

**Asbestos Abatement, Lead-Based  
Paint Removal, and Paint Surface  
Preparation Work Plan**

**City of Fort Collins  
Bobcat Ridge Natural Area  
Residential and Out-building  
Structures  
8281 West County Road 32 C  
Larimer County, Colorado**

WALSH Project Number: 5396-020  
June 29, 2006



Environmental Scientists and Engineers, LLC

**ASBESTOS ABATEMENT, LEAD-BASED PAINT REMOVAL,  
AND PAINT SURFACE PREPARATION WORK PLAN**

**CITY OF FORT COLLINS  
BOBCAT RIDGE NATURAL AREA  
RESIDENTIAL AND OUT-BUILDING STRUCTURES  
8281 WEST COUNTY ROAD 32 C  
LARIMER COUNTY, COLORADO**

June 29, 2006

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## ACRONYM/ABBREVIATION LIST

The following acronyms and abbreviations have been used in this Work Plan for the Bobcat Ridge Natural Area property located in Larimer County, Colorado:

ACM	Asbestos-Containing Material
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
DOT	United States Department of Transportation
f/cc	fibers per cubic centimeter
f/m <sup>3</sup>	fibers per cubic meter
HEPA	High Efficiency Particulate Air
HUD	United States Department of Housing and Urban Development
LBP	Lead-Based Paint
LF	Linear Feet
MAAL	Maximum Allowable Asbestos Level
mg/cm <sup>2</sup>	milligrams per square centimeter
NAM	Negative Air Machine
NIOSH	National Institute for Occupational Safety and Health
OSHA	United States Department of Labor, Occupational Safety and Health Administration
Owner	City of Fort Collins
PCM	Phase Contrast Microscopy
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
SF	Square Feet
SITE	8281 West County Road 32 C
s/mm <sup>2</sup>	structures per square millimeter
TEM	Transmission Electron Microscopy
TWA	Time-Weighted Average
US	United States
USEPA	US Environmental Protection Agency
WALSH	Walsh Environmental Scientists and Engineers, LLC
XRF	X-Ray Fluorescence
µg/m <sup>3</sup>	micrograms per cubic meter

# **ASBESTOS ABATEMENT, LEAD-BASED PAINT REMOVAL, AND PAINT SURFACE PREPARATION WORK PLAN**

## **CITY OF FORT COLLINS BOBCAT RIDGE NATURAL AREA RESIDENTIAL AND OUT-BUILDING STRUCTURES 8281 WEST COUNTY ROAD 32 C LARIMER COUNTY, COLORADO**

### **1 INTRODUCTION**

Walsh Environmental Scientists and Engineers, LLC (WALSH) conducted a pre-demolition/renovation building inspection on April 12, 2006 at the Bobcat Ridge Natural Area property located at 8281 West County Road 32 C in Larimer County, Colorado (SITE). The scope of work of the inspection consisted of a visual assessment and collecting bulk samples of suspected building materials, performing screening for lead-based paint (LBP) with a portable X-ray fluorescence (XRF) analyzer, and sampling of the anticipated demolition debris to determine lead content. Two structures were inspected at the SITE including the residence and an out-building. The intent of this phase of the project is to remove asbestos-containing materials (ACM), to remove LBP to reduce the overall lead content present in the structures, and to prepare select exterior portions of the structures for repainting.

### **2 SCOPE OF WORK**

#### **2.1 ASBESTOS ABATEMENT**

The work specified herein shall be the removal of ACMs by competent persons trained, knowledgeable, and qualified in the techniques of asbestos abatement. This includes the handling and disposal of asbestos containing and ACMs and the subsequent cleaning of contaminated areas. The abatement contractor (Contractor) must comply with all applicable federal, state, and local regulations, and be capable of performing the work specified in this Work Plan. The Contractor is responsible to obtain all necessary permits and make all required notifications.

##### **2.1.1 ACM and Materials Containing Trace Amounts of Asbestos to be Removed**

The following table lists the locations, materials, percentage, and type of asbestos, as well as the approximate quantities of ACM and materials containing trace amounts of asbestos to be removed.

**TABLE 1  
ACM AND MATERIALS CONTAINING TRACE AMOUNTS OF ASBESTOS  
TO BE REMOVED**

<b>Material Description</b>	<b>Material Location*</b>	<b>Material Type</b>	<b>Friability</b>	<b>Percentage and Type of Asbestos</b>	<b>Approximate Quantity**</b>
MA02 – Black Pliable Adhesive	Kitchen and Bathroom	Miscellaneous	Category II Non-friable	10% Chrysotile	250 SF
OT01 – White Finishing Mud on Fiber Board	Upstairs Rooms, Stairway Front Entry Room (Ceiling), and SE Bedroom (Ceiling)	Miscellaneous	Category II Non-friable	1.75% - 2% Chrysotile (Point Count)	1,000 SF
RSL01 – Black Tar Roof Sealant	Roof Penetrations and Seams	Miscellaneous	Category I Non-friable	10% Chrysotile	150 LF
SVF03 – Yellow and Cream Mottled Sheet Vinyl Flooring	Bathroom and Laundry Room	Miscellaneous	Friable	20% Chrysotile	100 SF
WG01 – Olive Window Glazing	Exterior Windows on portion to be demolished	Miscellaneous	Category II Non-friable	0.25% to 0.5% Chrysotile (Point Count)	176 LF

SF = Square Feet

LF = Linear Feet

\* Please see the figures included in Appendix A for approximate locations of ACMs

\*\* The quantities identified above are approximate and are for estimating purposes only

### 2.1.2 Work Procedures

The materials MA02 – black pliable adhesive, RSL01 – black tar roof sealant, and WG01 – olive window glazing may be removed utilizing non-friable component removal techniques. Full containment controls are required for the removal of the materials OT01 – White Finishing Mud on Fiber Board and SVF03 – Yellow and Cream Mottled Sheet Vinyl Flooring. The following procedures must be adhered to at a minimum, but all work is to be performed according to Colorado Department of Public Health and Environment (CDPHE) - Regulation No. 8, The Control of Hazardous Air Pollutants, Part B, The Control of Asbestos, 5 CCR 1001-10, Part B, effective March 2, 2005 (Regulation 8) and all other applicable laws and regulations:

- Put in place a fully operational decontamination unit contiguous with the work area, place and start a sufficient number of high efficiency particulate air (HEPA) equipped negative air machines (NAM) to ventilate the work area, pre-clean and then construct and place critical barriers, impart a negative pressure differential between the work area and all surrounding areas. NAM exhaust must be discharged to the outside of the buildings at all times.

