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SPECIFICATIONS

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SECTION 01715 - EXISTING CONDITIONS - HAZARDOUS MATERIALS SURVEY

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

As specified in SECTION 01001 - GENERAL REQUIREMENTS.

1.02 SUMMARY

A. This Section includes the Samuel Mahelona Memorial Hospital's Hazardous Materials Survey for the project, which is provided for the Contractor's information.

B. Related Sections include the following:

1. SECTION 13281 – REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS for requirements of all work which disturbs ACBM. Also, refer to the drawings.

2. SECTION 13282 – LEAD-CONTAINING AND LEAD-BASED PAINTS CONTROL MEASURES for requirements of all work which disturbs LCP and LBP. Also, refer to the drawings.

3. SECTION 13288 – TESTING AND AIR MONITORING for requirements of air monitoring during all work which disturbs asbestos containing materials (ACM), lead-containing paints (LCP), and lead-based paints (LBP).

1.03 ASBESTOS

A. The structure or structures to be renovated or modified under this contract were surveyed for the presence of asbestos containing building materials (ACBM). A copy of the initial survey report, as well as any subsequent supplemental survey report(s) if performed, is included in this Section.

1. Review the attached report(s) for the basis on which the ACBM finding was made. The Contractor may perform further surveys at its own expense, if ACBM not shown in the report(s) is suspected in the areas of the building(s) in which work will be performed. If ACBM is found, notify G70 immediately. G70 will reimburse the Contractor for reasonable costs for the testing if additional ACBM is found.

2. If there is ACBM outside of the areas in which work will be performed, this ACBM shall not be disturbed in any way.

B. If applicable, notify employees, subcontractors, and all other persons engaged on the project of the presence of asbestos in the existing buildings in accordance with the requirements of Chapter 110, Article 12-110-2 (f) (1) (B) of the Occupational Safety and Health Standards, State of Hawaii and 29 CFR 1926.1101.

C. In the event that work is required in any building or buildings on the site other than the one(s) designated within this project scope, request copies of the asbestos survey report(s) for such building(s) from G70. Based on the information contained in the additional survey(s), notify affected personnel.

1.04 LEAD-CONTAINING AND LEAD-BASED PAINTS

A. Inform employees, subcontractors, and all other persons engaged in the project that lead-containing paint (LCP) and lead-based paint (LBP) is present in the existing building(s) and at the job site. Follow the requirements of 29CFR 1926.62.

B. Review the attached lead testing data which identify locations LCP and LBP were found. Lead testing was for design purposes only and the results do not satisfy any of the requirements of 29CFR 1926.62.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 SURVEY (attached)

Limited Asbestos and Lead-Based Paint Sampling and Analysis, 2107-00256-HAZ SMMH, Samuel Mahelona Memorial Hospital, Radiology Suite, 4800 Kawaihau Road, Kapaa, Hawaii, 49 pages, dated August 13, 2021, prepared by ENPRO Environmental.

END OF SECTION

DIVISION 2 – SITE CONSTRUCTION

SECTION 02070 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes:

1. Demolition and removal of designated partitions, doors, flooring, ceilings, soffits, mechanical, plumbing, and electrical fixtures, finishes and components as indicated on the Drawings
2. Demolition of portions of concrete slabs.
3. Demolition of portions of concrete slabs for removal of designated utilities.
4. Identifying, disconnecting, capping, or sealing, and removing utilities.
5. Salvage designated items.

B. Related Work Described Elsewhere

1. Section 01010 – SUMMARY OF WORK
2. Section 01310 – PROJECT MANAGEMENT AND COORDINATION
3. Section 01500 – TEMPORARY FACILITIES AND CONTROLS
4. Section 01595 – PROJECT CLEANING
5. Section 01770 –CLOSEOUT PROCEDURES

C. The extent of selective demolition work is indicated on the demolition plan and other drawings.

D. It shall be the responsibility of the Contractor to examine the project site and determine the existing conditions for themselves.

E. Selective demolition work includes but is not limited to removal and subsequent disposal of all non-hazardous materials indicated or required to be removed.

F. Execute all work in an orderly and careful manner with due consideration for all items or work to remain.

G. Clearly obvious conditions requiring selective demolition, which exist at the site, shall be accepted as part of the work, even though they may not be clearly indicated on the Drawings and/or described herein, or may vary therefrom.

H. All debris of any kind accumulated from the work of this Section shall be disposed of off the site, unless noted otherwise.

I. Permits, Notice, Etc.:

1. The Contractor shall procure and pay for all necessary permits or certificates the may be required in connection of this work.

2. The Contractor shall serve proper notice and consult with Project Manager regarding any temporary barricades that are required, or for disconnections of electrical or other utility lines in the area which may interfere with the removal work. All such lines, where necessary, shall be properly disconnected or relocated prior to commencing with demolition work.

1.02 SUBMITTALS

A. Meet requirements of Section 01330 – SUBMITTAL PROCEDURES

B. Proposed Protection Measures: Submit informational report, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.

1. Adjacent Portions of Building: Portions of the site, including structures, adjacent to the areas to be demolished are to be kept intact. The demolition to take place in these areas is to be performed with the utmost care to avoid damage to the adjacent structures. Submit detailed special measures proposed to protect adjacent structures to remain.

C. Schedule of Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.

2. Temporary interruption of utility services.

3. Shutoff of utility services.

D. Demolition Plans: Drawings indicating the following:

1. General site, building(s) and other features to be removed and disposed of.

2. Locations of temporary protection and means of egress for adjacent occupied areas of the building.

E. Pre-demolition Photographs: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Submit before the Work begins.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled mechanics who are thoroughly trained and experienced in the necessary crafts.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Section 01310 – PROJECT MANAGEMENT AND

COORDINATION. Review methods and procedures related to building demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be demolished.
2. Review and finalize demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review and finalize protection requirements.
4. Review procedures for noise control, and dust control.
5. Review items to be salvaged and returned to the owner.
6. Review procedures for protection of adjacent, occupied structures or buildings.
7. Review schedule of work hours and facility rules.

1.04 PROJECT CONDITIONS

A. Existing conditions: The owner assumes no responsibility for actual condition of items to be demolished.

B. Conditions existing at time of commencement of contract will be maintained by the owner insofar as practical.

C. Occupancy: Building areas subject to demolition will be vacated and discontinued in use by the owner prior to start of work.

D. Do not interfere with use of adjacent building areas. Maintain free and safe passage to and from occupied spaces.

E. Provide accessibility around temporary structures conforming to ADAAG Section 4.1.1(4).

F. Prevent movement or settlement of structures. Provide and place bracing or shoring and be responsible for safety and support of adjacent structures. Assume liability for such movement, settlement, damage, or injury. Cease operations and notify the Project Manager immediately, if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.

G. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close, block, or otherwise obstruct streets, walks or other occupied or used facilities without written permission from the Project Manager. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations, as directed by the Project Manager.

H. Comply with Section 01500 – TEMPORARY FACILITIES AND CONTROLS for environmental controls including dust and noise control.

I. Fire Safety: Fire safety during demolition shall comply with Section 16 of the 2012 NFPA 1 - Fire Code, as amended and NFPA 241.

1.05 EXISTING UTILITY SERVICES

A. Do not abandon or otherwise alter utility services or drainage lines which would impair service to existing building areas.

B. Maintain utilities in service, protect, and reconstruct if damaged, all in-service utility pipes or conduits, except services to the structures to be dismantled. Reconstruct in-service utility pipes or conduits if damaged at no additional cost to the owner.

C. If service must be interrupted, observe requirements of Section 01500 – TEMPORARY FACILITIES AND CONTROLS.

D. Report damage, however slight, immediately. Do not repair or reconstruct any utility pipe, conduit, or installation without authorization; however, except perform emergency repairs immediately.

1.06 HAZARDOUS MATERIALS

A. Hazardous Materials: It has been determined that some hazardous materials exist based on the Hazardous Materials Survey performed on structure or structures to be renovated or modified under this contract. The survey is found in Section 01715 - EXISTING CONDITIONS - HAZARDOUS MATERIALS SURVEY.

B. Abatement, Disposal of hazardous materials and Testing and Air Monitoring shall be performed in strict accordance with the following specification sections:
1. Section 13280 – TESTING AND AIR MONITORING
2. Section 13281 – REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS for all work which disturbs asbestos.
3. Section 13283 – DISTURBANCE OF LEAD PAINT for all work which disturbs lead paint.

1.07 COORDINATION

A. Arrange demolition schedule so as not to interfere with the owner's on-site operations and operations of adjacent occupied buildings and areas.

1. At the end of each work period areas are required to be cleaned and readied for occupants. The condition of the areas shall be such that there is no interference with the typical work activities perform by the occupants and that the occupant's safety is not compromised

PART 2 - PRODUCTS

2.01 SALVAGE MATERIALS

A. Salvaged materials not indicated for reuse or salvage for the owner shall become Contractor's property. Remove from site and dispose of at Contractor's option.

1. Items to be salvaged for Owner not indicated in the Contract Documents will be identified at the Pre-Construction meeting walk-through.

B. Items of salvageable value not indicated for reuse may be removed from structure as work progresses. Salvaged items must be transported from site as they are removed. Storage or sale of removed items on site will not be permitted.

C. Historic items, antiques, and similar objects including, but not limited to, commemorative plaques and tablets, and other items of interest or value to the owner that may be uncovered during demolition remain the property of the owner.

1. Carefully salvage in a manner to prevent damage and promptly return to the Owner.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the conditions under which work of this section will be performed. Do not proceed until unsatisfactory conditions detrimental to timely and proper completion of the work have been corrected.

B. Verify that utilities have been disconnected and capped before starting demolition operations.

C. Inventory and record the condition of items to be removed and salvaged. Photograph existing conditions of structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work. File with Project Manager prior to starting work.

D. Engage a professional engineer currently licensed in the owner to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

E. If hazardous materials were found to exist, verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.02 PREPARATION

A. Maintain exit requirements throughout construction period.

B. Erect and maintain temporary barricades complying with the requirements of Section 01500 – CONSTRUCTION FACILITIES. On completion, remove barricades and repair damaged surfaces to match adjacent surfaces.

C. Existing Utilities: Locate, identify, disconnect, and remove indicated utilities serving portions of the building to be demolished.

1. If removal, relocation, or abandonment of utility services will affect adjacent occupied areas and buildings, then provide temporary utilities that bypass the portions of the building to be demolished and that maintain continuity of service to other buildings and adjacent areas.

2. Cut off pipe or conduit and cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

3.03 DEMOLITION

A. Demolition Work: Conform to owner of Hawaii, Occupational Safety and Health Standards; Subtitle 8, Division of Occupational Safety and Health; Part 3, Construction Standards; Chapter 131.1, Demolition.

B. Pollution controls: Provide temporary enclosures and use suitable methods to limit dust and dirt to the lowest practical level. Comply with governing regulations pertaining to environmental protection. Observe dust control measures of Section 01567 – POLLUTION CONTROL.

C. Explosives: Use of explosives will not be permitted.

D. Selective Demolition

1. Extent of demolition and removal as shown are minimum requirements. Contractor shall be responsible for the extent of work required to properly accommodate the methods of construction required for the new work. Additional work required to accommodate construction shall be considered incidental to the new work and shall be done at no additional cost to the owner. Contractor and its demolition subcontractor, as part of the bid proposal to review the demolition scope along with the new work and conduct site visit(s) to understand the extent of the scope and provide as part of its bid proposal, to include all work to accomplish the final work.

2. Conduct demolition of designated items and components as indicated on the Drawings and site investigation(s) in an orderly and careful manner as required to accommodate new work, including that required for connection to the existing building. Protect existing supporting structural members.

3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

4. Use the utmost care to avoid damage to the items being removed and designated for reuse including but not limited to:

5. Disconnect, remove, cap and seal designated utilities as indicated on the Drawings.

6. Use methods required to complete the Work within limitations of governing regulations.

7. Locate demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

8. Cease operations and notify Architect and Project Manager immediately if safety of adjacent structure appears to be endangered. Do not resume operations until safety is restored.

9. Remove contaminated, vermin infested, or dangerous materials encountered and dispose of by safe means.

10. Do not demolish, chip or penetrate any portion of existing structural members not designated for such without the expressed approval of the Architect and Engineer.

11. Repair excess demolition to match adjacent surfaces.

E. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.04 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish, and other materials resulting from demolition operations from the site. Transport materials removed from demolished structures and legally dispose of offsite.

B. Do not allow demolished materials to accumulate on-site.

C. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

D. Burning of removed materials from demolished structures will not be permitted on site.

3.05 CLEANUP AND REPAIR

A. Repair damage to adjacent structure and improvements resulting from this work at no cost to the owner.

B. Clean adjacent areas, structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by Project Manager or governing authorities. Return adjacent areas to condition existing prior to start of work.

END OF SECTION

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13280 – TESTING AND AIR MONITORING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

The General Instructions to Bidders, the General Conditions of Construction Contracts, and Special Provisions, and Section 01001 – GENERAL REQUIREMENTS preceding these specifications shall govern this section of work.

1.02 PRELIMINARY

In performing this project, all possible safeguards, precautions and protective measures should be utilized to prevent exposure of any individual to hazardous materials.

1.03 REQUIREMENTS

A. Basis for specifications: These specifications are based upon procedures and standards derived from U.S. regulatory agencies (EPA, OSHA, NIOSH) and the Hawaii State Division of Occupational Safety and Health as well as from industry and sound industrial hygiene practices. They must be followed to ensure that no measurable amount of asbestos fibers or lead particulates are released to the uncontrolled work and public areas.

Testing and visual inspections shall be conducted by the Architect's Project Monitor (Testing and Air Monitoring Consultant), for the purpose of:

1. Verifying compliance with the specifications and the applicable regulations listed in Sections 13281 and 13283.

2. Ensuring that the documentation required by these specifications and by law is collected and reported to G70.

3. Enforcing and initiating engineering controls during the project;

4. Ensuring that the general public and other workers not directly involved in the abatement and/or remediation project are not harmed.

B. The Architect shall hire and pay an independent firm that has the personnel with the qualifications and expertise to conduct work outlined herein as a the Project Monitor.

C. Procure legally required reports for air monitoring as part of the contract. All air monitoring reports shall include all field data, laboratory reports, test results, pump calibration, on-off times, calibration device used, description of the type of pumps used, location of sampling and other pertinent information about the daily work activities.

D. Air monitoring and testing conducted by the Project Monitor in order to follow up on work by the Contractor due to non-conformance with the requirements shall be the responsibility of the Contractor. The full cost of such additional monitoring shall be borne by the Contractor.

E. Personal air monitoring on Contractor's personnel that is part of the Contractor's prerogative shall be accommodated by the Project Monitor.

F. Any testing above and beyond what is specified and initiated by the Contactor shall be paid for by the Contractor at no additional cost to G70.

G. Analytical Methods;

1. Asbestos: Use the most current version of the NIOSH 7400 Method (PCM) or approved substitute per OSHA revisions for Personal Monitoring and Excursion Limit sampling. The Architect's Project Monitor shall use NIOSH 7400 method (PCM) to determine asbestos-in air for Air Clearances.

2. Lead: The Architect's Project Monitor shall use the most current version of the NIOSH 7082 or approved OSHA method.

H. Air monitoring and testing will be conducted according to the method prescribed by OSHA 29 CFR 1926.62 (for lead); OSHA 29 CFR 1926.1101 (f) (for asbestos); HIOSH 12-148.1 (for lead); HIOSH 12-145.1 (for asbestos); NIOSH 7400 method or approved substitute per OSHA revisions 15 August 1994 (for asbestos); the Asbestos Hazard Emergency Act (AHERA) 40 CFR Part 763, Asbestos Containing Materials in Schools; and the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing where applicable.

I. Applicable Standards and Guidelines:

1. All work under this contract, and any other trade work conducted with the project, shall be done in strict accordance with all applicable federal, state and local regulations, standards and codes governing the disturbance of asbestos and lead-containing material; demolition, handling, transportation and disposal of asbestos and lead materials. Where conflict or any inconsistency among requirements or this specification exists, the more stringent requirements shall apply. Contractor shall pay for all fines where violations of regulations result in fines, damages to property or injury to workers and the general public.

2. The most recent edition of any relevant regulation, standard, document or code shall be in effect.

J. Specific Statutory and Regulatory Requirements

1. Title 29, Code of Federal Regulations, section 1926.62, entitled "Lead

Exposure in Construction; Interim Final Rule".

2. Department of Labor and Industrial Relations: State of Hawaii, Occupational Safety and Health Standards; Title 12, Subtitle 8, Chapter 148.1, (also known as chapter 12-148.1, Hawaii Administrative Rules, entitled "Lead Exposure in Construction".

3. Department of Health: State of Hawaii; Title 11, Chapter 501, Hawaii Administrative Rules, entitled "Asbestos Requirements".

1.04 COORDINATION WITH OTHER SECTIONS

See SECTION 13281 – REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL and SECTION 13283 – DISTURBANCE OF LEAD PAINT

1.05 ABBREVIATIONS

A. CFR: Code of Federal Regulations

B. EPA: U.S. Environmental Protection Agency

C. HIOSH: Division of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii

D. HUD: Housing and Urban Development

E. NESHAP: National Emission Standards for Hazardous Air Pollutants

F. NIOSH: National Institute for Occupational Safety and Health

G. OSHA: Occupational Safety and Health Administration

H. PEL: Permissible Exposure Limit

1.06 DEFINITIONS

A. Abatement: Procedure to control fiber release from asbestos-containing building materials.

B. Air Clearance: Air monitoring inside the containment after passing visual clearance to determine if the containment area is safe for occupancy without the aid of respiratory equipment.

C. Air Monitoring: The process of measuring the concentration of a specific contaminant in the air by sampling a known volume of air in a stated period of time.

D. Ambient Air Monitoring: The process of measuring the concentration of a specific contaminant in the air by sampling a known volume of air in a stated period of time in one location. Standard practice is to use tripod stands that will hold the sampling device in a 45-degree downward direction between 5

to 6 feet in height and clear from any obstructions.

E. Excursion Limit: Personal monitoring for asbestos work representing a 30-minute exposure. The 30-minute exposure period must not exceed 1.0 fibers per cubic centimeter of air.

F. Personal Monitoring: An air monitoring procedure where the air-sampling cassette is placed in the breathing zone of the work being monitored. An eight-hour time weighted average is then calculated to compare with OSHA/HIOSH PELs.

