



Pre-Demolition Asbestos /
Hazardous Materials Survey Report

of

**Taco Bell #1557
22670 Allen Road,
Woodhaven, Michigan 48183-2255**



Prepared for

Taco Bell Corporation
1 Glen Bell Way, MD #534
Irvine, California 92618

8/3/2021

PSI Project No. 01661540-1

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
2	GENERAL BUILDING AND SURVEY INFORMATION	2
2.1	BUILDING INFORMATION	2
2.2	INSPECTION INFORMATION	2
3	FINDINGS	3
3.1	ASBESTOS RESULTS.....	3
3.2	HAZMAT INSPECTION RESULTS	3
4	CONCLUSIONS & RECOMMENDATIONS	4
4.1	CONCLUSIONS	4
4.2	RECOMMENDATIONS.....	4

TABLES AND FIGURES

TABLE 1 – SUSPECT ACMs – SAMPLED AND ASSUMED

FIGURE 1 - SAMPLE LOCATION MAP – EXTERIOR

FIGURE 2 - SAMPLE LOCATION MAP – 1ST FLOOR

LIST OF APPENDICES

APPENDIX A – SCOPE, METHODS, AND REGULATORY GUIDELINES

APPENDIX B – REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS AND NVLAP CERTIFICATION

APPENDIX C – ASBESTOS BULK SAMPLE LOG/CHAIN OF CUSTODY

APPENDIX D – OSHA ABATEMENT PROCEDURES



1 EXECUTIVE SUMMARY

Professional Service Industries, Inc. (PSI), an Intertek company, was retained by the Taco Bell Corporation to conduct a pre-demolition survey for asbestos-containing materials (ACM) inventory within and on the existing building structure located at 22670 Allen Road, Woodhaven, Michigan 48183 (subject building/property).

The subject building is approximately **2,391** square feet (SF) in size and consists of a 1-story structure that was constructed in **1998**. The subject building was occupied during the assessment.

The purpose of the assessment was to provide information regarding the presence, condition, and estimated quantity of accessible ACMs and HAZMATs located on the subject property at the time of the survey. This survey was conducted in preparation for the upcoming demolition.

The assessment was conducted on **7/28/2021**. A total of **39** samples/layers were collected from **12** suspect asbestos-containing homogeneous materials identified during the assessment. The samples were analyzed by polarized light microscopy (PLM). A material is considered by the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA) and the State of Michigan to be ACM if PLM results detect greater than one percent (>1%) asbestos.

ACMs (>1% asbestos) were not identified through laboratory analysis during this investigation.

Additional Issue Identified by Inspector:

- None

Inaccessible Areas / Areas Not Included:

- Roofing materials were not included in this survey.

Any areas that were noted as being inaccessible during this assessment or any concealed areas, such as behind walls, where suspect ACMs are discovered, will require a survey for ACM.

This summary does not contain all the information presented in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.



2 GENERAL BUILDING AND SURVEY INFORMATION

2.1 BUILDING INFORMATION

Subject Property: 22670 Allen Road,
Woodhaven, Michigan 48183-2255

Construction Date: 1998

Number of Floors: 1

Square Footage Approximately 2,391 Square Feet

Construction Type: Block and Mortar

Building Occupant(s) Taco Bell

2.2 INSPECTION INFORMATION

PSI Inspector(s): Tom Putvin

Signature: 

State of Michigan Inspector No. A49225

Date(s) of Inspection: 7/28/2021

Report Reviewed By: Jeff Chapman, Principal Consultant

Signature: 



3 FINDINGS

3.1 ASBESTOS RESULTS

A total of **39** samples/layers were collected from **12** suspect homogenous materials during the limited asbestos survey. In addition, several suspect homogeneous materials were observed during the limited asbestos survey but were not sampled and are assumed to be ACM until sampling and laboratory analysis can be conducted.

The "Report of Bulk Sample Analysis for Asbestos," the "Asbestos Bulk Sample Log," Photographs, and OSHA Abatement Procedures are included in the Appendices. Table 1 attached to this report lists the suspect ACMs observed throughout the building that were sampled, along with the results of the inspection and laboratory analysis.

Table 1 provides descriptions of the materials, their general locations, condition, and friability, EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) category, OSHA abatement classification and estimated quantity.

3.1.1 INACCESSIBLE AREAS / AREAS NOT INCLUDED

The following areas were inaccessible and/or not included in the scope of the survey.

- **Roofing materials were not included in this survey.**

Any areas that were noted as being inaccessible during this assessment or any concealed areas, such as behind walls, where suspect ACMs are discovered, will require a survey for ACM.

3.1.2 NON-SUSPECT MATERIALS

The following materials were observed but are considered 'non-suspect' ACM due to their composition (fiberglass, rubber, etc.) and were not sampled.

- Metal, plastic, and glass building components
- Rubber/foam pipe insulation
- Fiberglass roll/bat insulation
- Ceramic bathroom fixtures (sink, toilet, tub, etc.)

3.2 HAZMAT INSPECTION RESULTS

The scope of work for this project did not include testing for hazardous materials or lead-based paint. Based on the age of the subject structure it is presumed that lead based paints are most likely present in the structure. Although current regulations do not require removal of lead-based paint prior to demolition, PSI recommends testing for airborne lead during demolition activities to ensure that worker exposure does not exceed permissible exposure limits. In addition, PSI recommends avoiding activities that may increase worker exposure to potential airborne lead. Activities that can increase worker exposure include torch cutting, sanding, grinding, cutting, or abrading lead-based painted materials.



4 CONCLUSIONS & RECOMMENDATIONS

4.1 CONCLUSIONS

ACMs were not identified on the subject property.

Additional Issue Identified by Inspector:

- None

Inaccessible Areas / Areas Not Included:

- Roofing materials were not included in this survey.

Any areas that were noted as being inaccessible during this assessment or any concealed areas, such as behind walls, where suspect ACMs are discovered, will require a survey for ACM.

4.2 RECOMMENDATIONS

ACM

Regulated ACM (RACM) and Category II Non-Friable ACM must be properly removed by a licensed asbestos abatement contractor prior to demolition that would disturb the material. Federal, State and Local regulations and guidelines should be strictly adhered to when removing the ACM.

Category I Non-Friable ACM may often be left in place during demolition if not made friable by cutting, grinding, or sanding. If left in place, these materials cannot be recycled or used as clean fill.

PSI has provided the regulatory abatement methods as defined by OSHA in Appendix E for each class of work applied to the materials noted in this report. These procedures can be performed by the demolition contractor if they are licensed to perform abatement in Michigan.

HAZMATs

PSI recommends disposing the hazardous materials identified on the site in accordance with applicable regulations. Any unknown containers present on the site need to be verified through testing followed by proper disposal in accordance with applicable regulations.



