June 30, 1996

REPORT: Full Building Survey

TO: Tim Nelson, Facilities Management's Asbestos Coordinator, 400 Donhowe Building
Ben Ystenes, Manager, Zone 5, Facilities Management, 19 Scott Hall

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

SUBJECT: Asbestos Material Survey - Shevlin Hall
EH&S Project No: 021-96-053
Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on May 27, 1996 through June 7, 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 Shevlin Hall.

Project Description: One hundred eighty-four (184) bulk samples of suspect ACM were collected on-site and one hundred sixty-two (162) were analyzed via polarized light microscopy (PLM) by Twin City Engineering's Asbestos 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. A previous limited asbestos building survey was performed on Shevlin Hall by Delta Environmental Consultants on May 30, 1990. Information from the previous survey was included as part of this survey.

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" felt w/tar PI (5)
- <4" PFI on felt w/tar line (6)
- <4" fibrous PFI on FG w/tar line (8)
• 4"-8" white fibrous PI (11)
• 4"-8" PFI on white fibrous line (12)
• 4"-8" PFI on FG line (20)
• white fibrous tank (32)
• 9"x9" floor tile, dark brown w/brown & white streaks (42)
• 9"x9" floor tile, grey w/grey & white streaks (44)
• 9"x9" floor tile, beige w/white & tan (45)
• 9"x9" floor tile, black w/white (46)
• 9"x9" floor tile, dark grey w/white & black (47)
• 9"x9" floor tile, dark grey w/white streaks (48)
• 12"x12" floor tile, tan w/brown & white smears (71)
• 12"x12" floor tile, tan, brown, orange marble (73)
• textured wall (138)
• debris (Assumed) (198)
• floor tile under carpet (Assumed) (202)

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

• <4" fiberglass PI w/tar (7)
• <4" fiberglass PI (9)
• <4" fibrous PFI on FG line (10)
• 4"-8" FG w/tar PI (17)
• 4"-8" fibrous PFI on FG w/tar line (18)
• 4"-8" fiberglass PI (19)
• black foam PI (25)
• fiberglass duct insulation (31)
• ceiling plaster (34)
• wall plaster (35)
• red brick mortar (36)
• clay tile mortar (37)
• concrete block mortar (38)
• baseboard adhesive (40)
• 9"x9" floor tile, light brown w/brown & white streaks (41)
• 9"x9" floor tile, light grey w/grey & white smears (43)
• floor tile adhesive (43.5)
• floor tile adhesive (44.5)
• floor tile adhesive (48.5)
• 12"x12" floor tile, brown marble (70)
• floor tile adhesive (70.5)
• 12"x12" floor tile, blue grey marble (72)
• floor tile adhesive (72.5)
• 12"x12" ceiling tile, pegboard (100)
• ceiling tile adhesive (100.5)
• 12"x12" ceiling tile, pencil/nail hole (101)
• ceiling tile adhesive (101.5)
• 12"x12" ceiling tile, pinhole fissure (102)
• ceiling tile adhesive (102.5)
• 12"x12" ceiling tile, deep fissure (103)
• ceiling tile adhesive (103.5)
• 2'x2' ceiling tile, pinhole fissure (110)
• canvass vibration joint (130)
• trowel-on plaster (136)
The following non-friable with low potential to become friable materials tested positive as ACM:

- floor tile adhesive (41.5, 42.5, 45.5, 46.5, 47.5, 71.5, 73.5, 202.5)
- transite (133)

The following nonfriable, with low potential to become friable, material tested <1% asbestos:

- sheetrock & taping compound (39)

For room locations of above noted materials, refer to Appendices. Sample numbers of the above materials are located in the parenthesis following the sample descriptions.

**Observations and Recommendations:**

1.0 Department of Environmental Health & Safety (DEHS):

Please refer to condition assessments for specific damaged areas. In general, materials were found to be in good shape and do not pose significant health concerns to the building occupants.

Rooms 2, 6A, 11E, and 11F were not accessed at the time of the survey due to problems obtaining keys to these rooms. Room 2 is not as large as indicated on the floor plan. Those areas which were not accessed during this survey should be entered and surveyed by certified personnel at the time of any renovation or demolition activities and where contained abatement would need to be performed. Observations and sampling should be performed to determine if asbestos-containing materials are located in those areas.

Ceiling hatches located in the basement hallway (Hall 1-6A), wall hatches located in the second floor hallway (Hall 202-225), and wall hatches located in Rooms 45, 102, 206, and 225D were inaccessible (see Appendix I of the report).

2.0 Facilities Management:

Please refer to the floor plans included with this report for room numbers. The floor plans indicate the room numbers used in this survey.

The debris observed in the ceiling hatch located in Hall 41B was assumed to contain asbestos because the debris was not accessible for sampling due to its location with respect to the ceiling hatch.

Analytical results indicate that the textured wall material (sample 138) located on the basement level had mixed results. Project specific sampling should be performed prior to any work performed on this material.
Analytical results indicate that the 4"-8" white fibrous pipe insulation and associated fittings (samples 11 and 12) located in Room 119J have mixed results. Project specific sampling should be performed prior to any work performed on this material.

Based upon analysis, sheetrock and associated taping compound (sample 39) was determined to contain less than one percent (<1%) asbestos (see Appendix I of the report). The current Occupational Safety and Health Administration (OSHA) definition of a non-regulated asbestos material is anything that contains less than one percent (<1%) asbestos by area.

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

3.0 General:

Although no roofing 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. 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.

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>$63,988</td>
<td>$83,050</td>
</tr>
<tr>
<td>floor coverings and adhesives</td>
<td>$22,523</td>
<td>$45,046</td>
</tr>
<tr>
<td>textured wall</td>
<td>$23,976</td>
<td>$37,296</td>
</tr>
<tr>
<td>transite</td>
<td>$6,500</td>
<td>$9,500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$116,987</strong></td>
<td><strong>$174,892</strong></td>
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</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.

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 mechanical rooms, etc.)

If there is any further information required, or other questions arise regarding this request, please contact Dale Livingston at 626-2317.

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