G. Project Monitor: A person who shall perform, certify and document ambient air conditions during the work, visual clearances, air clearances, post remediation verification, and clean up and removal of all asbestos-containing material, lead-containing material, and associated waste from the project site. The Architect's Project Monitor shall be currently certified by the State of Hawaii's Department of Health as an Asbestos Project Monitor and certified by the State of Hawaii as a Lead Inspector.

H. Visual Clearance: The process by which the Architect's Project Monitor ensures by a visual inspection that the materials scheduled to be removed have been completely removed including debris and dust on the inside and debris on the outside of the regulated work area.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 ASBESTOS TESTING

A. The Architect's Project Monitor shall conduct ambient air monitoring daily during the work. Collect air samples in and around the outside perimeter of the work area in locations that may provide avenues of fiber release such as but not limited to entrances and exits to the work area and exhaust fan outlets. Collect at least three samples throughout the day in various locations. Ensure that the air samples are representative of the entire work period.

B. Airborne asbestos levels in areas adjacent to the work area or in any part of the work site impacted by the asbestos removal, surface preparation and demolition activities shall not exceed 0.01 fibers per cubic centimeter of air.

C. The Abatement Contractor shall collect personal air monitoring. Personal air monitoring results shall not exceed 0.1 fibers per cubic centimeter of air per eight-hour time-weighted-average.

D. The Abatement Contractor shall conduct Excursion Limit personal sampling to identify short term, high exposure levels at least one time or more throughout the day.

E. If Ambient Air Monitoring results exceed applicable regulatory levels, the

Architect's Project Monitor shall stop all work immediately in the work area causing or contributing to such a condition. Ensure that remedial action is taken immediately (i.e. increase misting, utilize less dust creating methods of demolition, etc.) to reduce concentrations to acceptable levels before starting work.

F. If Personal Monitoring or Excursion Limit results exceed applicable regulatory levels, the Abatement Contractor shall stop all work immediately in the work area causing or contributing to such a condition. Ensure that remedial action is taken immediately (i.e. increase misting, utilize less dust creating methods of demolition, etc.) to reduce concentrations to acceptable levels before starting work.

G. Visual Clearances: A Visual Clearance shall be conducted by the Architect's Project Monitor after the abatement work has been completed.

H. The Architect's Project Monitor shall submit a letter within 1 work day to the Architect certifying that the area had passed Visual Clearance. Letter shall be signed by the Architect's Project Monitor.

3.02 LEAD TESTING

A. The Architect's Project Monitor shall collect at least three ambient air samples throughout the day and on a daily basis in various locations. Ensure that the air samples are representative of the entire work period.

B. Airborne leaded dust levels in areas adjacent to the work area or in any part of the work site impacted by the work, surface preparation and demolition activities shall not exceed 30 micrograms of total lead per cubic meter of air.

C. The Abatement Contractor shall collect personal air monitoring samples on at least 25% of total personnel. Personal monitoring results shall not exceed 30 micrograms per cubic meter of air.

D. If 30 micrograms of total lead per cubic meters of air is exceeded in either the personal or ambient air samples, the Abatement Contractor or the Architect's Project Monitor shall stop all work immediately in the work area causing or contributing to such a condition. Take remedial action (i.e. increase misting, utilize less dust creating methods of demolition, etc.) to reduce concentrations to acceptable levels.

E. Visual Clearance: A Visual Clearance shall be conducted by the Architect's Project Monitor when the work has been completed.

F. The Architect's Project Monitor shall submit a letter within 1 work day to the Architect certifying that the area had passed Visual Clearance. Letter shall be signed by the Architect's Project Monitor.

G. The Architect's Project Monitor shall collect and have analyzed lead waste and debris. Submit a letter within 1 work day of the receipt of laboratory results to the Architect certifying that the waste has or has not

passed the EPA's criteria for hazardous waste.

END OF SECTION

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13281 - REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

As specified in SECTION 01001 - GENERAL REQUIREMENTS.

1.02 SUMMARY

A. This project entails activities that are expected to disturb asbestos containing materials (ACM). Activities that will disturb asbestos for this project are defined as Category 1, non-friable abatement. Asbestos containing vinyl floor tile assemblies require removal as part of this project.

The Abatement Contractor is to furnish all labor, materials, and equipment necessary to safely carry out this work in compliance with these specifications and EPA, OSHA, State of Hawaii, and any other applicable regulations. Whenever there is a conflict or overlap of the above references, the most stringent shall apply. In performing asbestos removal activities, all possible safeguards, precautions, and protective measures should be utilized to prevent exposure of any individual to asbestos fibers.

All work under this section is to be coordinated with the General Contractor and the Qualified Consultant. The Abatement Contractor shall verify the existing locations, conditions, layers, and thicknesses of all materials prior to commencing work that may disturb ACM. All asbestos-containing material (ACM) as identified in Section 01715 – EXISTING CONDITIONS – HAZARDOUS MATERIAL SURVEY, and/or any asbestos survey report included as part of the contract documents, and which will be impacted/disturbed by planned renovation activity described in the Contract Documents are included as part of the asbestos related work under this Section even if not identified in this Section.

The Abatement Contractor shall assume all materials within the project area that are similar in appearance to ACM identified in the provided asbestos survey reports are positive for ACM, unless proven otherwise, and is included as work under this Section as required to safely complete this project.

B. The asbestos work for this project shall generally include:

Class I Asbestos Abatement: Removal of asbestos containing vinyl floor tile assemblies.

C. In general, the principal items of the asbestos-related work shall be as follows:

1. Worker protection.

2. Negative air containment.

3. Preparation of the work area.

4. Management and disposal of dislodged asbestos containing materials.

5. Installation and removal of protective sheeting.

6. Final cleanup of work area.

D. Cleaning shall include removal of all asbestos-containing materials within the work area and any related dust or debris.

E. Cleanup shall include removal of all asbestos-containing materials within the work area and any related dust or debris.

1.03 COORDINATION WITH OTHER SECTIONS

A. The Contractor shall coordinate all asbestos disturbance work with G70, the General Contractor and the Qualified Consultant.

B. SECTION 13283 – DISTURBANCE OF LEAD PAINT

C. SECTION 13288 - TESTING AND AIR MONITORING

1.04 SUBMITTALS

A. General: Submit in accordance with SECTION 01300 - SUBMITTALS.

B. Final payment will not be made until copies of all submittals have been furnished to and accepted by G70. Submit 6 copies of the submittal package to include the items listed below.

C. Notices: As early as possible, but prior to commencement of work, send courtesy 10-day notice of the scheduled asbestos removal work to:

State of Hawaii, Department of Health,""Notification of Demolition and Renovation" form. Send to: Indoor and Radiological Health Branch, State Department of Health, Asbestos Program, 99-945 Halawa Valley Street, Aiea, Hawaii 96701.

D. Insurance: Proof of insurance for Workman's Compensation and General Liability which covers asbestos, lead, and pollution.

E. Manufacturer's Data: Submit 6 copies of manufacturer's specifications, safety data sheets (SDS), installation instructions and field test procedures for each material, and all equipment related to asbestos handling and disturbance, including other data as may be required to show compliance with these specifications and proposed uses. Indicate the application rate for encapsulant as specified herein. Indicate by transmittal form that a copy of each installation instruction has been distributed to the installer.

F. Samples: Submit samples of the following items for approval prior to ordering materials:

1. Asbestos Encapsulant(s): 6 copies of manufacturer's literature including all laboratory data, MSDS, and application instructions.

2. Plastic Sheeting: Six, 8.5 by 11-inch pieces of each thickness and type of plastic sheeting with labels indicating actual mil thickness.

3. Surfactant: 6 copies of manufacturer's literature including all laboratory data, SDS, mixing and application instructions.

4. Tapes and Adhesives: 6 copies of manufacturer's literature including all laboratory data.

5. Warning Labels and Signs: 6 copies of examples of all required signage.

6. Protective Clothing: 6 copies of manufacturer's literature on all protective clothing and one sample of each item (which will be returned to the Contractor).

7. Respirator Equipment: 6 copies of manufacturer's literature on all respirator equipment and one sample of each item which will be returned to the Contractor.

G. Work Plan: Submit six copies of an asbestos abatement Work Plan, signed by a State of Hawaii Department of Health Certified Asbestos Project Designer. The Work Plan shall provide detailed information concerning:

1. Location of regulated (control) work area boundaries.

2. Location and construction of containment area.

3. Location and construction of decontamination area(s).

4. Preparation of work area.

5. Personal protective equipment including respiratory protection and protective clothing.

6. Decontamination procedures for the personnel who may be exposed to asbestos.

7. Handling and disposal methods and procedures to be used.

8. Required air monitoring procedures and sampling protocols.

9. Procedures for final cleanup.

10. A sequence of work and performance schedule in coordination with other trades.

11. Emergency procedures.

12. Descriptions of any equipment to be employed not discussed.

13. Security provisions in and around the project area.

14. Outline of work procedures to be employed.

15. Location of the waste dumpster.

16. Staging (sequence) of work.

17. Locations of entrances and exits.

18. Description of all disposal methods, including asbestos debris, plastic sheeting, PPE, decontamination fluids, HEPA filters, etc.

19. Name and resume of the Asbestos Abatement Contractor's onsite Competent Person (Job Foreman) responsible for compliance with all Federal, State and Local regulations and plans and specifications. No work shall be performed unless the designated Competent Person is onsite.

H. Documentation for Instruction (Training): Furnish certification that each and every individual, including foremen, supervisors, workers, employees, other company personnel or agents, and any other individual who may be exposed to airborne asbestos fibers, who may be responsible for any aspects of Asbestos Abatement activities, or who is allowed or permitted to enter areas where such exposure may occur, has had instructions on the dangers of asbestos exposure, on respirator use, and decontamination, from an EPA approved training facility, as required. Training shall be consistent with EPA requirements for training as set forth in 40 CFR 763.92(a)(2). Contractor shall be responsible for keeping the documentation up to date and subsequent submittals before any additional employee or individual, not originally listed in the Work Plan, is allowed within the Work Area. Also submit documentation that personnel stated above have had instructions on the nature of the Asbestos Abatement activities and operations that may create a risk of asbestos exposure and the necessary protective steps, on use and fitting of respirators (in accordance with OSHA's Respiratory Protection Standard, 29 CFR 1910.134).

Provide documentation of training relative to procedures for protective dress, on use of showers (if necessary), on entry and exit from the work areas under normal and emergency conditions, on all aspects of work procedures and protective measures, and on all provisions of 29 CFR 1926.1101, and

confirmation that each and every employee understands these instructions. This documentation shall be an outlined format of the instruction and shall be signed by all employees to be engaged on this project, and by all individuals before being allowed within the project site and must include an acknowledgment and an assumption of the potential risk of exposure by that individual and a release of liability for any such exposure. The Asbestos Abatement Contractor shall be responsible for keeping the documentation up to date and providing subsequent submittals before any additional employee or individual, not currently on this list, is allowed within the project site

Submit completed and signed “Employee Acknowledgement of Instruction and Release” forms. A sample “Employee Acknowledgement of Instruction and Release” form is provided at the end of this section.

I. Medical Surveillance Program: Submit 6 copies of the Asbestos Abatement Contractor's medical surveillance program prepared in accordance with all applicable laws, and all medical examination documentation for all employees to be used on this project.

J. Respiratory Protection Program: Submit 6 copies of the Asbestos Abatement Contractor's respiratory protection program prepared in accordance with all applicable laws. The Contractor shall also submit fit test data on all employees to be used on this project.

K. Hazard Communication Program: Submit 6 copies of the Asbestos Abatement Contractor’s hazard communication program prepared in accordance with all applicable laws.

L. Site Emergency Action Plan: Submit 6 copies of the Asbestos Abatement Contractor's site emergency action plan prepared in accordance with all applicable laws.

M. Documentation from Physician: Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, documentation that all individuals permitted within the project site have received medical monitoring or had such monitoring made available to them as required in OSHA 29 CFR 1926.1101, and 29 CFR 1910.134. The Asbestos Abatement Contractor must be aware of and provide information to the examining physician about unusual conditions in the work place environment (e.g. high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities. The Asbestos Abatement Contractor shall keep and make available to all affected individuals a record and the results of such examinations.

N. HEPA Vacuums: Submit manufacturer's certification that vacuums conform to ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems as applicable to this project.

O. Respirators: Submit notarized certifications that respirators meet all requirements of NIOSH and EPA. Document NIOSH approval of all respiratory protective devices utilized on site. Include manufacturer's certification of HEPA filtration capabilities for all cartridges and filters.

P. Rental Equipment: When rental equipment is to be used in abatement areas or to transport asbestos-contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency and a copy of this notification is to be included as a project submittal.

Q. Entry Log: The Asbestos Abatement Contractor shall maintain a log of all personnel other than the Contractor's employees and agents who enter the work area while asbestos abatement operations are in progress until after final clearance is received. The log shall contain the following information as a minimum and certified copies shall be submitted weekly:

1. Date of visit.
2. Visitor's name, employer, business address, and telephone number.
3. Time of entry and exit from work area.
4. Purpose of visit.
5. Type of protective clothing and respirator worn.
6. Certificate of release signed and filed with the contractor.

R. Daily Log: The Asbestos Abatement Contractor shall maintain a daily log documenting the dates and times of, but not limited to, the following items:

1. Meetings; purpose, attendees, brief discussion.
2. Visitations; authorized and unauthorized at the job site.
3. Special or unusual events, i.e., equipment failures, accidents.

1.05 SUBMITTAL AFTER WORK IS COMPLETED

A. General: Submit in accordance with SECTION 01300 – SUBMITTALS.

B. After the completion of the Asbestos Abatement work, a final report shall be prepared by the Asbestos Abatement Contractor for acceptance by G70. Six copies of the report shall be submitted and shall include the items listed below.

1. The project name, Asbestos Abatement Contractor, Asbestos Abatement Contractor license number, notification form to DOH, work duration, material removed or disturbed, respiratory protection employed, employee exposure air sample results, and results of the most current PAT round for the laboratory conducting all air samples.

2. Certification of the Asbestos Abatement Contractor and Competent Person.
3. Visitor/Worker Entry Log (as described in Section 1.04).
4. Clearance certifications received from the Qualified Consultant.
5. Duration of the work.
6. Daily certification by the Asbestos Abatement Contractor's onsite Competent Person that all work has been performed in accordance with all applicable laws, specifications and approved work plan.
7. Waste Disposal Manifest Forms (if needed): Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos-containing and asbestos-contaminated waste materials removed from the work area during the abatement process in accordance with State and Federal requirements.
8. Air monitoring tests and test results from Qualified Consultant.
9. Documentation of Asbestos Abatement Contractor's completion of the following:
    a. Inspection of work area preparation prior to start of Asbestos Abatement Work and daily thereafter.
    b. Progress of the work.
    c. The Competent Person's inspections prior to encapsulation of the area from which asbestos containing materials were removed.
    d. Removal of waste materials from work area.
    e. Decontamination of equipment (list items).
    f. Daily certification by the Asbestos Abatement Contractor's onsite Competent Person that all work has been performed in accordance with all applicable laws, specifications and approved work plan.
10. Waste Disposal Manifest Forms: Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos-containing waste materials removed from the work area during the abatement process in accordance with State and Federal requirements.
11. Qualified Consultant Daily Air Monitoring, Testing Laboratory and Project Monitor: The Qualified Consultant shall submit name, address and telephone number of air monitoring testing laboratory selected for sample analysis and reporting of airborne fiber concentrations along with evidence that the Qualified Consultant's Project Monitor is a State of Hawaii certified Asbestos Project Monitor.

1.06 PRODUCT HANDLING

Delivery and Storage of Materials: Deliver materials to the site in original packages, containers or bags fully identified with manufacturer's name, brand

and lot number. Store materials in a dry well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation as approved by the Qualified Consultant. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations. Replacement materials shall be stored outside the contaminated work area until abatement is completed.

1.07 PROTECTION

A. Site Security: The work area is to be restricted only to authorized, trained, and protected personnel during the project. These may include the Asbestos Abatement Contractor's employees, employees of Subcontractors, the Qualified Consultant and his representatives, local regulatory inspectors, responding emergency personnel, and any other designated individuals. A list of authorized personnel shall be established prior to job start.

1. Entry to the work area by unauthorized individuals shall not be permitted without the express approval of G70 and any such entry shall be reported immediately to G70 by the Asbestos Abatement Contractor.

2. A Visitor/Worker Entry Log shall be maintained by the Asbestos Abatement Contractor.

3. The Asbestos Abatement Contractor shall have control, subject to approval of G70, of security in the work area and in proximity of Asbestos Abatement Contractor's equipment and materials.

B. Site Protection and Safety: As a minimum, follow the requirements of EPA, HIOSH (State of Hawaii), OSHA and NIOSH. Take all necessary precautions to ensure there is no asbestos contamination to those areas not included in the work schedule.

C. Protective Covering: The Asbestos Abatement Contractor shall provide and install protective covering to protect the project site on an "as required" or "upon request" by the Qualified Consultant. Protective covering shall be clear plastic sheets with a minimum thickness of 6-mil.

D. Safeguarding of Property: The Asbestos Abatement Contractor shall take whatever steps necessary to safeguard his work and also the property of G70 and other individuals in the vicinity of his work area during the execution of this Contract. He shall be responsible for and make good on any and all damages by his employees' negligence. Do not load structure with weight that will endanger the structure.

Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to G70. It will be the Asbestos Abatement Contractor’s responsibility to repair and/or replace to the G70’s satisfaction all items identified as damaged and/or missing that cannot be proven to have been in this condition prior to the commencement of this project.

E. Completed Work: The Asbestos Abatement Contractor shall provide all

necessary protection for surfaces encapsulated under this section.

1.08 ABBREVIATIONS

A. ANSI: American National Standards Institute, Inc.

B. AHERA: Asbestos Hazard Emergency Response Act.

C. CFR: Code of Federal Regulations.

D. HIOSH: Hawaii Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii.

E. EPA: U.S. Environmental Protection Agency.

F. NESHAPS: National Emission Standards for Hazardous Air Pollutants.

G. MAP: Asbestos Model Accreditation Plan.

H. NIOSH: National Institute for Occupational Safety and Health.

I. OSHA: Occupational Safety and Health Administration.

1.09 GENERAL REQUIREMENTS

A. Furnish required certifications within 10 consecutive calendar days from award, that the Asbestos Abatement Contractor is experienced with the EPA, OSHA and HIOSH regulations related to asbestos, application, removal, disposal, and treatment, and holds a valid C-19 Contractor's license.

