September 5, 1996

REPORT: Full Building Survey

TO: Pam Beader, Facilities Supervisor, Zone 2, 57 Management/Economics Building

FROM: Greg Archer, Asbestos Group, Environmental Health and Safety, W140 Boynton Health Services, 410 Church St. S.E., Minneapolis, MN 55455

SUBJECT: Asbestos Material Survey - Anderson Hall
EH&S Project No: 205-96-082
Client Project No: for Data Base

Scope of Work: A full building asbestos material survey was conducted on July 29 through August 14, 1996. The purpose of the survey was to identify asbestos-containing materials (ACM) as defined by the Environmental Protection Agency (EPA). Any material that is greater than 1% asbestos is considered to be ACM. The intent of the survey was to identify both friable and nonfriable suspect ACM, to identify nonfriable ACM that may become friable under demolition or renovation conditions, and to provide approximate cost estimates for the removal of identified ACM prior to renovation of the Anderson Hall.

Project Description: Bulk samples of suspect ACM were collected on-site and analyzed via polarized light microscopy (PLM) 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:

- <4" white fibrous pipe insulation and associated pipe fitting insulation
- <4" fibrous pipe fitting insulation on fiberglass with tar
- <4" fibrous pipe fitting insulation on fiberglass
- 4"-8" white fibrous pipe insulation and associated pipe fitting insulation
- 4"-8" fibrous pipe fitting insulation on fiberglass with tar
- 4"-8" fibrous pipe fitting insulation on fiberglass
- white fibrous tank insulation
- spray-on fireproofing
- 9"x9" floor tile, cream
- 9"x9" floor tile, off-white with beige
- 12"x12" floor tile, beige with brown and cream

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

- <4" fiberglass pipe insulation
- <4" fiberglass with tar pipe insulation
• 4"-8" fiberglass pipe insulation
• 4"-8" fiberglass with tar pipe insulation
• 9"-14" fiberglass pipe insulation and associated pipe fitting insulation
• fiberglass duct insulation
• fiberglass with tar duct insulation
• ceiling plaster
• wall plaster
• clay tile mortar
• red brick mortar
• concrete block mortar
• sheetrock and taping compound
• baseboard adhesive
• 12"x12" ceiling tile, nailhole crater
• mineral wool backing
• wall tar
• canvass vibration joint
• ceiling tile adhesive

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

• floor tile adhesive

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. Asbestos containing spray-on fireproofing is present throughout the building. In general, materials were found to be in good to excellent shape.

2. Facilities Management;
   The quantities listed reflect the visibility and accessibility at the time of the survey. Actual quantities must be verified by contracting entities.

3. General;
   Due to limited access points in the ceilings and walls, some pipe chases and areas 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.

   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.

   The following areas were inaccessible at the time of the survey: Rooms 110A-D, 125, 135, 135A, 137, 181, and 183.

   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.

   Samples taken of the fiberglass duct insulation were analyzed as non-asbestos containing material. However, it should be noted that asbestos containing seam sealer is occasionally used as an
adhesive/patch. Even though every effort is make to identify this material, it is difficult to
determine it's presence without extensively damaging the fiberglass insulation.

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>$128,146</td>
<td>$164,516</td>
</tr>
<tr>
<td>• spray-on fireproofing</td>
<td>233,585</td>
<td>382,230</td>
</tr>
<tr>
<td>• floor tile &amp; adhesive</td>
<td>1,240</td>
<td>2,480</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$362,971</td>
<td>$549,226</td>
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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 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 (mistig the air with water and keeping materials wet) should be required of the
general contractor.

If there is any further information required, or other questions arise regarding this request, please contact
Greg Archer at 626-2199.

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