- All surfaces within the work area shall be thoroughly HEPA vacuumed and wet-wiped so that no visible dust or debris remains. All moveable objects must be removed from work area prior to containment construction by the Contractor.
- Proceed with containment construction and establish a negative pressure differential of at least -0.030 inches of water. The containment must stand for a minimum of two hours with -0.030 inches of water negative pressure prior to the pre-abatement inspection being performed. After passing a pre-abatement visual inspection, gross removal and final cleaning can commence. All materials will be removed by hand using wet methods.

Final air clearance samples will utilize phase contrast microscopy (PCM) as the analytical technique. All clearance air monitoring will be conducted according to specifications outlined in Regulation 8.

The staging area for equipment and personnel will be at the closest entrance to the work area or an area determined by the Owner. Security for any equipment and/or vehicles left on-site is the responsibility of the Contractor. The Owner will not be responsible for theft or vandalism of Contractor's equipment that is left on-site.

Project hours will be 7:00 A.M. to 5:00 P.M., Monday through Friday. If any work is to be completed outside of these specified work hours, it must be approved in writing prior to being initiated. In addition, the Contractor shall bear any costs incurred by Owner/Owners representative required to staff the project which are outside of the specified work hours.

### **2.1.3 Special Considerations**

Electricity (115 volt) is available at the SITE. The Contractor is responsible for all costs related to providing any rework wiring required. Any rework wiring required must be performed by a qualified and licensed electrician.

Potable water is not available at the SITE. It is necessary that the Contractor provide all water for the removal process, as well as potable water for the decontamination unit.

A sanitary sewer service is not available for the discharge of filtered waste water. It is required that all filtered waste water be collected and discharged into a sanitary sewer at another location or disposed of properly.

Upon project completion all structures must be secured by the Contractor (boarding up windows, doors, etc.).

### **2.1.4 Inspections by Owner/Owners Representative**

Project inspection requirements are summarized below.

- When required by Owner/Owners representative, the Contractor shall take down or uncover portions of the finished work. If the work thus exposed is satisfactory to Owner/Owners representative, the cost of exposing and restoring the same shall be at the expense of Owner.



Alternatively, if in the opinion of Owner/Owners representative, the work is unsatisfactory, all cost and expenses of exposing, removing, re-testing, replacing, and restoring shall be borne by the Contractor.

- Any omission or failure on the part of Owner/Owners representative to disapprove or reject any inferior or defective work or material shall not be construed to be an acceptance of any such work or materials. The Contractor shall remove at its own expense any defective work or material rejected by Owner/Owners representative and shall rebuild or replace the same without extra charge to Owner/Owners representative. All applicable costs for re-testing an area for clearance purposes shall be performed at the Contractor's expense.
- All inspections shall take place during specified work hours. If inspections occur outside/past specified project hours, the Contractor shall bear all costs incurred by Owner/Owners representative.
- Where the Owner/Owners representative has an on-site representative, the Contractor shall give the Owner/Owners representative two hours advance notice of an impending inspection. Where the Owner/Owners representative does not have an on-site representative present, then a twenty-four hour advance notice of impending inspection is required. Contractor shall request in writing required Owner/Owners representative inspections including the time and date of the requested inspection.
- If the visual inspection detects items to be corrected the area will be termed "failed" and will need to have corrective action taken by the Contractor.
- The Contractor must allow for a two hour notice period before the re-inspection of the failed area may begin (this requirement may be waived by Owner/Owners representative). Items of work requiring inspection sign-off by Owner/Owners representative include:
  - Pre-Abatement (Area Preparation and Containment) Inspection - Removal of asbestos and necessary demolition shall not take place until Owner/Owners representative has inspected area preparation work and given approval.
  - Final Visual Inspection - The area shall not be encapsulated or locked down until Owner/Owners representative has inspected and given approval of the final cleaning and area decontamination. The containment must be completely dry, during the inspection with no water droplets, remains or saturation on polyethylene sheeting or other surfaces in the containment.
- The inspections are listed in the applicable above paragraphs. A punch list of items to be corrected resulting from the "failed" inspection, will be prepared jointly by the Contractor and Owner/Owners representative prior to final acceptance of the project by the Owner/Owners representative. Inspections shall in no way be construed as final or partial acceptance by Owner/Owners representative. Any failure or omission of the

Owner/Owners representative to notify the Contractor of defective work shall not excuse Contractor for liability for such defective work.

- It will be necessary that the Contractor successfully confine fiber release to the designated work area and within the containment. Owner/Owners representative obligations are solely to Owner/Owners representative. In meeting such obligations Owner/Owners representative may increase the burdens and expense of the Contractor, his sub-contractors or employees, or the surety of them. Nothing in the performance of Owner/Owners representative services in connection with this project implies the undertaking for the benefit of, or which may be enforced by, the Contractor, his sub-contractors, or employees, or the surety of any of them. It is not the function of Owner/Owners representative to specify all of the means by which the Contractor will attain the intended results, nor to state all of the environmental conditions that must be present for the safety of workers who are employed to produce the intended results, or for the safety of others during construction. The Contractor shall establish means and environmental conditions that meet all applicable laws and regulations.
- The Contractor is required to remove all specified ACM. Any ACM, debris or contaminated materials, missed, not accessed or abated thoroughly, and later discovered by the Owner/Owners representative, will be corrected by the Contractor at no cost to the Owner/Owners representative.
- The Owner/Owners representative will provide final visual inspection for the work area and Work Area Clearance sampling for the work area. Samples exceeding 0.010 fibers per cubic centimeter (f/cc) will be deemed to have failed, and must be re-cleaned and re-tested. Contractor may, on the approval of the Owner/Owners representative, have the work area re-sampled and analyzed by Transmission Electron Microscopy (TEM) if it will not interfere with the project schedule. Cost for TEM analysis will be the responsibility of the Contractor.
- The Contractor may be charged for any re-inspections and/or re-sampling of the work areas at the discretion of the Owner.

