October 3, 1996

REPORT: Full Building Survey

TO: Tim Nelson, Facilities Management’s Asbestos Coordinator, 400 Donhowe Building
    Bill Chose, Manager, Zone 1, Facilities Management, 202 Facilities Management Bldg.

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

SUBJECT: Asbestos Material Survey - Green Hall (Building #357)
          EH&S Project No: 357-96-098
          Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on September 9-17, 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 Green Hall.

Project Description: One hundred forty-nine (149) bulk samples of suspect ACM were collected on-site and one hundred forty-five (145) were analyzed via polarized light microscopy (PLM) by Milan 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 as ACM in the building:

- <4" aircell PI (assumed) (3)
- galbestos (assumed) (29)
- 9"x9" floor tile, brown (41)
- 1'x2' floor tile, black (79)
- sink undercoating (97)
- floor tile under carpet (assumed) (103)
- floor tile adhesive (assumed) (103.5)
- <4" pink fibrous pipe insulation (PI) (assumed) (105)
- <4" pipe fitting insulation (PFI) on pink fibrous line (assumed) (106)
- 4"-8" pink fibrous PI (assumed) (107)
- 4"-8" PFI on pink fibrous line (assumed) (108)

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

- <4" white fibrous PI (1)
The following non-friable with low potential to become friable materials tested positive as ACM:

- floor tile adhesive (62.5)
- transite (101)

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

- floor tile adhesive (79.5)

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 B20, B75A, B75D and 21 were not accessible at the time of the survey. 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 by certified personnel to determine if asbestos-containing materials are located in those areas.

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 <4" pink fibrous pipe insulation and associated pipe fitting insulation (samples 105 and 106) and the 4"-8" pink fibrous pipe insulation and associated pipe fitting insulation (samples 107 and 108) located in Room B75 were assumed to contain asbestos because the pipes and pipe fittings were not accessible for sampling due to their locations within Room B75.

The floor tiles and mastics under carpet (samples 103 and 103.5) 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.

Based upon analysis, one floor tile adhesive (sample 79.5) 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.

DEHS personnel observed pipes extending through the ceiling of the crawl space of the building. The pipes were observed to be insulated at the point the pipes entered the concrete ceiling. The insulation appeared to be either fiberglass w/tar insulation or felt insulation; however, DEHS personnel could not get close enough to the insulation to confirm the type of insulation or to sample the insulation.

The crawl space has been covered with a poly barrier; however, numerous tears have been made in the poly over time. Broken glass was observed both on top and beneath the poly barrier.

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, some pipe chases and spaces above ceilings were completely inaccessible or only slightly visible. As a result, 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 RANGE</th>
<th>HIGH RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Cost 1</td>
<td>Cost 2</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>thermal system insulation</td>
<td>$581</td>
<td>$756</td>
</tr>
<tr>
<td>floor coverings and adhesives</td>
<td>$30,931</td>
<td>$61,862</td>
</tr>
<tr>
<td>miscellaneous materials</td>
<td>$8,570</td>
<td>$12,658</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$40,082</strong></td>
<td><strong>$75,276</strong></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.

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 Kelly Brown at 626-2317.

Written By:

Kelly Brown
Environmental Health & Safety
Asbestos Group Senior Technician
MDH Certified Building Inspector
(ID# Applied for)

Dale Livingston
Environmental Health & Safety
Asbestos Group Senior Technician
MDH Certified Building Inspector
(ID# Applied for)

Reviewed By:

Roger L. Jeremiah
Environmental Health & Safety
Asbestos Group Manager
MDH Certified Building Inspector
(ID# Applied for)
MDH Management Planner
(ID# Applied for)
cc: John Sundsmo