LAB SCALE FLUME

Aditya Kumar , Sravya Kumbha , Lohit Vardhan.R , Om Litoriya , Mayank Goel , Ritik Kumar
Under The Guidance of - Dr.Mousumi Mukherjee (Assistant Professor), Dr. K.V. Uday (Associate Professor),
School Of Civil and Environmental Engineering

Indian Institute of Technology Mandi

PULLEY STAND

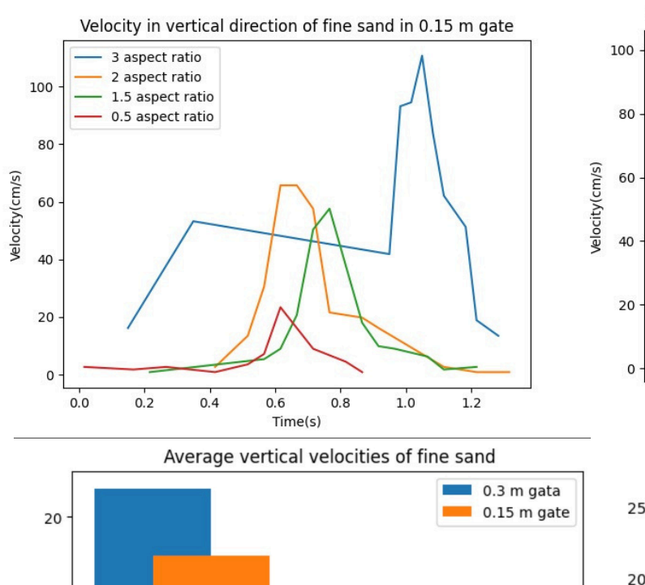
- Pulley mechanism to avoid any premature release.
- Helps to lift the gate with less force comparatively.
- With a good height to accommodate the gate when lifted.

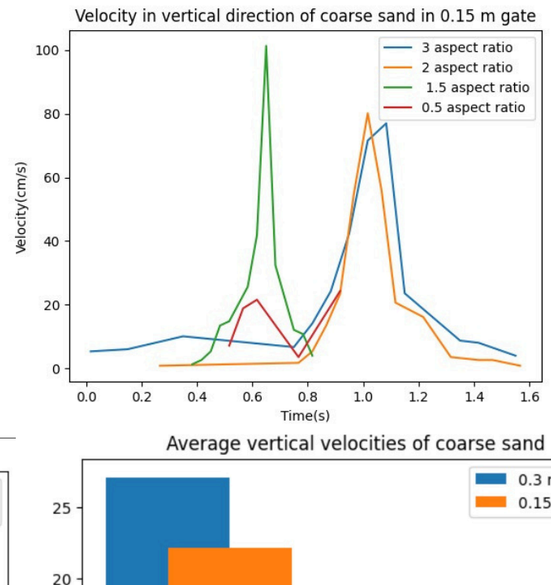
FLUME

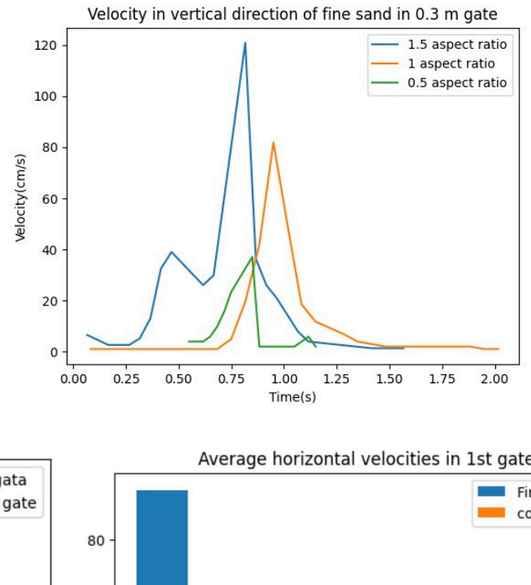
- Dimensions of flume: 1.5m*0.4m*0.7m
- Material: Toughened glass
- L- Holders and silicone gel were used to provide structural integrity.
- Two grooves were made at 0.15m and 0.30m