B. Furnish certification, within 10 consecutive calendar days from award, that employees have had instructions on the dangers of asbestos exposure, on respirator use and decontamination, from an EPA approved training facility, as described by AHERA Regulation 40 CFR 763, Appendix C to Subpart E, April 30, 1987 and asbestos Model Accreditation Plan (MAP), and Hawaii Administrative Rules, Chapter 11-501 through 11-504.

C. Asbestos Abatement Contractor shall examine and have at all times in his possession at his office (one copy) and in view and readily available at each jobsite (one copy) a current issue of the following publications:

1. Title 29, Code of Federal Regulations, Part 1926.1101 Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

2. State of Hawaii: Occupational Safety and Health Standards, Title12, Subtitle 8, Part 1.

3. Title 29, Code of Federal Regulations, SECTION 1910.134 - General Industry Standard for Respiratory Protection, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

4. Title 29, Code of Federal Regulations, SECTION 1910.2 - Access to Employee Exposure and Medical Records, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

5. Title 29, Code of Federal Regulations, SECTION 1910.1200 - Hazard Communication,, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

6. State of Hawaii: Occupational Safety and Health Standards, Title12, Chapter 203 - Hazard Communication.

7. Guidance for Controlling Asbestos-Containing Materials in Buildings (purple book), U.S. Environmental Protection Agency (EPA).

8. Title 34, Code of Federal Regulations, Part 231, Appendix C, Procedures for Containing and Removing Building Materials Containing Asbestos, U.S. Environmental Protection Agency (EPA).

9. Title 29, Code of Federal Regulations, SECTION 1910.145 - Specifications for Accident Prevention, Signs and Tags, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

10. ANSI Z 288.2 Practice for Respiratory Protection.

11. EPA, Final Response to the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR, Part 763, Subpart E.

12. EPA, Model Accreditation Plan, 40 CFR Part 763 Subpart E. Appendix C.

13. State of Hawaii, Asbestos Requirements, Title 11, Chapter 501 through 504.

14. Project plans and specifications and approved Work Plan.

D. The Asbestos Abatement Contractor shall comply with the above requirements and any applicable State and City and County regulations. Where conflict or any inconsistency exists among requirements, this specification, and approved work plans, the more stringent requirements shall apply. Ignorance of the above requirements and any applicable State and City and County regulations resulting in additional cost to the Asbestos Abatement Contractor or G70 shall be solely the responsibility of the Asbestos Abatement Contractor.

E. All regulations shall govern over these specifications, except that any more stringent specification (including approved work plan) or specification providing greater protection against asbestos exposure, injury, loss or liability shall control to the extent permitted by regulation. Any question regarding conflict or inconsistency between specifications and/or regulations should be directed to G70.

F. Whenever approval of G70 is required prior to proceeding with other work, the following shall be complied with:

1. The Asbestos Abatement Contractor shall allow G70 48 hours from notification to respond to the request for inspection.

2. The Asbestos Abatement Contractor shall designate one person (either a foreman or superintendent) who will be authorized to request inspections. The name of the designated person shall be submitted in writing to G70 prior to commencing with the work. Requests from any other person will not be considered an official request.

3. The designated person, when requesting inspection, shall provide the following information:

   a. Name of caller.

   b. Building and rooms to be inspected.

   c. Work phase of inspection, as specified.

1.10 DEFINITIONS

A. Abatement: Procedure to control fiber release from asbestos containing building materials.

   1. Removal: All herein specified procedures necessary to remove asbestos containing materials from an area and disposal of the material at an approved site in an acceptable manner.

   2. Post-Removal Surface Encapsulation: Procedures necessary to coat surfaces from which asbestos-containing materials have been removed and where designated on the drawings to control any residual fiber release.

B. Air Monitoring: The process of measuring the fiber content of a specific, known volume of air in a period of time. For this project, NIOSH 7400 Method.

C. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

D. Asbestos Containing Material: Building material with detectable concentrations of of asbestos including chrysotile, amosite, tremolite, anthophyllite, and/or actinolite.

E. Authorized Visitor: G70, the Qualified Consultant, his representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.

F. Encapsulant: A liquid material which can be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components (penetrating encapsulant). Selected encapsulants shall be compatible with the

existing finishes including wood, metal and/or plastic.

G. Holding Area: A secure area used for the storage of double bagged asbestos-containing material before removal from the project site to an approved disposal site.

H. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.

I. Friable Asbestos: Asbestos containing material which can be crumbled to dust, when dry, under hand pressure.

J. HEPA Filter: A High Efficiency Particulate Air filter capable of trapping and retaining 99.97 percent of monodispersed particles 0.3 micrometers or greater in diameter.

K. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Air (HEPA) filter.

L. Project Monitor: Third-party qualified environmental consultant who is a State of Hawaii certified Asbestos Project Monitor, herein referred to as the Project Monitor.

M. Surfactant: A chemical-wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

N. Qualified Consultant: A third party, independent consultant hired G70 and not affiliated with the Asbestos Abatement Contractor who will perform air monitoring and inspection during Asbestos Abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant shall be certified as a State of Hawaii Department of Health Project Monitor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plastic Sheeting: Minimum thickness of 6-mil polyethylene film.

B. Plastic Bags: Minimum thickness 6-mil polyethylene film labeled as specified hereinafter.

C. Tapes: Tape shall be capable of sealing joints of adjacent sheets of polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide, and double-faced foam tapes, by Nashua, 3-M. Arno. or pre-approved equal shall be used on polyethylene sheeting, red or NATO orange tape, minimum 2 inches wide for exit arrows.

D. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of

polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

E. Surfactant (Wetting Agent): 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether, or equivalent, and shall be mixed with water to provide a concentration of 1 ounce, or more as needed, of surfactant to 5 gallons of water. (An equivalent surfactant shall be understood to mean material with a surface tension of 29 dynes/em as tested in its properly-mixed concentration, using ASTM Method D 1331-56 (R 1980), "Surface and Interfacial Tension of Solutions of Surface-Active Agents")

F. Asbestos Encapsulant: Encapsulant shall be non-flammable with a Class A fire classification. Encapsulant shall be odorless when dry, and compatible with materials applied by others (separate contract). All references to application at stregths below full strength shall be as approved by the product manufacturer for the intended use.

G. Warning Labels and Signs: As required by OSHA regulation 29CFR 29 CFR 1926.1101. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter. Signage shall be as approved by G70.

H. Protective Clothing: As specified hereinafter. The Asbestos Abatement Contractor is cautioned that during the summer and fall, there is usually a tremendous shortage of coveralls due to the consumption of these items by mainland contractors for summer abatement projects. The Abatement Contractor shall have all the required sets of coveralls required for this project on island prior to the start of work. There will be no time extension for the unavailability of coveralls or related equipment.

I. Other Materials: Provide all other materials, which may be required to properly prepare and complete this project.

2.02 TOOLS AND EQUIPMENT

A. General: Provide and fabricate suitable tools for the Asbestos Abatement Work.

B. Water Sprayer: Airless or a pressure sprayer for amended water application as applicable.

C. HEPA Vacuum: High Efficiency Particulate Air (HEPA) vacuum.

D. Air Purifying Unit: Air filtration system equipped with HEPA filter.

E. Negative Air Pressure Units: Portable “exhaust units” with air purification equipment in accordance with EPA Document, Guidance for Controlling Asbestos-Containing Materials in Building, (Purple Book), EPA560/5-85-024 of June 1985, Appendix J. Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement.

One back-up unit will be on-site during all Asbestos Abatement Work in accordance with HAR 11-501.

F. Paint/Encapsulant Sprayer: Airless type.

G. Other tools and equipment as necessary.

2.03 PERSONNEL PROTECTION REQUIREMENTS

A. The Asbestos Abatement Contractor acknowledges he alone is responsible for instruction and enforcement of personnel protection requirements and that these specifications provide only a minimum acceptable standard.

The Asbestos Abatement Contractor acknowledges that all person(s) within the regulated work area shall not remove respiratory protection. Any person(s) observed removing respiratory protection within the regulated area on more than one occasion will not be permitted to continue any work on the project.

B. Provide workers with personally-issued and marked respiratory equipment approved by NIOSH and accepted by OSHA and HIOSH. All Asbestos Abatement Work shall be performed in air purifying respirators equipped with cartridges approved for asbestos by NIOSH.

C. Loading and Unloading of Double-Bags or Drums at the Project Site and Landfill: Half-face dual-cartridge respirators equipped with cartridges NIOSH approved for asbestos.

D. Other: Should any condition, for any reason, be encountered where the exposure level exceeds the action levels provided by the Qualified Consultant, the Asbestos Abatement Contractor shall stop work and determine the causes of the excessive levels. Should the action level continue to be exceeded, the contractor shall stop work. Work will not be resumed until approval is received from the Qualified Consultant.

E. Beards: Bearded persons will not be permitted in the regulated work area.

F. Provide workers with sufficient sets of disposable protective full-body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full-body coveralls, footwear, gloves, and headgear. Provide hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as asbestos-contaminated waste.

Protective clothing shall be worn by all personnel within the work area from the start of the Asbestos Abatement Work through final encapsulation, until the Asbestos Abatement Contractor has received acceptance of clearance by the Qualified Consultant.

All persons conducting any work within the regulated work area shall remain fully

suited (dressed) with protective clothing at all times. Any persons(s) observed partially suited while conducting work within the regulated area on more than one occasion will be required to be removed from the project.

G. No visitors shall be allowed in work areas, except as authorized by G70 or the Qualified Consultant. Authorized visitors shall be responsible for their own suitable respirators, disposable protective full-body clothing, footwear, gloves and headgear, including hard hat when required and insulated rubber boots or equal.

H. All electrical systems used for Asbestos Abatement Work shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes. All GFCI inside the regulated work area must be of waterproof type.

I. Additional safety equipment (e.g., hard hats meeting the requirements of ANSI Z89.1-1981, eye protection meeting the requirements of ANSI Z87.1-1979, safety shoes meeting the requirements of ANSI241.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers.

PART 3 - EXECUTION

3.01 WORK PRACTICES AND ENGINEERING CONTROLS

A. Wet methods shall be used.

B. Whenever feasible, local exhaust ventilation shall be used.

C. Containment of work area is required when there is no negative exposure assessment or monitoring results show the PEL has been exceeded.

1. Posting of Caution Signs: Post caution signs in and around the work area to comply with 29 CFR 1926.1101 and all other Federal, State and local requirements. Signs shall be posted at a distance sufficiently far enough away from the work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.

2. Precleaning/Wet-Wiping: Clean the work area first using HEPA vacuum equipment and then wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces. Pick up all loose debris and any other material that may be considered contaminated with asbestos material.

3. Critical Seals (Barriers): Seal all openings within the contained work area, including but not limited to, roof vents, exhaust hoods, utility plates, and air conditioning equipment intakes/supply vents, with plastic sheeting and tape/adhesive. Plastic sheeting is to remain in place for the duration of the Asbestos Abatement Work or until specified by the Qualified Consultant.

4. Inspect the Building Openings: At the beginning of each work day, the

Asbestos Abatement Contractor shall inspect and ensure that all critical seals are intact and remain closed or sealed.

5. Negative Pressure Containment: For any Asbestos Abatement work conducted within the interior of the building, a negative pressure containment shall be constructed to enclose the work area.

   HEPA Air Filtration: Install a sufficient number of air filtration units to create one full room air exchange every 15 minutes and a negative pressure differential of 0.02 inches of water.

D. Respirators are required for all Asbestos Abatement Work.

E. Temporary Fire Protection:

1. Provide and maintain temporary fire protection equipment during the Asbestos Abatement Work.

2. Equipment shall be of the appropriate type to fight fires associated with the existing building materials and those materials used during the construction operations.

F. Notify the Qualified Consultant and get their approval prior to proceeding with Asbestos Abatement Work as specified herein.

Commencement of work shall not start until:

1. Pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Qualified Consultant.

2. All equipment for Asbestos Abatement Work, clean-up and disposal are on hand.

3. All worker training (and certification) is completed.

4. Asbestos Abatement Contractor receives permission from the Qualified Consultant to commence abatement.

3.02 ASBESTOS FIBER CONCENTRATIONS IN THE WORK AREA

The maximum permissible exposure to airborne concentrations of asbestos fibers within the work area shall be 0.1 fibers per cubic centimeter (f/cc). The maximum permissible exposure to airborne concentrations of asbestos fibers outside the work area shall be 0.01 f/cc or the equivalent of the pre-abatement air sample concentrations. The work shall stop whenever these limits are exceeded and the Asbestos Abatement Contractor shall remedy the condition prior to commencing the work. The expenses resulting from the delays shall be the Asbestos Abatement Contractor's responsibility and shall not be paid by anyone else involved with the project.

3.03 PRIOR TO ASBESTOS ABATEMENT WORK

A. Install critical barriers (seals) at all openings within the work area.

B. Establish regulated area, decontamination areas, and clean areas.

C. Post warning signs.

3.04 PERFORMANCE OF ASBESTOS ABATEMENT WORK

A. The Asbestos Abatement Contractor shall be responsible for any and all damages due to his negligence.

B. Continuously throughout the work shift and at the end of the day the Asbestos Abatement Contractor shall perform a visual inspection and clean up any and all visible debris resulting from his work.

C. The asbestos-containing material shall be saturated with amended water containing a wetting agent (surfactant) before removal. Wet methods shall be used at all times during the asbestos abatement. No dry or mechanical method of removal is permitted. Drilling, breaking, pulverizing, or crushing of material shall be minimized as it may increase the possibility of fiber release. Application of an encapsulant on surfaces from which ACM was removed is required.

E. At the end of each work shift and if required during the work shift the Asbestos Abatement Contractor shall immediately clean up any visible debris in and around the regulated work area. All debris must be immediately cleaned up and bagged as necessary.

F. It shall be the responsibility of the Asbestos Abatement Contractor to verify the thickness/ quantity and complexity of the material and satisfy himself as to the total work and/or effort as required to safely complete this project. No additional payment will be considered for any deviations of the actual thickness/quantity from any thickness/quantity noted.

G. The Asbestos Abatement Contractor shall protect the existing building substrates and components from damage from tools and equipment used during Asbestos Abatement Work and subsequent encapsulation procedures. Damage to the buildings as a result of the Asbestos Abatement Contractor's negligence will require the Asbestos Abatement Contractor to repair the damage at no cost to G70.

3.05 DECONTAMINATION PROCEDURES

A. Require all Workers to adhere to the following personal decontamination procedures whenever they leave the work area and at the end of work shift:

1. Before leaving the regulated area, require the worker to remove the disposable coveralls in the designated decontamination area. Disposable coveralls are placed in a bag for disposal with other contaminated material. Respiratory protection should not be removed at this time. Tools used for asbestos abatement should be stored in the regulated area until they are

decontaminated and removed at the completion of the abatement activity.

2. The worker shall then proceed to the designated clean area or "clean" room, at which time the respiratory protection may be removed.

B. Equipment and Waste Container Decontamination: All equipment and surfaces of containers must be cleaned prior to removing from the regulated area.

Decontamination Sequence: Take all equipment or material from the work area through the decontamination area according to the following procedure:

a. At the work area, thoroughly clean sealed polyethylene bags or contaminated equipment and pass into the decontamination area.

b. Once inside the decontamination area, wet clean the bags/containers and equipment.

c. Require these workers to wear full protective clothing and appropriate respiratory protection while cleaning equipment and waste containers.

d. All bags/containers and equipment are to be transported in clean sealed containers that have never entered the work area.

C. Work Area Decontamination: At completion of the Asbestos Abatement Work, thoroughly HEPA vacuum and wet wipe all surfaces inside work area. Carefully disassemble and roll up work area polyethylene and dispose as asbestos-contaminated material. Wet clean and/or HEPA vacuum the work area to prepare the area for visual clearance and air sampling clearance by the Qualified Consultant.

3.06 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL AND ASBESTOS - CONTAMINATED WASTE (SOLID AND/OR LIQUID)

A. Asbestos-containing material, asbestos contaminated material and PPE shall be double-bagged in leak tight bags with OSHA label prescribed by the HIOSH regulations referenced in these specifications. Label shall state:

DANGER

ASBESTOS FIBERS

MAY CAUSE CANCER

CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONAL ONLY

Asbestos-containing material to be transported off the facility site shall be labeled with the name of the waste generator and the location at which the waste was generated, as prescribed by EPA regulation 40 CFR 61.150 (NESHAPS). Additionally, label bags in accordance with OSHA requirement 29 CFR

1926.1101.

B. Vehicles used for transporting waste to the disposal sites shall have a completely enclosed, lockable storage compartment. Storage compartments shall be plasticized and sealed with a minimum of one layer of 6-mil polyethylene sheeting on the sides and top, and 2 layers of 6-mil polyethylene on the floor (bed). If allowed by HIOSH, waste materials, except those with sharp edges (metal lath, screws, nails, metal suspension system, etc.), properly double-bagged or wrapped may be transported to the disposal site without being placed in drums if the transporting vehicle is prepared as specified above in addition to any more stringent requirements by HIOSH. The compartments shall be thoroughly wet-cleaned and/or HEPA vacuumed following the disposal of each load at the disposal sites at an approved location with electrical power as required. At the conclusion of the asbestos abatement, or before transport vehicles are used for other purposes, the polyethylene sheeting shall be properly removed and disposed of as contaminated waste. After this has been accomplished, compartments shall once again be wet cleaned and HEPA vacuumed in order to eliminate all debris.

C. The Asbestos Abatement Contractor shall mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that signs are visible and displayed in such a manner and location that a person can easily read the legend. The legend shall conform to the NESHAP requirement specified in 40 CFR Part 61J 49(d)(1)(iii), and HAR.11-501 to 11-504.

D. Workers unloading bags at the disposal sites shall be dressed in full-body protective clothing and dual-cartridge respirators.

E. Waste disposal manifest forms shall be properly completed to assure custody and disposal of all asbestos-containing material and asbestos-contaminated waste at approved disposal sites. Forms shall be kept on file as directed by G70 with copies submitted to the Qualified Consultant the next working day after each trip.

NOTE: IT IS THE Asbestos Abatement CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ANY LANDFILL USED FOR DISPOSAL OF ASBESTOS-CONTAINING OR ASBESTOS-CONTAMINATED WASTE IS APPROVED FOR THAT PURPOSE.

F. Bags must be placed in the hole for burial. Dumping of bags from the containers will not be allowed. However, if a bag is torn and if acceptable by the landfill, the entire container may be buried.

G. Liquid waste shall not be disposed into the sanitary sewer system, filtered or unfiltered, without appropriate City and County of Honolulu permit(s).

