February 6, 1997

REPORT: Full Building Survey

TO: Tim Nelson, Facilities Management's Asbestos Coordinator, 400 Donhowe Building
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FROM: Bryan Angstman, Asbestos Group, Environmental Health and Safety, W-140
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SUBJECT: Asbestos Material Survey - Mineral Resources Research Center
EH&S Project No: 041-97-009
Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on January 22, 1997 through January 31, 1997. 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 the Mineral Resources Research Center.

Project Description: One hundred sixty (160) bulk samples of suspect ACM were collected on-site and one hundred twenty-seven (127) 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 as ACM in the building:

• <4" white fibrous pipe insulation(PI)(1)
• <4" pipe fitting insulation (PFI) on white fibrous line(2)
• <4" aircell PI(3)
• <4" PFI on aircell line(4)
• <4" felt PI(5)
• <4" PFI on felt w/tar line(6)
• <4" fibrous PFI on FG w/tar line(8)
• <4" fiberglass PI(9)
• <4" PFI on fiberglass line(10)
• 4"-8" white fibrous PI(11)
• 4"-8" PFI on white fibrous line(12)
• 4"-8" aircell PI(13)
• 4"-8" PFI on aircell line(14)
• 4"-8" felt PI(15)
• 4"-8" PFI on felt w/tar line(16)
• 4"-8" fiberglass PI(19)
• 4"-8" PFI on fiberglass line(20)
• 9"-14" white fibrous PI(21)
• 9"-14" PFI on white fibrous line(22)
• 9"-14" fiberglass PI(23)
• 9"-14" PFI on fiberglass line(24)
• 9"X9" grey w/black & white streaks floor tile(41)
• 9"X9" tan w/white streaks floor tile(42)
• 9"X9" light grey w/cream floor tile(43)
• 12"X12" cream w/tan specks floor tile(60)
• 12"X12" tan w/white smears floor tile(64)
• 12"X12" tan w/brown streaks floor tile(65)
• 12"X12" brown/grey marble floor tile(67)
• black lab top(96)
• black lab sink(97)
• transite(101)
• sink undercoating(102)
• galbestos(105)
• gaskets(106)
• debris(107)
• cloth pads(108)
• cloth wire covering(114)
• asbestos cloth(116)

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

• floor tile adhesive(41.5)
• floor tile adhesive(42.5)
• floor tile adhesive(43.5)
• floor tile adhesive(60.5)
• floor tile adhesive(64.5)
• floor tile adhesive(65.5)
• floor tile adhesive(66.5)

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

• <4" fiberglass PI w/tar(7)
• blue spray-on fireproofing(33)
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.

The building has a large amount of water damage and there may be a concern of fungus exposure to the workers and residents if the problem is not properly addressed.

There is a large amount of unlabeled chemicals in the building and possible PCB contaminants. These need to be assessed and tested before any construction related work should be started.

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.

Asbestos containing pipe insulation was found under most fiberglass pipe insulation. Therefore, the following materials are to be considered asbestos containing material: <4” fiberglass PI (9), 4"-8" fiberglass PI (19) and 9"-14" fiberglass PI (23).

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.

In the Appendices, material descriptions followed by a date refer to samples referenced from previous surveys conducted by Delta Environmental Consultants or by the Department of Environmental Health & Safety. The date refers to the original sampling date.

Metal covered pipes in room S10 are suspected of having asbestos containing material underneath the covering and need to be considered positive.

If machinery is to be dismantled, testing on any gaskets on the inside of machinery needs to be done in accordance with state and federal guidelines.

Area between Mezzanine level and Attic level floor has asbestos debris and needs to be cleaned before demolition of ceiling plaster on Mezzanine takes place.

Crawl space area on south end of sub-basement has contaminated soil and needs to be kept as a restricted area until such time soil can be removed 3 to 6 inches or having the area raked cleaned and gypcrete poured.

Cloth wiring was visible in several area and has been found positive in previous surveys. There is no way to know exactly how much asbestos wire is in the walls, chases, wire trays, etc. All cloth covered wire found during demolition should be considered positive and dealt with according to all state and federal regulations.

3.0    General:

In the Appendices, material descriptions followed by a date refer to samples referenced from previous surveys conducted by Delta Environmental Consultants or by the Department of Environmental Health & Safety. The date refers to the original sampling date.

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.
Cost Estimation

<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>$139,927</td>
<td>$181,428</td>
</tr>
<tr>
<td>• contaminated soil</td>
<td>$6,225</td>
<td>$10,375</td>
</tr>
<tr>
<td>• Misc.</td>
<td>$32,969</td>
<td>$60,853</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$179,121</strong></td>
<td><strong>$252,656</strong></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 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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