

ASBESTOS SURVEY REPORT

Bear Administration Building

270 Bear Christiana Road, Bear, DE 19701

DEL-DOT



Prepared For:

DELDOT- 800 Bay Road Dover,
DE 19901

Prepared by:

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SECTION 1.0

INTRODUCTION

An asbestos survey was conducted at 270 Bear-Christiana Road, Bear, DE 19701. The survey was conducted from June 3, 2019- July 8, 2019 by Joseph Pancoski, (EHSBIR-190205-00009) Nicholas Mariconda, (EHSBIR-190205-00008) and Jeffrey Kuntz, (EHSBIR 181011-013) of Batta Environmental Associates, Inc. (BEA), AHERA-certified inspectors.

The purpose of this asbestos survey was to identify the presence, and extent of asbestos-containing materials (ACM) in the interior and exterior areas of the residential property including the roof area. The survey was in support of future plans to demolish the property.

The inspection was performed by certified EPA asbestos building inspectors, experienced in identifying and sampling suspect ACM. All areas of the interior and exterior of the building including the roof were accessed and inspected. All observed suspect materials were sampled to determine asbestos content. No materials were assumed to contain asbestos with the exception of wall mastic observed on the restroom cinderblock walls that was observed but inaccessible to sample.

All samples collected were analyzed at Batta Laboratories, LLC using Polarized Light Microscopy (PLM) methods. All suspect materials in the survey area were tested and no materials were assumed to contain asbestos. A total of one-hundred & twenty-one (121) samples were collected, one-hundred & ten (110) were analyzed using PLM, and eleven (11) weren't analyzed by PLM due to positive stop protocols.

Laboratory Analysis Reports – Certificates of Analysis are located in Appendix A of this report. All field reports and drawings are in Appendix B and photographs taken from the site are in Appendix C. The State of Delaware Asbestos Inspection Form can be found in Appendix D and all company and individual licenses and certifications can be found in Appendix E.

SECTION 2.0

BUILDING DESCRIPTION

The Administration Building at 270 Bear Admin Building, 270 Bear-Christiana Road, Bear, DE 19701, was observed to be a two story office building with a basement comprised of approximately 22,500 square feet consisting of typical offices and administration areas as well as restrooms, a boiler room, electrical room, storage room, and an elevator mechanical room.

The exterior walls of the building were brick with window wall units.

All interior walls were drywall and wall paneling throughout. Interior ceilings had 2'x2' or 2'x4' drop in ceiling tile with restrooms areas and basement mechanical areas having ceiling plaster. The floors throughout were 12' x 12' floor tile, ceramic tile, concrete, with carpet in some areas.

Suspect pipe insulation and pipe fittings were found in the basement area primarily in the boiler room. Fiberglass duct insulation with a suspect mastic material was observed near the air handler unit in the boiler room.

The roof was a built up roof with roof flashings and mastics. Window caulk, door caulk, and louver caulk was observed on the exterior of the building.



SECTION 3.0 METHODS AND LIMITATIONS

3.1 ASBESTOS SURVEY METHODS

The property was inspected for suspect ACM, unless otherwise noted. Each observed suspect material was assigned a homogenous area number, described, and measured. Each observed suspect material was sampled or assumed to be asbestos. Samples of suspect ACM were collected using procedures established by the United States (US) Environmental Protection Agency (EPA) Code of Federal Regulations (CFR) Title 40 Part 763 Subpart E, Asbestos-Containing Materials in Schools.

At the beginning of the survey, the inspector(s) conducted a walkthrough of the areas identifying and sampling different types of probable ACM and categorizing these materials.

Each probable ACM was grouped into homogenous areas, which group a particular material by similar characteristics such as appearance, texture, manufacturer, etc. All similar materials within a particular building or process area were in their own homogenous area groups.

ACM's were also further divided into three categories:

- ***“Surfacing Materials”*** material that is sprayed-on, trowelled on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing or other purposes.
- ***“Thermal System Insulation”*** material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain, or water condensation, or for other purposes.
- ***“Miscellaneous ACM”*** interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal insulation.

ACM's inventoried in this survey are classified as either friable or non-friable. Friable ACM can be crumbled or reduced to powder by hand pressure whereas non-friable ACM cannot.

