November 11, 2012

Mr. B.K.
Carle Place, NY

Re: XXXX Bethpage, NY

INFRARED INSPECTION REPORT

On November 10th 2012 PBI performed a moisture survey with the objective of identifying wet building materials the result of a roof failure. This inspection process utilized various equipment including a FLIR B20HS thermal imaging camera, Tramex wet wall detector and Delmhorst BD 210 moisture meter.

As a result of our survey we find wet building materials in several locations within the building. These areas are Quality Control (QC), Origination Hub (ORH), Engineering Shop, East and West Side Drive (common hallways). The attached digital pictures and thermal images show thermal anomalies consistent with wet building materials resulting from the roof leak. In all locations the thermal anomalies were confirmed to represent elevated moisture as tested with the invasive and non-invasive meters.

The images below are side-by-side digital photographs and thermal images. Essentially, the image on the right is what you see and the image on the left is what the infrared camera sees.
The above set of images depict moisture in the lower 1/3 of the walls in the hallways (East and West Drives).

Additional IR images find pockets of moisture high on the wall along the hallway outside the entrance to Engineering leading as far back as the ramp entrance to the Origination hub.
West side drive hallway, the lower section of wall common with Q/C.

Within the **Origination Hub** we find moisture in ceiling tiles and soffits above the server racks. Most wall bases are wet behind the cove base trim.
In the QC section of the building there is residual moisture in the soffits above server racks, in the double thickness sheetrock above the drop ceiling and in the wall cavities of the demising walls.
There is standing water in this location.

IR image of the ceiling above Q room 9 and 10.

image typical of Tramex meter confirming moisture in wall cavities throughout the building.

Schematic drawing below shows areas highlighted where moisture penetration occurred and structural drying is needed.
Recommendations

In locations above structural drying is needed to rapidly bring the moisture content of the sheetrock down to below 0.05% to prevent mold growth.

We recommend

- Remediation to be conducted by trained staff.
  - Such persons should receive training on proper drying techniques as approved by IICRC S 500
  - Additional training on cleaning methods, personal protection, and potential health hazards associated with potential mold exposure. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

- In order to facilitate drying the work area needs to be contained with 6 mil fire proof plastic sheeting and sealed with tape.
This will aid in rapid drying and prevent cross contamination of dust and any possible mold.

- Efforts should be made to reduce dust generation. Dust suppression methods particularly during any cutting or resurfacing of materials are highly recommended. Methods to consider include: cleaning or gently misting surfaces with a dilute soap or detergent solution prior to removal.
- Installation of HEPA air filtration within the work areas.
- In all areas below install dehumidifier and air movers to reduce relative humidity and bring moisture content of drywall to below 0.05% (ASTM standards)

**WEST SIDE DRIVE**

- Western wall between Engineering as far back as ramp entrance to ORG.
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
- Eastern wall beginning at Engineering as far back as ramp entrance to ORG.
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.

**WEST LOCKERS**

- Open drywall above soffit entrance from hallway to allow forced air from turbo fans to feed in-between sheetrock.
- As necessary cut 2-3" round holes higher up on wall to allow blown air to escape.
- Remove ceiling tiles.

**ENGINEERING**

- In office common with west side drive
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
- Along demising wall between main engineering room and engineering staging room
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
ORIGINATION HUB

- Remove ceiling tiles
- Remove a portion of raised flooring to allow the HVAC to absorb the moisture from the concrete floor.
- In all server aisles
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
  - In the soffits (pictured above) cut 2-3" round holes to allow trapped moisture to escape.

EAST BROADWAY (HALLWAY)

- Western wall between Wall Street and as far back as entrance to central.
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
- Eastern common with QC, from QC entrance to QC entrance
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.

Q/C including HD section

- Remove ceiling tiles
- Remove a portion of raised flooring to allow the HVAC to absorb the moisture from the concrete floor.
- Remove boards and shelving from walls to allow drywall to dry out and not have trapped moisture behind.
- In all server aisles
  - Remove baseboard and cut holes at bottom of sheetrock to allow forced air from turbo fans to feed in-between inner and outer sheetrock.
  - Cut 2-3" round holes at top of wall to allow blown air to escape.
  - In the soffits (pictured above) cut 2-3" round holes to allow trapped moisture to escape.
- Above QC Room #9 and #10 remove outer layer of sheetrock ceiling as viewed from above
Upon completion of the above structural drying a repeat IR survey and moisture scan should be conducted to confirm all materials are in accord with ASTM standards.

Due to the time frame in which the materials have been wet it is possible that mold growth has occurred already or will occur in the days to come until the drying is complete. For this reason we strongly recommend that air monitoring be conducted to determine if all locations are consistent with IICRC S520 Condition 1, normal background levels of mold that do not require remediation.

*All HEPA filters, air movers and fans need to be shut down for 24 hours following the above protocol before air samples can be taken.*

Should you have any questions regarding our findings, please do not hesitate to me.

Sincerely,

Scott Gressin
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