



Air Stratification

Burton Barr Central Library

Marlin Addison *Arizona State University*

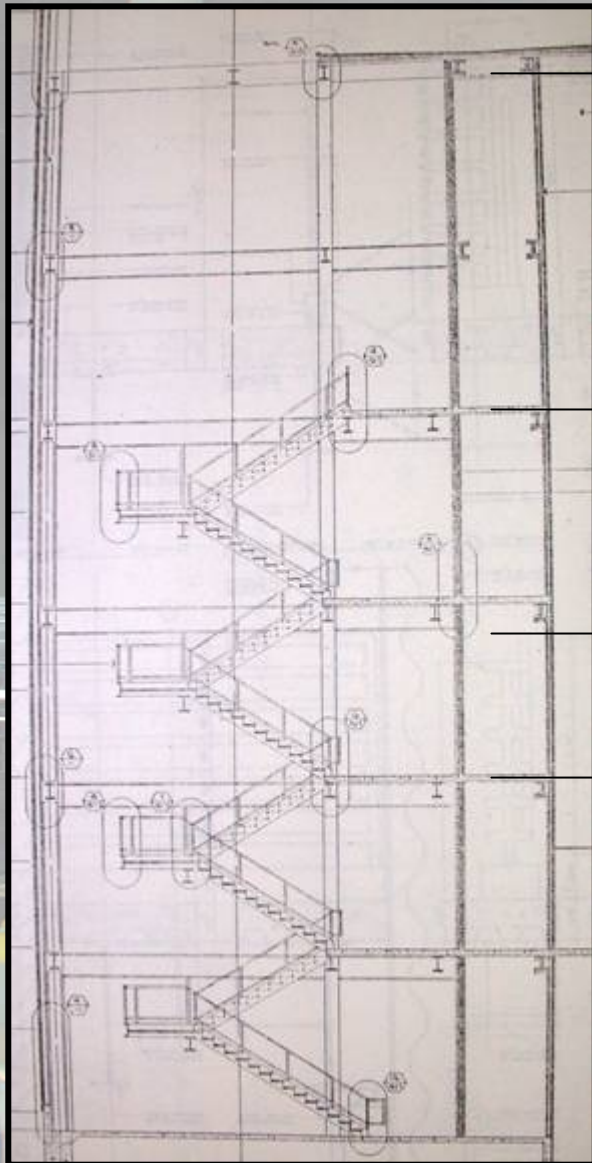
Sajini Badrinarayan *University of New Mexico*

Sara Goenner *University of Oregon*

Jared Hoffman *University of Idaho*

Sandy Stannard *California Polytechnic Institute*

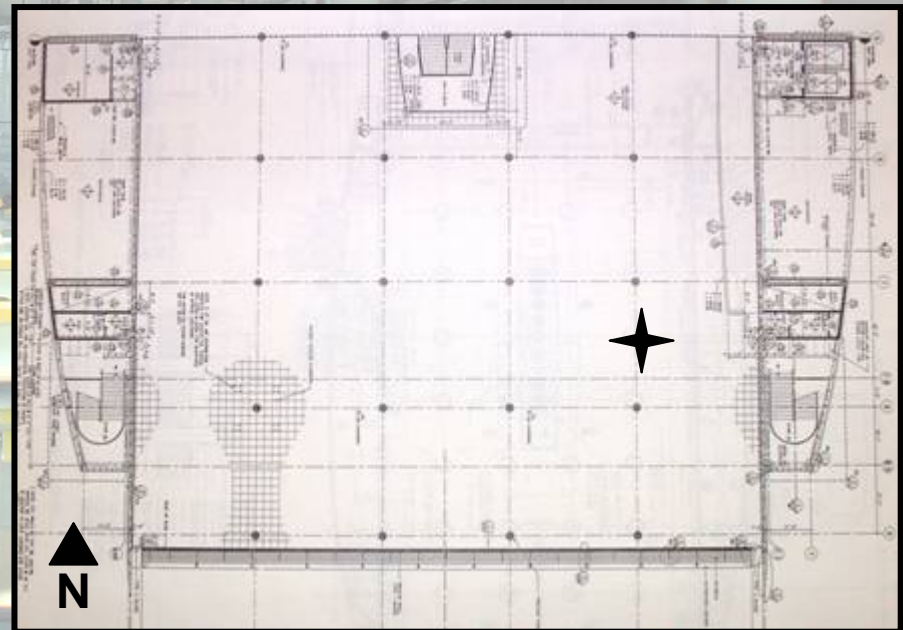
Brandon Stengel *University of Minnesota*



30'

9'

There will be greater air temperature stratification on the 5th floor as compared to the 3rd floor.



