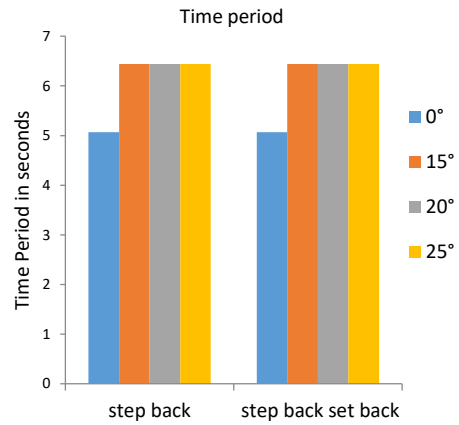


Chart-7: Variation of Time period of building with varying slope angle for step back building and step back set

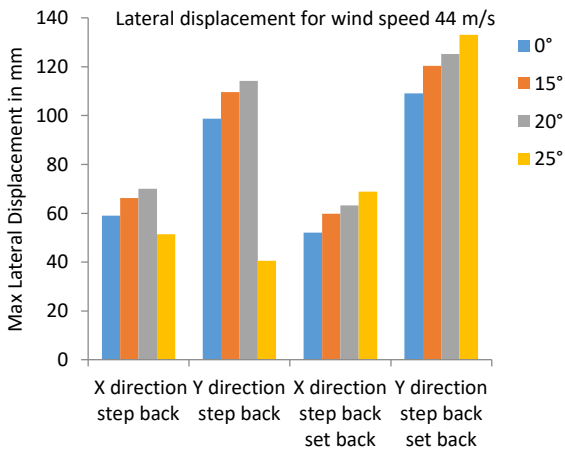


Chart-5: Variation of maximum lateral displacement in X & Y direction for building with varying slope angle for wind speed 44 m/s for step back building and step back set back

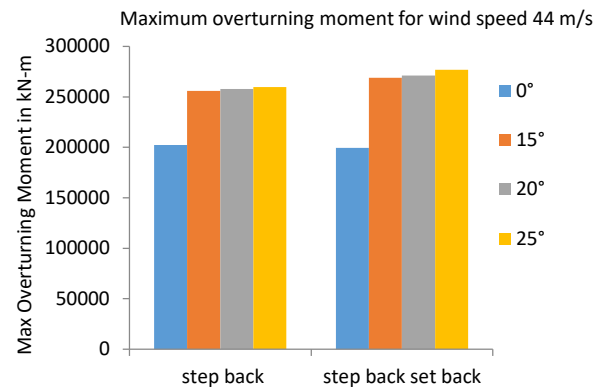


Chart-8: Variation of maximum overturning moment for building with varying slope angle in seismic zone II for step back building and step back set back

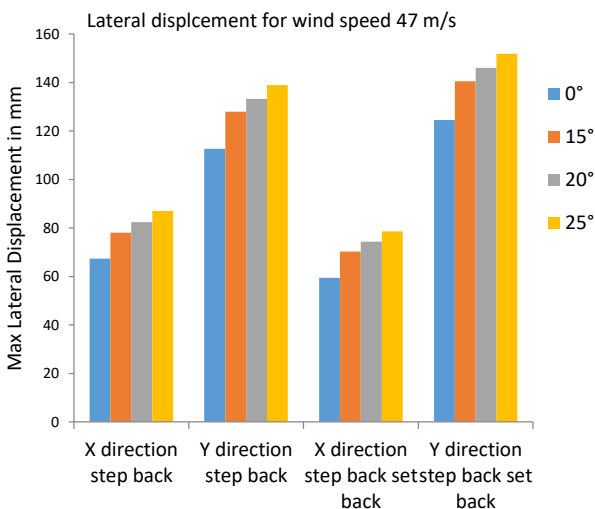


Chart-6: Variation of maximum lateral displacement in X & Y direction for building with varying slope angle for wind speed 47 m/s for step back building and step back set back

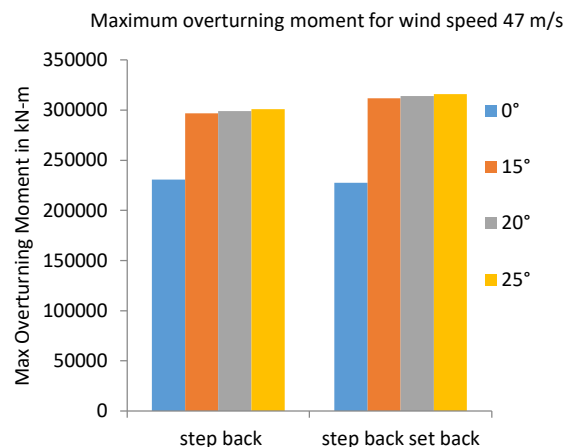


Chart-9: Variation of maximum overturning moment for building with varying slope angle in seismic zone III for step back building and step back set back

4. CONCLUSIONS

Wind loads are calculated as per IS 875 Part 3, which will increase with the slope angle as height of the building increases with increase in slope angle. From results, Slope of building was maintained by increasing the height of columns from one side as compared to other side which creates additional torsional effect on the building. From the results, it was found out that there is not much of change in base shear due to slope of ground as only slight increase of 0.5-1% in base shear is observed due to sloping ground due to increase in wind loading of the building at sloping part of the structure due to wind loading. From the results, it was also found out that there is significant increase in maximum story drift of the structure due to sloping ground i.e. around 10-25%. there is a drastic change of 4-5% is observed when slope angle is increased from 15° to 20° to 20° to 25°. Also there is reduction in maximum story drift for step back set back configuration as compared to step back configuration by around 10-15% in X direction and almost no change in Y direction due to wind loading. It was found out that there is significant increase in Maximum lateral displacement of the structure due to sloping ground i.e. around 12-25% in X direction % 10-21% in Y direction. There is increase of around 5-7% in maximum lateral displacement when slope angle changes from 15-20 & 20-25. Also there is reduction in maximum lateral displacement for step back set back configuration as compared to step back configuration by around 10-12% in X direction and increase by around 8-10% in Y direction for wind loading. From the results, it was found out that that maximum Overturning moment of the building is increase by 5-15% for sloping ground as compared to building on plain ground. Again there is increase only 3-5% in overturning moment when slope angle is changes from 15° to 20° & 20-25. There is 6-8% increase is there in maximum overturning moment for step back set back configuration as compared to step back configuration for wind loading. Thus we can summarize that step back set back configuration performs better as compared to normal step back building resting on sloping ground. Over turning moment as well as lateral displacement & drift is significantly less in step back set back configuration.

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