### **2.1.5 Maximum Allowable Asbestos Level (MAAL)**

Outside Work Area: If any air sample taken outside of the work area exceeds the CDPHE maximum allowable asbestos level (MAAL), immediately and automatically stop all work except corrective action. The Owner/Owners representative will determine the source of the high reading and so notify the Contractor in writing.

- Maximum Allowable Asbestos Level
  - Air monitoring shall be conducted during normal occupancy and samples shall not be collected in an aggressive manner.
  - Where PCM is used as the method of analysis the standard is 0.010 f/cc of air which is equivalent to 10,000 fibers per cubic meter of air (f/m<sup>3</sup>). The

National Institute for Occupational Safety and Health (NIOSH) 7400 Method shall be used to analyze samples. The number of samples to be taken shall be determined by the air monitoring specialist. Where TEM is used as the method of analysis, the standard is 70 structures per square millimeter (s/mm<sup>2</sup>). TEM analysis shall be conducted pursuant to the protocol in 40 Code of Federal Regulations (CFR) Part 763, Appendix A to Subpart E.

- All air monitoring samples collected for MAAL and clearance purposes shall be performed by the Owners representative who is independent of the general abatement contractor to avoid possible conflict of interest.
- In the event that airborne fiber levels outside a work area exceed the MAAL when analyzed by Phase Contract Microscopy (PCM) (and verified by TEM), the Contractor shall comply with CDPHE requirements for Major Asbestos Spills (Regulation 8 Section III.T.1). If the high reading was the result of a failure of work area isolation measures initiate the following actions:
  - Immediately erect critical barriers to isolate the affected area from the balance of the building and establish a negative pressure differential. Erect critical barriers at the next existing structural isolation of the involved space (e.g. ceiling, floor, and wall).
  - Decontaminate the affected area.
  - Require that respiratory protection be worn in affected area until area is cleared for re-occupancy.
  - Leave critical barriers in place until completion of work and insure that the operation of the pressure differential system in the area results in a flow of air from the balance of the building into the affected area.
  - If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a shower room and change room at entry point to affected area.
  - After certification of visual inspection in the area, final clearance air samples will be taken within the area.
- In the event that areas beyond the work area become contaminated with asbestos, or asbestos-containing dust/debris, and/or visible emissions from the work area, the Contractor shall be responsible for all costs associated with cleaning and subsequent testing (visual inspection, air sampling, and bulk analysis) of these areas.
- If the high reading was the result of other causes, Contractor shall initiate corrective action as required by the Owner/Owners representative.

Effect on Contract Sum: Complete corrective work with no change in the contract sum if high airborne fiber counts were caused by Contractors activities. The contract sum and schedule will be adjusted for additional work caused by high airborne fiber counts beyond the Contractors control. Contractor is responsible for all costs associated with TEM verification where PCM samples exceed 0.010 f/cc, and any subsequent cleaning and additional sampling costs regardless of TEM sample results.

### 2.1.6 Submittals

The following sections detail the required submittals for the asbestos abatement portion of the project.

#### 2.1.6.1 Plan of Action

Prior to the start of work, the Contractor shall prepare a brief plan of the procedures proposed for use in complying with the requirements of this work plan and all applicable regulations. Include in the plan the sequencing of asbestos work (containments and work areas), methods to be used to assure the safety of building occupants and visitors to the SITE, disposal plan including staging and waste load-out procedures, and location of approved disposal facility. Expand upon the method of removal to prohibit visible emissions. The Contractor is solely responsible for construction means, methods, techniques and sequences, and procedures with respect to complying with all applicable regulations.

#### 2.1.6.2 Technical Submittals

The Contractor shall submit all technical documentation as specified in this section using the list and schedule provided below.

<b>Pre-start Submittals</b>	<b>Daily Submittals</b>	<b>Contract Closeout</b>
<b>(Minimum five days prior)</b>	<b>(Daily for the previous day)</b>	<b>(Two weeks after)</b>
Respiratory Protection Program	Daily Field Logs	Disposal Manifests
Hazard Communication Program	Daily Entry/Exit Sign-in Sheets	Owner's Final Inspection
Medical Response Program	Visitor Documentation Forms	Change Orders
General Abatement Certificate	Event Condition Report	
List of Personnel to be Used	24-hour Manometer Chart	
Personnel Certifications	Personal Air Monitoring Results	
Plan of Action	Accident Reports	
Project Sequencing and Schedule	Photographs (digital)	
Disposal Facility Information		

## 2.2 LBP REMOVAL AND PAINT SURFACE PREPARATION

The U.S. Environmental Protection Agency (USEPA), CDPHE, OSHA, and other agencies define LBP as paint having a lead content of greater than or equal to 1.0 milligrams per square centimeter ( $\text{mg}/\text{cm}^2$ ) using XRF techniques. Select typical painted components of the structures were evaluated for the presence of LBP. A table included in Appendix B provides a summary of the painted components screened for lead at the SITE and the screening results. XRF analysis results identified several components that contained lead above the  $1.0 \text{ mg}/\text{cm}^2$  level. The paint on the structures was observed to range from a fair to very poor condition.

The work specified herein shall be the LBP removal and surface preparation for repainting at the SITE. The work must be performed by persons trained, knowledgeable, and qualified in the techniques of LBP removal, surface preparation, waste disposal, and U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) lead compliance. The paint to be removed and surface prepared for repainting are described in the Section 2.2.1. The Contractor is responsible for determining exact quantities of paint to be removed and quantities of surfaces of paint to be prepared for repainting.

The activities described in this Work Plan are not intended to permanently contain or eliminate the LBP hazard and therefore is not a State of Colorado Regulation 19 “Abatement Project.” Instead activities are intended to remove LBP to reduce the overall lead content present in the structures prior to demolition, as well as prepare and restore painted exterior portions of the structures while adhering to the OSHA regulations, Resource Conservation and Recovery Act (RCRA), and any other applicable regulations. OSHA regulates worker exposure to lead under regulations promulgated under 29 CFR Part 1926.62. This standard applies to all construction work where employees may be occupationally exposed to lead, including demolition, renovation, and remodeling activities. During the LBP removal and surface preparation functions the selected contractor must comply with all requirements outlined in 29 CFR Part 1926.62.