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Equipment List

- 1) 10 Hobo temperature dataloggers
- 2) Fishing Line
- 3) Duct Tape
- 4) 3 large Happy Birthday helium balloons
- 5) 2 Velocity Sticks (anemometers)
- 6) Tape Measure
- 7) Air Flow Visualization Bubbles
- 8) 6 brilliant individuals

3rd Floor

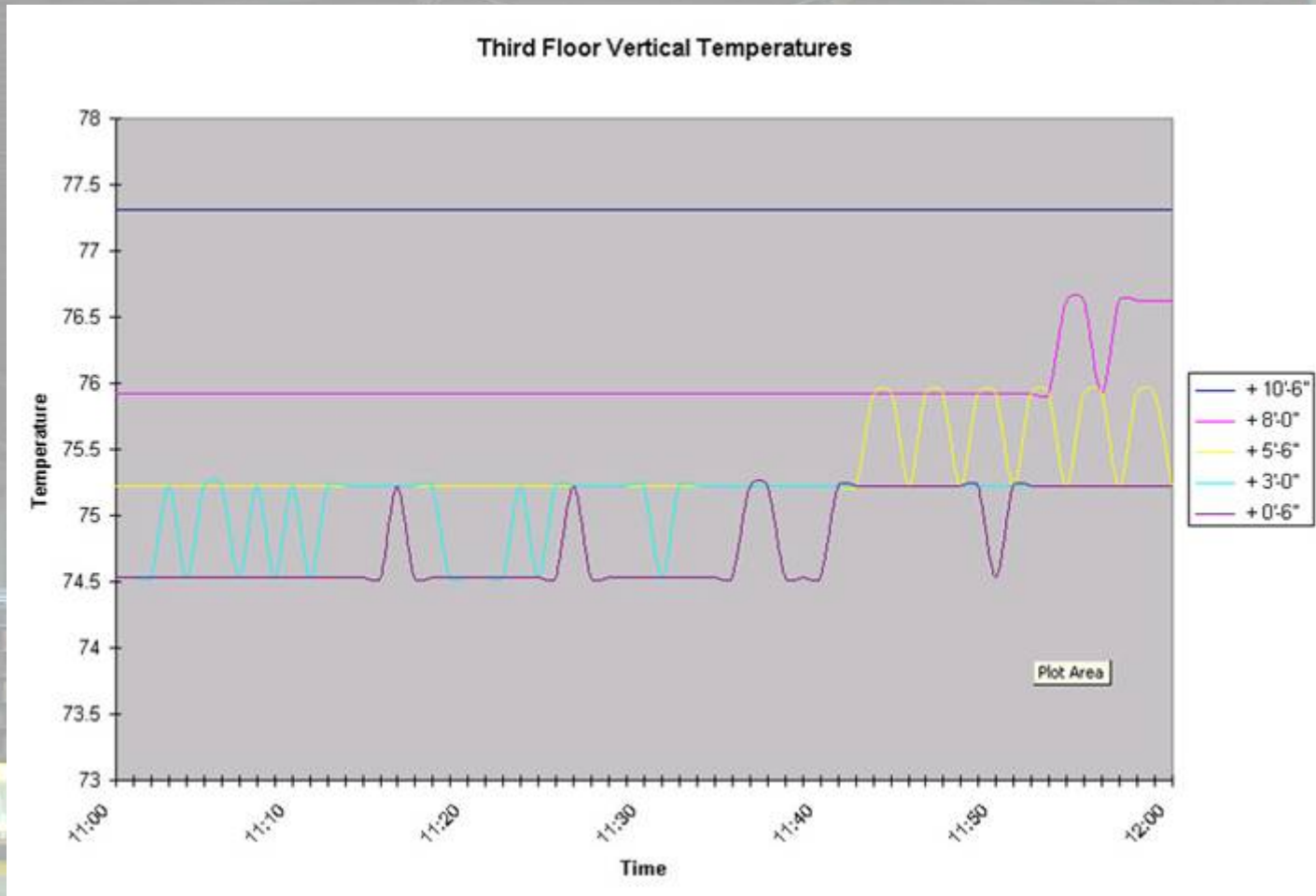


- 1) Launch Hobo's utilizing Boxcar Software
- 2) Fabricate 2 Hobo lines, for the third and fifth floors respectively
- 3) Suspend temperature dataloggers 6" above floor, space units @ 6", 3'-0", 5'-6", 8'-0" respectively and attach to the ceiling with duct tape and fishing line