TABLES AND FIGURES

TABLE 1 – SUSPECT ACMS – SAMPLED

Site:22670 Allen Road, Woodhaven, Michigan 48183-2255

Survey Date:7/28/2021

Material Number & Sample Number	Material Description ¹	Material Location ²	F/NF ³	Cond. ⁴	% Asbestos & Type ⁵	EPA NESHAP Category ^{6,7}	Osha Class Designation ⁸	Estimated Quantity
22670-1A-B	Drywall System (White)	FS 1-13	F	G	NAD	NA	NA	4,645 SF
22670-2A-B	12'x12" Ceramic Floor Tile System (Brown)	FS 1-5	NF	G	NAD	NA	NA	2,035 SF
22670-3A-B	Interior Door and Window Frame Sealant (White)	FS 1,2	NF	G	NAD	NA	NA	245 LF
22670-4A-B	2'x2' Ceiling Tile (Gray Painted Black)	FS 2	F	G	NAD	NA	NA	925 SF
22670-5A-B	2'x4' Ceiling Tile (White)	FS 6-10,13	F	G	NAD	NA	NA	1,260 SF
22670-6A-B	Sink Sealant (White)	FS 3-5,7,9	NF	G	NAD	NA	NA	20 LF
22670-7A-B	4"x4" Ceramic Floor Tile System (Brown)	FS 6-13	NF	G	NAD	NA	NA	1,115 SF
22670-8A-B	FRP W/Adhesive (White/Beige)	FS4,6-10,12,13	NF	G	NAD/NAD	NA	NA	1,915 SF
22670-9A-B	Exterior Door and Window Frame Sealant (Gray/White)	EA 1,2,4	NF	G	NAD	NA	NA	245 LF
22670-10A-B	Exterior Seam Sealant (White/Beige)	EA 1-4	NF	G	NAD	NA	NA	250 LF
22670-11A-B	Brick & Mortar (Brown/Gray)	EA 1-4	NF	G	NAD/NAD	NA	NA	3,600 SF
22670-12A-C	Stucco (White Painted Beige)	EA 1-4	F	G	NAD	NA	NA	725 SF

- 1 Homogeneous materials/systems may contain an indefinite/indistinguishable number of layers that may not be visually identified by the inspector at the time of the survey. Bulk sample analysis (Appendix B) will report all possible layers that may be contained within the homogeneous materials/system. Therefore, laboratory results may differ from the chain of custody (Appendix C) description.
- 2 **EA** = Exterior Area = Generally relating to sides of the principal structure on the site.
FS = Functional Space = A room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling, and the floor or roof deck above) designated by a person accredited to prepare management plans, design asbestos abatement projects, or conduct asbestos response actions.
- 3 **F** = Friable; **NF** = Non-friable
- 4 **Cond.** = Condition of Materials; Either Good (G), Damaged (D) or Significantly Damaged (SD)
- 5 **NAD** = No Asbestos Detected, **Ch** = Chrysotile, **Am** = Amosite, **Tr** = Tremolite, **Cr** = Crocidolite **PT** = Point Count Analysis
- 6 **NESHAP** Category - Regulated ACM (RACM), **Cat I NF**=Category I Non-Friable ACM, **Cat II NF**= Category II Non-Friable ACM
- 7 **NA** = Not Applicable
- 8 **OSHA/EPA Class Definitions:**
Class I Asbestos work means activities involving the removal of TSI and surfacing ACM and PACM.
Class II Asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
Class III Asbestos work means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.
Class IV Asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

TABLE 1 – ASSUMED ACMS – NOT SAMPLED

Site:22670 Allen Road, Woodhaven, Michigan 48183-2255

Survey Date:7/28/2021

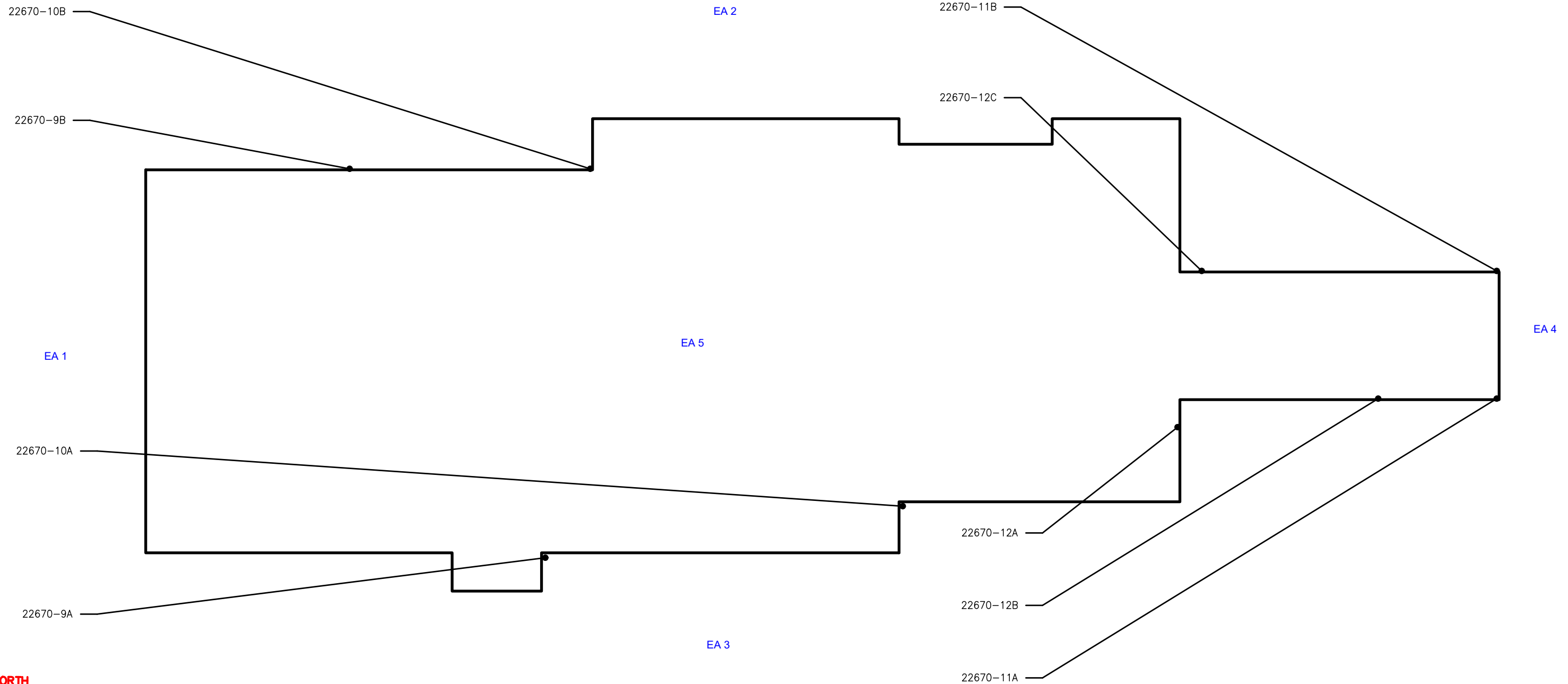
Material Description ¹	Material Location ²	Cond. ³	% Asbestos & Type	Estimated Quantity
Roofing Materials	Exterior	NA	Assumed	3,000 SF

1 Homogeneous materials/systems may contain an indefinite/indistinguishable number of layers that may not be visually identified by the inspector at the time of the survey. Bulk sample analysis (Appendix B) will report all possible layers that may be contained within the homogeneous materials/system. Therefore, laboratory results may differ from the chain of custody (Appendix C) description.

2 **EA** = Exterior Area = Generally relating to sides of the principal structure on the site.

FS = Functional Space = A room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling, and the floor or roof deck above) designated by a person accredited to prepare management plans, design asbestos abatement projects, or conduct asbestos response actions.