H. The Asbestos Abatement Contractor shall pay the waste transportation and disposal charge for use of the landfills. All expenses for landfills shall be the complete responsibility of the Asbestos Abatement Contractor. The Asbestos Abatement Contractor shall provide the required advance notice of all deliveries

to the landfill(s). Delivery time shall be as directed by the landfill operator.

I. The Asbestos Abatement Contractor shall be responsible for all costs associated with disposal of asbestos waste at an approved landfill.

3.07 CLEANING OF THE WORK AREA

A. Should the Asbestos Abatement Contractor fail to commence work to clean-up and make the work area asbestos free within one working day after the clean-up has been requested by G70, G70 may without further notice and without termination of contract, do the clean-up and deduct the cost thereof from the contract price.

B. Surfaces to be encapsulated shall be wet-wiped and/or HEPA vacuumed just prior to the application of encapsulant.

C. Post-removal encapsulation of affected areas shall begin as specified hereinafter when approved by the Qualified Consultant.

3.08 POST-REMOVAL ENCAPSULATION OF AFFECTED AREAS

An approved encapsulant diluted to a maximum of 1/3 strength of the manufacturer's normal application rate for the intended substrate shall be applied using airless spray equipment to all areas where asbestos containing materials have been removed.

3.09 FINAL CLEAN-UP

A. Final clean-up may not proceed until a visual inspection for dust and debris is successfully completed by the Qualified Consultant.

B. Following visual inspection and clearance by the Qualified Consultant, the Asbestos Abatement Contractor shall encapsulate the exposed surfaces at and adjacent to the disturbed material.

C. After final cleanup, the Qualified Consultant shall perform a visual inspection to ensure that the asbestos control and work areas are free of any accumulations of dirt, dust, or debris. Should the Qualified Consultant determine that the asbestos control and work areas do not pass the visual clearance, the Asbestos Abatement Contractor shall take appropriate actions to re-clean the area and shall repeat the visual clearance.

D. Following successful completion of visual clearance and application of encapsulant as described above, the Qualified Consultant shall perform air clearance of the contained work area. Containment shall remain under negative air pressure until receipt of successful air clearance results, as confirmed by the Qualified Consultant.

E. Following successful completion of air clearance, remove signage required by the Asbestos Abatement work. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.

F. Completely remove all plastic sheeting and negative air equipment. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore existing facilities to their original condition as approved by G70.

Employee Release Form
(Sample)

Employee Name:

_____

Employee Address:

_____

Employee Telephone No.:

_____

Name of Training Center, Certificate Number and Expiration:

_____

Date: Classification of Worker:

_____

Have you had in the past or present, any respiratory problems?

Yes _____ No _____

Have you worked in the past with asbestos or fiberglass type materials?

Yes _____ No _____

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard. The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed at the commencement of the job on the required use of safety equipment, clothing, working conditions, and procedures. These must be rigidly adhered to. Smoking is not permitted in the work areas. Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to me by the company at my work commencement and I am thoroughly conversant with them and I have answered the above questions truthfully.

Signed (Employee) Date:

_____ _____

CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

PROJECT NAME: _____ DATE: _____
PROJECT ADDRESS: _____
CONTRACTORS NAME: _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with G70 for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project, you must be given a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

Physical characteristics of asbestos
Health hazards associated with asbestos
Respiratory protection
Use of protective equipment
Pressure Differential Systems
Work practices including hand on or on-job training
Personal decontamination procedures
Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

By signing this document you are acknowledging only G70 has advised you of your rights to training and protection relative to your employer, the Contractor.

Signature _____ Social Security Number_____

Printed Name _____ Witness _____

END OF SECTION

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13283 – DISTURBANCE OF LEAD PAINT

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

As specified in Section 00700.

1.02 DESCRIPTION OF WORK

A. Whenever paint containing lead (lead-containing paint and lead-based paint) is being disturbed, this section shall take precedence over others. All paint shall be considered to contain lead until proven otherwise.

B. The preparation and treatment of existing paint with lead (lead-containing paint and lead-based paint) on various surfaces. This section is being implemented so that the planned work can be accomplished in a safe manner.

C. All preparation of paint with lead (lead-containing paint and lead-based paint) shall be identified in advance so that the preparation/treatment of surfaces will be one continuous operation.

D. Demolition of surfaces and components containing paint with lead (lead-containing paint and lead-based paint).

1.03 WORK SPECIFIED IN THIS SECTION

Furnish all labor, materials and equipment necessary to carry out the safe preparation and treatment of paint with lead in compliance with all applicable laws and regulations from all surfaces, including all incidental and pertinent operations to safely complete this project.

Furnish all labor, materials and equipment necessary to carry out the safe demolition of surfaces and components with paint with lead in compliance with all applicable laws and regulations from all surfaces, including all incidental and pertinent operations to safely complete this project.

All paint shall be considered to contain lead until proven otherwise.

1.04 COORDINATION WITH OTHER SECTIONS

It will be the Contractor's responsibility to repair and/or replace, to the Architect's satisfaction, all items identified as damaged and/or missing in connection with this work that cannot be proven to have been in this condition prior to the commencement of this project. It is the Contractor's responsibility to bring to the attention of the Architect, any discrepancies in

the plans and specifications prior to starting any work.

1.05 CONTRACTOR USE OF PREMISES

A. General: The Contractor shall cooperate fully with the Architect, during the project execution to minimize conflicts.

B. Pollution Control: The Contractor shall not contaminate the air, water, soil or other items with hazardous materials such as cleaning solutions, lead paint debris and waste, etc. The Contractor shall immediately clean the contaminated area and dispose of the waste at his own expense if determined by the Architect to be contaminated. The Architect shall have the authority to immediately stop the work and order the Contractor to clean the contaminated site.

C. Use of the Site:

1. Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while at the project site.

2. Do not unreasonably encumber the site with materials or equipment. Confine stock-piling of materials and location of storage to the areas authorized by the Architect.

1.06 COMMENCEMENT OF WORK

A. The Contractor shall not commence work unless the following requirements have been met. These requirements must be met each time work that calls for the disturbance paint with lead is to begin in a new work area.

B. Submittals: All pre-treatment submittals, notifications, posting and permits have been provided and are satisfactory to the Architect.

C. Equipment: All equipment for preparation, clean-up and disposal are on hand.

1.07 SUBMITTALS

Submit in accordance with Section 01300 – SUBMITTALS and the following requirements. Submittals shall be submitted in the order listed herein. Failure to do so will result in automatic rejection of submittals.

A. General: All submittals shall be made to the Architect no later than ten (10) consecutive calendar days from award date unless specified otherwise.

B. Detailed Paint with Lead Disturbance Schedule: The Contractor shall submit a project schedule indicating the actual start and completion dates for each phase of the work. The Contractor shall also provide detailed information concerning:

1. Name of Contractor's onsite Competent Person responsible for compliance with all Federal, State and Local regulations and plans and specifications.

2. Preparation of the work area.

3. Any personal protective equipment including respiratory protection and protective clothing approved by the Architect.

4. Employees who will participate in the project, including delineation of experience, training, and assigned responsibilities during the project.

5. Decontamination procedures for the personnel, work area and equipment.

6. Work methods and procedures to be used during the removal of loose, peeling, flaking and/or blistering paint and during demolition of surfaces and components containing lead paint including methods to suppress dust emissions during the disturbance of paint with lead.

7. Required air monitoring procedures and sampling protocols when the likelihood of airborne exposure of lead-containing dust and fumes are probable.

8. Procedures for handling and transporting waste materials.

9. Procedures for final decontamination and clean-up.

10. A sequence of work and performance schedule in coordination with other trades.

11. Emergency procedures.

C. Samples: The Contractor shall submit samples for approval prior to ordering materials

1. Six (6) copies and samples for each manufacturer supplied items shall include manufacturer's name, trade name, catalog number, size, specification reference, applicable federal and military specification references, and all other information necessary to establish contract compliance.

2. Liquid sanders, encapsulants and any other materials brought

on- site that are considered as hazardous materials under 29 CFR 1910.1200, shall include Materials Safety Data Sheets.

D. The Architect's Project Monitor with the Contractor may inspect the work area wherein all associated activities will occur and submit a statement signed by both, agreeing on building and fixture condition prior to the commencement of work.

E. Documentation for Instructions:

1. Submit to the Architect's Project Monitor that the Contractor's employees, including foreman, supervisors and any other company personnel or agents who may be exposed to airborne lead dust or who may be responsible for any aspects of lead paint removal activities certificates of training, in accordance with the Hawaii Department of Occupational Safety and Health's (HIOSH) lead standard (12-148).

2. Submit to the Architect's Project Monitor, a written respiratory protection program meeting the requirements of 29 CFR 1910.134 (b) (d) (e) and (f), documentation that all employees using respirators have received the training specified in this Section and documentation of respirator fit-testing for all Contractor employees and agents who must wear negative pressure respirators.

F. Documentation From Physician: The Contractor shall submit documentation from a physician that all employees or agents who may be exposed to airborne lead dust or fumes have been medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, the Contractor shall document that his personnel have received medical monitoring as required in the HIOSH lead standard (12-148).

1. Before exposure to lead dust or fumes, the Contractor will provide workers with a comprehensive medical examination as required by Part 8, Section 12-148, June 1993 of the HIOSH standards; Federal Register/Volume 55, No. 189; and 29 CFR 1926.62 or whichever is stricter for the operation being performed. This examination will not be required if adequate records show the employees have been examined as required by the aforementioned regulations within the last year.

2. The Contractor shall provide information to the examining physician about unusual conditions in the work place environment that may impact on the employee's ability to perform work activities; a copy of 29 CFR 1910.1025; HIOSH Section 12-148; Federal Register/Volume 55, No. 189; a description of the affected employee's duties as they relate to

the employee' s exposure; the employee's representative exposure level or anticipated exposure level; and description of any personal protective and respiratory equipment used or to be used; and information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

1.08 GENERAL REQUIREMENTS

A. The work specified herein shall include the preparation of work area, preparation and/or other special treatment procedures, demolition, and transportation and disposal procedures as required of lead-containing and lead-based materials by persons trained, knowledgeable and qualified in the techniques of handling and disposing of lead-containing, lead-based, and lead-contaminated materials, and the subsequent cleaning of contaminated areas. This work shall be performed in compliance with all applicable federal, state and local regulations and be performed by workers who are capable of and willing to perform the work of this contract.

B. The Contractor shall submit documentation within 10 consecutive calendar days of award, that employees have had instructions on the dangers of lead exposure on respirator use and decontamination.

C. Applicable Standards and Guidelines: All work under this contract, and any other trade work conducted with the project, shall be performed in strict accordance with all applicable federal, state and local regulations, standards and codes governing lead paint preparation, removal, disposal, treatment, transportation and disposal of lead materials.

1. The most recent edition of any relevant regulation, standard, document code shall be in effect.

2. The Contractor shall have copies of all standards, regulations, codes and other applicable documents available at the work site in an area assigned to the Contractor throughout the execution of this project.

D. Specific Statutory and Regulatory Requirements:

1. The Department of Labor and Industrial Relations: State of Hawaii; Occupational Safety and Health Standards; Part 8, Section 12-148, June 1993 (HIOSH) Lead Exposure in Construction.

2. Office of Public and Indian Housing, Department of Housing and Urban Development: Lead Paint Guidelines, dated June 1995.

3. Title 29 Code of Federal Regulations Part 1926.62, Safety and Health Standards (Lead Exposure in Construction, May 1993).

4. Title 29 Code of Federal Regulations Part 1910.134, Respiratory Protection.

5. Title 40 Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste.

6. Title 40 Code of Federal Regulations Part 262, Standards Applicable to Generators of Hazardous Waste.

7. Title 40 Code of Federal Regulations Part 263, Regulations Hazardous Waste Transporters.

8. Federal Register/Vol. 54, No. 131; Tuesday, July 11, 1989. Department of Labor, Occupational Safety and Health Administration; 29 CFR Parts 1910, 1915, 1917 and 1918; Occupational Exposure to Lead; Statement of Reasons; Final Rule.

E. Alternative Procedures:

1. Requests for Alternative Procedures: Procedures described in this specification are to be used at all times. However, if specified procedures cannot be used, a request must be made in writing to the Architect providing details of the problem encountered and recommended alternatives.

2. Requirements for Alternative Procedures: Alternative procedures shall provide equivalent or greater protection than the procedures that they replace.

3. Approval of Alternative Procedures: Any alternative procedure must be approved in writing by the Architect before implementation.

F. The Contractor shall comply with the above requirements and any applicable State and City & County regulations. Where conflict or any inconsistency among requirements, this specification exists, and approved work plan exists the more stringent requirements shall apply. Ignorance of the above requirements and any applicable State and City & County regulations resulting in additional cost to the Contractor shall not be paid by the Architect.

G. All regulations shall govern over these specifications, except that any more stringent specification (including approved work plan) or

specification providing greater protection against asbestos exposure, injury, loss or liability shall control to the extent permitted by regulation. Any question regarding conflict or inconsistency between specifications and/or regulations should be directed to the Architect.

H. The Contractor shall not begin with any work without the Architect's Contracted third-party Lead Inspector (Project Monitor) present onsite.

1.09 DEFINITIONS

A. Abatement: Procedure to control lead dust release from paint with lead.

B. Removal: All herein specified procedures necessary to remove peeling, flaking and blistering paint with lead in an acceptable manner.

C. Action Level (AL): Employee exposure averaged over an 8-hour period, without regard to the use of respirators, to a particular airborne concentration. OSHA requirements become effective at this level. Lead: 30 micrograms/cubic meter.

D. Air Monitoring: The process of measuring the content of a specific, known, volume of air in a stated period of time. For this project, NIOSH 7082 method for lead monitoring.

E. Architect's Project Monitor: Architect's contracted third-party qualified environmental consultant who is a State of Hawaii certified Lead Inspector, herein referred to as the Project Monitor.

F. Authorized Visitor: The Architect, their representatives, air monitoring personnel, or representative of any regulatory or other agency having jurisdiction over the project.

G. Contaminated Area: An area where unwanted toxic or harmful substances have been introduced.

H. Fixed Object: A unit of equipment or furniture in the area which cannot be removed from the work area without dismantling.

I. HEPA Filter: A High Efficiency Particulate Absolute filter capable of trapping and retaining 99.97% of particulate greater than 0.3 micron in length.

J. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Absolute (HEPA) filter.

K. Holding Area: A secure area used for the storage of properly contained paint with lead material before removal from the project

site to an approved disposal site.

L. Lead: Metallic lead, all inorganic lead compounds, and inorganic lead soaps. Excluded are all other organic lead compounds.

M. Lead Control Area: An area where paint with lead paint removal, treatment and preparation operations are performed which is isolated by physical boundaries to prevent unauthorized entry of personnel and to prevent the spread of lead dust, paint chips or debris.

N. Permissible Exposure Limit (PEL): The employer shall ensure that no employee is exposed to concentrations greater than the PEL as determined from an 8-hour time weighted average. Lead: 50 micrograms/cubic meter.

O. Personal Monitoring: Sampling of lead paint dust concentrations within the breathing zone of an employee to determine the 8-hour time weighted average. The samples shall be representative of the employee's work tasks.

P. Plasticizing: Procedures necessary to use polyethylene sheeting, adhesives and (or) taping.

1.10 ABBREVIATIONS

A. ANSI - American National Standards Institute, Inc.

B. CFR - Code of Federal Regulations

C. EPA - U.S. Environmental Protection Agency

D. HIOSH - Department of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii

E. NIOSH - National Institute for Occupational Safety and Health

F. OSHA - Occupational Safety and health Administration

G. NESHAPS - National Emissions Standards for Hazardous Air Pollutants

H. LBP - Lead-Based Paint

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plastic Sheeting: Minimum thickness is 6-mil polyethylene film.

B. Tapes: Tape shall be capable of sealing joints of adjacent sheets of

polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide; red or NATO orange tape, minimum 2 inches wide for exit arrows; and double-faced foam tapes, by Nashua 3-M, Arno, or approved equal.

C. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of polyethylene and for attachment of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water. 3-M #76, #77, or approved equal.

D. Warning Labels and Signs: As required by HIOSH regulation 12-148 and CFR. 55 No. 189 and as approved by the Architect.

E. Protective Clothing: The Contractor shall have all the required sets of coveralls required for this project prior to the start of work. There will be no time extension for the unavailability of coveralls or related equipment.

F. Liquid Sanders: Product shall be specifically designed for the preparation of paint where dry sanding is not allowed or not appropriate. Liquid sanders are not to be used to remove paint.

G. Other Materials: Provide all other materials which may be required to prepare properly and complete this project.

2.2 TOOLS AND EQUIPMENT

A. General: Provide and fabricate suitable tools for the lead treatment/preparation procedures.

B. Other tools and equipment as necessary to accomplish the work.

2.3 PERSONNEL PROTECTION REQUIREMENTS

A. The Contractor acknowledges that he alone is responsible for the instruction and for enforcing personnel protection requirements, and that these specifications provide only a minimum acceptable standard. If other potentially hazardous materials are used, the Contractor shall comply with all applicable regulations that exist for that particular hazardous material and to ensure worker safety and health.

B. Respiratory Protection: The Contractor shall provide all respiratory protection to workers in accordance with the submitted written respiratory protection program, which includes all items in 29CFR1910.134(b)(l-II).

C. Protective Clothing:

1. Clothing: The Contractor shall provide clothing including head, hands, foot and full body protection consisting of material impenetrable by bulk material in sufficient quantities and adequate sized for all workers and Authorized Visitors. Disposable or reusable clothing are acceptable; however, disposable clothing shall be disposed of in accordance with all federal, state and local regulations.

2. Miscellaneous safety equipment: The Contractor shall provide hard hats (meeting the requirements of ANSI Standard Z89.1-1981), protective eyewear (meeting the requirements of ANSI Standard Z87.1-1979), and disposable gloves to all workers. Safety shoes (meeting the requirements of ANSI Standard Z41.1- 1987) may be required for some activities.

3. Footwear: The Contractor shall require appropriate footwear for all workers.

PART 3 EXECUTION

3.1 POTENTIAL LEAD HAZARD

A. The disturbance or dislocation of lead-containing and lead-based materials may cause lead-containing dust to be released into the atmosphere, thereby creating a potential health hazard to workmen, building occupants, and neighboring residences. Apprise all workers supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified lead-containing materials, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to respirable airborne lead dust and ingestible lead-containing materials. Such measures shall include at the minimum, the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

3.2 LEAD-CONTAINING AND LEAD-BASED MATERIALS

A. Lead-containing and lead-based painted components known to be present due the age of the facility and based on lead paint testing conducted.