The following sections of this Work Plan describe the areas of LBP to be removed and prepared, recommended work practices, and basic OSHA regulatory compliance issues. An outline of applicable regulatory requirements is also included.

### **2.2.1 Paint to be Removed**

A description of paint to be removed is described below.

- All exterior paint (white) on the portion of the residence to be demolished (single story section) shall be removed and properly disposed.
- The paint (red) on the entrance door to the out-building to be demolished shall be removed and properly disposed.
- All exterior paint (white) on the portion of the residence that will remain (two story section), that is loose, peeling, and/or cracking shall be removed and properly disposed.
- All paint that has delaminated from the structure and fallen onto the ground surrounding the structure shall be removed and properly disposed.

### **2.2.2 Area to be Prepared for Repainting**

A description of painted areas to be prepared for repainting are described below.

- All exterior painted surfaces (i.e. doors, fascia, siding, soffit, trim, windows, etc.) on the portion of the structure that will remain (two story section) shall be prepared for repainting by the Contractor.
- All areas where the paint has become loose, peeled away, cracked, or chipped shall be sanded with sanders attached to HEPA filter equipped vacuums, wet sanded, or wet scrapped until smooth and then “feathered out.” When complete all surfaces must be smooth and dust free to allow for proper paint adhesion.

### **2.2.3 Recommended Removal, Surface Preparation, and Cleanup Techniques**

A description of the recommended removal, surface preparation, and cleanup techniques are described below.

- Setup a functional decontamination area or unit.
- Establish a controlled work area using physical barriers and/or barrier tape.
- Remove all visible loose paint from the soil surrounding the structures.
- Install six millimeter polyethylene drop cloths extending a minimum of ten feet out from the structures.
- Pre-wet (mist) painted surfaces to be removed/prepared to minimize dust generation during preparation/removal activities.
- Sand with HEPA filter equipped sanders; wet sand, and/or wet scrape all deteriorated surfaces.
- Wet wipe all surfaces using a high-phosphate detergent solution to remove visible dust.
- After drying, vacuum all surfaces with HEPA filter equipped vacuums.

### **2.2.4 Waste Handling/Disposal**

A description of the waste handling and disposal requirements are described below.

- The selected Contractor is responsible for proper waste containerization, storage, characterization, and labeling in accordance with applicable federal, state, and local regulations.
- All lead-contaminated waste will be bagged or wrapped in six millimeter polyethylene sheeting prior to being removed from the controlled work area.
- Waste will be staged in a secure area on-site until transported to a disposal site.
- Waste material will not be handled in such a way as to generate dust.
- No visible emissions will be created during any waste handling activity.
- Properly manifest, transport, and dispose of lead-contaminated paint chips, debris, and waste water in accordance with applicable federal, state, and local regulations.

### **2.2.5 Special Considerations**

Descriptions of special considerations related to this portion of the project are described below.

- Prior to the start of any field work, the selected contractor is required to submit a written lead compliance plan to the building Owner/Owners representative.
- Electricity (115 volt) is available at the SITE. The Contractor is responsible for all costs related to providing any rework wiring required. Any rework wiring required must be performed by a qualified and licensed electrician.
- Water and sewer service is not available at the SITE. All waste water will be collected, filtered, and disposed of in accordance with local wastewater facility requirements.
- Removal and surface preparation methods should be chosen to minimize the generation of dust (e.g. wet methods and/or HEPA filter equipped sanders).
- The Contractor shall take steps to prevent the transport of dust, debris, or other contamination to adjacent portions of the SITE.

- All of the exterior window glazing on the residential structure contains a trace (less than 1.0 percent) amount of asbestos. This material is currently not regulated by the USEPA or the CDPHE. If this material is disturbed during the paint surface preparation, the contractor must comply with all current OSHA regulations for monitoring employee exposure to asbestos, as well as comply with proper disposal requirements (if removed).
- All waste and debris generated by the Contractor during the paint removal and surface preparation activities must be disposed of as a hazardous waste unless characterized as non-hazardous. The contractor may, at their own expense, segregate and characterize different waste streams (i.e. personal protective equipment, water filters, polyethylene sheeting, etc.). Owner/Owners representative must be notified forty-eight hours in advance of any waste characterization sampling by the Contractor. Analytical results of all waste characterization tests must be submitted to the Owner/Owners representative. The Contractor is responsible for all costs associated with the analytical testing and proper disposal of these lead-contaminated materials. In addition, the Contractor will provide a copy of the completed waste manifest to the Owner/Owners representative
- The Owner/Owners representative will provide a final visual inspection of completed work areas. Clearance protocols will include a visual inspection to determine that each specified area is free of loose paint and visible dust and that the surface is ready for repainting. The final project clearance criteria are described in Section 2.2.8.
- The Contractor is responsible for removing any/all fixtures, fixed objects, and other items that may be required to facilitate paint removal and surface preparation. The Contractor is responsible for reinstalling any removed items unless the item is noted for removal and disposal.

## **2.2.6 Worker Protection**

The following sections detail the programs and activities required for worker protection.

### **2.2.6.1 Lead Compliance Program**

The Contractor is responsible for developing and implementing a site-specific written lead compliance program for the project. A written plan for this lead compliance program must be submitted and approved by the Owner/Owners representative prior to the start of any work. After the plan is approved, a copy must be available throughout the duration of project for subsequent on-site inspection. The following items are considered major components of the plan:

- Regulatory Information
- Description of Emission Activities
- Permissible Exposure Limit (PEL) Compliance Technologies
- Air Monitoring Data Documenting Lead Emissions
- Program Schedule Implementation
- Work Practices
- Administrative Control Schedule
- Potential Affected Employee Notification
- Work Site Inspection
- Personnel Protection
- Housekeeping

- Hygiene Facilities and Protection
- Medical Surveillance
- Medical Removal
- Employee Information and Training
- Signage
- Observation of Monitoring
- Recordkeeping, and
- Other Relevant Information.