3 **Cond.** = Condition of Materials; Either Good (G), Damaged (D) or Significantly Damaged (SD)



LEGEND:

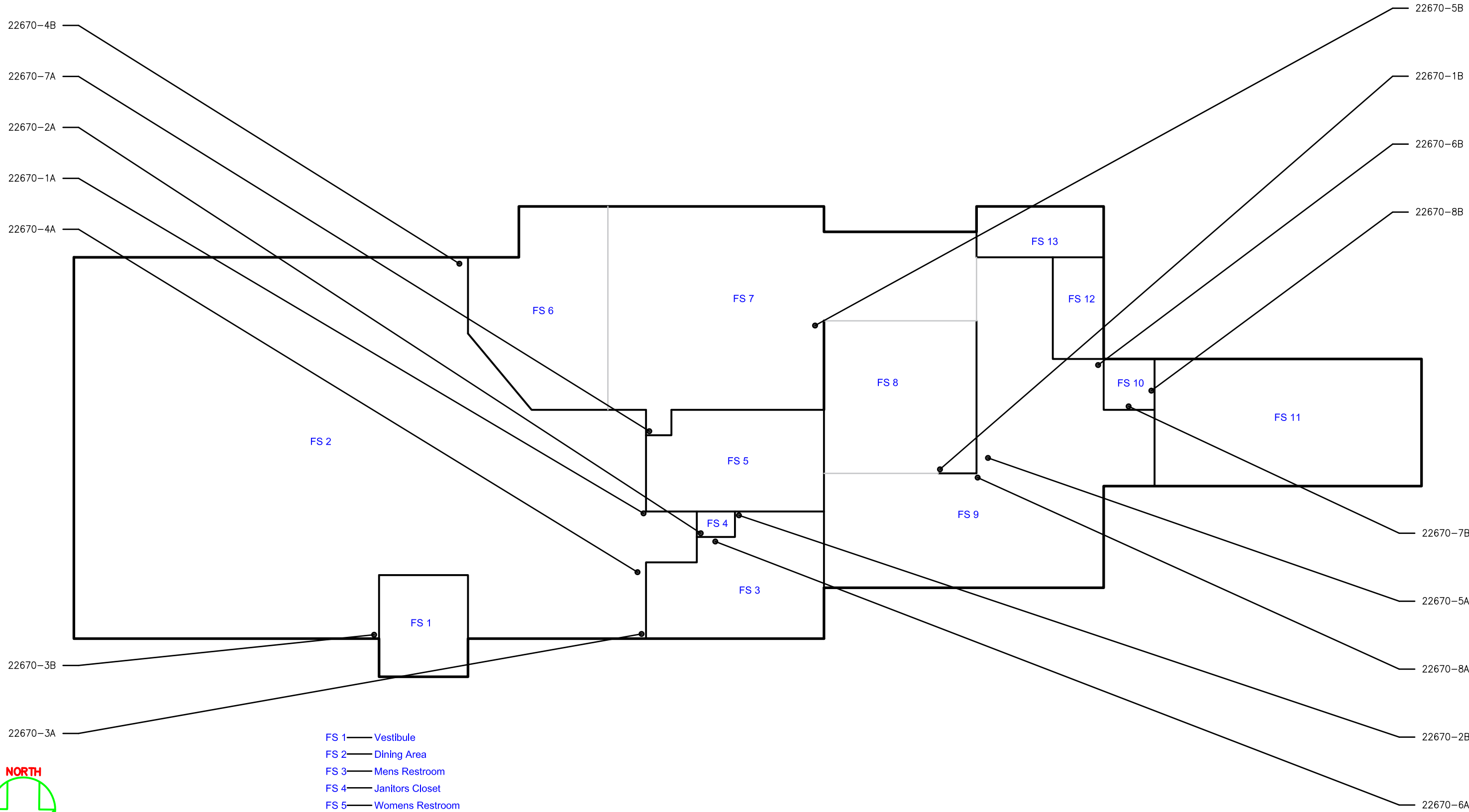
- EA EXTERIOR AREA
- FS FUNCTIONAL SPACE
- 22670-0A SAMPLE LOCATION
- 22670-0A POSITIVE ACM SAMPLE LOCATION
- EA 1 — Front side of Building (East)
- EA 2 — Left side of Building (South)
- EA 3 — Rear side of Building (West)
- EA 4 — Right side of Building (North)
- EA 5 — Roof

NOTE: All locations are approximate and must be field verified.



Environmental Services
 37483 Interchange Drive, Farmington Hills, Michigan 48335
 Tel (248) 957-9911 Fax (248) 957-9909

PROJECT NAME:	Taco Bell# 1557 2670 Allen Road, Woodhaven, MI 48183-2255	DRAWN BY:	T. Putvin	DATE:	08-02-2021	DRAWING NO.:	1
TITLE:	Sample Location Map Exterior	PROJECT MGR.:	M. Sherrard	PROJECT NO.:	0166-1540-1		



LEGEND:

- EA EXTERIOR AREA
 - FS FUNCTIONAL SPACE
 - 22670-0A SAMPLE LOCATION
 - 22670-0A POSITIVE ACM SAMPLE LOCATION
- NOTE: All locations are approximate and must be field verified.

- FS 1 — Vestibule
- FS 2 — Dining Area
- FS 3 — Mens Restroom
- FS 4 — Janitors Closet
- FS 5 — Womens Restroom
- FS 6 — Service Counter Area
- FS 7 — Kitchen
- FS 8 — Dish Washing Area
- FS 9 — Backroom
- FS 10 — Mechanical Room
- FS 11 — Freezer
- FS 12 — Storage Room
- FS 13 — Office



Environmental Services
 37483 Interchange Drive, Farmington Hills, Michigan 48335
 Tel (248) 957-9911 Fax (248) 957-9909

PROJECT NAME:	Taco Bell# 1557 2670 Allen Road, Woodhaven, MI 48183-2255	DRAWN BY:	T. Putvin	DATE:	08-02-2021	DRAWING NO.:	2
TITLE:	Sample Location Map INTERIOR	PROJECT MGR.:	M. Sherrard	PROJECT NO.:	0166-1540-1		

APPENDIX A – SCOPE, METHODS, AND REGULATORY GUIDELINES

A1 INTRODUCTION

A1.1 SCOPE OF SERVICES

The scope of services for this project consisted of conducting a pre-demolition ACM and hazardous material assessment, sampling, and analysis of accessible and exposed areas on the subject property.

The assessment included areas within the structure where building materials could potentially be impacted during scheduled demolition. The scope included a visual inspection of the subject area(s), sample collection, PLM sample analysis, quantification of ACMs, suspected hazardous materials, and report preparation and review.

A1.2 PURPOSE

The purpose of this survey was to provide general information for the subject property regarding the presence, condition, and quantity of accessible and/or exposed friable and non-friable building materials that contain asbestos, as well as substances that would require special handling and disposal prior to demolition.

A1.3 AUTHORIZATION

Authorization to perform this work was given by the Taco Bell Corporation as project administrator through the issuance of a Notice to Proceed.

A1.4 LIMITATIONS

The asbestos survey was intended to meet the requirements of the EPA NESHAP regulation for demolition or renovation. The survey included a thorough inspection of all areas on the subject property.

Vermiculite Insulation was assumed to be asbestos containing for the purposes of this study. These materials can be treated as non-regulated demolition debris provided; they are not rendered friable during the demolition process.

Destructive sampling, such as behind finished surfaces (plaster/drywall walls, above hard ceilings, etc.); inside mechanical chases, behind mirrored walls, under carpet or tiled floors, etc., was generally conducted to try to assess inaccessible or concealed materials. The inspection team selected representative areas to perform an intrusive evaluation of void spaces within the building or structure. Such inspections were made by creating an opening of sufficient size to determine the presence, condition, and quantity of suspect ACM within. Void spaces which were evaluated included locations of suspected pipe or HVAC chases, wall cavities where fireproofing or other ACM was suspected, above finished ceiling systems where ACM was likely to exist, within pipe trenches or within concealed locations. Although PSI made an attempt to identify all areas of ACM, an exhaustive investigation of void spaces was not included in the scope of services for

this project. Inaccessible is defined as areas of the building that were locked, or where admittance was not possible. It also includes areas/materials that could not be tested (sampled) without destruction of the structure or a portion of the structure, and areas/materials that could not be safely reached by the inspector or inspection team. If access to a portion of the building was not obtained (which otherwise would have been tested), such limitations specifically are identified in the Findings Section of this report.

