CLEVELAND TOOL DAY

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DOTY & MILLER ARCHITECTS

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The Green Team aka "Greenies"

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Preliminary Observations:

Relative to the basement level, the team noted blistering paint, apparent odors, some standing water in the heat pump units.

These conditions were not observed in the occupied areas of the upper floors.

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Hypothesis

a. There is more humidity in the basement than in occupied areas of other floors.

b. The temperature in the basement is lower than that in the occupied areas on other floors.

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Instrumentation

Hobo data logger – ambient air temperature and relative humidity

Raytek Infrared Thermometer MT-4 – surface temperatures

Kestrel 3000 Pocket Weather Meter – temperature and relative humidity

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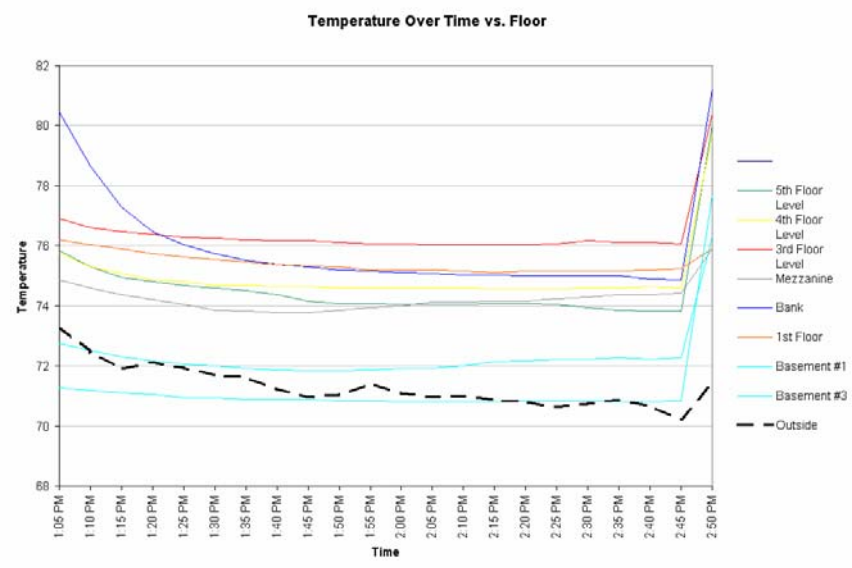

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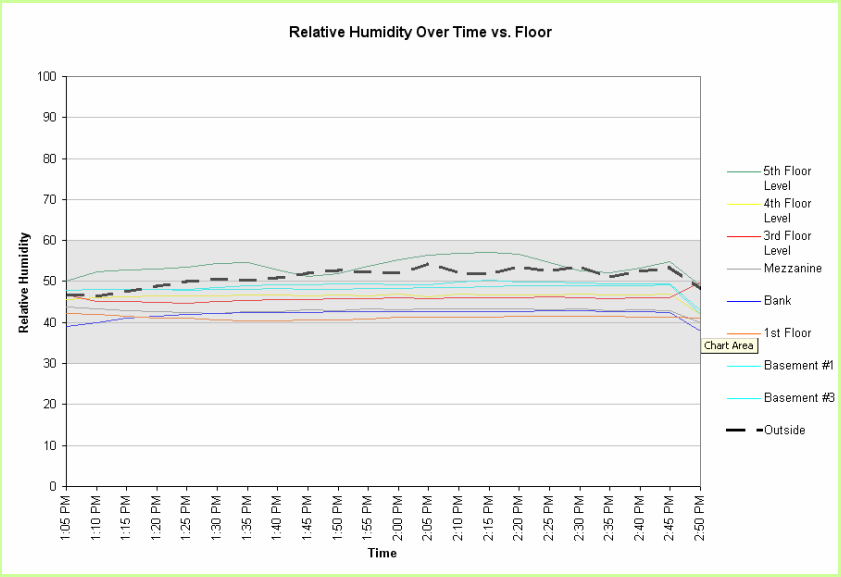

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Conclusions:

- *The upper floors had higher relative humidity levels than the basement.*
- *The basement was slightly cooler than the rest of the building.*

Misc. Observations

1) Sewer odor
2) Mold odor
3) Apparent humidity source
4) CO_2 levels

Sewer Gas Odor

- Upon arrival an odor of sewer gas and mold was present.
- At lunch time the sewer gas odor had increased.
- Person or persons unknown added liquid to trap under fire purge.
- One hour later sewer gas odor had reduced. Both in room and in fire suppression equipment room.

Sewer Gas Odor

- Suggested solutions
  - Sewer gas leaking at fire-drain-trap add either water or dry urinal fluid
  - The cover of ejection pump is poorly sealed to basket
  - The entrance of plumbing pipes to cover does not have proper (code) fittings

Mold Odor

- Upon arrival mold odor was strong in basement work room.
- Through out morning odor reduced
- At lunch temperature at floor near south wall was 69F however ceiling was 75 F
- Both work room heat pumps have standing water under coil at lunch when observed.
- Left heat pump filter was wet and very dirty.
- Condensate drain pipe traveled up hill slightly

Mold Odor

- Suggestions
- Reduction or odor by lunch perhaps caused by addition of fresh air due to fresh air. (caused by CO2 level increase)
- Fix Heat pump drain connections to allow down slope from drain pan to drain pipe
- Temp at floor 70F and 50%RH, 46% at 75 on table top. Entering air 78 and 46%

Mold Odor

- Suggestions
- With Make up air at ambient humidity and on warm day with high humidity the floor and near wall the dew point can be reached.
- The basement should be at least be mechanically dehumidified.

Carbon Dioxide

- At lunch time CO2 in back hall was 890 PPM after lunch CO2 was 720 ppm
- In front room at lunch time 410 ppm after lunch 390
- At 3:20 back hall 750 ppm and front room 400 ppm
- Supply air after lunch 78 F and RH 46%
- Outside air at 77 and 47%

Lamp Ballasts
Bottom, second from left leaking epoxy

Watch where you put your sensor