### **2.2.6.2 Lead Worker Health and Safety Regulations**

OSHA regulates worker exposure to lead under regulations promulgated under 29 CFR Part 1926.62. This standard applies to all construction work where employees may be exposed to lead, including demolition, renovation, and remodeling activities. During the LBP removal and surface preparation functions the Contractor must comply with all requirements outlined in 29 CFR Part 1926.62. Briefly summarized, the standard requires the following:

- Representative and periodic air monitoring must be conducted for all employees potentially exposed to airborne (fume and dust) lead.
- Establish a lead action level of 30 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air calculated over an eight hour time-weighted average (TWA) period.
- Establish a lead permissible exposure limit (PEL) of  $50 \mu\text{g}/\text{m}^3$  of air averaged over an eight hour TWA period.
- Conduct preliminary exposure assessment (air monitoring) to determine that the airborne lead concentration has not exceeded the action level or the PEL.
- Provide adequate protection of employees during the preliminary exposure assessment.
- Apply engineering and administrative controls or respiratory protection for workers potentially exposed above the PEL.
- Provide a written compliance program to control workers' lead exposure to below the PEL.
- Provide protective clothing for workers exposed above of the PEL or when there is a potential for eye and skin irritation.
- Provide hygiene facilities and procedures where workers are exposed above the PEL without regard to the use of respirators.
- Conduct biological testing consisting of blood sampling and analysis for lead at the beginning and at the end of the project.
- Provide medical removal protection for workers overexposed to lead.
- Provide information and training for employees who may be exposed to lead.
- Erect warning signs where workers are exposed above the PEL.
- Maintain employee lead exposure monitoring information/records and medical examinations.



### 2.2.7 Additional Regulations

All federal, state, and local regulations must be followed during the removal and surface preparation of lead contaminated materials. Additional regulations include, but are not limited to the following:

OSHA:

29 CFR Part 1910.20	Exposure Monitoring/Medical Surveillance Recordkeeping
29 CFR Part 1910.134	Respiratory Protection
29 CFR Part 1926.20	General Safety and Health Provisions
29 CFR Part 1926.21	Safety Training and Education
29 CFR Part 1926.23	First Aid
29 CFR Part 1926.24	Fire Protection
29 CFR Part 1926.25	Housekeeping
29 CFR Part 1926.28	Personal Protective Equipment
29 CFR Part 1926.59	Hazard Communication
29 CFR Part 1926.103	Respiratory Protection
29 CFR Part 1926.451	Scaffolding
29 CFR Part 1926.500	Fall Protection

U.S. Department of Transportation (DOT):

49 CFR Parts 171 and 172	Hazardous Substances Transportation
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USEPA:

40 CFR Parts 260, 261, 262, 263, and 264	Resource Conservation and Recovery Act (RCRA)
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U.S. Department of Housing and Urban Development (HUD):

24 CFR Parts 35, 905, 941, 965, and 968	Lead-Based Paint Hazard Elimination; Interim Rule
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### 2.2.8 Visual Clearance

Upon completion of paint removal and surface preparation activities, the Owner/Owners representative will perform a thorough visual inspection. This visual inspection will confirm that all loose paint has been removed from the surfaces and visible paint from the soil, and that all surfaces shall be free of visible dust. In addition all surfaces must be smooth and ready for repainting. Any areas which exceed these visual clearance criteria will require supplemental removal and/or surface preparation work at no additional cost to the Owner.

### **3 SCHEDULE**

Contractor is not authorized to apply for the asbestos abatement permits prior to being issued the notice of award from the City of Fort Collins (Owner) and does so at their own risk. It is understood that there is a ten day waiting period after applying for a permit. Contractor will apply for an asbestos abatement permit within two working days of issuance of notice of award. Mobilization and lead removal activities may begin during the ten day waiting period. The Contractor will mobilize no later than the tenth day of the permit waiting period and will commence abatement work within twenty-four hours of the end of the permit waiting period. This project shall be completed within ten working days from the effective date of the permit. If the Contractor neglects to complete the contract in the time specified, the Owner shall be entitled to liquidated damages including, but not limited to, the cost of the air monitoring consultant being on-site to monitor conditions at the SITE and including any cost incurred for the delay of work being performed by additional contractors plus \$300 until project completion is attained. These amounts will be deducted from the Contractors payment at the conclusion of the project

### **4 PROJECT COORDINATION**

The Contractors estimate should allow provisions for coordination, which shall include informal meetings with Owner/Owners representative such as the following:

- Inspect areas in which work will be performed, prior to commencement of work. Prepare a listing of damage to structure, surfaces, and equipment or of surrounding properties, which could be misconstrued as damage resulting from the work. Obtain digital photographs or video of existing conditions as necessary to document conditions. Submit to Owner for recording purposes prior to starting work.
- Attend informal conference to be convened by the Owner prior to start of any work. The conference will be scheduled before start of work, at a time convenient to the Owner, but no later than the day of the start of the project. Meet at the SITE, or as otherwise directed. Authorized Owner/Owners representatives will be in attendance. An authorized representative of the Contractor and its project supervisor and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the projects scope and authorized to conclude matters relating to the work.
- Before requesting final inspection for certification of final acceptance and final payment, a project punch list must be completed and accepted by Owner. The punch list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Owner/Owners representative.

### **5 INSURANCE**

The Contractors estimate shall include provisions for Comprehensive General Public Liability and Property Damage Insurance, Worker's Compensation Insurance, and Comprehensive Automobile Liability and Property Damage Insurance to be specified in the Owners general condition contract

documents, at his/her own expense, during the life of this contract. This insurance shall include a provision preventing cancellation without ninety days prior notice by certified mail and shall state whether the coverage is "claims made" or "occurrence made." The Contractor shall obtain "occurrence made" insurance and must not contain any pollution exclusion provisions. A completed Certificate of Insurance shall be filed with the owner within ten days after the date of the notice of award, said Certificate to specifically state the inclusion of the coverage and provisions set forth in the contract.