PSI did not sample any system which presented a hazard to the inspection team such as energized electrical systems, confined spaces, or structurally unsafe areas.

The HAZMATs survey was visual only and did not include sampling of identified materials.

A1.5 WARRANTY

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and/or exposed suspect ACM/HAZMATs for the subject property. PSI warrants that the findings contained herein have been prepared in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the community. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey and analytical methods have been used to provide the client with information regarding the presence of accessible and/or exposed suspect ACM/HAZMATs existing at the time of the inspection. Test results are valid only for the material(s) tested. There is a distinct possibility that conditions may exist which could not be identified within the scope of the study or which were not apparent during the site visit. This inspection covered only those areas that were exposed and/or physically accessible to the Inspector. The study is also limited to the information available from the client at the time it was conducted.

As directed by the client, PSI did not provide any service to investigate or detect the presence of moisture, mold, or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Client further acknowledges that site conditions are outside of PSI's control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification. No other warranties are implied or expressed.

A2 METHODOLOGY

Inspection and sampling procedures were performed in general accordance with the guidelines published by the EPA. The inspection and survey described below was performed by an EPA and Michigan accredited inspector.

A2.1 RECORD DOCUMENT REVIEW

Prior to conducting the visual inspection, PSI typically reviews documents provided by the client, including drawings, floor plans, historical data, maintenance records, previous survey reports, laboratory reports, etc. for information regarding construction history and building materials.

No documents were provided by the client for review as a part of this Asbestos and HAZMAT Survey.

A2.2 VISUAL INSPECTION PROCEDURES

A2.2.1 Asbestos

An initial property walkthrough was conducted to determine the presence of suspect asbestos-containing materials that were accessible and/or exposed within all areas scheduled for upcoming demolition activities.

Materials which were similar in color, texture, general appearance and which appear to have been installed at the same time were grouped in Homogeneous Sampling Areas. Such materials are termed "homogeneous materials" by the EPA. During this walkthrough, the approximate locations of these homogeneous materials were also noted.

The inspector evaluated the overall condition of the material and determined whether the materials were friable or non-friable by touching the material, where practical. A friable material is defined as any material able to be crushed, crumbled, pulverized, or reduced to a powder by hand pressure when dry.

Each material was further assessed for overall condition. Conditions were rated as good, damaged, or significantly damaged. PSI's inspector also identified the EPA NESHAP classification of the material based on the materials current condition. PSI's inspector provided estimated quantities of the materials identified as ACM, based only on materials that were accessible and exposed.

Homogeneous materials/systems may contain an indefinite/indistinguishable number of layers that may not be visually identified by the inspector at the time of the survey. Bulk sample analysis (Appendix B) will report all possible layers that may be contained within the homogeneous materials/system. Therefore, laboratory results may differ from the chain of custody (Appendix C) description.

A2.2.2 HAZMAT Inventory

Materials or equipment that have been traditionally known to contain hazardous or regulated materials such as lead, PCBs, mercury, and CFCs are identified and quantified during the HAZMAT Inventory. These are materials that should be removed, reclaimed, and/or properly disposed of prior to demolition. In addition, inspectors noted containers observed with chemicals subject to disposal regulations or that would pose demolition worker exposure potential, such as cleaners, varnishes, glues, etc.

A2.3 ASBESTOS SAMPLING PROCEDURES

Following the walkthrough, the Inspector collected samples of suspect materials.

Exterior Area (EA) and Functional Space (FS) sampling locations were chosen to be representative of the homogeneous sampling area. While an effort was made to collect samples randomly, samples were taken preferentially from areas already damaged or areas which were the least visible to minimize disturbance of the material.

Each sample location was sprayed with amended water and was kept wet during the entire sampling process. Samples were collected by coring through the material from the surface down to the base substrate. All layers of the material were extracted and placed into a sample container for transport to the laboratory. Sample containers were sealed and labeled with a unique sample identification number. Where appropriate, sampled materials were sealed with an encapsulant or covered with tape after sampling. PSI is not responsible for restoring the sampled areas to their pre-sampled condition.

In accordance with the agreement between PSI and the client, vermiculite insulation was assumed to be an asbestos containing material as part of this survey.

A2.4 ASBESTOS ANALYSIS PROCEDURES

All samples were analyzed by one of the following four pre-approved laboratories:

- Professional Service Industries, Inc.
850 Poplar Street,
Pittsburgh, PA 15220
- Eurofins-CEI Labs, Inc.
730 Southeast Maynard Road,
Cary, NC 27511
- Environmental Testing Laboratories, Inc.
38900 Huron River Drive, Suite 200
Romulus, MI 48174
- Scientific Analytical Institute Inc.
4604 Dundas Drive,
Greensboro, NC 27407

These Laboratories are all National Voluntary Laboratory Accreditation Program (NVLAP) Accredited.

The samples were analyzed for asbestos on a “positive-stop” basis by PLM and in accordance with the “EPA Method for the Determination of Asbestos in Bulk Building Materials” (EPA/600/R-93/116 July 1993). Analysis was performed by observing the bulk samples and slide preparation(s) for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, actinolite/tremolite), and fibrous non-asbestos constituents (mineral wool, fiberglass, cellulose, etc.). Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos 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 EPA method allows samples which are visually determined to have less than 1% asbestos to be quantified using a Point Count procedure. An ocular reticule (cross hair or point array) is used to visually superimpose a point or points on the microscope field of view. A total of 400 points superimposed on either asbestos fibers or non-asbestos matrix material must be counted over at least eight different preparations of representative subsamples. If an asbestos fiber and matrix particle overlap so that a point is superimposed on their visual intersection, a point is scored for both categories. Point counting provides a quantification of the area percent asbestos. Point counted results supersede the results of the visual estimation.

It should be noted that some ACM might not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. Transmission Electron Microscopy (TEM) is recommended for a more definitive analysis of these materials.

A2.4.1 Laboratory Quality Control Program

Each laboratory maintains an in-house quality control program. This program involves blind reanalysis of ten (10) percent of all samples, precision, and accuracy controls, and use of standard bulk reference materials. In addition, the Laboratories are accredited by NVLAP, which also has quality control procedures inherent in its program.

A2.5 REGULATORY GUIDELINES:

ACM Definition –

The EPA and OSHA consider a material to be ACM if at least one sample from the homogeneous area shows asbestos in an amount greater than 1%.

Point Count Quantification –

If a material is found to contain less than 1% asbestos via PLM visual estimation, it can be treated as non-ACM per EPA Regulations, if verified to contain 1% or less asbestos by the Point Count Quantification Procedure. Please refer to the laboratory analyses for a more detailed description of the microscopic analysis of individual samples.

EPA NESHAP Category –

EPA classifies ACM into the following categories:

- **RACM** as defined by the Asbestos NESHAP is any (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
- **Category I Non-friable ACM** includes packings, gaskets, resilient floor covering, and asphalt roofing products which contain more than one percent asbestos.
- **Category II Non-friable ACM** includes any material, except for a Category I non-friable ACM, which contains more than one-percent asbestos and cannot be reduced to a powder by hand pressure when dry.