The EPA asbestos NESHAP regulation further classifies nonfriable ACM into two categories.

- Category I. Nonfriable ACM includes any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product.
- Category II. Nonfriable ACM includes any nonfriable ACM other than Category I nonfriable ACM.

Samples were collected in air tight, sealed bags for transportation to Batta Laboratories, Inc. for analysis. During sample collection procedures, good safety and hygiene practices were implemented to prevent asbestos airborne contamination from being introduced into the building's atmosphere.

All field records pertaining to samples collected during this inspection can be found in Appendix C of this report and each sample is listed as follows:

1. Field Number
2. Lab Number
3. AHERA Classification
4. Sample Location
5. Material Sampled
6. Lab Results

All lab data pertaining to the samples analyzed can be found in Appendix A & B of this report and each sample is listed as follows:

1. Date Analyzed
2. Field Sample Number
3. Lab Sample Number
4. Sample Location
5. Asbestos Content
6. Non-Asbestos Content

Samples were analyzed using an A,B,C... positive stop protocol for each set of homogenous materials (*materials with similar characteristics*). If a sample in the homogenous set tested positive for asbestos (*greater than 1% by composition*) then the other samples in that set were not analyzed. If asbestos was not detected in a sample then all samples from that homogenous set were analyzed for asbestos until one tested positive.

3.2 LABORATORY ANALYSIS METHODS

All samples collected during the survey were analyzed at **BATTA LABORATORIES, LLC**, an A.I.H.A., NVLAP certified laboratory. Upon arrival at the laboratory, the samples were logged-in and submitted for analysis.

PLM samples were analyzed utilizing the Environmental Protection Agency's test method: Methods for the determination of Asbestos in Bulk Building Materials (EPA 600/R-93/116, July 1993) and the McCrone Research Institute's The Asbestos Particle Atlas as the principal analytical references. Additional treatment and tests may be required to accurately define composition (i.e. ashing, extraction, acetone treatment, and TEM).

The PLM method utilizes a light microscope equipped with polarizing filters. The identification of asbestos fiber bundles is determined by the visual properties displayed when the sample is treated with various dispersion staining liquids. Identification is substantiated by the actual structure of the fiber and the effect of polarized light on the fiber, all of which is viewed by a trained technician. The limit of detection of asbestos by PLM is about one percent (1%) by area. Samples containing lower levels of asbestos are not reliably detectable by this technique.

Analysis was performed by using the bulk sample for visual observation and slide preparation(s) for microscopic examination and identification. The samples analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, and actinolite/tremolite), fibrous non-asbestos constituents (cellulose, synthetic, etc.) and non-fibrous constituents. Using a stereoscope, the microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample.

The asbestos NESHAP recommends that asbestos bulk samples that are less than 10% by PLM are to be analyzed by point counting for friable ACM and mandates point counting when PLM results for friable ACM are in trace amounts (< 1%) in order to declare that the material is non-asbestos containing. The point-count procedure mandated by NESHAP is in the EPA "Interim" Bulk Method. For each layer to be point counted, eight mounts are made by dispersing 8 pinches of sample in suitable fluid. Each of the mounts is examined under the polarizing light microscope using an eyepiece reticule that superimposes a grid of points over the field of view. Fifty non-empty points are examined for each mount, yielding 400 points – some of which would be identified as asbestos and the rest as non-asbestos material.

Upon request and in accordance with EPA recommendations, samples collected that were Category I non-friable ACM and other non-friable organically bound (NOB) materials that tested negative for asbestos may be prepped using the gravimetric sample preparation procedures and further analyzed by Transmission Electron Microscopy (TEM) (New York State Method Item #198.4).

Gravimetric reduction (EPA/600/R-93/116, section 2.3) is an improved protocol for analyzing NOB materials with dense organic matrices. This additional procedure helps remove many of the matrices present in building materials that can mask or interfere with the ability to identify and quantify asbestos content. The two steps of gravimetric reduction are an ashing step to remove the organic component and an acid wash to remove the carbonate component.