B. This Section applies to lead painted components that will be disturbed during surface preparation and treatment, demolition, and other activities and as described herein. It does not apply to painted components that do not contain lead, nor lead paint that will not be

disturbed in any manner during the work to be performed under this contract. The Architect shall have the authority to require special Architect controls described under this Section of any lead painted components that are disturbed.

3.3 WORK AREA PREPARATION

A. Posting of Caution Signs: The Contractor shall post caution signs in accordance with HUD lead paint guidelines at any location and approaches to a location where airborne concentrations of lead may exceed ambient background levels. The Contractor shall post signs at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of work place barriers.

B. Isolation Barriers: Isolation barriers shall be installed in accordance with the contractor's approved work plan wherever it is necessary to protect the public, employees of the facility and non-working personnel from leaded dust. The isolation barriers shall provide sufficient protection from contaminating the exterior of the work area.

C. Inspect the Building Openings: At the beginning of each work day, the Contractor shall inspect and ensure that all doors, windows and other openings of affected building(s) and all surrounding buildings are closed or sealed.

3.4 LEAD PAINT TREATMENT/PREPARATION PROCEDURES

A. General:

1. Provide temporary utilities, security, safety, worker protection, clean-up and disposal of waste materials as described in this Section and elsewhere in these specifications.

2. Cleaning and isolating the work area: Clean the work area first using HEPA vacuum equipment and then wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming equipment on wet surfaces.

3. Handling of lead-containing and lead-based material: The Contractor shall not drop or throw to the floor, material removed from building structures or components. Material shall be removed as intact sections or components (whenever possible) and carefully lowered to the floor. For materials over 15 feet above the floor, the materials may be containerized at elevated levels, or gently lowered onto inclined chutes or scaffolding for subsequent collection and containerization.

4. Requirements for re-establishment of work area: Re-establishment of the work area shall only occur when clean-up procedures have been completed, all repairs necessitated by paint treatment activities have been performed, no visible paint chip debris is present, and all work has been documented to the satisfaction of the Architect's Project Monitor. Any variation from this shall be at the Architect's discretion.

5. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

   If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

B. Paint Stripping:

1. Work included under this sub-section includes the furnishing of all labor, materials and equipment required to remove lead paint by scraping and/or brushing after the paint has been softened by the application of a chemical stripping agent.

2. Chemical removers shall contain no methylene chloride products. Chemical removers shall be compatible with, and not harmful to the substrate to which they are applied. Chemical removers used for interior surfaces shall not raise or discolor the surface being abated.

3. Chemical stripping agent neutralizers may be used on exterior surfaces only. Neutralizers shall be compatible with and not harmful to the substrate that they are applied to. Neutralizers shall be compatible with the stripping agent that has been applied to the surface substrate.

4. Chemical stripping agents and neutralizers shall be applied in accordance with the recommendations of the manufacturer. Care must be taken to adhere to all MSDS, health/safety code and other specification section requirements. Stripping agents shall not be allowed to penetrate wood or other fibrous substrates.

5. Apply paint strippers in accordance with the manufacturer's printed instructions by trowel to a minimum thickness of 1/8 inch. Cover past with fibrous rubbing gently to remove air and pierce remaining air bubbles with knife. Leave on for period of not less than 24 hours or longer according to test patch

findings.

6. Neutralize area: Rinse off the residue with water into an approved collection-filtration system and neutralize the area in accordance with the manufacturer's recommendations.

7. Protective clothing: All workers shall be protected by rubber or polyethylene full body coverage suits, boots, gloves, face shield and protective head gear. Avoid contact with eyes and skin.

8. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

   If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

C. Abrasive Removers Machine Sander:

1. Work included under this sub-section includes the furnishing of all labor, materials, and equipment required to remove lead paint by machine sanding using a high efficiency dust Particulate Accumulator (HEPA) vacuum system, as called out in these specifications.

2. Sanders shall be of the dual action, rotary action, orbital or straight line system type, capable of being fitted with a (HEPA) dust pick- up system.

3. Air compressors utilized to operate this equipment shall be designed to continuously provide 90 to 110 psi or a recommended by the manufacturer.

4. Wet sanding shall be conducted by hand or pneumatic driven sanders. Electric powered sanders shall not be used for wet sanding.

5. Dry sanding shall only be done on flat surfaces which allow the HEPA dust collection system come into tight contact with the surface being sanded. Surfaces to be sanded shall be wide enough to allow maximum efficiency of the HEPA dust collection system.

6. All lead paint shall be removed down to the bare substrate surface. In cases that some pigment may remain embedded in wood grain and similar porous substrate, care shall be

taken to avoid damage to the substrate with the sanding machine. If the pigment cannot be removed without damaging the substrate, the Contractor shall notify the Architect for further instructions.

7. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

   If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

D. Chemical Paint Stripping:

1. Work included under this sub-section includes the furnishing of all labor, materials and equipment required to remove lead paint by a non-abrasive technique using PEEL-AWAY.

2. "PEEL AWAY I" shall be used to prepare lead painted surfaces.

3. Application:

   a. Protective clothing shall be worn at all times during the applications and removal of "PEEL-AWAY I". Tyvek suits or coveralls made of synthetic fibers that cover up to the wrists and ankles shall be worn with protective rubber shoes and long rubber gloves. Eye protection such as an approved face shield or safety glasses shall also be worn.

   b. Plastic drop cloths shall cover the floor and other areas not being repainted.

   c. The Contractor shall test a small area that is representative of the surface being prepared for removal of lead paint. A waiting period of 24 hours is sufficient to remove up to 15 layers of paint but a shorter waiting time may be sufficient for this project.

   d. Apply a layer of approximately 1/8" to 1/4" thick of "PEEL- AWAY I" using a hand trowel.

   e. Cover paste with PEEL-AWAY cloth, printed side facing out. Rub gently to remove air.

   f. Wait for the pre-determined time period.

g. Remove paste from the painted surface along with cloth using a spatula. Do not remove paste by pulling on cloth.

h. Dispose of paste and clothe into plastic bags of at least 10 mil thickness.

i. Wash surface with PEEL-AWAY's neutralizing agent or equal, then finish with a water rinse. Follow manufacturer's instructions.

j. Dispose of waste, gloves, suits, plastic and disposable equipment in accordance with 40 CFR 261.

k. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

E. Paint Preparation:

1. Work included under this Sub-Section includes the furnishing of all labor, materials and equipment required to prepare lead painted components by non-abrasive or wet abrasive techniques.

2. Application:

a. Protective clothing shall be worn at all times during the work. Tyvek suits or coveralls shall be worn with protective shoes and gloves.

b. Plastic drop cloths shall cover the floor and other areas not being repainted.

c. Remove from surface to be repainted all foreign matter such as tape and gum.

d. Where existing finish remains clean, tight and firm, prepare surface by using a commercial paint preparation solution (liquid sandpaper) or wet sandpaper to remove the glossy coat.

e. Completely wipe or wash all surfaces with mineral spirits,

T.S.P. (tri-sodium phosphate), or other appropriate solution as required to remove any accumulated film of wax, oil, grease, smoke, dust, dirt, chalky or other foreign matter which would impair bond of, or bleed through new finish.

f. Immediately, spot prime with specified primer, areas where bare metal is exposed.

g. Dispose of waste, gloves, suits, plastic, and disposable equipment in accordance with 40 CFR 261 and specifications herein.

3. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

3.5 LEAD PAINT - DEMOLITION PROCEDURES

A. Provide temporary utilities, security, safety, worker protection, clean-up and disposal of waste materials as described in this Section and elsewhere in these specifications.

B. Isolating the work area: The Contractor shall isolate work area, with barricades and signs to prevent un-authorized persons from entering into the work area.

The Contractor shall post signs at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of work place barriers.

C. The Contractor shall at all times suppress dust emissions while disturbing any material containing lead paint. No visible emissions will be permitted.

D. Requirements for re-establishment of work area: Re-establishment of the work area shall only occur when clean-up procedures have been completed, all repairs necessitated by paint treatment activities have been performed, no visible paint chip debris is present and all work has been documented to the satisfaction of the Architect's Project Monitor. Any variation from this shall be at the Architect's discretion.

E. Ground contamination of lead paint and other paint preparatory materials shall be cleaned before leaving the premises.

If the Contractor's operation results in lead levels in the soil which exceeds 400 parts per million in play areas and 1,200 parts per million in non-play areas, the Contractor shall pay for any Architect coordinated remediation and testing to clean up the soil to a lower lead concentration.

3.6 STORAGE AND DISPOSAL REQUIREMENTS

A. Storage Requirements: The Contractor shall store Non-Hazardous and Hazardous Waste Material within the Contractor's trailer or secured storage area.

1. Bagged waste material: If bagged waste material is to be stored, the Contractor shall use dumpsters for this purpose. The dumpsters shall have doors and tops that can be closed and locked to prevent vandalism, wind dispersion of lead dust, or other disturbance of the bagged debris. The Contractor shall not store unbagged lead-containing waste, liquid waste or non-lead- containing waste in these dumpsters. The Contractor also shall ensure that the bags in the dumpsters are not damaged. The Contractor shall post warning signs on the dumpsters as specified in OSHA requirement 29 CFR 1926.62.

2. Drummed waste material: If waste material is to be stored in drums, the Contractor shall use a secured storage area for this purpose. This storage area shall have doors that can be closed and locked to prevent vandalism. The Contractor shall only store waste material contained in drums or dumpsters in the secured area. The Contractor shall ensure that the drums in this secured storage area are not damaged. The Contractor shall post warning signs outside the secured storage area as specified in the OSHA requirement 29 CFR 1926.62.

B. Waste Disposal and Landfill Requirements:

1. Representative samples of demolition debris and lead paint chip debris for lead leachability (TCLP) testing shall be collected and paid for by the Contractor. If results are below the EPA limit, the materials shall be disposed of at a landfill approved for such purposes. The Contractor shall submit to the Architect, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill owner.

2. If waste characterization result of the demolition debris and paint chip debris are above the EPA limits, the materials shall be disposed of at an approved facility for receiving hazardous

materials. The Contractor shall be responsible for all disposal costs including all transportation fees. The Contractor shall submit to the Architect, documentation that the lead-containing waste material removed from the work area has been accepted by the hazardous materials approved landfill owner

C. Disposal of Non-Hazardous Lead-Containing and Lead-Based Waste:

1. Notifying landfill operator: If required by the landfill or its agents, the Contractor shall advise the landfill operator with sufficient time prior to transportation of the quantity of material to be delivered.

2. Unloading: upon reaching the landfill, the Contractor's trucks are to approach the dump location as close as possible for unloading the Lead-Containing and Lead-Based Waste Material.

   a. The Contractor shall inspect containers as they are unloaded at the disposal site. Material in damaged containers shall be repacked in empty containers, as necessary.

   b. The Contractor shall carefully place waste Containers on the ground at the disposal site, not push or throw the containers out of the trucks.

3. Clean-up procedures:

   a. If containers are broken or damaged, the Contractor shall leave the containers in the truck and clean the entire truck and its contents using HEPA vacuums and wet cleaning methods, until no visible residue is observed.

   b. Following the removal of all contaminated waste, the Contractor shall decontaminate the truck cargo area using HEPA Vacuums and/or wet cleaning methods until no visible residue is observed. Polyethylene sheeting shall be removed and discarded as Lead-Contaminated Waste Material, along with contaminated cleaning materials and protective clothing, in containers at the disposal site.

   c. Requirements for re-establishment of work area: Re-establishment of the work area shall only occur when clean-up procedures have been completed, all repairs necessitated by paint treatment activities have been performed, no visible paint chip debris is present, and all work has been documented to the satisfaction of the

Architect's Project Monitor. Any variation from this shall be at the Architect's discretion.

3.7 TESTING /AIR MONITORING

A. Coordination with Other Sections: The testing/air monitoring requirements of the scope of work for any testing/air monitoring consultants or project monitors, and all applicable Federal, State and local regulations shall be coordinated with this Section.

B. Contractor Responsibilities:

1. The Contractor shall provide the personal monitoring and necessary records for all of the Contractor's employees as required by OSHA (29 CFR 1926.62), Hawaii State Law HIOSH (12-148) and all other applicable law.

C. Architect's Project Monitor:

1. The Architect's Project Monitor shall be on site at all times and will ensure that the applicable specifications are being followed using the methods and requirements of the applicable scope of work.

2. The Architect's Project Monitor shall conduct area air sampling and floor wipe sampling and analysis.

3. The Architect's Project Monitor and the Architect shall have the authority of providing control during the project.

3.8 PROJECT CLEARANCE CRITERIA

A. The area of lead disturbance shall pass a visual inspection by the Architect's Project Monitor to assess for the presence of visible dust and/or debris.

B. Following successful completion of the visual inspection, the Architect's Project Monitor shall perform air sampling. Air sample results in the work area must be less than 30 $\mu g/m^3$.

C. In addition to air samples, the Architect's Project Monitor shall collect wipe samples of floor surfaces within the work area. Wipe sample results must be less than 10 $\mu g/ft^2$ for the interior floors and less than 40 $\mu g/ft^2$ for the exterior floors.

END OF SECTION

Gamma Medical Physics LLC
850 W. Hind Drive Ste 214, Honolulu, HI 96821

An APEX Physics Partner

Report of Shielding Design Evaluation

Facility: Samuel Mahelona Memorial Hospital
CT Room

Date: June 28, 2021

Address: 4800 Kawaihau Road
Kapaa, HI 96746

Performed by: Ronald Frick, M.S., CHP, DABR

Introduction

An evaluation of the shielding requirements for a computed tomography room was performed according to the procedures and recommendations of the National Council on Radiation Protection and Measurements Report No. 147, *Structural Shielding Design for Medical X-Ray Imaging Facilities.*

For this evaluation, room dimensions, sizes, and layouts were obtained from Group 70 International, Inc.. Drawings showing the sizes and layouts of the x-ray rooms and the uses of areas surrounding the rooms are attached to this report.

General Requirements

1. Steel nails or screws used to secure lead barriers need not be covered with lead discs or supplementary lead. Steel nails or screws generally attenuate radiation equally, or more effectively, than the displaced lead.

2. Where the edges of two lead sheets meet, there should be an overlap of at least 1 cm.

3. Lead shielding should be installed to a height of at least 7 feet from the finished floor, unless otherwise specified in the Specific Shielding Requirements.

4. Viewing windows should be made from lead glass or lead acrylic of the same shielding effectiveness as the wall in which they are installed, unless otherwise specified in the Specific Shielding Requirements. Frames for viewing windows should have lead installed in them that overlaps the lead glass or lead acrylic.

5. Doors should have the same shielding effectiveness as the walls in which they are installed, unless otherwise specified in the Specific Shielding Requirements. Door frames should have lead installed in them so there is an overlap over the door edge

around the entire door jamb.

6. Shielding should be constructed so there are no voids from penetrations for pipes, conduits, wall outlets, or ducts. Where wall outlets, pipes, ducts, or conduits penetrate the shielding, they shall be covered with additional lead that overlaps the edges of the opening in the shielding. Where possible, penetrations of shielding should occur only in secondary barriers.

7. A Radiation Protection Survey of the finished room shall be performed by a qualified Medical Physicist within six months after installation of the x-ray equipment.

Assumptions and Formulas Used

1. The workload and kVp distribution are taken as that which represents a practical value for the specified use. Unless site specific data is available, workloads corresponding to a busy facility, as described in NCRP 147, are used.

2. Values for Occupancy Factors and Use Factors were assigned according to the function and occupancy of each surrounding area given in NCRP Report No. 147.

3. In keeping with the ALARA recommendations of the National Council on Radiation Protection and Measurements Report No. 116, Limitation of Exposure to Ionizing Radiation, maximum allowable weekly exposures were set to 0.1 mGy/week for occupational workers and 0.02 mGy/week for non-occupational workers. Maximum weekly exposures for unexposed film storage locations were set to 0.025 mGy/week. For locations where loaded cassettes will be stored, maximum weekly exposures were set to 0.0025 mGy/week.

4. The following formulas were used for calculation of required additional shielding, as described in NCRP Report No. 147:

$$K_{Head} = k_{Head} \times DLP_{Head}$$

$$K_{Body} = 1.2 \times k_{Body} \times DLP_{Body}$$

$$K_S = K_{Head} \times N_{Head} \times (1 + F_{Head}) + K_{Body} \times N_{Body} \times (1 + F_{Body})$$

Where:

K_{Head} is the secondary radiation exposure for a head scan at a distance of one

meter from isocenter, in units of mGy per procedure;

K_{Body} is the secondary radiation exposure for a body scan at a distance of one meter from isocenter, in units of mGy per procedure;

K_S is the total radiation exposure at a distance of one meter from the isocenter, in units of mGy per week;

k is the scatter fraction per centimeter for the peripheral axis of the FDA head and body phantoms, assumed to be $9x10^{-5}$ cm^{-1} for the head phantom and $3x10^{-4}$ cm^{-1} for the body phantom;

DLP is the dose length product, assumed to be 1,200 mGy-cm for head scans and 1000 mGy-cm for body scans;

N is the number of patients per week for each type of scan;

F is the fraction of procedures which are repeated with contrast, assumed to be 0.4 for body procedures and 0.4 for head procedures.

$$x = \frac{1}{\alpha\gamma} \ln\left(\frac{\left(\frac{TK_S}{Pd_{sec}^2}\right)^{\gamma} + \frac{\beta}{\alpha}}{1 + \frac{\beta}{\alpha}}\right)$$

Where:

P is the permissible weekly exposure in mGy per week;

T is the Occupancy Factor;

d_{sec} is the distance from the isocenter to the point in question (one foot beyond indicated wall);

x is the shield thickness;

α,β,γ are parameters dependent on shielding material and kVp distribution, and are taken from Appendices B and C of NCRP 147.

