Scope of Work: A full building asbestos material survey was conducted on April 24, 1996 through May 29, 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 Peik Hall.

Project Description: Two hundred twenty-nine (229) bulk samples of suspect ACM were collected on-site and one hundred sixty-five (165) 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" white fibrous pipe insulation (PI)(1)
- <4" pipe fitting insulation (PFI) on white fibrous line (2)
- <4" aircell PI (Assumed) (3)
- <4" fibrous PFI on aircell line (Assumed) (4)
- <4" felt with tar PI (5)
- <4" fibrous PFI on felt with tar line (6)
• <4" fibrous PFI on FG line (10)
• 4"-8" white fibrous PI (11)
• 4"-8" PFI on white fibrous line (12)
• 4"-8" felt with tar PI (15)
• 4"-8" fibrous PFI on felt with tar line (16)
• 4"-8" fibrous PFI on FG w/tar line (18)
• 9"-14" white fibrous PI (21)
• 9"-14" PFI on white fibrous line (22)
• <4" fibrous PFI on cork line (29)
• white fibrous duct insulation (30)
• white fibrous tank (32)
• 9"x9" floor tile, light grey w/cream streaks (43)
• 9"x9" floor tile, light grey w/black & white streaks (44)
• 12"x12" floor tile, white w/brown smears (71)
• 12"x12" floor tile, olive w/black blotches (73)
• 12"x12" floor tile, beige tan marble (76)
• debris (137)

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

• <4" fiberglass PI (9)
• 4"-8" fiberglass w/tar PI (17)
• 4"-8" fiberglass PI (19)
• 9"-14" fiberglass PI (23)
• 9"-14" fibrous PFI on fiberglass line (24)
• black foam PI (25)
• <4" cork w/tar PI (28)
• fiberglass (FG) duct insulation (31)
• ceiling plaster (34)
• wall plaster (35)
• red brick mortar (36)
• clay tile mortar (37)
• concrete block mortar (38)
• sheetrock & taping compound (39)
• 12"x12" floor tile, grey, white, & dark grey swirls (70)
• floor tile mastic (70.5)
• floor tile mastic (73.5)
• 12"x12" floor tile, white/cream/tan marble (78)
• floor tile mastic (78.5)
• floor tile mastic (79.5)
• 12"x12" floor tile, tan w/white marble (80)
• floor tile mastic (80.5)
• floor tile mastic (81.5)
• 2'x2' floor tile, white grey (82)
• 12"x12" floor tile, white cream marble (83)
• 12"x12" ceiling tile, pegboard (100)
• 12"x12" ceiling tile, rough textured splined (101)
• 12"x12" ceiling tile, fissured (102)
• 12"x12" ceiling tile, pencil/nail hole (103)
• ceiling tile mastic (103.5)
• 12"x12" ceiling tile, pin/pencil hole (104)
• ceiling tile mastic (104.5)
• 2'x2' ceiling tile, pinhole fissured (110)
• 2'x2' ceiling tile, chicken scratch (111)
• 2'x2' ceiling tile, pinhole/wormhole (112)
• 2'x2' ceiling tile, pinhole/nailhole (113)
• 2'x4' ceiling tile, pinhole fissured (120)
• canvass vibration joint (130)
• black lab top (131)
• black lab sink (132)
• sink undercoating (135)
• troweled-on plaster (136)
• wall panel mastic (138)
• red pipe putty (139)
• corkboard w/mastic (140)
• foiled FG batting (141)
• pressboard (142)
• grey duct putty (144)
• carpet adhesive (203)

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

• baseboard adhesive (40)
• floor tile mastic (42.5, 43.5, 44.5, 71.5, 72.5, 74.5, 75.5, 76.5, 83.5, 100.5)
• ceiling tile mastic (102.5) Assumed
• transite (133)

The following material tested less than 1% asbestos:

• 9"x9" floor tile, white w/black streaks (42)
• 12"x12" floor tile, beige w/white & brown streaks (72)
• 12"x12" floor tile, grey, white & dark grey specks (74)
• 12"x12" floor tile, off-white w/olive streaks (75)
• 12"x12" floor tile, dark grey marble (79)
• 12"x12" floor tile, grey w/white streaks (81)

For room locations of above noted materials, refer to Appendices.

Observations and Recommendations:

1.0 Department of Environmental Health & Safety (DEHS):

Room 17B, Room 17C, and Room 40/42 closets were not accessed at the time of the survey due to problems obtaining keys to these spaces.

The debris identified in the wall hatches is asbestos-containing; however, the debris may not be accessible due to the space constraints of the pipe chases.

2.0 Facilities Management:

Please refer to floor plans included with this report for room numbers. The floor plans were changed to refer to the actual number on the room door.
Wall hatches in Rooms 174, 216, 274, 316 and 384 were inaccessible due to materials stored in the rooms. A ceiling hatch in Room 60A was also inaccessible at the time of the survey.

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

The tunnel between Peik Hall and Peik Gym was surveyed as part of this survey. Also surveyed was a pipe chase (Room S10/tunnel) located at the bottom of the west stairs (see floor plans) at the Peik Hall end of the tunnel. This chase is not located on the floor plans.

Above the ceiling observations on the first and second floors were limited by access and ventilation equipment.

The ventilation system was leaking into the above ceiling area above Room 355.

The troweled-on plaster was observed on structural beams and columns. The material has a light grey appearance with a rough texture. In many areas in the building, this material could not be observed due to location above the plaster ceiling or in the walls.

3.0 General:

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.

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>$134,457</td>
<td>$171,276</td>
</tr>
<tr>
<td>• debris</td>
<td>$3,515</td>
<td>$3,515</td>
</tr>
<tr>
<td>• floor coverings &amp; mastic</td>
<td>$64,493</td>
<td>$128,986</td>
</tr>
<tr>
<td>• transite</td>
<td>$26,396</td>
<td>$38,580</td>
</tr>
<tr>
<td>• ceiling tile adhesive</td>
<td>$31,522</td>
<td>$63,044</td>
</tr>
<tr>
<td>• baseboard adhesive</td>
<td>$4,414</td>
<td>$8,828</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$264,797</td>
<td>$414,229</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.

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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