

Bennington State Office Building TBS Diagnostics Status Summary

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Ongoing Scope/Recommendations

■ Assist The State of Vermont BGS and VDH
as needed, Collaborate w. NIOSH

■ Update 5-3-07

■ Status of Scope

■ Current initial recommendations not
expected to change, others will be added.

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Scope 1: Status / Rec.

■ Airborne Particle Characterization

■ Indoor/Outdoor Soot Analysis

| (All Samples @Lab), (Waiting for analysis report)

| Recommendation: None at this time. Worst case, walls will need detergent cleaning, repainting, duct cleaning.

■ Boiler Stack: Conducting ASHRAE Stack Re-entrainment Modeling, Reviewed Boiler Oper.

| Recommendation: Will Rec. Stack Reconfiguration

Scope 1: Status / Rec.

■ Airborne Particle Characterization

■ Indoor/Outdoor Real-time fine & coarse particle data logging (rm.35,145,14,123) with on-site meteorological data (4 weeks)

| Processing data, nothing major obvious related to wind direction, coldest weather may underestimate warmer weather cold fire boiler impact.

| Recommendation: None at this time

Scope 1: Status/ Rec.

■ Airborne Particle Characterization

I Indoor/Outdoor Teflon Filter Sampling

- | (4 weeks collected) Elemental Analysis of Collected Particles
- | (We are aware that multiple room HEPA filters were placed in service by 2-1-07.)
- | Processing data, nothing very unusual in data.

| Recommendation: None at this time

Scope 2: Status/ Rec.

■ Ventilation Assessment (CO₂ Logging) (spot checks & logging)

Results: Carbon Dioxide levels looked normal, not high, not too low. Because of air leakage sites identified in building, may not be a good indicator of proper ventilation equipment operation.

I Recommendation: None at this time

Scope 3: Status / Rec.

■ Pressure Field Diagnostics/Tracer

(Conducted to understand bulk air transport)

- I Building-Wide Pressure Field Assessments
- I Logging of pressures to outdoors
- I Logging of hall pressures to boiler room
- I Results: Undesirable Pressures

- I Recommendations: Will Recommend Design Changes in Boiler Room Pressures

Scope 4: Status / Rec.

■ Ventilation Equipment Inspections

I Hygiene Inspections Results:

- I Installation of heat pump AC condensate drain lines & difficulty to maintain in hygienic condition likely contribute to reported historic musty odor. Tracer testing confirmed distribution of condensate line air throughout facility.
- I Fiberglass liner & pans look in good condition.

- I Recommendation #4: (status report #3) BGS, VDH, NIOSH work cooperatively to further sample condensate lines for microbial activity. (Collection by NIOSH on 5-1-07, TBS to draw systems as installed as requested by BGS.)

Scope 4: Status / Rec. Cont'd

■ Ventilation Equipment Inspections

I Hygiene Inspections

Recommendation #4a: (status report#3) As A Precautionary Measure, Consider Prompt Identification of Other State of Vermont Facilities With Similar Condensate Drainage Features

"Once located, further evaluate regarding proper trap design and venting, construction material, unusual pressure changes, and the ability to maintain the hygiene condition of the HVAC system can be undertaken as needed."

Scope 5: Status / Rec.

■ Ventilation Equipment Controls

I Results: Outdoor Air control discrepancies observed, some ventilation controls not working as designed, OA damper air leakage, reported humidity control problems in summer. Controls contractor and TBS conducted further diagnostics.

I Recommendations: Will Recommend Design Changes

Scope 6: Status / Rec.

- **Settled Dust Evaluations (done)**
 - I **Typical Allergens: (Dust Mites, cat & dog allergens, Particle Morphology (Fiberglass, dirt) Results: Some elevated mold levels in carpets, no fiberglass. Normal cat & dog allergens**

 - I **Recommendations: Will Recommend Carpet Removal Ground Floor, Improved Housekeeping**

Scope 7: Status / Rec.