Transmission Electron Microscopy (TEM) analysis is used to quantify and identify asbestos structures using electron diffraction and energy dispersive X-ray (EDX) analysis. Identification of chrysotile or amphibole crystalline structures can be consistently determined via the electron-diffraction capabilities of modern TEMs. The five amphibole types can be differentiated based on their elemental composition when EDX analysis is combined with their electron diffraction patterns.

3.3 LIMITATIONS

This survey was limited in scope to an asbestos survey of the Administration Building at 270 Bear-Christiana Road, Bear, DE 19701 as defined by contract documents and the project scope of work. Lead based paint, coatings or other lead based survey or sampling was not included in this investigation. Also, no investigation of other hazardous materials such as PCBs, fluorescent light tubes, mercury switches, HID lamps, lead acid batteries, refrigerants, stored chemicals, or other environmentally sensitive materials was performed as part of this inspection.

This asbestos survey report has been prepared by BEA in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty, expressed or implied is made. The intent of this survey report is to assist the building owner or management in locating ACM. This document is not intended to be utilized as a proposal or a project design document for the remediation of asbestos materials discovered during this investigation.

The survey was conducted to identify suspect ACM on the interior and exterior areas of the building. Some ACM may not have been discovered due to inaccessibility. Any suspect

materials discovered subsequent to the issue of this survey report should be sampled and analyzed to determine asbestos content and to initiate appropriate responses.

BEA's interpretations and recommendations are based upon the results of sample collection and analyses in compliance with environmental regulations, quality control and assurance standards, and the scope of work. The results, conclusions, and recommendations contained in this report pertain to conditions observed at the time of the survey.

SECTION 4.0
SURVEY RESULTS

4.1 ASBESTOS ANALYSIS RESULTS

A total of one-hundred & twenty-one (121) samples were collected and one-hundred & ten (110) were analyzed by PLM due to positive stop protocols. The original laboratory report / certificates of analysis are attached as Appendix A and survey field records are attached in Appendix B.

The following table summarizes the samples collected and identifies and quantifies materials that contain asbestos in amounts greater than 1 % (NAD = No Asbestos Detected, RACM = Regulated Asbestos Containing Material, CAT I NF = Category I Non-friable ACM, CAT II NF = Category II Non-friable ACM).

BEAR ADMINISTRATION BUILDING					
Material	Location	% ACM	Category	Condition	Quantity
Ceiling tile (2 x2)	Throughout/Mainly Stairwells (Grooved)	NAD	NA	NA	NA
Ceiling tile (2 x2)	Throughout (Non Grooved)	NAD	NA	NA	NA
12"x12" Floor Tile	(Tan with Blue) Under most Carpets	NAD	NA	NA	NA
Carpet Glue	Throughout	NAD	NA	NA	NA
12"x12" Floor Tile	Throughout Corridors (White)	NAD	NA	NA	NA
Joint Compound	Server Room/ in Basement (White)	NAD	NA	NA	NA
12"x12" Floor Tile	Throughout Corridors (Blue)	NAD	NA	NA	NA
Drywall	Throughout	NAD	NA	NA	NA
Duct Insulation Mastic	Boiler Room (near A.H.U.)	7% Chry.	CAT I NF	Good	760 SF
Ceiling Plaster	Boiler Room/ Elec. Room/ Elevator Room / Restrooms	NAD	NA	NA	NA
Flue Packing	Boiler Room	NAD	NA	NA	NA
Ceiling Coating	Elevator Room/ Electrical Room	NAD	NA	NA	NA
Pipe Fittings	Above Ceiling in Boiler Room / Bsmt.	NAD	NA	NA	NA
Elevator Mastic	Elevator Exterior	10%Chry	CAT I NF	Good	180 SF
Carpet Mastic	Throughout (Green)	NAD	NA	NA	NA
2 x 4 Ceiling Tile	1 st Floor	NAD	NA	NA	NA
12"x12" Floor Tile	Hallways (White w/blue)	NAD	NA	NA	NA
Floor Tile Mastic	Hallway Rooms (Tan/ Brown)	NAD	NA	NA	NA
Drywall	Interior Walls behind Metal Sheet	NAD	NA	NA	NA
Textured Fire Coat	Cross Support above Ceiling/Bsmt.	NAD	NA	NA	NA
12"x12" Floor Tile	Elevator	NAD	NA	NA	NA
Built Up Roof	Exterior Roof	NAD	NA	NA	NA

