May, 1996

REPORT: Full Building Survey

TO: Tim Nelson, Facilities Management's Asbestos Coordinator, 400 Donhowe Building

FROM: Bryan Angstman, Asbestos Group, Environmental Health and Safety, W-140 Boynton Health Service, 410 Church Street, S.E., Minneapolis, MN 55455

SUBJECT: Asbestos Material Survey - Health Sciences Unit F (Weaver-Densford Hall)
EH&S Project No: 147-96-036
Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on March 1, 1995 through April 30, 1996. The purpose of the survey was to identify asbestos-containing materials (ACM) as defined by the Environmental Protection Agency (EPA), the Occupational Health & Safety Administration (OSHA), and the Minnesota Department of Health (MDH). Any material that is greater than 1% asbestos is considered to be ACM. The intent of the survey was to identify both friable and non-friable suspect ACM, identify non-friable ACM that may become friable under demolition or renovation conditions, and to provide approximate cost estimates for the removal of identified ACM in Health Sciences Unit F (Weaver-Densford Hall).

Project Description: Three hundred seventeen (317) bulk samples of suspect ACM were collected on-site and two hundred ninety-three (293) were analyzed via polarized light microscopy (PLM) by Twin City Engineering's Laboratory for asbestos content. Results of analyses are listed in Appendix I of this report. Appendix I is formatted to provide a room by room inventory of suspect ACM, the asbestos content of each material listed, and friability. An explanation of the tables and abbreviations used in the tables is included with Appendix I. Appendix II is a room by room listing of only those suspect materials that tested >1% asbestos. Minnesota Department of Health (MDH) Asbestos Rules regulate only friable ACM (material may be reduced to powder or dust under hand pressure) while the EPA regulates ACM that may become friable under demolition or renovation conditions.

The following friable or potentially friable materials tested positive as ACM in the building:

- <4" white fibrous pipe insulation (PI) (1)
- <4" pipe fitting insulation (PFI) on white fibrous line (2)
- <4" fibrous PFI on FG w/ putty (10)
- 4"-8" white fibrous PI (11)
4"-8" PFI on white fibrous line (12)
4"-8" fibrous PFI on FG w/putty (20)
9"-14" white fibrous pipe insulation (PI)(21)
9"-14" pipe fitting insulation (PFI) on white fibrous line (22)
9"-14" fibrous PFI on FG w/putty (24)
9"-14" fibrous PFI on styrofoam w/putty (27)
white fibrous tank (32)
12"x12" floor tile, grey w/ brown, white mottling (70)
black lab top (131)
black lab sink (132)
transite (133)
sink/countertop undercoating (135)
transite hood (136)
light fixture insulation undercoating (142)
<4" fibrous PFI on styrofoam w/putty (145)
4"-8" fibrous PFI on styrofoam w/putty (147)
14"+ white fibrous (PI)(148)
14"+ PFI on white fibrous line (149)
14"+ fibrous PFI on FG w/putty (151)
14"+ fibrous PFI on styrofoam w/putty (153)
fire door (156) Assumed
white pipe putty (159)
grey wall putty (162)
cloth door gasket (163) Assumed
asbestos gloves (166) Assumed
tan duct putty (168)
grey caulking (171)
white window putty (175)
black tar on heater board (176)
floor tile under carpet (202) Assumed

The following suspect materials tested none detected (ND) as ACM in the building:

black foam PI (25)
black foam tank insulation (29)
fiberglass (FG) duct insulation (31)
Spray-on fireproofing white (33)
ceiling plaster (34)
wall plaster (35)
red brick mortar (36)
clay tile mortar (37)
cement block mortar (38)
sheet rock and taping compound (39)
baseboard adhesive (40)
12"x12" floor tile, beige w/ white grey streaks (71)
12"x12" floor tile, beige w/brown & white streaks (72)
floor tile mastic (72.5)
12"x12" floor tile, white w/grey & black specks (73)
floor tile mastic (73.5)
12"x12" floor tile, beige, brown & white marble (74)
12"x12" floor tile, white, beige, tan marble (75)
12"x12" ceiling tile, random pinhole (100)
• ceiling tile mastic (100.5)
• 12"x12" ceiling tile, pattern pin/pencil hole (101)
• ceiling tile mastic (101.5)
• 2'x2' ceiling tile, white (110)
• 2'x2' ceiling tile, pattern pinhole (111)
• 2'x2' ceiling tile, chicken scratch (112)
• 2'x2' ceiling tile, plain white (113)
• 2'x2' ceiling tile, rough textured (114)
• 2'x5' ceiling tile, small pinhole (127)
• 2'x5' ceiling tile, random pin-pencil hole (128)
• 2'x5' ceiling tile, patterned pinhole (129)
• canvass vibration joint (130)
• red pipe putty (137)
• brown pipe putty (138)
• tan pipe putty (139)
• spray-on fireproofing blue (140)
• fiberglass batting w/over spray (143)
• tar pipe wrap (154)
• debris (155)
• fiberboard (157)
• fiberboard adhesive (157.5)
• wall patch material (160)
• stone mortar (161)
• black foam duct insulation (164)
• wall insulation mastic on foam (167)
• brown pipe caulking (170)
• dark grey spray-on (172)
• FG w/tar paper (173)
• cotton blown insulation (174)
• FG insulation w/foil (178)
• beige/brown/white linoleum (179)
• linoleum adhesive (179.5)
• white insulation board (180)
• grey duct putty (181)
• ceramic tile mortar (198)
• white w/gold & brown linoleum (204)