OSHA –

OSHA requires all suspect materials to be analyzed by layer, even materials such as drywall/joint compound, which may sometimes be composited per the EPA. If any layer contains asbestos in a concentration >1%, the material is considered an ACM.

OSHA has a classification system (I thru IV) for ACM depending on the type of material and the disturbance as follows:

- **Class I** work is defined as activities involving the removal of ACM or presumed ACM (PACM) that is thermal system insulation (TSI) and surfacing materials.
- **Class II** activities involve removal of ACM/PACM other than TSI or surfacing material.
- **Class III** work includes repair and maintenance operations which are likely to disturb ACM/PACM.
- **Class IV** work includes maintenance and custodial activities during which employees contact but do not disturb ACM/PACM.

Materials where asbestos is detected, but where point counting is conducted and determined that the concentration is $\leq 1\%$ asbestos, are not considered to be ACM by OSHA. However, these materials are considered unclassified asbestos work per OSHA. Some OSHA work control practices and prohibitions will still apply, with the extent depending on whether the worker's exposure to airborne asbestos exceeds the OSHA permissible exposure limit (PEL).

Additional details of the OSHA asbestos regulations related to the construction industry can be found in 29 CFR Part 1926.1101.

A2.6 QUANTIFICATION

Quantification of suspect ACMs and HAZMATs were conducted using visual estimation by an accredited asbestos inspector. This visual estimation was performed in accordance with generally accepted practices in the asbestos industry based on materials that were accessible and exposed. These values are sufficiently accurate for the purpose of documenting the presence of asbestos within its space for the purpose of identifying abatement control conditions or for general policy considerations. Actual quantities may differ between visually estimated values and physical measurements. If a licensed asbestos abatement contractor is engaged to remove the identified ACM, they should be made responsible for verifying reported quantities of ACM.

A2.7 HAZMAT CLASSIFICATION

The EPA has determined that some specific wastes are hazardous. These wastes are incorporated into lists published by the EPA. These lists are organized into three categories:

1. The F-list (non-specific source wastes). This list identifies wastes from common manufacturing and industrial processes, such as solvents that have been used in cleaning or degreasing operations. Because the processes producing these wastes can occur in different sectors of industry, the F-listed wastes are known as wastes from non-specific sources. Wastes included on the F-list can be found in the regulations at 40 CFR §261.31.
2. The K-list (source-specific wastes). This list includes certain wastes from specific industries, such as petroleum refining or pesticide manufacturing. Certain sludges and wastewaters from treatment and production processes in these industries are examples of source-specific wastes. Wastes included on the K-list can be found in the regulations at 40 CFR §261.32.
3. The P-list and the U-list (discarded commercial chemical products). These lists include specific commercial chemical products in an unused form. Some pesticides and some pharmaceutical products become hazardous waste when discarded. Wastes included on the P- and U- lists can be found in the regulations at 40 CFR §261.33.

Waste that has not been specifically listed may still be considered a hazardous waste if exhibits one of the four characteristics defined in 40 CFR Part 261 Subpart C - ignitability (D001), corrosivity (D002), reactivity (D003), and toxicity (D004 - D043).

1. Ignitability - Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include waste oils and solvents.

2. Corrosivity - Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels.
3. Reactivity - Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water.
4. Toxicity - Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute ground water. Toxicity is defined through a laboratory procedure called the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311). The TCLP helps identify wastes likely to leach concentrations of contaminants that may be harmful to human health or the environment.

Mercury-containing equipment, mercury containing lamps, batteries and pesticides that are classified as hazardous waste can be collected under the streamlined collection standards for Universal Waste as defined by the EPA in 40 CFR §273. Universal Waste identified as part of this investigation should be removed and either disposed of or recycled in accordance with the EPA.

Light fixture ballasts manufactured through 1979 and those without a "No PCBs" label should be assumed to contain polychlorinated biphenyls (PCBs). The capacitor in the ballast may contain two to three ounces of PCBs. Potting compound (used to dissipate heat from electrical components in the ballast) may be made of waste oil contaminated by PCBs. The Toxic Substances Control Act of 1976 (TSCA) regulates disposal and storage of PCB. Ballasts containing or suspected of containing PCBs should be disposed of at hazardous waste incinerators or chemical waste landfills.

**APPENDIX B – REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS AND
NVLAP CERTIFICATION**

August 2, 2021

PSI Engineering, Consulting, Testing
37483 Interchange Dr.
Farmington Hills, MI 48335

CLIENT PROJECT: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183
-2255
CEI LAB CODE: A2111078

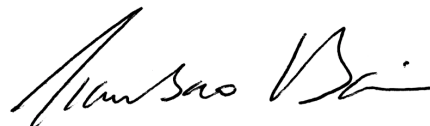
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on July 29, 2021. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH
Laboratory Director



CEI

ASBESTOS ANALYTICAL REPORT

By: Polarized Light Microscopy

Prepared for

PSI Engineering, Consulting, Testing

CLIENT PROJECT: 01661540-1, 22670 Allen Road, Woodhaven, Michigan
48183-2255

LAB CODE: A2111078

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 08/02/21

TOTAL SAMPLES ANALYZED: 25

SAMPLES >1% ASBESTOS:

TOTAL LAYERS ANALYZED: 39



CEI

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 01661540-1, 22670 Allen Road,
Woodhaven, Michigan 48183-2255

LAB CODE: A2111078

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
22670-1A		A158185	Off-white,Brown	Drywall	None Detected
22670-1B		A158186	Off-white,Brown	Drywall	None Detected
22670-2A	Layer 1	A158187	Brown	Ceramic Floor Tile	None Detected
	Layer 2	A158187	Black,Gray	Grout	None Detected
22670-2B	Layer 1	A158188	Brown	Ceramic Floor Tile	None Detected
	Layer 2	A158188	Black,Gray	Grout	None Detected
22670-3A	Layer 1	A158189	Clear	Door And Window Frame Sealant (type 1)	None Detected
	Layer 2	A158189	Gray,Off-white	Door And Window Frame Sealant (type 2)	None Detected
22670-3B	Layer 1	A158190	Clear	Door And Window Frame Sealant (type 1)	None Detected
	Layer 2	A158190	Gray,Off-white	Door And Window Frame Sealant (type 2)	None Detected
22670-4A		A158191	Black,Off-white	Ceiling Tile	None Detected
22670-4B		A158192	Black,Off-white	Ceiling Tile	None Detected
22670-5A		A158193	Off-white,Brown	Ceiling Tile	None Detected
22670-5B		A158194	Off-white,Brown	Ceiling Tile	None Detected
22670-6A	Layer 1	A158195	White	Sink Sealant (type 1)	None Detected
	Layer 2	A158195	Off-white	Sink Sealant (type 2)	None Detected
22670-6B	Layer 1	A158196	White	Sink Sealant (type 1)	None Detected
	Layer 2	A158196	Off-white	Sink Sealant (type 2)	None Detected
22670-7A	Layer 1	A158197	Brown	Ceramic Floor Tile	None Detected
	Layer 2	A158197	Gray	Grout	None Detected
22670-7B	Layer 1	A158198	Brown	Ceramic Floor Tile	None Detected
	Layer 2	A158198	Gray	Grout	None Detected
22670-8A		A158199A	White	Frp	None Detected
		A158199B	Beige	Adhesive	None Detected
22670-8B		A158200A	White	Frp	None Detected
		A158200B	Beige	Adhesive	None Detected
22670-9A	Layer 1	A158201	Gray	Door And Window Frame Sealant (type 1)	None Detected