Data and Results

Workload assumptions
Room Type: Computed Tomography
Head procedures per week: 60
Body procedures per week: 80

Note: The data in the table below is presented to show results of calculations performed. ***Shielding thicknesses should not be taken from this table.*** *Recommended shielding thicknesses may vary from the values in this table. Refer to 'Specific Shielding Requirements' below for actual shielding requirements.*

Wall	Distance (ft)	Distance (m)	T	P (mGy/wk)	Lead (mm)	Lead (lb/ft^2)	Concrete (in)
A	13.0	3.96	1	0.1	0.77	2	3.1
B	12.0	3.66	1	0.02	1.40	4	4.9
C	8.5	2.59	0.2	0.02	1.06	4	4.0
D	8.5	2.59	0.2	0.02	1.06	4	4.0

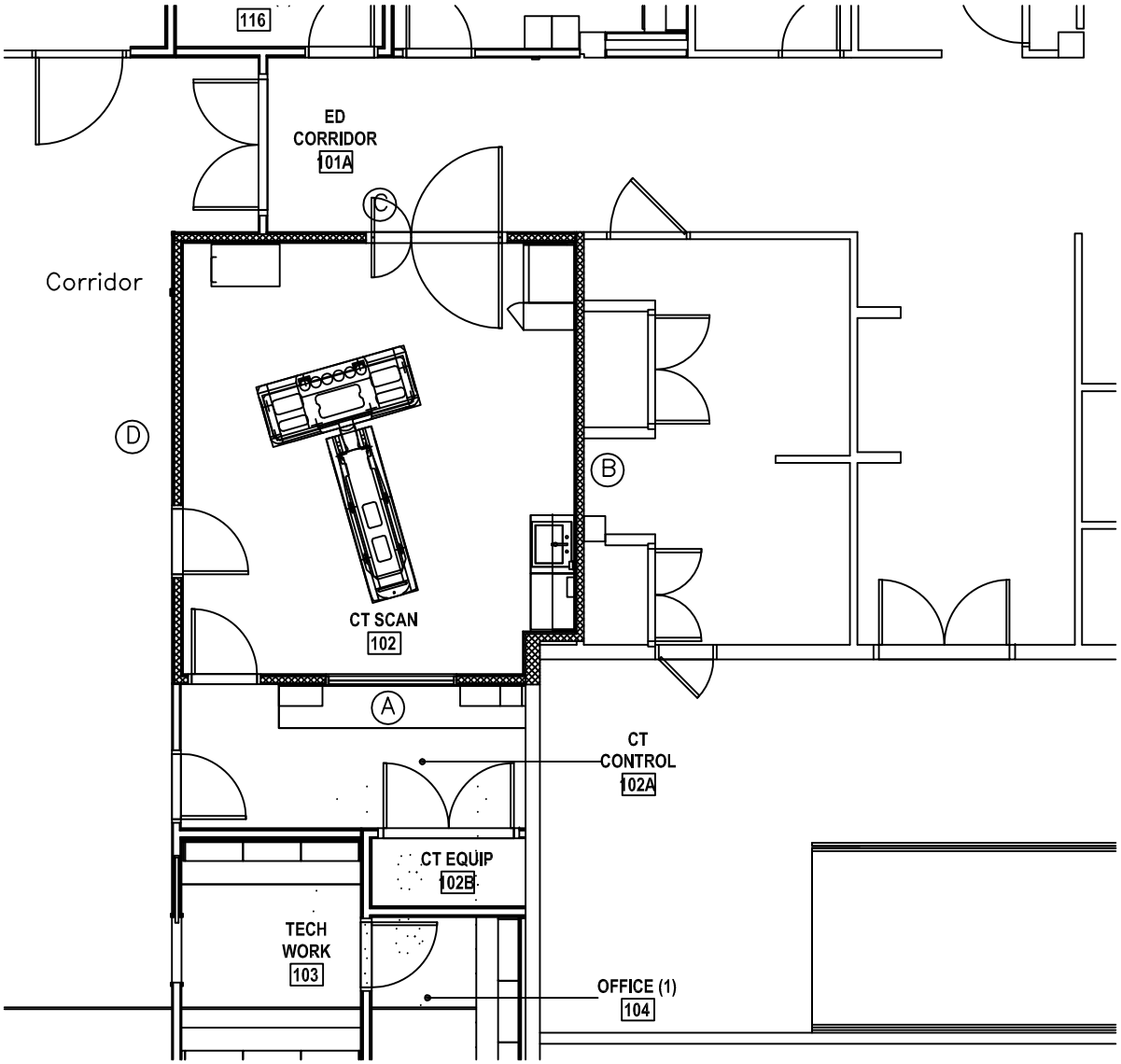
Specific Shielding Requirements

1. Walls A, B, C, and D shall have at least 4 lb/ft^2 lead shielding as shown in the attached drawing.

2. The viewing window in wall A shall have a minimum shielding equivalence of 1.5 mm lead. The door installed in wall A shall be provided with a minimum of 4 lb/ft^2 lead shielding.

3. The doors installed in wall C shall be provided with a minimum of 4 lb/ft^2 lead shielding. One of the leaves of the double door installed in wall C shall have a lead astragal attached which overlaps the other leaf when closed.

4. The door installed in wall D shall be provided with a minimum of 4 lb/ft^2 lead shielding.



Samuel Mahelona Memorial Hospital
4800 Kawaihau Road, Kapaa, HI 96746

4 lb/sqft lead

Gamma Medical Physics LLC
850 W. Hind Drive Ste 214, Honolulu, HI 96821

An APEX Physics Partner

Report of Shielding Design Evaluation

Facility: Samuel Mahelona Memorial Hospital
X-ray Room

Date: June 28, 2021

Address: 4800 Kawaihau Road
Kapaa, HI 96746

Performed by: Ronald Frick, M.S., CHP, DABR

Introduction

An evaluation of the shielding requirements for a radiographic x-ray room was performed according to the procedures and recommendations of the National Council on Radiation Protection and Measurements Report No. 147, *Structural Shielding Design for Medical X-Ray Imaging Facilities.*

For this evaluation, room dimensions, sizes, and layouts were obtained from Group 70 International, Inc.. Drawings showing the sizes and layouts of the x-ray room and the uses of areas surrounding the room are attached to this report.

General Requirements

1. Steel nails or screws used to secure lead barriers need not be covered with lead discs or supplementary lead. Steel nails or screws generally attenuate radiation equally, or more effectively, than the displaced lead.

2. Where the edges of two lead sheets meet, there should be an overlap of at least 1 cm.

3. Lead shielding should be installed to a height of at least 7 feet from the finished floor.

4. Viewing windows should be made from lead glass or lead acrylic of the same shielding effectiveness as the wall in which they are installed, unless otherwise specified in the Specific Shielding Requirements. Frames for viewing windows should have lead installed in them that overlaps the lead glass or lead acrylic.

5. Doors should be have the same shielding effectiveness as the walls in which they are installed, unless otherwise specified in the Specific Shielding Requirements. Door frames should have lead installed in them so there is an overlap over the door edge around the entire door jamb.

6. Shielding should be constructed so there are no voids from penetrations for pipes, conduits, wall outlets, or ducts. Where wall outlets, pipes, ducts, or conduits penetrate the shielding, they shall be covered with additional lead that overlaps the edges of the opening in the shielding. Where possible, penetrations of shielding should occur only in secondary barriers.

7. A Radiation Protection Survey of the finished room shall be performed by a qualified Medical Physicist within six months after installation of the x-ray equipment.

Assumptions and Formulas Used

1. The workload and kVp distribution are taken as that which represents a practical value for the specified use. Unless site specific data is available, workloads corresponding to a busy facility, as described in NCRP 147, are used.

2. Values for Occupancy Factors and Use Factors were assigned according to the function and occupancy of each surrounding area given in NCRP Report No. 147.

3. In keeping with the ALARA recommendations of the National Council on Radiation Protection and Measurements Report No. 116, Limitation of Exposure to Ionizing Radiation, maximum allowable weekly exposures were set to 0.1 mGy/week for occupational workers and 0.02 mGy/week for non-occupational workers. Maximum weekly exposures for unexposed film storage locations were set to 0.025 mGy/week. For locations where loaded cassettes will be stored, maximum weekly exposures were set to 0.0025 mGy/week.

4. The following formulas were used for calculation of required additional shielding, as described in NCRP Report No. 147:

   For the Chest bucky wall, the required thicknesses for the primary barrier directly behind the bucky is calculated. The shielding thickness required to shield the area next to the bucky from scattered radiation is also calculated. The larger of these two thicknesses is used for the entire wall. Formulas for primary and secondary barrier are shown below:

$$x_{Pri} = \frac{1}{\alpha\gamma} \ln\left(\frac{\left(\frac{Z_{Pri} TU}{P}\right)^{\gamma} + \frac{\beta}{\alpha}}{1 + \frac{\beta}{\alpha}}\right) - x_{pre}$$

$$Z_{Pri} = \frac{N_{Rad} K_{P(Chest)}}{d^2_{P(Chest)}}$$

$$x_{Sec} = \frac{1}{\alpha\gamma} \ln\left(\frac{\left(\frac{Z_{Sec} T}{P}\right)^{\gamma} + \frac{\beta}{\alpha}}{1 + \frac{\beta}{\alpha}}\right)$$

$$Z_{Sec} = \frac{N_{Rad} K_{SL(Table)}}{d^2_{S(Table)}} + \frac{N_{Rad} K_{S(Chest)}}{d^2_{S(C.Bucky)}} + \frac{N_{Rad} K_{L(Chest)}}{d^2_{L(C.Tube)}}$$

Where:

- P is the permissible weekly exposure in mGy per week;
- N is the number of patients per week(for either Radiographic or Fluoroscopic exams);
- T is the Occupancy Factor;
- U is the Use Factor *(Note: no use factor is necessary for chest bucky barriers, since this factor is built into the K value for this type of barrier)*;
- d_P is the distance from the tube to the point in question (one foot beyond indicated wall);
- d_S is the distance from the scatter source to the point in question (one foot beyond indicated wall);
- d_L is the distance from the tube (source of leakage radiation) to the point in question;
- x is the shield thickness;
- x_{pre} is the amount of pre-shielding provided by the imaging hardware, taken from Table 4.6 of NCRP 147;
- K_P is the primary radiation exposure at a distance of one meter from the x-ray tube, in units of mGy per patient, which is dependent on the room type and barrier type, taken from Table 4.5 of NCRP 147;
- K_{SL} is the secondary radiation exposure (including scatter and leakage) at a distance of one meter from the patient, in units of mGy per patient, which is dependent on the room type, taken from table 4.7 of NCRP 147; and
- α,β,γ are parameters dependent on shielding material and kVp distribution, and are taken from Appendices B and C of NCRP 147.

For the cross-table wall, contributions from primary and secondary radiation are considered. Due to the variables involved, the required shielding thickness for a particular target dose rate cannot be calculated directly. Instead, a particular shielding thickness is assumed, and the projected dose rate is calculated and compared to the target dose rate. The shielding thickness is adjusted until the projected dose rate is below the target dose rate. There are two different sources for secondary radiation which are considered for the cross table wall: (1) Scatter and leakage from radiographic patients examined on the table, and (2) Scatter and leakage from radiographic patients examined with the chest bucky. Dose contributions are calculated separately from each source and added together to determine D_{Sec}. Formulas are shown below:

$$D_{Proj} = D_{Pri} + D_{Sec}$$

$$D_{Pri} = \frac{N_{Rad} T K_{P(Rad)} U}{d_{P(cross)}^2} \left[\left(1 + \frac{\beta}{\alpha}\right) \left(e^{(x + x_{pre})\alpha\gamma} - \frac{\beta}{\alpha}\right) \right]^{-\frac{1}{\gamma}}$$

$$D_{Sec} = \frac{N_{Rad} T K_{SL(Rad)} U}{d_{SL}^2} \left[\left(1 + \frac{\beta}{\alpha}\right) \left(e^{x\alpha\gamma} - \frac{\beta}{\alpha}\right) \right]^{-\frac{1}{\gamma}}$$

For the floor beneath the table, primary radiation from the overhead tube is the only consideration. For the floor areas away from the table, scatter and leakage from radiographic patients is the only consideration. The required thicknesses due to primary and secondary radiation are calculated separately, and the larger of the two values is reported. Formulas are similar to those shown for the chest bucky wall.

For the ceiling, scatter and leakage from radiographic patients is the only consideration. Formulas are similar to those used for chest bucky wall secondary barrier calculation.

For walls not described above, there are two different sources for secondary radiation which are considered: (1) Scatter and leakage from radiographic patients examined on the table, and (2) Scatter and leakage from radiographic patients examined using the chest bucky. Formulas are similar to those used above.

Data and Results

Workload assumptions
Room Type: Radiographic
Patients per week(Radiographic): 160

Note: The data in the tables below is presented to show results of calculations performed. ***Shielding thicknesses should not be taken from these tables.*** *Recommended shielding thicknesses may vary from the values in this table. Refer to 'Specific Shielding Requirements' below for actual shielding requirements.*

Chest wall

Wall	Pri Dist. (m)	Sec Dist. (bucky to wall) (m)	Sec Dist. (table to wall) (m)	T	P (mGy/wk)	Lead (mm)	Lead (lb/ft^2)	Concrete (in)
A	2.44	0.76	3.05	0.20	0.02	0.60	2	1.72

Cross table wall

Wall	Sec Dist. (table) (m)	Pri Dist. (m)	Sec Dist. (chest bucky) (m)	U	T	P (mGy/wk)	Lead (mm)	Lead (lb/ft^2)	Concrete (in)
B	1.98	2.74	3.05	0.09	0.2	0.02	0.38	2	1.25

Other walls

Wall	Dist. (Table) (m)	Dist. (Chest bucky) (m)	T	P (mGy/wk)	Lead (mm)	Lead (lb/ft^2)	Concrete (in)
C	3.2	5.79	1	0.02	0.34	2	1.2
D	2.74	4.11	1	0.1	0.14	2	0.53
E	3.66	2.29	0.2	0.02	0.11	2	0.45

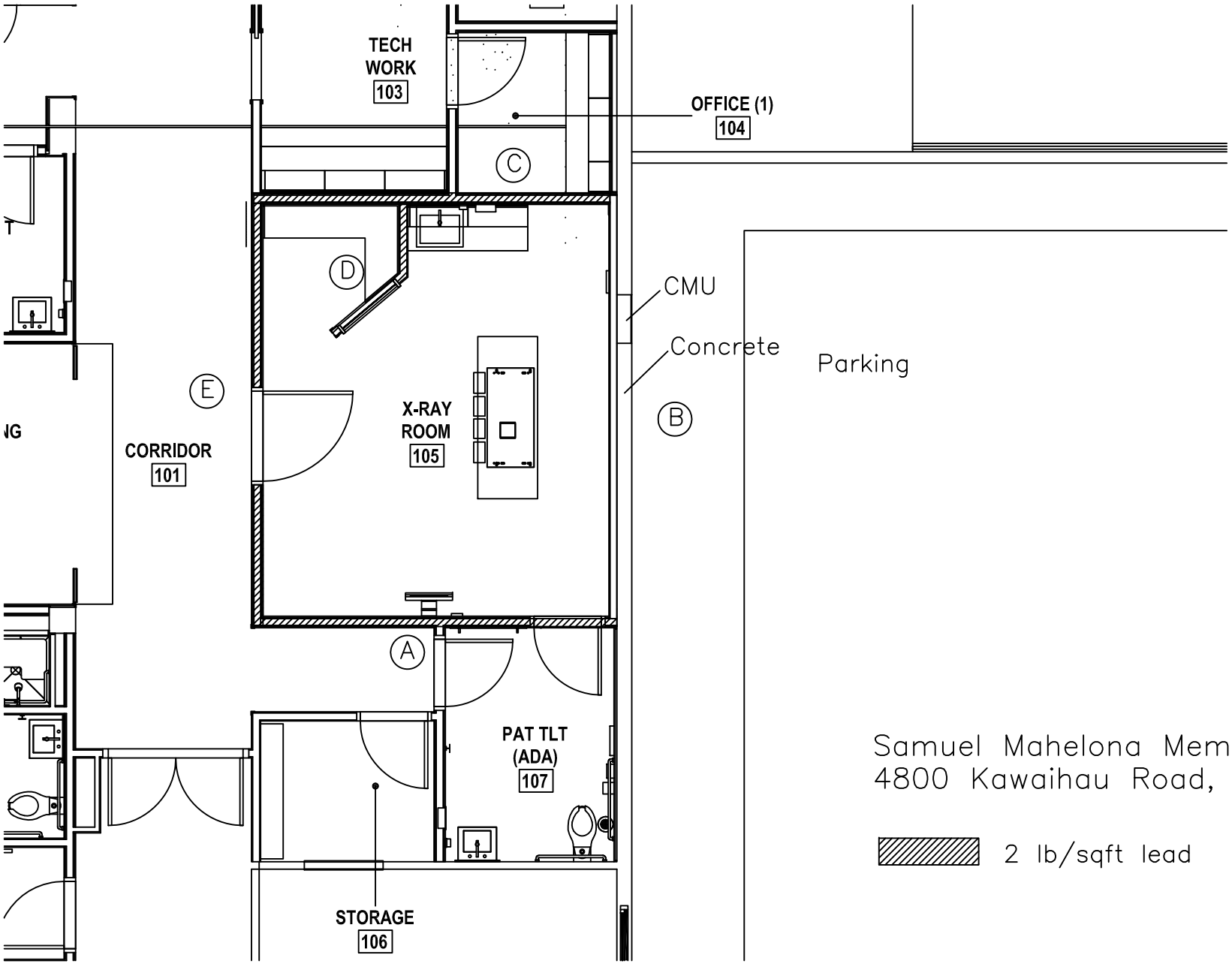
Specific Shielding Requirements

1. Walls A, C, D, and E shall have at least 2 lb/ft^2 lead shielding as shown in the attached drawing.

2. The existing concrete and CMU in wall B will provide adequate shielding.

3. The viewing window in wall D shall have a minimum shielding equivalence of 0.8 mm lead.

4. The doors installed in walls A and E shall be provided with a minimum of 2 lb/ft^2 lead shielding.



Samuel Mahelona Memorial Hospital
4800 Kawaihau Road, Kapaa, HI 96746

2 lb/sqft lead

August 13, 2021

Ms. Kendyl Mitsui
G70
111 South King Street, Suite 170
Honolulu, Hawaii

RE: Limited Asbestos, Paint, and PCB Sampling and Analysis
Samuel Mahelona Memorial Hospital, Radiology Suite
4800 Kawaihau Road
Kapaa, Hawaii
ENPRO Project Number: 2107-00256-HAZ

Dear Ms. Mitsui,

This letter is regarding the limited asbestos, paint, and polychlorinated biphenyls (PCBs) sampling and analysis, conducted on July 26 and July 29, 2021 at the above referenced property. The purpose of this project was to collect and analyze samples of certain suspect asbestos containing materials (ACM), collect interior and exterior paint chip samples for total lead analysis, and collect exterior window caulking for PCBs analysis. Sampling focused on materials which may be during renovation activities.