BEAR ADMINISTRATION BUILDING - continued					
Material	Location	% ACM	Category	Condition	Quantity
Perimeter Roof Flashing	Exterior Roof	NAD	NA	NA	NA
Mech. Roof Flashing	Exterior Roof	NAD	NA	NA	NA
Stairwell Roofing	Exterior Raised Stairwell Roof	NAD	NA	NA	NA
Roof Walk Pad	Exterior Roof	NAD	NA	NA	NA
Roof Pad Adhesive	Exterior Roof	NAD	NA	NA	NA
Stairway Roof Flashing	Exterior Raised Stairwell Roof	NAD	NA	NA	NA
Roof Rubber Lap Seam	Exterior Roof	NAD	NA	NA	NA
Black Tar in Roof Drain	Exterior Roof	NAD	NA	NA	NA
Rubber Patch Adhesive	Exterior Roof – Roof Drain (Middle)	NAD	NA	NA	NA
Window Caulk	Exterior Window Walls	5% Chry.	CAT I NF	Good	1,210 LF
Door / Vent Caulk	Near entrance to Boiler Room	7% Chry.	CAT I NF	Good	45 LF
Building Caulk	Between Sidewalk & Ext. Wall	NAD	NA	NA	NA
Pipe Insulation	Boiler Room Area (Above Plaster)	12%Amos	RACM	Damaged	50 LF
Pipe Fittings	Basement Boiler Room Area	NAD	NA	NA	NA
Plaster Ceiling	Boiler Room Area	NAD	NA	NA	NA
12"x12" Floor Tile	(Grey) Basement – Central Wing	3% Chry.	CAT I NF	Good	1,990 SF
Floor Tile Mastic	(Black)Basement – Central Wing	5% Chry.	CAT I NF	Good	1,990 SF
Carpet Glue	Throughout	NAD	NA	NA	NA
12"x12" Floor Tile	(Grey w Blue) Basement Area	NAD	NA	NA	NA
Floor Tile Mastic	Basement Area under Carpet (Grey)	NAD	NA	NA	NA
12"x12" SA Floor Tile	Storage Area in Bsmt. Center Wing	5% Chry.	CAT I NF	Good	200 SF
12"x12" Floor Tile	(White) Basement Corridors	NAD	NA	NA	NA
Floor Tile Mastic	(Tan) Basement Corridors	NAD	NA	NA	NA
12"x12" Floor Tile	(Blue) Basement Corridors	NAD	NA	NA	NA
Floor Tile Mastic	(Tan) Basement Corridors	NAD	NA	NA	NA
Boiler Packing	Top of Boiler around Header	NAD	NA	NA	NA
Pipe Flange Gaskets	Boiler Room – near Boiler	NAD	NA	NA	NA
Vibration Damper	Boiler Room Large A.H.U.	NAD	NA	NA	NA
Joint Compound	Server Room-Basement	NAD	NA	NA	NA
Plaster Ceiling	Server Room Basement	NAD	NA	NA	NA
12"x12" Floor Tile	(Grey w Blue) 1 st Floor Areas	NAD	NA	NA	NA
2' x 2' Ceiling Tile	1 st & 2 nd Floor Hallways	NAD	NA	NA	NA
Ceiling Plaster	1 st Floor Women's Bathroom Lobby	NAD	NA	NA	NA
Pipe Fitting	1 st Floor Custodial Closet	NAD	NA	NA	NA
Ceramic Tile Floor – 1"	1 st Floor Women's Room-Pink	NAD	NA	NA	NA
Ceramic Tile Grout	1 st Floor Women's Room (Floor)	NAD	NA	NA	NA
Ceramic Tile (Wall)	1 st Floor Women's Room-Pink	NAD	NA	NA	NA
CT Grout (Wall)	1 st Floor Women's Room	NAD	NA	NA	NA
CT Adhesive (Wall)	1 st Floor Women's Room	NAD	NA	NA	NA
Ceramic Tile Floor- 1"	1 st Floor Men's Room-Green	NAD	NA	NA	NA
CT Grout (Floor)	1 st Floor Men's Room	NAD	NA	NA	NA
Ceramic Tile (Wall)	1 st Floor Men's Room-(Yellow White)	NAD	NA	NA	NA
CT Grout (Wall)	1 st Floor Men's Room-Grey	NAD	NA	NA	NA
Dust Seam Mastic	2 nd Floor- Corridor	NAD	NA	NA	NA
Wall Mastic	Restroom Block Walls 1st & 2nd Floor	Assumed	CAT I NF	Good	520 SF

