February 6, 1998

REPORT: Full Building Survey

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SUBJECT: Asbestos Material Survey - Amundson Hall
         EH&S Project No: 066-97-153
         Client Project No: 066-94-1183

Scope of Work: A full building asbestos material survey was conducted on December 1, 1997 through January 15, 1998. 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 Amundson Hall.

Project Description: Eighty-two (82) bulk samples of suspect ACM were collected on-site and eighty (80) were analyzed via polarized light microscopy (PLM) by the Department of Environmental Health & Safety’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.

The following friable or potentially friable materials tested positive or were assumed as ACM in the building:
• <4" white fibrous pipe insulation (PI) (1)
• <4" felt PI w/tar (7)
• <4" fibrous pipe fitting insulation (PFI) on felt line (8)
• <4" fibrous PFI on fiberglass line (10)
• 4"-8" white fibrous PI (11)
• 9"x9" gray w/white & black streaks floor tile (41)
• black lab top (96)
• black lab sink (97)
• transite (101)
• heat gloves (199)

The following non-friable materials tested positive or were assumed as ACM in the building:

• floor tile adhesive (sample 41) (41.5)
• floor tile adhesive (sample 65) (65.5)
• carpet mastic (108)

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

• <4" white fibrous PI sprayed-on (1.5)
• <4" fiberglass w/tar PI (7)
• <4" fiberglass PI (9)
• 4"-8" fiberglass w/tar PI (17)
• 4"-8" fiberglass PI (19)
• 9"-14" fiberglass PI (23)
• black foam PI (25)
• black foam tank insulation (26)
• spray-on (29)
• fiberglass tank insulation (30)
• fiberglass duct insulation (31)
• textured sheetrock (33)
• ceiling plaster (34)
• wall plaster (35)
• red brick mortar (36)
• clay tile mortar (37)
• concrete block mortar (38)
• sheetrock & taping compound (39)
• baseboard adhesive (40)
• 12"x12" beige/gray/white marbled FT (60)
• floor tile adhesive (sample 60) (60.5)
• 12"x12" black/brown marbled FT (61)
• floor tile adhesive (sample 61) (61.5)
• 12"x12" tan/brown/white marbled FT (62)
• floor tile adhesive (sample 62) (62.5)
• 12"x12" cream/gray/white marbled FT (63)
• floor tile adhesive (sample 63) (63.5)
• 12"x12" brown/dark brown/white marbled FT (64)
• floor tile adhesive (sample 64) (64.5)
• 12"x12" art deco FT (65)
• 12"x12" white w/black specks FT (66)
• floor tile adhesive (sample 66) (66.5)
• 12"x12" fissured CT (80)
- ceiling tile adhesive (sample 80) (80.5)
- 2'x2' pinhole wormhole CT (84)
- 2'x2' pinhole pencilhole CT (85)
- 2'x2' pinhole CT (86)
- 2'x2' pinhole rough CT (87)
- 2'x2' random fissure CT (88)
- 2'x4' pinhole CT (90)
- 2'x4' sheetrock CT (91)
- sink undercoating (98)
- grey duct putty (102)
- brown duct putty (103)
- beige duct putty (104)
- ceramic tile mortar (105)
- stair tread mastic (106)
- red duct putty (107)

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.

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.

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

At the time of the survey, samples of <4 fibrous PPI on fiberglass (10) were unattainable. These were only found in Room 12 on the Ground floor. They have been assumed to be asbestos containing and listed as positive. At a time they are damaged or removal needs to take place they should be sampled by a certified inspector according to State and Federal regulations.

The following areas were inaccessible at the time of the survey: Hall 101-124 Wall Hatches, Hall 201-225 Wall Hatches, Rooms 165, 165A, 216C, 243, 410B, and 461A. When these areas can be accessed, they need to be surveyed by a certified inspector according to State and Federal regulations.

Due to mixed results on carpet mastic (108), it is suggested that the carpet mastic in each room be sampled by a certified inspector according to State and Federal regulations prior to renovation or demolition of an area.

3.0  General:

Due to limited access points in the ceilings and walls, the quantities listed reflect the visibility available at the time of the survey.
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</th>
<th>HIGH</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>RANGE</td>
<td>RANGE</td>
</tr>
<tr>
<td>• thermal system insulation</td>
<td>$993</td>
<td>$1,208</td>
</tr>
<tr>
<td>• misc.</td>
<td>$21,195</td>
<td>$42,390</td>
</tr>
<tr>
<td>• transite</td>
<td>$129,310</td>
<td>$193,965</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$151,498</strong></td>
<td><strong>$237,563</strong></td>
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</tbody>
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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 Bryan Angstman at 626-2328.

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