CEI

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 01661540-1, 22670 Allen Road,
Woodhaven, Michigan 48183-2255

LAB CODE: A2111078

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
	Layer 2	A158201	Off-white	Door And Window Frame Sealant (type 2)	None Detected
22670-9B	Layer 1	A158202	Gray	Door And Window Frame Sealant (type 1)	None Detected
	Layer 2	A158202	Off-white	Door And Window Frame Sealant (type 2)	None Detected
22670-10A		A158203	Off-white	Exterior Seam Sealant	None Detected
22670-10B		A158204	Off-white	Exterior Seam Sealant	None Detected
22670-11A	Layer 1	A158205	Brown,Beige	Brick	None Detected
	Layer 2	A158205	Gray	Mortar	None Detected
22670-11B	Layer 1	A158206	Brown,Beige	Brick	None Detected
	Layer 2	A158206	Gray	Mortar	None Detected
22670-12A		A158207	Off-white,Beige	Stucco	None Detected
22670-12B		A158208	Off-white,Beige	Stucco	None Detected
22670-12C		A158209	Off-white,Beige	Stucco	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
 37483 Interchange Dr.
 Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous	Non-Fibrous			
22670-1A A158185	Drywall	Heterogeneous	27%	Cellulose	60%	Gypsum	None Detected
		Off-white,Brown Fibrous Bound	3%	Fiberglass	10%	Binder	
Lab Notes: No joint compound present.							
22670-1B A158186	Drywall	Heterogeneous	27%	Cellulose	60%	Gypsum	None Detected
		Off-white,Brown Fibrous Bound	3%	Fiberglass	10%	Binder	
Lab Notes: No joint compound present.							
22670-2A Layer 1 A158187	Ceramic Floor Tile	Heterogeneous			15%	Silicates	None Detected
		Brown Non-fibrous Tightly Bound			85%	Binder	
Layer 2 A158187	Grout	Heterogeneous	<1%	Cellulose	55%	Calc Carb	None Detected
		Black,Gray Non-fibrous Bound			35%	Silicates	
22670-2B Layer 1 A158188	Ceramic Floor Tile	Heterogeneous			15%	Silicates	None Detected
		Brown Non-fibrous Tightly Bound			85%	Binder	
Layer 2 A158188	Grout	Heterogeneous	<1%	Cellulose	55%	Calc Carb	None Detected
		Black,Gray Non-fibrous Bound			35%	Silicates	
22670-3A Layer 1 A158189	Door And Window Frame Sealant (type 1)	Heterogeneous			100%	Caulk	None Detected
		Clear Non-fibrous Bound					

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
 37483 Interchange Dr.
 Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous		Non-Fibrous		
Layer 2 A158189	Door And Window Frame Sealant (type 2)	Heterogeneous Gray,Off-white Non-fibrous Bound	95%	Caulk	5%	Binder	None Detected
22670-3B Layer 1 A158190	Door And Window Frame Sealant (type 1)	Heterogeneous Clear Non-fibrous Bound	100%	Caulk			None Detected
Layer 2 A158190	Door And Window Frame Sealant (type 2)	Heterogeneous Gray,Off-white Non-fibrous Bound	95%	Caulk	5%	Binder	None Detected
22670-4A A158191	Ceiling Tile	Heterogeneous Black,Off-white Fibrous Bound	15% 65%	Cellulose Fiberglass	20%	Binder	None Detected
22670-4B A158192	Ceiling Tile	Heterogeneous Black,Off-white Fibrous Bound	15% 65%	Cellulose Fiberglass	20%	Binder	None Detected
22670-5A A158193	Ceiling Tile	Heterogeneous Off-white,Brown Fibrous Bound	30% 3%	Cellulose Fiberglass	60% 5% 2%	Gypsum Vinyl Mica	None Detected
22670-5B A158194	Ceiling Tile	Heterogeneous Off-white,Brown Fibrous Bound	30% 3%	Cellulose Fiberglass	60% 5% 2%	Gypsum Vinyl Mica	None Detected



CEI

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
37483 Interchange Dr.
Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
22670-6A Layer 1 A158195	Sink Sealant (type 1)	Heterogeneous White Non-fibrous Bound	100%	Caulk	None Detected
Layer 2 A158195	Sink Sealant (type 2)	Heterogeneous Off-white Non-fibrous Bound	100%	Caulk	None Detected
22670-6B Layer 1 A158196	Sink Sealant (type 1)	Heterogeneous White Non-fibrous Bound	100%	Caulk	None Detected
Layer 2 A158196	Sink Sealant (type 2)	Heterogeneous Off-white Non-fibrous Bound	100%	Caulk	None Detected
22670-7A Layer 1 A158197	Ceramic Floor Tile	Heterogeneous Brown Non-fibrous Tightly Bound	15% 85%	Silicates Binder	None Detected
Layer 2 A158197	Grout	Heterogeneous Gray Non-fibrous Bound	<1% 55% 35% 10%	Cellulose Calc Carb Silicates Binder	None Detected
22670-7B Layer 1 A158198	Ceramic Floor Tile	Heterogeneous Brown Non-fibrous Tightly Bound	15% 85%	Silicates Binder	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
 37483 Interchange Dr.
 Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous	Non-Fibrous			
Layer 2 A158198	Grout	Heterogeneous Gray Non-fibrous Bound	<1%	Cellulose	55%	Calc Carb 35% Silicates 10% Binder	None Detected
22670-8A A158199A	Frp	Homogeneous White Non-fibrous Tightly Bound	15%	Fiberglass	75%	Vinyl 10% Binder	None Detected
A158199B	Adhesive	Homogeneous Beige Non-fibrous Bound	<1%	Cellulose	100%	Mastic	None Detected
22670-8B A158200A	Frp	Homogeneous White Non-fibrous Tightly Bound	15%	Fiberglass	75%	Vinyl 10% Binder	None Detected
A158200B	Adhesive	Homogeneous Beige Non-fibrous Bound	<1%	Cellulose	100%	Mastic	None Detected
22670-9A Layer 1 A158201	Door And Window Frame Sealant (type 1)	Heterogeneous Gray Non-fibrous Bound			100%	Caulk	None Detected
Layer 2 A158201	Door And Window Frame Sealant (type 2)	Heterogeneous Off-white Non-fibrous Bound			95% 5%	Caulk Binder	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
 37483 Interchange Dr.
 Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
22670-9B Layer 1 A158202	Door And Window Frame Sealant (type 1)	Heterogeneous	100%	Caulk	None Detected
		Gray Non-fibrous Bound			
Layer 2 A158202	Door And Window Frame Sealant (type 2)	Heterogeneous	95%	Caulk	None Detected
		Off-white Non-fibrous Bound	5%	Binder	
22670-10A A158203	Exterior Seam Sealant	Heterogeneous	95%	Caulk	None Detected
		Off-white Non-fibrous Bound	5%	Paint	
22670-10B A158204	Exterior Seam Sealant	Heterogeneous	95%	Caulk	None Detected
		Off-white Non-fibrous Bound	5%	Paint	
22670-11A Layer 1 A158205	Brick	Heterogeneous	15%	Silicates	None Detected
		Brown,Beige Non-fibrous Tightly Bound	85%	Binder	
Layer 2 A158205	Mortar	Heterogeneous	<1%	Cellulose	None Detected
		Gray Non-fibrous Bound	55%	Calc Carb	
22670-11B Layer 1 A158206	Brick	Heterogeneous	15%	Silicates	None Detected
		Brown,Beige Non-fibrous Tightly Bound	85%	Binder	