The following non-friable with low potential to become friable materials tested positive as ACM:

• <4" fiberglass PI w/putty (9)
• 4"-8" fiberglass PI w/putty (19)
• 9"-14" fiberglass PI w/putty (23)
• 9"-14" styrofoam PI w/putty (26)
• fiberglass tank insulation w/putty (28)
• spray-on fireproofing mastic (33.5, 172.5)
• floor tile mastic (70.5, 71.5, 74.5, 75.5)
• <4" styrofoam PI w/putty (144)
• 4"-8" styrofoam PI w/putty (146)
• 14"+ fiberglass PI w/putty (150)
• 14"+ styrofoam PI w/putty (152)
• mineral wool insulation w/tar (158)
• floor tile adhesive under carpet (202)  Assumed
• carpet adhesive (203)
• linoleum adhesive (204.5)

For room locations of above noted materials, refer to Appendices.

Observations and Recommendations:

1. Department of Environmental Health & Safety (DEHS):

   Please refer to condition assessments for specific damaged areas. In general, all materials were found to be in good to excellent condition (except where noted) and do not pose significant health concerns to the building occupants.

   Several wooden ladders located in cores and mechanical spaces were observed in poor physical condition. There is a high potential for personnel injury if these ladders remain accessible for use.

   The heating and ventilation system in Health Sciences Unit F (Weaver-Densford Hall) is a sealed duct system. Above ceiling spaces are not used as air plenums. However, the above ceiling areas do have air movement from leaking ducts and vents.

   During the building survey, building occupants advised DEHS personnel that there are problems with poor ventilation in offices and laboratories through out the building.

2.0 Facilities Management:

   All quantities in this survey are estimations and should not be considered exact measurements when used on abatement bids.

2.1 Occupied Nonmechanical Building Spaces:

   Mixed analytical results were encountered regarding the light board (material number 142). Several samples were found not to contain asbestos, as well as several were found to contain asbestos. Light panels throughout the building must be considered asbestos containing. Project specific sampling could be performed if this material is to be impacted by any work.

   White fibrous 14+" pipe insulation is enclosed by sheet metal and was not sampled. However, this material is assumed to be asbestos-containing.

   Samples taken off fiberglass pipe insulation, styrofoam pipe insulation and fiberglass tank insulation were all analyzed as having asbestos containing putty. These materials should be treated as non-friable asbestos containing materials, and proper operations and maintenance procedures must be followed whenever these materials are disturbed.

   The area above freezer in Room 9-139 could not be physically accessed during the building survey, and no observations were performed in this area.
The inside of exterior walls of the building contain a dark grey spray-on or foam insulation coated with a black mastic. The black mastic was analyzed to be an asbestos-containing material. All materials coated with this black mastic should be treated as non-friable asbestos containing materials. Proper operations and maintenance procedures must be followed whenever these materials are to be disturbed.

Metal fire curtains were observed above the ceiling, above bathrooms and office areas through out the building.

Due to the difficulty associated with identifying or sampling, fire doors and fire hoses were not included in the scope of the survey. Please note that these items frequently contain asbestos. Fire doors were observed labeled in the building.

Transite was observed in cabinets under the fume hoods, which are located throughout the building. Generally, the fume hoods cabinets were locked and not accessible to determine if they contained transite at the time of the survey except on the stairways. In such cases, transite was assumed to be present.

2.2 Mechanical Cores:

The mechanical cores were surveyed and sampled separately from the rest of the building. The findings of the survey indicate only that Core F-9 has asbestos-containing fire proofing. The remainder of the cores do not have asbestos-containing spray-on fire-proofing.

In general, the mechanical cores contained delaminated spray-on material debris. The material is delaminating from the beams and falling on to the floors, ducts, pipes, and materials stored in the cores.

The air handling units in the basement have an asbestos-containing black adhesive between the fiberglass and the wall of the unit. All materials coated with this black adhesive should be treated as non-friable asbestos containing materials. Proper operations and maintenance procedures must be followed whenever these materials are to be disturbed.