## **6 QUALIFICATIONS AND LIMITATIONS**

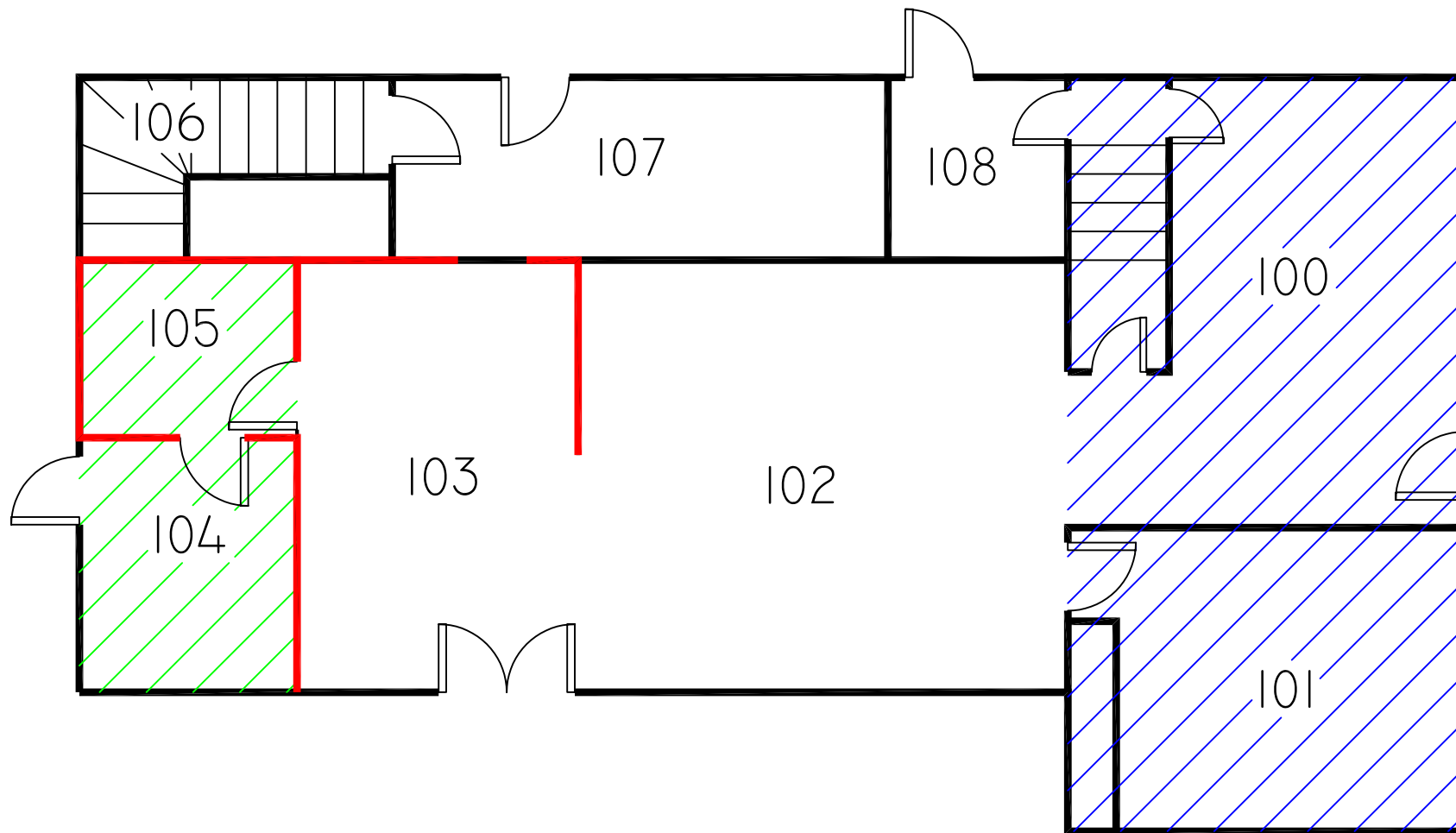
WALSH prepared this Work Plan in a manner consistent with current professional practices. It is possible that additional reports or investigations could alter the conclusions of this document.

Procedures are prepared for use by the Contractor, but do not limit the Contractor from performing its work according to any regulations not included in this document.

This Work Plan is intended for use only by the client or its designees. Any future use of this report by anyone other than the client or its designees will require written authorization by WALSH.