CEI

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: PSI Engineering, Consulting, Testing
37483 Interchange Dr.
Farmington Hills, MI 48335

Lab Code: A2111078
Date Received: 07-29-21
Date Analyzed: 08-02-21
Date Reported: 08-02-21

Project: 01661540-1, 22670 Allen Road, Woodhaven, Michigan 48183-2255

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 A158206	Mortar	Heterogeneous Gray Non-fibrous Bound	<1%	Cellulose	55%	Calc Carb	None Detected
					35%	Silicates	
					10%	Binder	
22670-12A A158207	Stucco	Heterogeneous Off-white,Beige Fibrous Bound	5%	Fiberglass	40%	Calc Carb	None Detected
					50%	Foam	
					5%	Paint	
22670-12B A158208	Stucco	Heterogeneous Off-white,Beige Fibrous Bound	5%	Fiberglass	40%	Calc Carb	None Detected
					50%	Foam	
					5%	Paint	
22670-12C A158209	Stucco	Heterogeneous Off-white,Beige Fibrous Bound	5%	Fiberglass	40%	Calc Carb	None Detected
					50%	Foam	
					5%	Paint	

LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

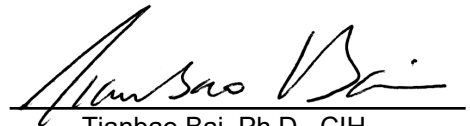
Information provided by customer includes customer sample ID and sample description.

ANALYST:



Scott Minyard

APPROVED BY:



Tianbao Bai, Ph.D., CIH
Laboratory Director

APPENDIX C – ASBESTOS BULK SAMPLE LOG/CHAIN OF CUSTODY

APPENDIX D – OSHA ABATEMENT PROCEDURES

Excerpt of 29 CFR 1926.1011 Asbestos Construction Standard – asbestos removal methods

Subpart Z—Toxic and Hazardous Substances

AUTHORITY: Sec. 107, Contract Work Hours and Safety Standards Act (40 U.S.C. 333); Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order Nos. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 35736), 1-90 (55 FR 9033), or 6-96 (62 FR 111), as applicable; 29 CFR part 1911. Section 1926.1102 not issued under 29 U.S.C. 655 or 29 CFR part 1911; also issued under 5 U.S.C. 553.

SOURCE: 58 FR 35190, June 30, 1993, unless otherwise noted.

§ 1926.1100 [Reserved] § 1926.1101 Asbestos.

(5) *Specific control methods for Class I work.* In addition, Class I asbestos work shall be performed using one or more of the following control methods pursuant to the limitations stated below:

(i) Negative Pressure Enclosure (NPE) systems: NPE systems may be used where the configuration of the work area does not make the erection of the enclosure infeasible, with the following specifications and work practices.

(A) *Specifications:*

- (1) The negative pressure enclosure (NPE) may be of any configuration,
- (2) At least 4 air changes per hour shall be maintained in the NPE,
- (3) A minimum of 0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements,
- (4) The NPE shall be kept under negative pressure throughout the period of its use, and
- (5) Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

(B) *Work Practices:*

- (1) Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed.
- (2) Electrical circuits in the enclosure shall be deactivated, unless equipped with ground-fault circuit interrupters.
- (ii) Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices:
(A) *Specifications:*

- (1) Glovebags shall be made of 6 mil

thick plastic and shall be seamless at the bottom.

(2) Glovebags used on elbows and other connections must be designed for that purpose and used without modifications.

(B) *Work Practices:*

- (1) Each glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
- (2) Glovebags shall be smoke-tested for leaks and any leaks sealed prior to use.
- (3) Glovebags may be used only once and may not be moved.
- (4) Glovebags shall not be used on surfaces whose temperature exceeds 150 °F.

(5) Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum.

(6) Before beginning the operation, loose and friable material adjacent to the glovebag/box operation shall be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact,

(7) Where system uses attached waste bag, such bag shall be connected to collection

bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity:

(8) Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected:

(9) At least two persons shall perform Class I glovebag removal operations.

(iii) *Negative Pressure Glove Bag Systems.*

Negative pressure glove bag systems may be used to remove ACM or PACM from piping.

(A) *Specifications:* In addition to specifications

for glove bag systems above, negative pressure glove bag systems shall attach HEPA vacuum systems or other devices to bag to prevent collapse during removal.

(B) *Work Practices:* (1) The employer shall comply with the work practices for glove bag systems in paragraph (g)(5)(ii)(B)(4) of this section.

(2) The HEPA vacuum cleaner or other device used to prevent collapse of bag during removal shall run continually during the operation until it is completed at which time the bag shall be collapsed prior to removal of the bag from the pipe.

(3) Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

(iv) *Negative Pressure Glove Box*

Systems: Negative pressure glove boxes may be used to remove ACM or PACM from pipe runs with the following specifications and work practices.

(A) *Specifications:*

(1) Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal:

(2) A negative pressure generator shall be used to create negative pressure in the system:

(3) An air filtration unit shall be attached to the box:

(4) The box shall be fitted with gloved apertures:

(5) An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water:

(6) A back-up generator shall be present on site:

(7) Waste bags shall consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.

(B) *Work practices:*

(1) At least two persons shall perform the removal:

(2) The box shall be smoke-tested for leaks and any leaks sealed prior to each use.

(3) Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job.

(4) A HEPA filtration system shall be used to maintain pressure barrier in box.

(v) *Water Spray Process System.* A water spray process system may be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. The system shall meet the following specifications and shall be performed by employees using the following work practices.

(A) *Specifications:*

(1) Piping shall be surrounded on 3 sides by rigid framing,

(2) A 360 degree water spray, delivered through nozzles supplied by a high pressure separate water line, shall be formed around the piping.

(3) The spray shall collide to form a fine aerosol which provides a liquid barrier between workers and the ACM and PACM.

(B) *Work Practices:*

(1) The system shall be run for at least 10 minutes before removal begins.

(2) All removal shall take place within the water barrier.

(3) The system shall be operated by

Excerpt of 29 CFR 1926.1011 Asbestos Construction Standard – asbestos removal methods

at least three persons, one of whom shall not perform removal, but shall check equipment, and ensure proper operation of the system.

(4) After removal, the ACM and PACM shall be bagged while still inside the water barrier.

(vi) A small walk-in enclosure which accommodates no more than two persons

(mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices.

(A) *Specifications:*

(1) The fabricated or job-made enclosure shall be constructed of 6 mil plastic or equivalent:

(2) The enclosure shall be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit:

(B) *Work practices:*

(1) Before use, the mini-enclosure shall be inspected for leaks and smoketested to detect breaches, and any breaches sealed.

(2) Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed..

(3) During use, air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

(6) *Alternative control methods for Class I work.* Class I work may be performed using a control method which is not referenced in paragraph (g)(5) of this section, or which modifies a control method referenced in paragraph (g)(5) of this section, if the following provisions are complied with:

(i) The control method shall enclose, contain or isolate the processes or source of airborne asbestos dust, or otherwise capture or redirect such dust before it enters the breathing zone of employees.

(ii) A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer as defined in paragraph (b) of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in

Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (g)(4)(ii)(B) of this section.

(A) Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less , the evaluation required

in paragraph (g)(6) of this section may be performed by a "competent person", and may omit consideration of perimeter or clearance monitoring otherwise required.

(B) The evaluation of employee exposure required in paragraph (g)(6) of this section, shall include and be based on sampling and analytical data representing

employee exposure during the use of such method under worstcase conditions and by employees whose training and experience are equivalent to employees who are to perform the current job.