Asbestos

Specific materials for asbestos sampling and analysis included:

- Vinyl floor tile assembly in the hallway
- Covebase with associated mastic in the X-Ray Room and hallway
- Linoleum floor tile assembly in the X-Ray Room
- Caulking in the X-Ray Room and the X-Ray Bathroom
- Drywall wall assembly in the X-Ray Control Room
- Ceiling tile in the X-Ray Room, Dental Room, and hallway
- Thermal insulation in the X-Ray Room
- Wood laminate with associated mastic in the X-Ray Room and the Physician's Sleep Room
- Wallpaper with associated mastic in the Oxygen Storage Room

Three samples of each suspect material were collected by a State of Hawaii Department of Health (DOH) certified asbestos inspector (HIASB certification #5052) and submitted to an independent laboratory for asbestos analysis.

The suspect asbestos samples were analyzed by polarized light microscopy using Environmental Protection Agency (EPA) Method 600/M4-82-020 by Hawaii Analytical Laboratory, LLC, a National Voluntary Laboratory Accreditation Program accredited laboratory. The results for the samples are listed in the following table:

Table 1

Asbestos Sampling Locations and Analytical Results

SAMPLE NUMBER	LOCATION	MATERIAL	ASBESTOS DETECTED
A1 (a, b*, c*)	**Hallway**	**Black mastic** **Brown vinyl floor tile**	**Yes** **Yes**
A2 (a, b, c)	Hallway	Black covebase Yellow mastic Tan compound material	No No No
A3 (a, b*, c*)	**Hallway**	**Black/yellow mastic** Tan vinyl floor tile	**Yes** No
A4 (a, b, c)	X-Ray Room	White linoleum Yellow mastic Gray cementitious material	No No No
A5 (a, b, c)	X-Ray Room	Blue covebase Yellow mastic Off-white mastic	No No No
A6 (a, b, c)	X-Ray Bathroom	White caulking	No
A7 (a, b, c)	X-Ray Room	Clear caulking/white paint	No
A8 (a, b, c)	X-Ray Control	White drywall White joint compound (1)/paint White joint compound (2)/paper	No No No
A9 (a, b, c)	X-Ray Room Dental Room Hallway	White/gray ceiling tile	No
A10 (a, b, c)	X-Ray Room	Silver/tan wrap White insulation	No No

BOLD – Asbestos containing material
*This sample is assumed to contain asbestos due to the laboratory-confirmed presence of asbestos in a sample collected from a homogeneous material.

Table 1 (continued)
Asbestos Sampling Locations and Analytical Results

SAMPLE NUMBER	LOCATION	MATERIAL	ASBESTOS DETECTED
A11 (a, b, c)	Physician's Sleep Room	Gray wood laminate Red adhesive	No No
A12 (a, b, c)	X-Ray Room	Blue wood laminate Red adhesive	No No
A13 (a, b, c)	Oxygen Storage Room	Floral wallpaper Tan adhesive	No No

Based on the analytical results, the following materials from Samuel Mahelona Memorial Hospital, Radiology Suite were determined to be asbestos containing:

- Black mastic in the hallway, 8% chrysotile
- Brown vinyl floor tile in the hallway, 2% chrysotile
- Black/yellow mastic in the hallway, 8% chrysotile

Table 2
Sampled ACM Assessment Summary and Quantity

SAMPLE NUMBER	MATERIAL/ FRIABILITY/CONDITION**	POTENTIAL FOR DISTURBANCE* Contact/Erosion/Vibration	ESTIMATED QUANTITY
A1	Mastic, black, (8% chrysotile), non-friable, good	High/Moderate/Moderate	896 ft^2
	Vinyl floor tile, brown, (2% chrysotile), non-friable, good	High/High/High	896 ft^2
A3	Mastic, black, (8% chrysotile), non-friable, good	High/Moderate/Moderate	4 ft^2

*An assessment of "High" in any of the three categories, (Contact, Erosion, or Vibration), represents the potential for Significant Damage. An assessment of "Moderate" in any of the three categories represents the potential for Damage. An assessment of "Low" in all of the three categories represents a low potential for damage.
**Damage is defined as the loss of adhesion or cohesion. Significant Damage is defined as greater than ten percent distributed Damage or greater than twenty-five percent localized Damage.

National Emission Standards for Hazardous Air Pollutants (NESHAP) states that if asbestos identified in amounts less than 10%, the owner or operator of the building must elect to assume the amount to be greater than 1% and treat the material as asbestos-containing material or request verification of the amount by point counting.

Asbestos removal should be conducted by a DOH Certified C-19 Asbestos Abatement Contractor. Workers disturbing any quantity of ACM must have minimum United States Occupational Safety and Health Administration (OSHA) asbestos awareness training as specific to the class of disturbance work. A ten-day notification to the DOH is required for the removal of 160 square feet or 260 linear feet or more of Regulated ACM, however a courtesy notification is recommended for smaller quantities of ACM.

Lead Paint

Two paint samples were collected from the interior and one from the exterior of the Samuel Mahelona Memorial Hospital, Radiology Suite. The samples were analyzed for total lead by flame atomic absorption spectrophotometry using the National Institute for Occupational Safety and Health (NIOSH) Method 7082m. The results of the samples are listed in the following table:

Table 3

Building Materials Sampling Locations and Analytical Results
Lead-Based Paint

SAMPLE NUMBER	LOCATION	MATERIAL	LEAD (mg/kg)
LP1	Interior, Hallway	Paint-White	400
LP2	Interior, Hallway	Paint-Beige	420
LP3	**Exterior, Lanai**	**Paint-Blue**	**7,200**

The blue exterior lanai paint (sample LP3) determined to be lead-based paint (LBP). The white and beige paints from the interior hallways are considered lead-containing paint and not LBP. EPA regulations require specialized lead-based paint training for all renovators/painters who disturb greater than six square feet of interior painted surfaces per room or greater than twenty square feet of exterior painted surfaces in target housing and child-occupied facilities constructed prior to 1978. These regulations do not apply to complete demolition jobs. OSHA regulations apply to worker protection during renovation and demolition activities.

If the property is to undergo renovation or demolition, OSHA regulations apply to abatement workers. At a minimum OSHA requires lead awareness training for all workers who may be exposed to airborne lead concentrations above the OSHA Action Level (AL) of thirty micrograms per cubic meter (30 µg/m3) for an 8-hour time-weighted average (TWA). Additionally, demolition debris shall need to be sampled and tested (per TCLP) to meet municipal disposal site acceptance criteria. Other than demolition considerations, no other regulations apply.

Polychlorinated Biphenyls

One PCB sample was collected from the exterior window caulking at the Samuel Mahelona Memorial Hospital, Radiology Suite. The sample was analyzed for PCBs in oil by EPA Method 8082A/3580A/3665A. The results are listed in the following table:

Table 4
Building Materials Sampling Locations and Analytical Results
PCBs in Oil by EPA 8082A/3580A/3665A

SAMPLE NUMBER	ANALYTE	LOCATION	MATERIAL	PCBs (mg/kg)
PCB-1	A1016	Northeast exterior window	Caulking	<1
PCB-1	A1221	Northeast exterior window	Caulking	<1
PCB-1	A1232	Northeast exterior window	Caulking	<1
PCB-1	A1242	Northeast exterior window	Caulking	<1
PCB-1	A1248	Northeast exterior window	Caulking	<1
PCB-1	A1254	Northeast exterior window	Caulking	<1
PCB-1	A1260	Northeast exterior window	Caulking	<1
PCB-1	A1262	Northeast exterior window	Caulking	<1

The window caulking sample collected for PCB analysis did not detect concentrations equal to or greater than the laboratory's detection limit of 1 mg/kg, which is well below the EPA's regulatory level of 50 mg/kg.

It has been a pleasure to be of service to you. Please contact me at 808-748-2104 if you have any questions regarding this project.

Sincerely,

Kristine Joy Sellona

Kristine Joy Sellona
Environmental Technician
HIASB Certification Number 5052

Enclosures: Laboratory Reports
Photographs
Floor Plan

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Friday, July 30, 2021

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808)262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 202107130
Date Submitted: 7/28/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/26/21

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143790	**A-1a Brown VFT**	**Yes**	Chrysotile	**8**	Wood fiber (undulose)	**3**	Tar	7/29/2021
Layer	Black mastic							
Comments								
202143790	**A-1a Brown VFT**	**Yes**	Chrysotile	**2**	None detected		Vinyl	7/29/2021
Layer	Brown vinyl floor tile							
Comments								
202143791	**A-1b Brown VFT**							
Layer	NOT ANALYZED DUE TO STOP ANALYSIS							
Comments								
202143792	**A-1c Brown VFT**							
Layer	NOT ANALYZED DUE TO STOP ANALYSIS							
Comments								
202143793	**A-2a Black Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Black covebase							
Comments								
202143793	**A-2a Black Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								

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Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/26/21

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143794	**A-2b Black Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Black covebase							
Comments								
202143794	**A-2b Black Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143795	**A-2c Black Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Black covebase							
Comments								
202143795	**A-2c Black Covebase**		NONE DETECTED		None detected		Calcite + binder	7/29/2021
Layer	Tan compound material							
Comments								
202143795	**A-2c Black Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143796	**A-3a Tan VFT**	**Yes**	Chrysotile	**8**	None detected		Tar	7/29/2021
Layer	Black/yellow mastic							
Comments								
202143796	**A-3a Tan VFT**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Tan vinyl floor tile							
Comments								
202143797	**A-3b Tan VFT**							
Layer	Black/yellow mastic (Not Analyzed)							
Comments								
202143797	**A-3b Tan VFT**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Tan vinyl floor tile							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 3 – 20200630

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Date Submitted: 7/28/2021
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Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143798	**A-3c Tan VFT**							
Layer	Black/yellow mastic (Not Analyzed)							
Comments								
202143798	**A-3c Tan VFT**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Tan vinyl floor tile							
Comments								
202143799	**A-4a White Linoleum**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	White linoleum							
Comments								
202143799	**A-4a White Linoleum**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143800	**A-4b White Linoleum**		NONE DETECTED		None detected		Cementitious + other	7/29/2021
Layer	Gray cementitious material							
Comments								
202143800	**A-4b White Linoleum**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	White linoleum							
Comments								
202143800	**A-4b White Linoleum**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143801	**A-4c White Linoleum**		NONE DETECTED		None detected		Cementitious + other	7/29/2021
Layer	Gray cementitious material							
Comments								

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Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143801	**A-4c White Linoleum**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	White linoleum							
Comments								
202143801	**A-4c White Linoleum**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143802	**A-5a Blue Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Blue covebase							
Comments								
202143802	**A-5a Blue Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143803	**A-5b Blue Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Blue covebase							
Comments								
202143803	**A-5b Blue Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Yellow mastic							
Comments								
202143804	**A-5c Blue Covebase**		NONE DETECTED		None detected		Vinyl	7/29/2021
Layer	Blue covebase							
Comments								
202143804	**A-5c Blue Covebase**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	Off-white mastic							
Comments								

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Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143805	**A-6a White Caulking**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	White caulking							
Comments								
202143806	**A-6b White Caulking**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	White caulking							
Comments								
202143807	**A-6c White Caulking**		NONE DETECTED		None detected		Binder	7/29/2021
Layer	White caulking							
Comments								
202143808	**A-7a Gray Caulking**		NONE DETECTED		None detected		Binder + paint	7/29/2021
Layer	Clear caulking / white paint							
Comments								
202143809	**A-7b Gray Caulking**		NONE DETECTED		None detected		Binder + paint	7/29/2021
Layer	Clear caulking / white paint							
Comments								
202143810	**A-7c Gray Caulking**		NONE DETECTED		None detected		Binder + paint	7/29/2021
Layer	Clear caulking / white paint							
Comments								
202143811	**A-8a Drywall**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**15**	Gypsum	7/29/2021
Layer	White drywall							
Comments								
202143811	**A-8a Drywall**		NONE DETECTED		None detected		Calcite + binder + paint	7/29/2021
Layer	White joint compound (1) / paint							
Comments								

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Date Submitted: 7/28/2021
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Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202143811	**A-8a Drywall**		NONE DETECTED		Cellulose (undulose)	**20**	Calcite + binder	7/29/2021
Layer	White joint compound (2) / paper							
Comments								
202143812	**A-8b Drywall**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**15**	Gypsum	7/29/2021
Layer	White drywall							
Comments								
202143812	**A-8b Drywall**		NONE DETECTED		None detected		Calcite + binder + paint	7/29/2021
Layer	White joint compound (1) / paint							
Comments								
202143812	**A-8b Drywall**		NONE DETECTED		Cellulose (undulose)	**20**	Calcite + binder	7/29/2021
Layer	White joint compound (2) / paper							
Comments								
202143813	**A-8c Drywall**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**15**	Gypsum	7/29/2021
Layer	White drywall							
Comments								
202143813	**A-8c Drywall**		NONE DETECTED		None detected		Calcite + binder + paint	7/29/2021
Layer	White joint compound (1) / paint							
Comments								
202143813	**A-8c Drywall**		NONE DETECTED		Cellulose (undulose)	**20**	Calcite + binder	7/29/2021
Layer	White joint compound (2) / paper							
Comments								

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Lab Job No: 202107130
Date Submitted: 7/28/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/26/21

General Comments
The bulk sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures outlined in the United States Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020, Dec. 1982) and / or "Method for Determination of Asbestos in bulk Building Materials" (EPA-600/R-93-116, July 1993). The analysis of each bulk sample relates only to the material examined, and may or may not represent the overall composition of its original source. Floor tile and other resinously bound materials, when analyzed by the EPA methods referenced above may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. Alternative methods of identification, including Transmission Electron Microscopy (TEM) may or may not be applicable. We utilize calibrated visual area estimation on a routine basis and do not conduct point counting unless specifically requested to do so. Estimated error for the visual determinations presented are 75% relative (1 to 2%), 50% relative (3 to 5%); 25% relative (6 to 25%) and 20% (>26% v/v). We will not separate layers which in our opinion are not readily discernable. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Governement. Unless otherwise indicated, the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
None Detected = asbestos was not observed in the sample. If trace amount of asbestos was detected below our quantifiable limits of 1.0%, <1% (trace) would be indicated and the asbestos type listed. Point counting, where applicable, are recommended to improve accuracy.

Jennifer Hsu Liao
Laboratory Manager

HAWAII ANALYTICAL LABORATORY, LLC

3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Report results to	ksellona@enproenvironmental.com
via email or fax	info@enproenvironmental.com
or verbal:	

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:

- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HAZ

Sampled By: Kristine Sellona SOS2

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107130

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	*Lab ID*
A-1a: Brown VFT	07-26-2021	Bulk	N/A	Asbestos		202143790
A-1b						202143791
A-1c						202143792
A-2a: Black Cove base						202143793
A-2b						202143794
A-2c						202143795
A-3a: Tan VFT						202143796
A-3b						202143797
A-3c						202143798
A-4a: White linoleum						202143799
A-4b						202143800
A-4c						202143801

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-28-21	Rozlyn Luber Rozlyn Luber	7/28/21 8252

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
***Required fields, failure to complete these fields may result in a delay in your samples being processed.**
Rev 20140701

HAWAII ANALYTICAL LABORATORY, LLC

3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Report results to	ksellona@enproenvironmental.com
via email or fax	info@enproenvironmental.com
or verbal:	

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:

- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HAZ

Sampled By: Kristine Sellona SOH2

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107130

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
A-5a: Blue Grebase	07-26-2021	Bulk	N/A	Asbestos		202143802
A-5b						202143803
A-5c						202143804
A-6a: White Caulking						202143805
A-6b						202143806
A-6c						202143807
A-7a: Gray Caulking						202143808
A-7b						202143809
A-7c						202143810
A-8a: Drywall						202143811
A-8b						202143812
A-8c						202143813

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-28-21	Rozlyn Luber Rozlyn Luber	7/28/21 8:50

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
***Required fields, failure to complete these fields may result in a delay in your samples being processed.**
Rev 20140701

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Tuesday, August 3, 2021

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808)262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 202107228
Date Submitted: 7/30/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/29/21

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202144321	**A-9a Ceiling Tile**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**50**	Perlite + glass beads + other	8/3/2021
Layer	White/gray ceiling tile							
Comments								
202144322	**A-9b Ceiling Tile**		NONE DETECTED		Fibrous glass (amorphous)	**65**	Glass beads + gypsum + other	8/3/2021
Layer	White/gray ceiling tile							
Comments								
202144323	**A-9c Ceiling Tile**		NONE DETECTED		Fibrous glass (amorphous)	**65**	Glass beads + gypsum + other	8/3/2021
Layer	White/gray ceiling tile							
Comments								
202144324	**A-10a HVAC Dust TSI**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**50**	Foil	8/3/2021
Layer	Silver/tan wrap							
Comments								
202144324	**A-10a HVAC Dust TSI**		NONE DETECTED		Fibrous glass (amorphous)	**> 99**	None detected	8/3/2021
Layer	White insulation							
Comments								
202144325	**A-10b HVAC Dust TSI**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**50**	Foil	8/3/2021
Layer	Silver/tan wrap							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 3 – 20200630

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Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202144325	**A-10b HVAC Dust TSI**		NONE DETECTED		Fibrous glass (amorphous)	> **99**	None detected	8/3/2021
Layer	White insulation							
Comments								
202144326	**A-10c HVAC Dust TSI**		NONE DETECTED		Cellulose (undulose) + fibrous glass (amorphous)	**50**	Foil	8/3/2021
Layer	Silver/tan wrap							
Comments								
202144326	**A-10c HVAC Dust TSI**		NONE DETECTED		Fibrous glass (amorphous)	> **99**	None detected	8/3/2021
Layer	White insulation							
Comments								
202144327	**A-11a Gray Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Gray wood laminate							
Comments								
202144327	**A-11a Gray Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144328	**A-11b Gray Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Gray wood laminate							
Comments								
202144328	**A-11b Gray Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144329	**A-11c Gray Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Gray wood laminate							
Comments								

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Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202144329	**A-11c Gray Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144330	**A-12a Blue Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Blue wood laminate							
Comments								
202144330	**A-12a Blue Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144331	**A-12b Blue Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Blue wood laminate							
Comments								
202144331	**A-12b Blue Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144332	**A-12c Blue Wood Laminate**		NONE DETECTED		Wood fibers (undulose)	**70**	Other	8/3/2021
Layer	Blue wood laminate							
Comments								
202144332	**A-12c Blue Wood Laminate**		NONE DETECTED		None detected		Binder + other	8/3/2021
Layer	Red adhesive							
Comments								
202144333	**A-13a Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**60**	Other	8/3/2021
Layer	Floral wallpaper							
Comments								

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Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/29/21

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202144333	**A-13a Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**2**	Calcite + binder + other	8/3/2021
Layer	Tan adhesive							
Comments								
202144334	**A-13b Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**60**	Other	8/3/2021
Layer	Floral wallpaper							
Comments								
202144334	**A-13b Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**2**	Calcite + binder + other	8/3/2021
Layer	Tan adhesive							
Comments								
202144335	**A-13c Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**60**	Other	8/3/2021
Layer	Floral wallpaper							
Comments								
202144335	**A-13c Floral Wallpaper**		NONE DETECTED		Cellulose (undulose)	**2**	Calcite + binder + other	8/3/2021
Layer	Tan adhesive							
Comments								

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808)262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 202107228
Date Submitted: 7/30/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/29/21

General Comments
The bulk sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures outlined in the United States Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020, Dec. 1982) and / or "Method for Determination of Asbestos in bulk Building Materials" (EPA-600/R-93-116, July 1993). The analysis of each bulk sample relates only to the material examined, and may or may not represent the overall composition of its original source. Floor tile and other resinously bound materials, when analyzed by the EPA methods referenced above may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. Alternative methods of identification, including Transmission Electron Microscopy (TEM) may or may not be applicable. We utilize calibrated visual area estimation on a routine basis and do not conduct point counting unless specifically requested to do so. Estimated error for the visual determinations presented are 75% relative (1 to 2%), 50% relative (3 to 5%); 25% relative (6 to 25%) and 20% (>26% v/v). We will not separate layers which in our opinion are not readily discernable. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Governement. Unless otherwise indicated, the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
None Detected = asbestos was not observed in the sample. If trace amount of asbestos was detected below our quantifiable limits of 1.0%, <1% (trace) would be indicated and the asbestos type listed. Point counting, where applicable, are recommended to improve accuracy.