Specific cores areas were not accessed during the building survey. Cores with no access doors are listed as follows: Cores 1, 2, 4, 5, 11 on First floor; Cores 1, 2, 4, 5, 11, on Second floor; 1, 4, 5, 11, Cores on Third and Fourth Floors, and Core 1 on ninth Floor.

Seven other cores could not be accessed due to office furniture blocking the access doors. The cores are listed as follows: Cores 1, 8 located on Fifth Floor; and Cores 1, 2, and 4 located on Seventh Floor; Cores 4, 11 Eighth Floor.

Core 9 on the tenth Floor Roof was not accessed due to warning signs indicating ethylene oxide is vented from dental sterilization equipment through the core. Spray-on material in this Core on the roof is assumed to be asbestos-containing based on samples obtained in the core from lower floors.

3. General:

Although no roof sampling was done, complete roof sampling is recommended at a time when a qualified roofing contractor is on-site to patch core sample holes in roofing, or prior to roof removal or demolition.

Due to limited access points in the ceilings and walls, some pipe chases were completely inaccessible or only slightly visible. Structural columns covered with spray-on in walls were not accessed. As a result, the quantities listed reflect the visibility available at the time of the survey.
The floor tiles and mastics under carpet that were assumed to be asbestos containing were either inaccessible to sampling or unidentifiable. The floor tile and mastic under carpet should be sampled prior to being disturbed. DEHS suggests three samples of miscellaneous materials be taken and analyzed in accordance with OSHA regulations.

Stairway data can be found on the tables of the floor which the stairway begins (either basement or first floor). In addition, the elevator shaft data can be found on the basement tables.

Cost Information: The approximate cost for the removal of all ACM is itemized below. These figures are based on the assumption that all friable and potentially friable ACM are going to be removed. For project specific removal costs, contact this office with your project requirements and unit costs can be calculated for the impacted areas.

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>LOW RANGE</th>
<th>HIGH RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• thermal system insulation</td>
<td>$489,357</td>
<td>$710,234</td>
</tr>
<tr>
<td>• floor coverings &amp; mastic</td>
<td>$252,146</td>
<td>$504,292</td>
</tr>
<tr>
<td>• mastic on spray-on</td>
<td>$188,870</td>
<td>$309,060</td>
</tr>
<tr>
<td>• Spray-on fire proofing</td>
<td>$171,710</td>
<td>$280,980</td>
</tr>
<tr>
<td>• light fixture insulation board</td>
<td>$91,440</td>
<td>$128,016</td>
</tr>
<tr>
<td>• transite &amp; lab top/sink</td>
<td>$49,490</td>
<td>$73,561</td>
</tr>
<tr>
<td>• debris</td>
<td>$7,400</td>
<td>$8,000</td>
</tr>
<tr>
<td>• miscellaneous</td>
<td>$120</td>
<td>$240</td>
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<tr>
<td>TOTAL</td>
<td>$1,250,533</td>
<td>$2,014,383</td>
</tr>
</tbody>
</table>

All ACM removal must be performed by a Minnesota licensed asbestos abatement contractor. All asbestos removal shall be performed within the specified procedures as outlined in the University of Minnesota Technical Specification for Asbestos Abatement. Please note that removal costs are highly variable and dependent on such factors as contractor availability, accessibility of work areas and site specific work plans.

Air monitoring is required for many asbestos-related projects. Environmental Health and Safety (EH&S) is available to provide this service. The estimated cost for EH&S to complete air monitoring requirements for specific projects will be made available upon request. The cost of air monitoring is a function of contractor on-site days and may vary dependent upon project specific scope of work. EH&S will provide labor, equipment and project oversight as necessary. Project management and contract administration will be provided by the Facilities Management Project Development Group.

EH&S also recommends that throughout the general renovation activities associated with this building, precautions and work practices should be implemented to minimize nuisance dust levels. Dust suppression techniques (misting the air with water and keeping materials wet) should be required of the general contractor.

4. Recommendations:

At the time of renovation and/or demolition, any areas where contained abatement would need to be performed, and those areas not having been accessed during this survey should be entered and surveyed
by certified personnel. In the case this may constitute an uncontrolled abatement procedure DEHS would suggest nine samples of surfacing materials and at least three of thermal or miscellaneous materials be taken and analyzed to be considered non-asbestos containing material in accordance with OSHA regulations.
In accordance with OSHA regulations, areas which contain asbestos materials are required to be labeled at the access points (i.e. the outside of all mechanical core doors; Mechanical Rooms etc.)

If there is any further information required, or other questions arise regarding this request, please contact Bryan Angstman at 626-2328.

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