(iii) Before work which involves the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of a paragraph (g)(6) of this section required evaluation and certification, the employer shall send a copy of such evaluation and certification to the national office of OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW, Washington, DC 20210. The submission shall not constitute approval by OSHA.

(7) Work Practices and Engineering Controls for Class II work.

(i) All Class II work shall be supervised by a competent person as defined in paragraph (b) of this section.

(ii) For all indoor Class II jobs, where the employer has not produced a negative exposure assessment pursuant to paragraph (f)(2)(iii) of this section, or where during the job, changed conditions

indicate there may be exposure above the PEL or where the employer does not remove the ACM in a substantially intact state, the employer shall use one of the following methods to ensure

that airborne asbestos does not migrate from the regulated area;

(A) Critical barriers shall be placed over all openings to the regulated area; or,

(B) The employer shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance

monitoring which meets the criteria set out in paragraph (g)(4)(ii)(B) of this section.

(C) Impermeable dropcloths shall be placed on surfaces beneath all removal activity;

(iii) [Reserved]

(iv) All Class II asbestos work shall be performed using the work practices and requirements set out above in paragraph (g)(1) (i) through (g)(1)(iii) of this section.

(8) *Additional Controls for Class II work.* Class II asbestos work shall also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed, set out in this paragraph. Where more than one control method may be used for a type of asbestos work, the employer may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

(i) For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, the employer has not verified the absence of ACM pursuant to paragraph (g)(8)(i)(I) of this section. The employer shall ensure that employees comply with the following work practices and that employees are trained in these practices pursuant to paragraph (k)(9):

(A) Flooring or its backing shall not be sanded.

(B) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors.

(C) Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.

(D) All scraping of residual adhesive and/or backing shall be performed using wet methods.

(E) Dry sweeping is prohibited.

(F) Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirements of paragraph (g)(5)(i) of this section.

(G) Tiles shall be removed intact, unless the employer demonstrates that intact removal is not possible.

(H) When tiles are heated and can be removed intact, wetting may be omitted.

(I) Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist

Excerpt of 29 CFR 1926.1011 Asbestos Construction Standard – asbestos removal methods

determines that it is asbestos-free using recognized analytical techniques.

(ii) For removing roofing material which contains ACM the employer shall ensure that the following work practices are followed:

(A) Roofing material shall be removed in an intact state to the extent feasible.

(B) Wet methods shall be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.

(C) Cutting machines shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.

(D) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation shall be collected by a HEPA dust collector, or shall be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation shall be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still-wet dust and debris left along the cut line. The dust and debris shall be immediately bagged or placed in covered containers.

(E) Asbestos-containing material that has been removed from a roof shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist:

(1) Any ACM that is not intact shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

(2) Intact ACM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

(F) Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

(G) Roof level heating and ventilation air intake sources shall be isolated

or the ventilation system shall be shut down.

(H) Notwithstanding any other provision of this section, removal or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming as long as manual methods which do not render the material nonintact

are used to remove the material and no visible dust is created by the removal method used. In determining whether a job involves less than 25 square feet, the employer shall include all removal and repair work performed on the same roof on the same day.

(iii) When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs, where paragraph (g)(8)(ii) of this section applies) the employer shall ensure that the following work practices are followed:

(A) Cutting, abrading or breaking siding, shingles, or transite panels, shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.

(B) Each panel or shingle shall be sprayed with amended water prior to removal.

(C) Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

(D) Nails shall be cut with flat, sharp instruments.

(iv) When removing gaskets containing ACM, the employer shall ensure that the following work practices are followed:

(A) If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag as described in paragraph (g)(5)(ii) of this section.

(B) [Reserved]

(C) The gasket shall be immediately placed in a disposal container.

(D) Any scraping to remove residue must be performed wet.

(v) When performing any other Class II removal of asbestos containing material

for which specific controls have not been listed in paragraph (g)(8)(iv)

(A) through (D) of this section, the employer shall ensure that the following work practices are complied with.

(A) The material shall be thoroughly wetted with amended water prior to and during its removal.

(B) The material shall be removed in an intact state unless the employer demonstrates that intact removal is not possible.

(C) Cutting, abrading or breaking the material shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.

(D) Asbestos-containing material removed, shall be immediately bagged or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the work shift.

(vi) *Alternative Work Practices and Controls*. Instead of the work practices and controls listed in paragraph (g)(8)

(i) through (v) of this section, the employer may use different or modified engineering and work practice controls if the following provisions are complied with.

(A) The employer shall demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure

will not exceed the PELs under any anticipated circumstances.

(B) A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall certify in writing, that the different or modified controls are adequate

to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements

of this standard. The evaluation shall include and be based on data representing

employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees

whose training and experience are equivalent to employees who are to perform the current job.

(9) *Work Practices and Engineering Controls for Class III asbestos work*. Class

III asbestos work shall be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.

(i) The work shall be performed using wet methods.

(ii) To the extent feasible, the work

Excerpt of 29 CFR 1926.1011 Asbestos Construction Standard – asbestos removal methods

shall be performed using local exhaust ventilation.

(iii) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, the employer shall use impermeable dropcloths, and shall isolate the operation using mini-enclosures or glove bag systems pursuant to paragraph (g)(5) of this section or another isolation method.

(iv) Where the employer does not produce a “negative exposure assessment” for a job, or where monitoring results show the PEL has been exceeded, the employer shall contain the area using impermeable dropcloths and plastic barriers or their equivalent, or shall isolate the operation using a control system listed in and in compliance with paragraph (g)(5) of this section.

(v) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a “negative exposure assessment”

or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.

(10) *Class IV asbestos work.* Class IV asbestos jobs shall be conducted by employees trained pursuant to the asbestos awareness training program set out in paragraph (k)(9) of this section. In addition, all Class IV jobs shall be conducted

in conformity with the requirements set out in paragraph (g)(1) of this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM or PACM.

(i) Employees cleaning up debris and waste in a regulated area where respirators

are required shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.

(ii) Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, shall assume that such waste and debris contain asbestos.

(11) *Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline*

coating materials. Notwithstanding any other provision of this section, an

employer who complies with all provisions of this paragraph (g)(11) when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof flashings which contain asbestos fibers encapsulated or coated by bituminous

or resinous compounds shall be deemed to be in compliance with this section. If an employer does not comply with all provisions of this paragraph (g)(11) or if during the course of the job the material does not remain intact, the provisions of paragraph (g)(8) of this section apply instead of this paragraph (g)(11).

(i) Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards

in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.

(ii) All employees performing work covered by this paragraph (g)(11) shall be trained in a training program that meets the requirements of paragraph (k)(9)(viii) of this section.

(iii) The material shall not be sanded, abraded, or ground. Manual methods which do not render the material non-intact shall be used.

(iv) Material that has been removed from a roof shall not be dropped or thrown to the ground. Unless the material

is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist. All such material shall be removed from the roof as soon as is practicable, but in any event no later than the end of the work shift.

(v) Where roofing products which have been labeled as containing asbestos pursuant to paragraph (k)(8) of this section are installed on non-residential roofs during operations covered by this paragraph (g)(11), the employer shall notify the building owner of the presence and location of such materials no later than the end of the job.

(vi) All removal or disturbance of pipeline asphaltic wrap shall be performed using wet methods.

(h) *Respiratory protection.* (1) *General.* For employees who use respirators required

by this section, the employer must provide respirators that comply with the requirements of this paragraph. Respirators must be used during:

(i) Class I asbestos work.

(ii) Class II asbestos work when ACM is not removed in a substantially intact state.