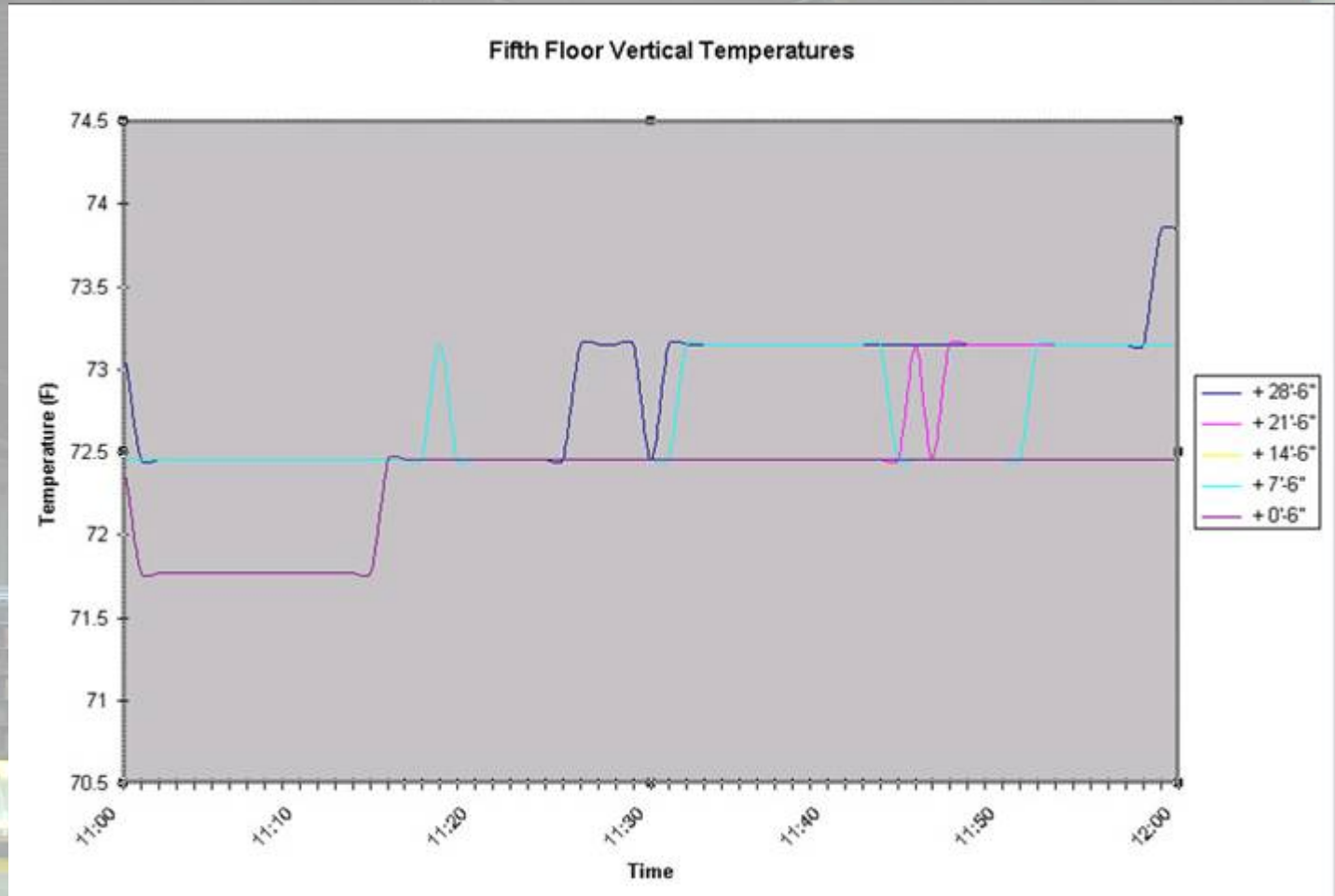
5th Floor

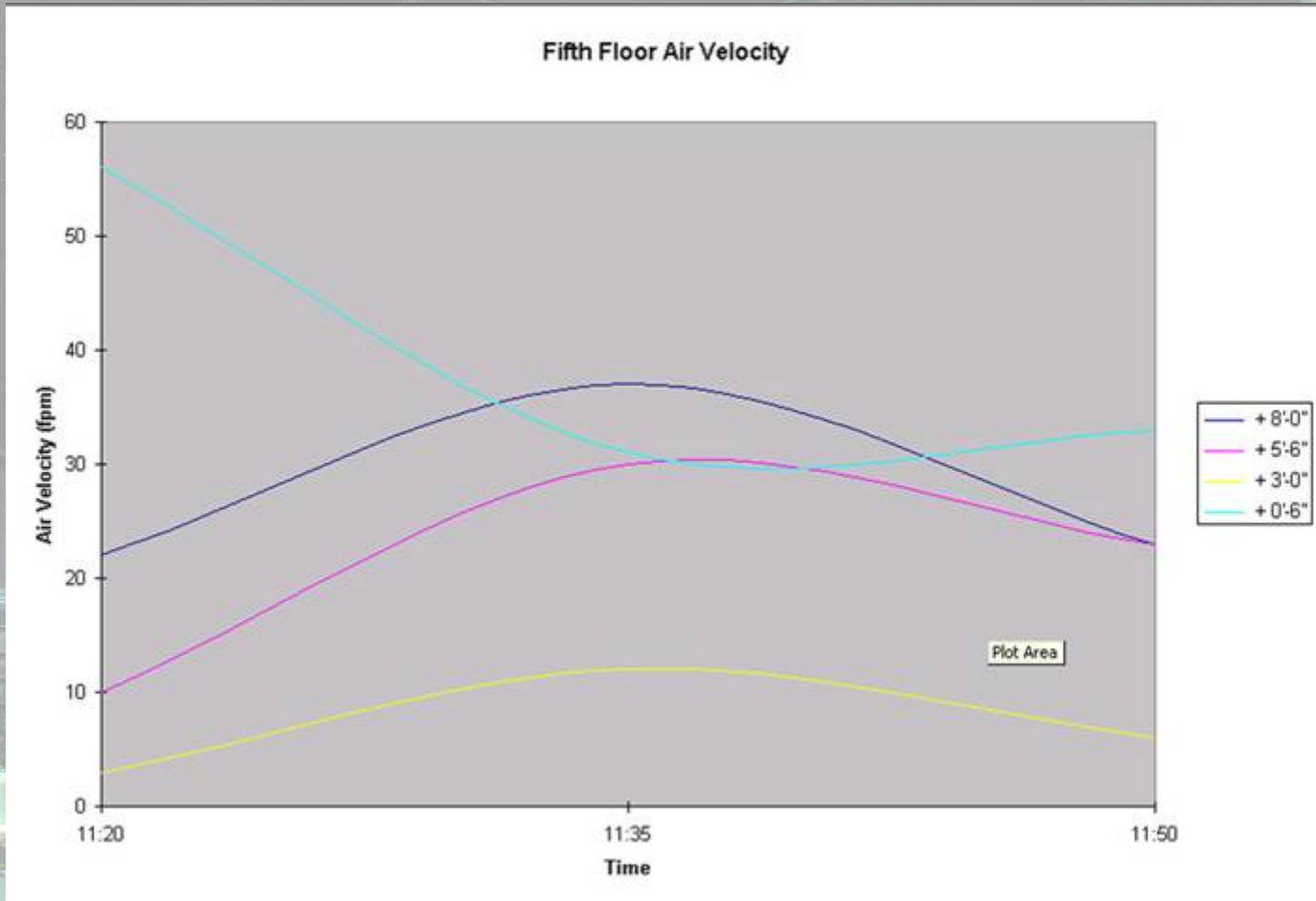


- 4) Layout string and attach five Hobos at 0'-6", 7'-6", 14'-6", 21'-6", 28'-6" respectively and attach to three helium balloons.
- 5) Release and allow to rest on the ceiling
- 6) Monitor Hobos at designated places on the third and fifth floors between 11am and 12pm
- 7) Take velocity measurements at 15 minute intervals
- 8) Download, record and analyze data



(No measurable air velocity discovered at this location)





Original Hypothesis:

There will be greater air temperature stratification on the 5th floor as compared to the 3rd floor.

Conclusions:

Our hypothesis was incorrect.

We found:

- Minimal thermal stratification on the 5th floor.
- Some minor thermal stratification on the 3rd floor. More importantly, we found the air to be stagnant and it felt rather “stuffy.”



(Left to Right) Bill Ruehoe, Sajini Badrinarayan, Marlin Addison, Jared Hoffman, Brandon Stengel, Sara Goenner, Sandy Stannard



Agents of Change

Phoenix 2004