4.2 ADDITIONAL OBSERVATIONS

In addition to the results presented in Section 4.1, BEA observed the following:

- Only visibly accessible areas were inspected.
- Suspect asbestos wall mastic was observed on the building perimeter cinderblock walls of both restrooms on the 1st and 2nd floors. This material was observed through a hatch in the plaster ceiling of both restrooms and could not be accessed to sample without plaster ceiling demolition. This material is assumed to be asbestos containing until sampling can be performed and indicates otherwise.
- There is a large inaccessible space in the front of the building just right of the main entrance that was inaccessible to inspect and a smaller space in the back of the building to the left of the central entrance. The most likely use of these spaces are for ducts to be running vertically up the building since they both are located where the large air handler unit is in the boiler room. Since asbestos duct insulation mastic and pipe insulation was found in the boiler room these spaces as well may contain asbestos containing materials and need to be inspected once exploratory demolition is able to be done.
- If any new suspect asbestos materials are discovered during the renovation/demolition phase of this project then they should be tested for asbestos prior to handling.

SECTION 5.0

RECOMMENDATIONS

5.1 RECOMMENDATIONS FOR REGULATED ACM (RACM)

Pipe insulation was identified as RACM during this inspection:

If present, these materials must be removed prior to any activity that would release asbestos fibers from this material. Specifically, any renovation or demolition activity that will crush, abrade, or dissolve the matrix of this material must be performed by a Delaware licensed Asbestos Contractor. If these materials are in good condition and not impacted by the renovation/demolition and will remain on/in the facility, no other special handling, or action is required.

5.2 RECOMMENDATIONS FOR CATEGORY I NONFRIABLE ACM (C1NF)

12"x12" floor tile, floor tile mastic, duct insulation mastic, elevator mastic, wall mastic, and window/door/vent caulk were identified as C1NF ACM during this investigation.

If present, these materials are required to be removed by a Delaware licensed asbestos contractor if proposed renovations or demolition will impact these materials in such a manner as to render them friable and thus RACM. Specifically, any renovation or demolition activity that will crush, abrade, or dissolve the matrix of these materials then they must first be removed by a Delaware-licensed Asbestos Contractor. If these materials are in good condition and not impacted by the renovation/demolition and will remain on/in the facility, no other special handling, or action is required.

5.3 RECOMMENDATIONS FOR CATEGORY II NONFRIABLE ACM (C2NF)

No materials were identified as Category II Non-friable ACM during this inspection:

If present, these materials identified as Category II Non-friable ACM must be removed prior to any renovation or demolition activity that will crush, abrade, or dissolve the matrix of this material. The removal of this material must be performed by a Delaware licensed Asbestos Contractor. If this material is in good condition and not impacted by the renovation/demolition and will remain on/in the facility, no other special handling, or action is required.

5.5 GENERAL RECOMMENDATIONS

Based on the results of this survey, BEA has the following general recommendations:

- All types of asbestos that need to be removed as a part of any renovation or demolition project in Delaware are required to be removed, handled, and disposed of as ACM waste by a licensed Delaware asbestos contractor regardless if the material is a RACM, C1NF, or C2NF in accordance with the Delaware Department of Natural Resources and Environmental Control (DNREC).
- For State and Public Buildings in Delaware or projects through State agencies all asbestos abatement projects must have a specification written by a certified Project Designer which is approved by the State of Delaware, Facilities Management prior to initiating the bidding process or performing the work.
- Suspect materials discovered after this inspection should be sampled and analyzed to determine asbestos content and to initiate appropriate responses.

DNREC and the US Environmental Protection Agency – Region III, require notification of intent to renovate or demolish when asbestos is present. Notification must be sent at least 10 working days prior to the start of any construction activities. The general contractor should also keep a copy of this survey at the construction site during the entire construction project as proof of compliance with 40 CFR 61 (NESHAP).