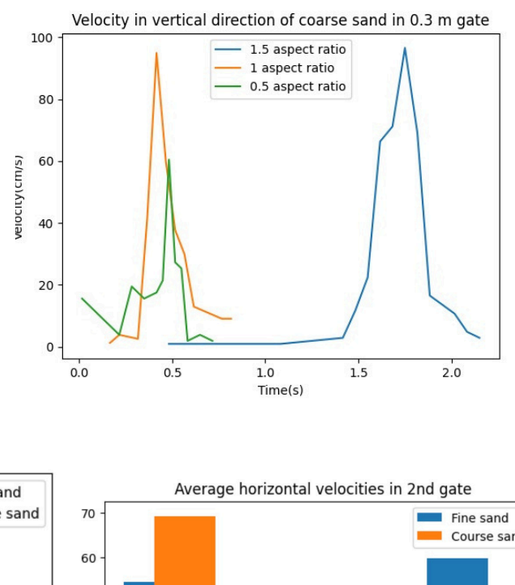
FLUME STAND

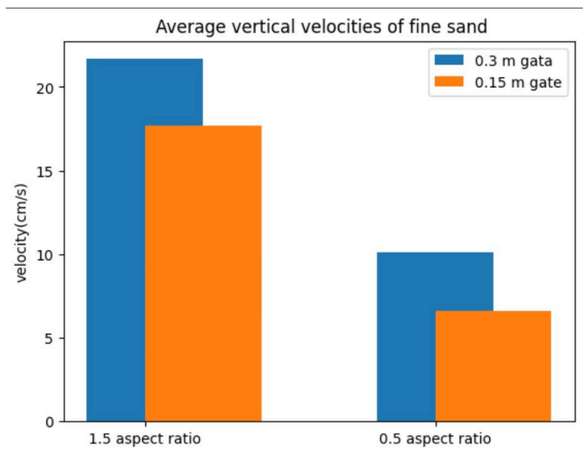
- Flume stand with slope changing aspect.
- Consists of wheels facilitating the movement.

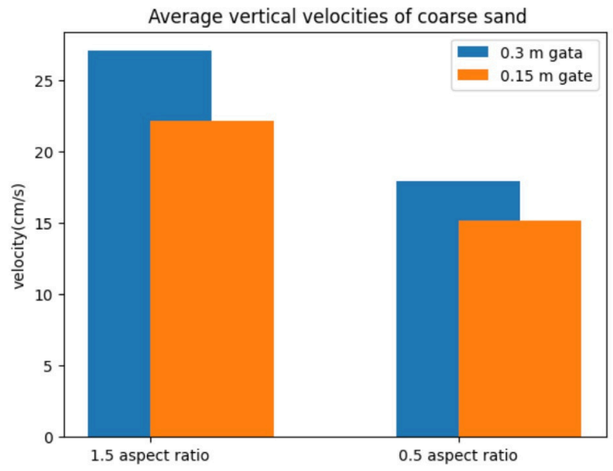




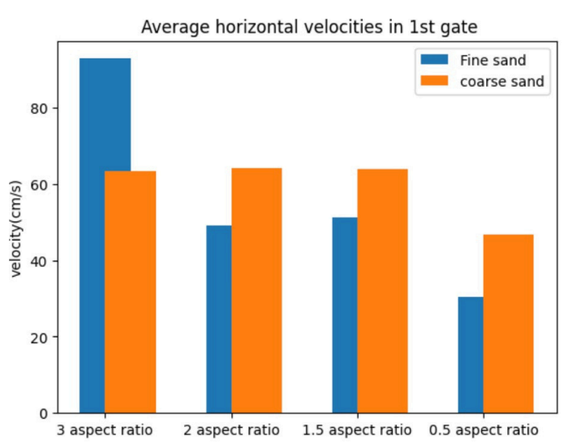


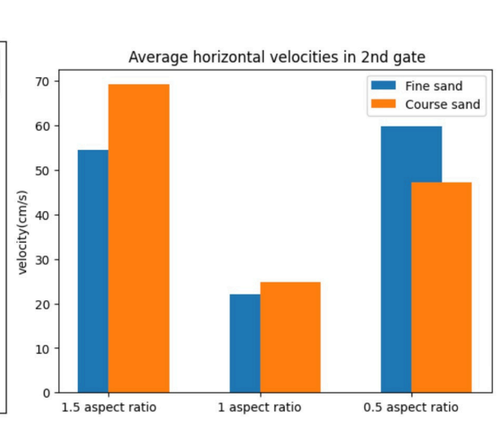






Comparison between fine sand and coarse sand





Comparison between velocities at two grooves(0.15m and 0.30m)

ADVANTAGES

- Scaling down natural phenomena in a lab setting
- Researchers can simulate different scenarios
- Variables can be well controlled
- Cost effective
- Reproducible
- Experiments can be done quickly and efficiently
- Enables researchers to perform sensitivity analysis

CONCLUSIONS

- Dimensions of flume and positioning of grooves played a major role in analysing granular flow
- Higher aspect ratios result in increased velocity.
- Vertical and horizontal velocities of fine sand exceed those of coarse sand.
- Velocities from the 0.30m gate are generally higher than those from the 0.15m gate.