Title: Experimental and Numerical Investigation of Wind Load Distribution Characteristics on Tall Buildings with Irregular Plan Shape

Duration: April 2024 to September 2025

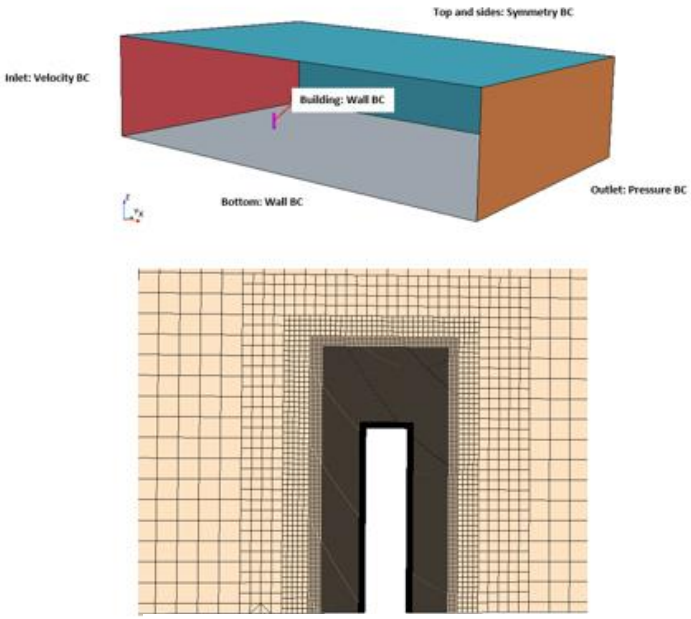
Objectives*:*

- Wind tunnel experimental investigation of irregular plan shaped buildings with vertical grooves of various sizes and aspect ratios
- Numerical investigation of irregular plan shaped buildings with vertical grooves using computational fluid dynamics
- Development of preliminary design guidelines for irregular shaped buildings with vertical grooves of various sizes

Progress Highlights:

- ❖ Experiments have been performed in the boundary layer wind tunnel for regular and irregular shaped building for open terrain condition covering various angles of wind incidences
- ❖ For the irregular shaped building, the groove depth was kept constant, while the groove width was varied
- ❖ A comparison of mean and rms pressure coefficients, drag and lift coefficients for the regular and irregular shaped building was also carried out
- ❖ Development of numerical model using computational fluid dynamics and validation with experimental results

Pressure measurement experimental test set-up



Numerical computational domain and meshing details

Future Programme:

- ➢ Numerical simulation of irregular plan buildings using computational fluid dynamics
- ➢ Development of preliminary design guidelines for irregular shaped buildings

Project Leader
Ms. N. Ramya

Team:
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Date: September 2024