- **Indoor sampling for possible Soil Gas for VOC's (Dry Cleaning Fluid) added by BGS, (conducted 2/7/07 through 2/8/07).**
- **Results: No elevated levels found**
 - I **Recommendations: None Needed**

Scope 8: Status / Rec.

- **Infrared Camera & Blower Door Testing.**
- **Results: Lots of typical specific air leakage sites as expected in commercial buildings or schools with flat roofs.**
- **Recommendations: Status Report #2 Apply IPM principals to cluster fly problems, seal air leakage sites prior to any spraying.**

Scope 9: Status

- **Tracer Testing Sewer Venting**
 - **Evaluation of Sewer Venting (1-22-07)**
 - | 18 dry traps located, fix: water added,
 - | no broken lines located.
 - **Recommendations: Status Report #2, Keep water or other fluid in traps year-round.**

Scope 10: Status / Rec.

■ Moisture Source Eval. Status Rpt#4

- I Floors: Calcium Chloride & Dry Hole Cutting
- I Results: Status Rpt. #4, Vapor Barrier found as designed under old and new construction under ground floors.
- I Recommendation: Further evaluate area near room #53 where some elevation in moisture content is noted.

Scope 10: Status / Rec.

■ Intrusive Disassembly Status Rpt.#4

- I South Walls Court Areas:
- I Results: Elevated moisture readings on exterior gypsum sheathing behind brick in many areas. Some hidden mold growth. Likely source of water: tired/failing window caulk and flashing.
- I Recommendation: Will recommend window and wall rebuilding for entire south walls of courtrooms.

Scope 10: Status / Rec.

■ Intrusive Disassembly Status Rpt.#4

I Other Walls Old Sections:

I Results: No elevated moisture readings on exterior gypsum behind brick in multiple areas checked. Signs of past moisture damage at base of perimeter heat valves exterior offices. Likely source of water: two roof scuppers and tired/failing joints at valves in perimeter heat.

I Recommendation: Will recommend removal of fin-tube heat for repair of moisture damaged interior sheetrock. Elimination of dissimilar metal joints in heating piping.

Scope 10: Status / Rec.

■ Intrusive Disassembly Status Rpt.#4

I New Building Walls Upper Sections:

I Results: No elevated moisture readings on any exterior gypsum behind brick in multiple areas checked. Exterior drainage plane observed to be in place.

I Recommendation: None, new walls on upper levels appear to be performing well regarding moisture intrusion.

Scope 10: Status / Rec.

■ Intrusive Disassembly Status Rpt.#4

- I New Building Walls Ground Level:
- I Results: Two specific areas of moisture intrusion and water damage. Source of water not clear, further disassembly needed during repairs.
- I Recommendation: Will recommend further work to find leak and permanently repair.

Scope 11 Status / Rec.

■ Stained Ceiling Tiles, Status Rpt.#5

- I Court Room Area:
- I Results: Four types of stains, leaky valves on coils, un-insulated ducts of chilled water pipes, HVAC roof curbs, roof step down joint.
- I Recommendation: Will recommend repair of valves, insulation, and roof curb repairs. Roof step down joint needs further review of drawings, may need complete rebuilding of joint area for repair.

Scope 11 Status / Rec.

■ Stained Ceiling Tiles, Status Rpt.#5

- I Areas Outside Court:**
- I Results: Three types of stains, leaky valves, un-insulated chilled water pipes, old? Roof leaks.**
- I Recommendation: Will recommend repair of valves, and insulation of chilled water pipes. Confirmation of elimination of other leaks.**

Scope 12 Status / Rec.

■ Condensate Line Samples Conveyed to NIOSH, Status Rpt.#5

- I Lines Removed from Heat Pumps on all floors, and Sanyo Unit in Prob.& Parole.**
- I Results: NIOSH will submit for analysis**
- I Recommendation: Will be developed in cooperation with NIOSH, VDH, and others as warranted.**

Questions & Comments Regarding Status ?

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