**APPENDIX A**

**FIGURES**



 OT01- WHITE FINISHING MUD ON FIBERBOARD

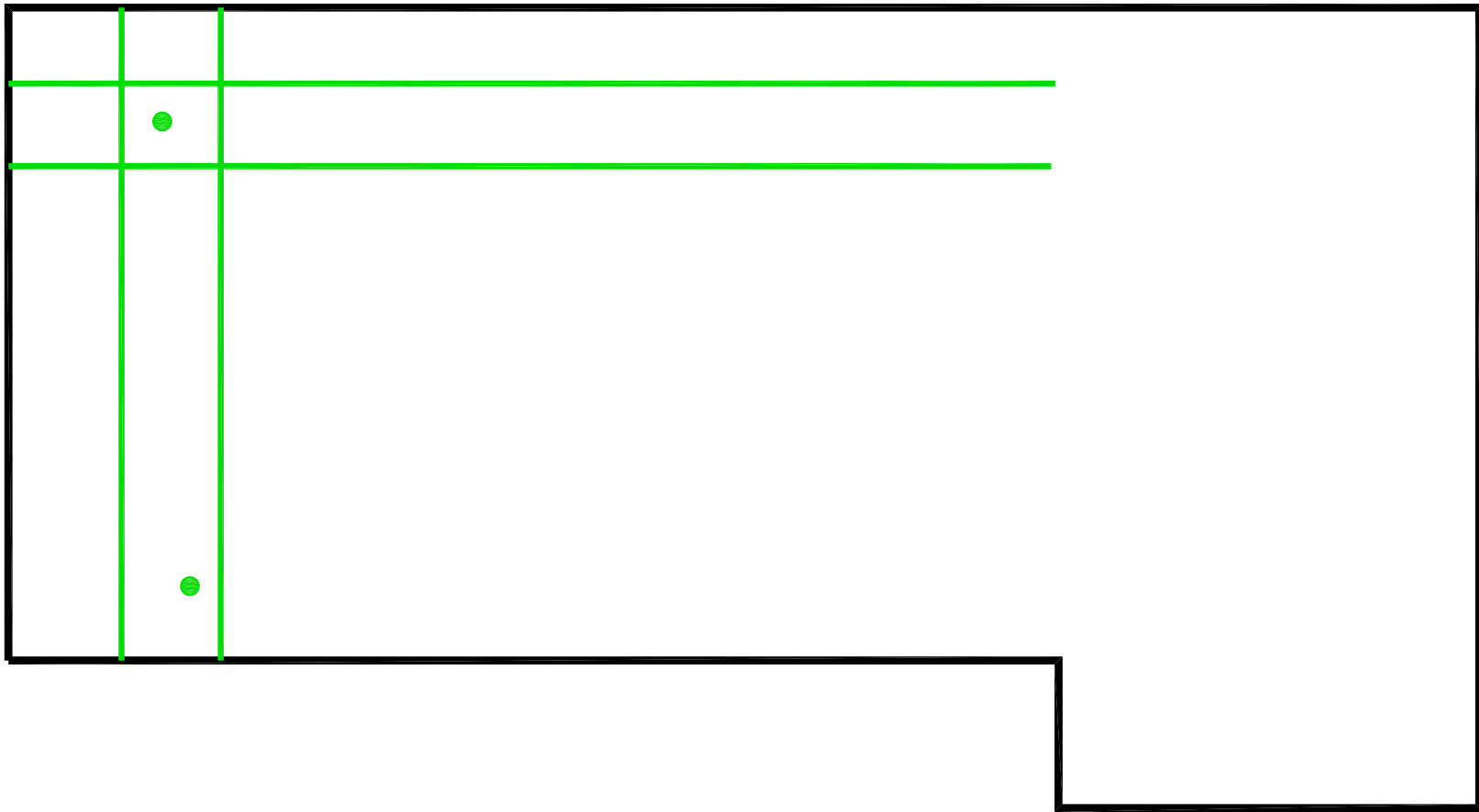
 MA-02 BLACK PLIABLE PANEL ADHESIVE

 SVF03- YELLOW & CREAM MOTTLED SHEET FLOORING



**First Floor  
ACM To Be Removed**

No.	Revisions	Date
#1		
#2		
#3		
#4		

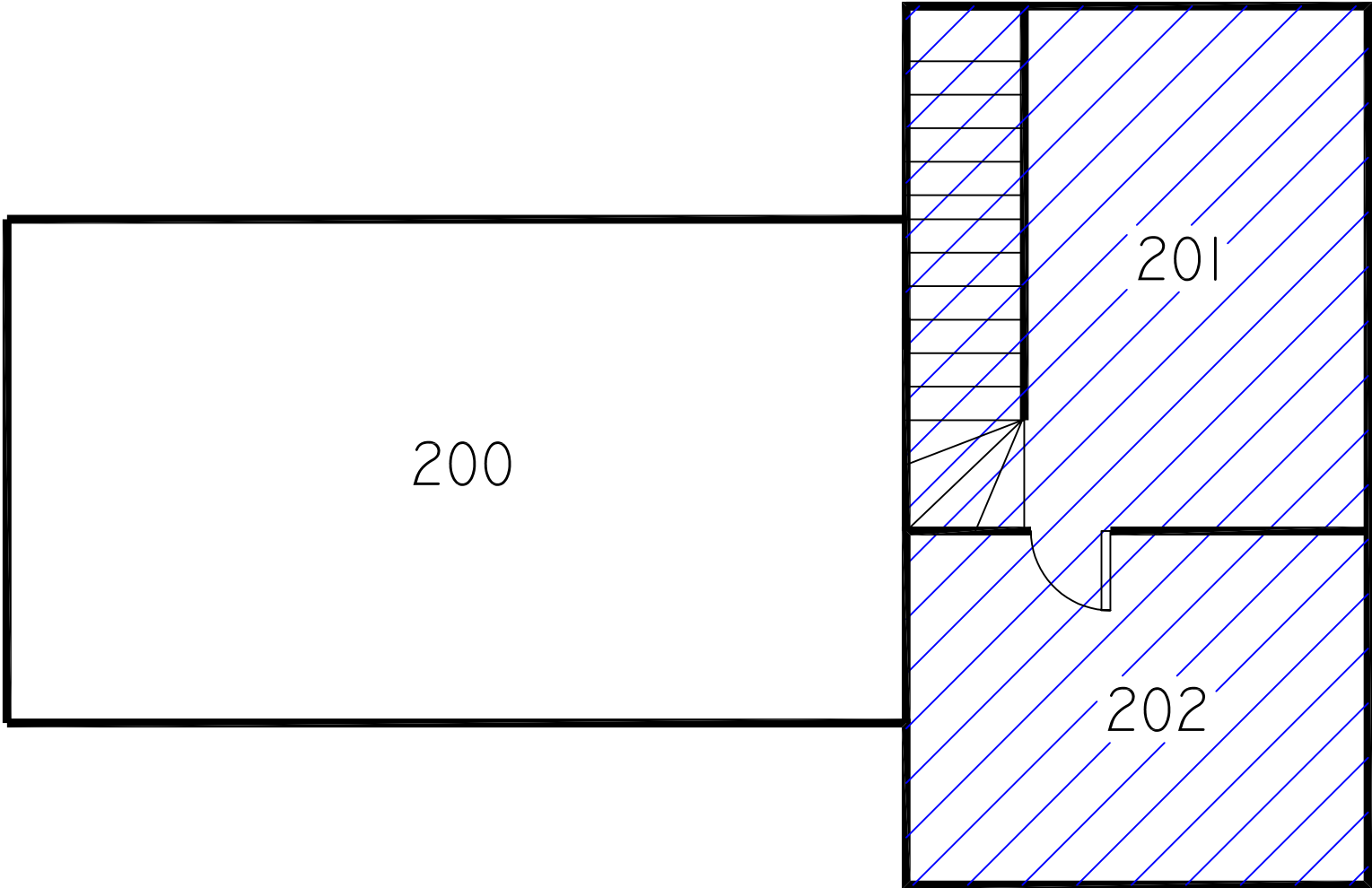


— RSL01- BLACK TAR ROOF SEALANT



**Roof  
ACM To Be Removed**

No.	Revisions	Date
#1		
#2		
#3		
#4		

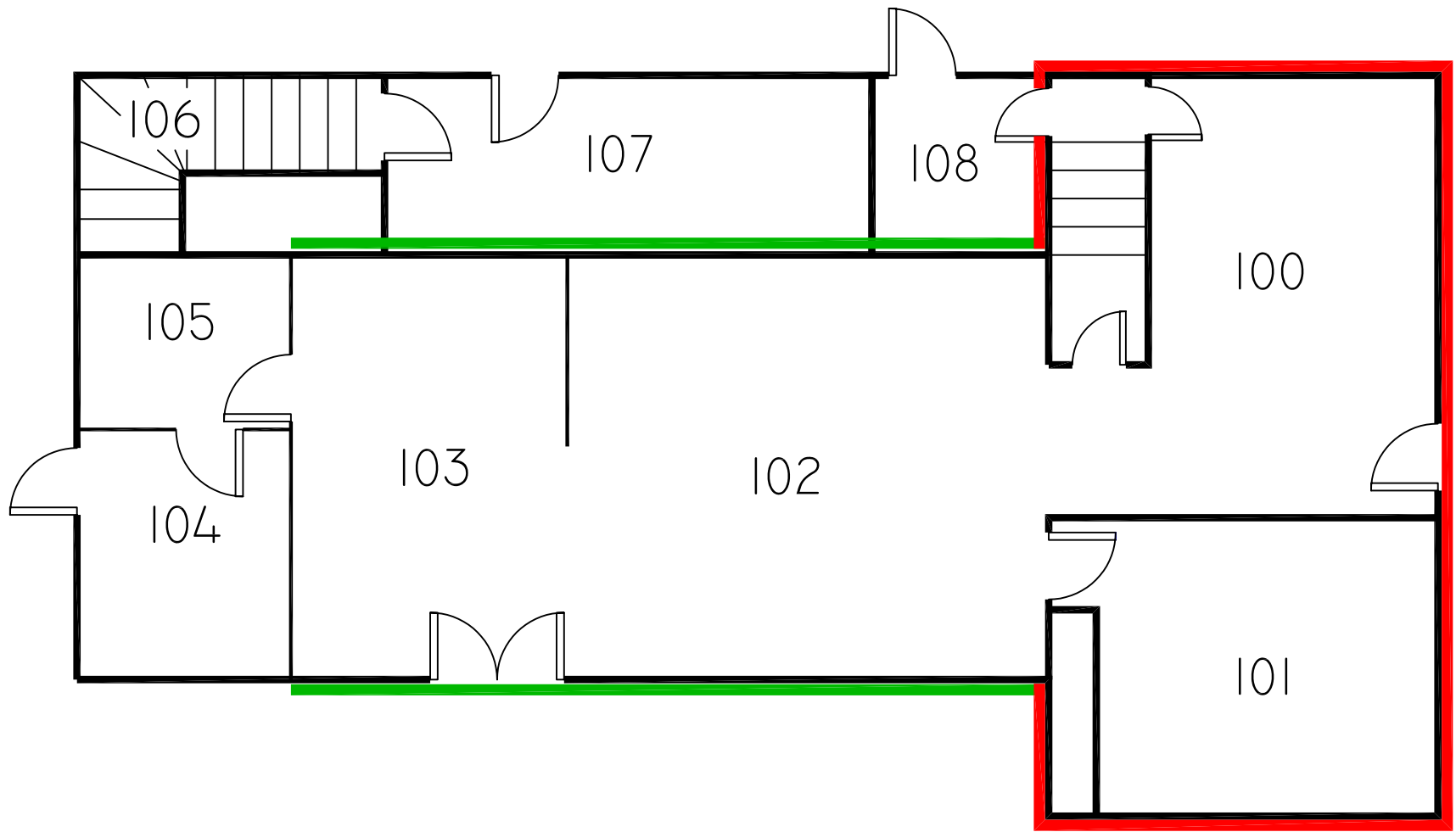


0T01- WHITE FINISHING MUD  
ON FIBERBOARD



**Second Floor  
ACM To Be Removed**

No.	Revisions	Date
#1		
#2		
#3		
#4		



 LBP TO BE PREPPED FOR REPAINTING

 LBP TO BE REMOVED



**LBP TO BE REMOVED AND PREPPED**

No.	Revisions	Date
#1		
#2		
#3		
#4		



**APPENDIX B**

**LEAD-BASED PAINT SCREENING TABLE**

**Lead-Based Paint Screening Results**  
**Bobcat Ridge Natural Area**  
**Residential and Out-building Structures**  
**8281 West County Road 32 C, Larimer County, Colorado**

Location	Component Type	Visible Color	Number of Readings	SXRF Range mg/cm <sup>2</sup>	Lead-Based Paint	Comments
Residence Exterior	North, East, and West Walls, South Window Frame	White	5	-0.19 to 6.82	Yes	
Residence Exterior	South and West Wall	Red	3	-0.35 to 2.20	Yes	LBP is likely white paint on original siding
Storage Shed Exterior	North and South Wall	Red	3	0.32 to 0.56	No	
Storage Shed Exterior	Door	Red	1	1.52	Yes	
Residence Exterior	South Wall Trim	White	3	0.12 to 4.58	Yes	
Residence Interior, First Floor	Wall, Door, Door Trim, Ceiling	White	6	-0.33 to 0.90	No	
Residence Interior, First Floor	Window Trim, Doors	Beige	7	-0.94 to 0.08	No	
Residence Interior, Stairway to Basement	Siding	White	1	6.37	Yes	Previously on Exterior of residence. Now enclosed by addition.
Residence Interior, Second Floor	Paneling	Beige	4	-0.46 to 0.26	No	



Environmental Scientists and Engineers, LLC

Corporate Headquarters: Boulder, Colorado

Grand Junction, Colorado

Colorado Springs, Colorado

Fort Collins, Colorado

Quito, Ecuador

Lima, Peru