Jennifer Hsu Liao
Laboratory Manager

HAWAII ANALYTICAL LABORATORY, LLC

3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Report results to	ksellona@enproenvironmental.com
via email or fax	info@enproenvironmental.com
or verbal:	

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:
- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HAZ

Sampled By: Kristine Sellona 5052

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107228

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
A-9a: Ceiling Tile	07-29-2021	Bulk	N/A	Asbestos		202144321
A-9b	"	"	"	"		202144322
A-9c	"	"	"	"		202144323
A-10a: HVAC Duct Tsl	"	"	"	"		202144324
A-10b	"	"	"	"		202144325
A-10c	"	"	"	"		202144326
A-11a: Gray Wood Laminate	"	"	"	"		202144327
A-11b	"	"	"	"		202144328
A-11c	"	"	"	"		202144329
A-12a: Blue Wood Laminate	"	"	"	"		202144330
A-12b	"	"	"	"		202144331
A-12c	"	"	"	"		202144332

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-30-21	Rozlyn Luber	7/30/21 8352
		Rozlyn Luber	

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
***Required fields, failure to complete these fields may result in a delay in your samples being processed.**
Rev 20140701

HAWAII ANALYTICAL LABORATORY, LLC

3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Report results to	ksellona@enproenvironmental.com
via email or fax	info@enproenvironmental.com
or verbal:	

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210 Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:
- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HAZ

Sampled By: Kristine Sellona 5052

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☒ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107228

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
A - 13a: Floral Wallpaper	07-29-2021	Bulk	N/A	Asbestos		202144333
A - 13b	"	"	"	"		202144334
A - 13c	"	"	"	"		202144335
- Last Entry						

KS 7-29-21

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-30-21	Rozlyn Luber Rozlyn Luber	7/30/21 8352

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
*Required fields, failure to complete these fields may result in a delay in your samples being processed.
Rev 20140701

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Tuesday, August 3, 2021

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808)262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 202107229
Date Submitted: 7/30/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/29/21

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Sample No.	Your Sample ID / Description	Results	Units	Date Analyzed
202144336	**LP-1 White Paint**	400	mg/kg	7/30/2021
Comments				
202144337	**LP-2 Beige Paint**	420	mg/kg	7/30/2021
Comments				
202144338	**LP-3 Blue Paint (Exterior)**	7200	mg/kg	7/30/2021
Comments				

ENPRO Environmental
151 Hekili Street,Suite. 210
Kailua HI 96734

Phone Number: (808)262-0909
Facsimile: (808) 262-4449
Email: -

Lab Job No: 202107229
Date Submitted: 7/30/2021
Your Project: 2107-00256-HAZ, Samuel Mahelona Memorial Hospital, 7/29/21

All Quality Control data are acceptable unless otherwise noted.
MRL for lead air is 5ug.
MRL for lead wipe is 10ug.
MRL for lead paint or soil is 40 mg/kg for a 0.25g sample.

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. Modifications to this methodology may have been made based upon the analyst's professional judgment and / or sample matrix effects encountered. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document profiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
# = Analytical methods marked with an "#" are not within our AIHA LAP, LLC Scope of Accreditation.
MRL = Method Reporting Limit.

Jennifer Hsu Liao
Laboratory Manager

HAWAII ANALYTICAL LABORATORY, LLC
3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Report results to	ksellona@enproenvironmental.com
via email or fax	info@enproenvironmental.com
or verbal:	

Invoice To*	Kanani Cale
Company	ENPRO Environmental
Address*	151 Hekili Street, Suite 210
	Kailua, HI 96734
Phone / Cell No.*	808-262-0909
Purchase Order No.	
Email Invoice To	info@enproenvironmental.com

Need Results By*:
- ☐ 5 Working Days
- ☐ 4 Working Days
- ☒ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HA2

Sampled By: Kristine Sellona

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☐ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107229

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
LP-1: White Paint	07-29-2021	Paint	N/A	Lead		202144336
LP-2: Beige Paint	"	"	"	"		202144337
LP-3: Blue Paint (Exterior)	"	"	"	"		202144338
- Last Entry						

KS 7-29-21

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-30-21	Rozlyn Luber Rozlyn Luber	7/30/21 8352

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
***Required fields, failure to complete these fields may result in a delay in your samples being processed.**
Rev 20140701

Hawaii Analytical Laboratory

3615 Harding Avenue, Suite 308, Honolulu, Hawaii, 96816

Tel: (808) 735-0422 – Fax: (808) 735-0047

August 10, 2021

Ken Beal
Enpro Environmental
151 Hekili Street suite 210
Kailua, HI 96734

Project Name:	2107-00256-HAZ, Samuel Mahelona Memorial Hospital
Date collected:	7/29/2021
Date received:	7/30/2021
HAL #:	202107221

Dear Mr. Beal,

Enclosed are the analytical results for the sample received by our laboratory on July 30, 2021. The sample on the chain of custody was received in good condition unless otherwise noted.

The bulk sample submitted for PCB analysis was subcontracted to Advanced Analytical Laboratory / Accu lab, in Seattle, WA.

Results in this report are based on the sampling data provided by the client and refer only to the sample as it was received at the laboratory. Unless otherwise requested, all samples will be discarded 14 days from the date of this report.

Quality assurance data is collected to accompany all analyses and to ensure that results generated meet Hawaii Analytical Laboratory's quality standards. This data is available upon request.

Please contact us at 808-735-0422 if you have questions.

Thank you for using Hawaii Analytical Laboratory and have a great day!!

Anne Antin
Quality Manager
Hawaii Analytical Laboratory
3615 Harding Ave. Ste. 308
Honolulu, HI 96816
Phone: (808) 735-0422
E-mail: aantin@analyzehawaii.com

ADVANCED ANALYTICAL LABORATORY INC

August 10, 2021

Hawaii Analytical Laboratory.
3615 Harding Avenue, Ste. 308
Honolulu, HI
96816

Dear Anne Antin:

Please find enclosed the analytical report for:

Project Name:	2107-00256-HAZ Samuel Mahelona Memorial Hospital
AAL Project #:	W679
Date Received:	08/02/2021
MIS Prep:	No

The results, applicable reporting limits, QA/QC data, invoice, and copy of COC are included.

Advanced Analytical Laboratory appreciates the opportunity to provide analytical services for this project. If you have any questions regarding this project, please don't hesitate to contact AAL.

Thank you for your business and continuing support.

Sincerely,

Uwe Baumgartner, Ph.D
Owner

Elisa M. Young
Owner

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**21-AL0802-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	7/29/2021
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	8/2/2021
Project Name	**2107-00256-HAZ Samuel Mahelona Memorial Hospital**	Date Reported	8/10/2021
Client Project#	**202107221**		
Project#	**W679**		

Polychlorinated Biphenyls in Oil by EPA 8082A/3580A/3665A

Accu Lab Batch# AL080721-3

Client sample ID					**PCB-1**	**MS**	**MSD**	**RPD**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	21-AL0802-1-1	21-AL0717-5-1	21-AL0717-5-1	21-AL0717-5-1
Matrix			Liquid	Liquid	Oil	Liquid	Liquid	Liquid
Date Extracted			8/7/2021	8/7/2021	8/7/2021	8/7/2021	8/7/2021	8/7/2021
Date Analyzed			8/7/2021	8/7/2021	8/7/2021	8/7/2021	8/7/2021	8/7/2021
A1016	1.0	mg/kg	nd		nd			
A1221	1.0	mg/kg	nd		nd			
A1232	1.0	mg/kg	nd		nd			
A1242	1.0	mg/kg	nd		nd			
A1248	1.0	mg/kg	nd		nd			
A1254	1.0	mg/kg	nd		nd			
A1260	1.0	mg/kg	nd	111%	nd	80%	79%	1%
A1262	1.0	mg/kg	nd		nd			
Surrogate Recoveries								
Decachlorobiphenyl			90%	97%	60%	79%	79%	
Tetrachloro-m-xylene			89%	131%	110%	85%	87%	

Acceptable Recovery Limits:

Surrogates/LCS	*60-150%*
MS/MSD	*50-150%*
Acceptable RPD limit:	*30%*

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	Advanced Analytical Laboratory	**Acculab WO#**	**21-AL0802-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	7/29/2021
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	8/2/2021
Project Name	**2107-00256-HAZ Samuel Mahelona Memorial Hospital**	Date Reported	8/10/2021
Client Project#	**202107221**		
Project#	**W679**		

Data Qualifiers and Comments:

MRL- Method Reporting Limit
nd- Indicates the analyte is not detected at the listing reporting limit.
C- Coelution with other compounds.
M- % Recovery of surrogate, MS/MSD is out of the acceptable limit due to matrix effect.
B- Indicates the analyte is detected in the method blank associated with the sample.
J- The analyte is detected at below the reporting limit.
E- The result reported exceeds the calibration range, and is an estimate.
D- Sample required dilution due to matrix. Method Reporting Limits were elevated due to dilutions.
H- Sample was received or analyzed past holding time
Q- Sample was received with head space, improper preserved or above recommended temperature.
I- Due to insufficient sample, LCS/LCS DUP were analyzed in place of MS/MSD.
R- The recovery of this analyte in QC sample failed high, but the analyte was not detected in all related samples. No action was taken.
R-1- The RPD value for the MS/MSD was outside of QC acceptance limits however both recoveries were acceptable. All related samples were "nd". No action was taken.
R-2- The recovery of the surogate in sample failed high, but all related analytes were not detected in the sample. No action was taken.

21AC0802-1

ADVANCED ANALYTICAL LABORATORY-CHAIN OF CUSTODY RECORD

Phone: (808) 838 2252 Fax:(808) 838 2250 Address: 544 Ohohia Street #10 - HONOLULU HAWAII 96819

TURNAROUND TIME: 5 days

AAL PROJECT#: W679

CLIENT: Hawaii Analytical Laboratory
ADDRESS: 3615 Harding Ave, Suite 308 - Honolulu HI, 96816
PHONE: 808-735-0422 EMAIL: jhsu@analyzehawaii.com & aantin@analyzehawaii.com
CLIENT PROJECT#: 202107221

PROJECT NAME: 2107-00258-HAZ Samuel Mahelona Memorial Hospital
COLLECTOR: K Sellona
DATE OF COLLECTION: 7/29/2021
PROJECT MANAGER: Anne Antin

Sample Number		Sample Type	Container Type	ANALYSES: PCB	Field Notes	Number of containers	Number containers
PCB-1	Window Caulking (Exterior)	Bulk	Ziploc	X	2.5 → 5 ml	1	

RELINQUISHED BY (Signature): Roz Luber DATE/TIME: 7/30/2021 RECEIVED BY (Signature): Tom DATE/TIME: 8-3-21

RELINQUISHED BY (Signature) DATE/TIME RECEIVED BY (Signature) DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS INTACT	
RECEIVED IN GOOD CONDITION	
TEMPERATURE	

LABORATORY NOTES:

HAWAII ANALYTICAL LABORATORY, LLC
3615 Harding Avenue, Suite 308
Honolulu, HI 96816
PH: 808-735-0422
FAX: 808-735-0047

☐ New Client?

Report To*	
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Address*	151 Hekili Street, Suite 210
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Need Results By*:

- ☒ 5 Working Days
- ☐ 4 Working Days
- ☐ 72 hour
- ☐ 48 hour
- ☐ 24 Hour
- ☐ Rush - 6 hours
- ☐ Immediate - 4 hrs or less

Site/Project Name: Samuel Mahelona Memorial Hospital

Client Project No.: 2107-00256-HAZ

Sampled By: Kristine Sellona

Comments / Special Instructions:

PLM POSITIVE STOP Instructions:
- ☐ Positive stop per SAMPLE
- ☐ Positive stop per LAYER

LAB USE ONLY
Lab Report No.: 202107221

Sample Identification* (Maxmium of 30 Characters)	Date Sampled* (mm/dd/yy)	Collection Medium	Sample Area / Air Volume	Analysis Requested*	Method Reference	Lab ID
PCB-1: Window Caulking (Exterior)	07-29-2021	Bulk	N/A	PCBs		
- Last Entry						
						KS 7-29-21

Relinquished By (Print and Sign)	Date/Time	Received By (Print and Sign)	Date/Time
Kristine Sellona Kristine Sellona	7-30-21	Rozlyn Luber	07-30-21 A08:50 IN
		Rozlyn Luber	

Sample description can be paint chips, concrete, specific sample collection location, etc...
If matrix is 'soil', please specify if it is a FOREIGN SOIL SAMPLE (outside Hawaii) in the comment section.
All samples submitted are subject to Hawaii Analytical Laboratory terms and conditions.
***Required fields, failure to complete these fields may result in a delay in your samples being processed.**
Rev 20140701

Photo 1

4800 Kawaihau Road – Facing Southeast

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 2

Asbestos Bulk Sample 1: Brown Vinyl Floor Tile Assembly

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 3

Asbestos Bulk Sample 2: Black Covebase with Associated Mastics

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 4

Asbestos Bulk Sample 3: Tan Vinyl Floor Tile Assembly

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 5

Asbestos Bulk Sample A4: White Linoleum Assembly

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

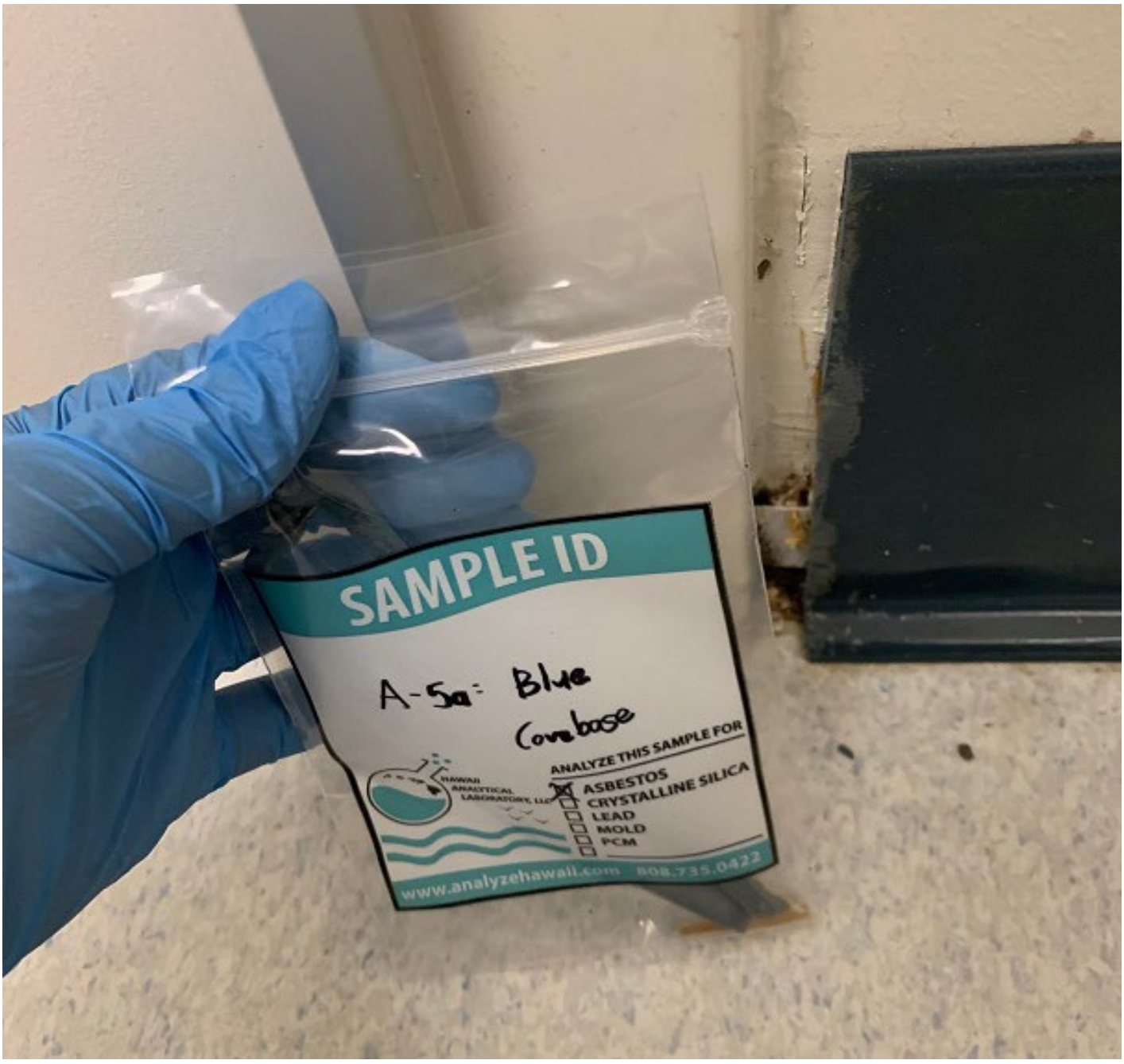

Photo 6

Asbestos Bulk Sample 5: Blue Covebase with Associated Mastics

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 7

Asbestos Bulk Sample 6: White Caulking

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

Photo 8

Asbestos Bulk Sample 7: Gray Caulking

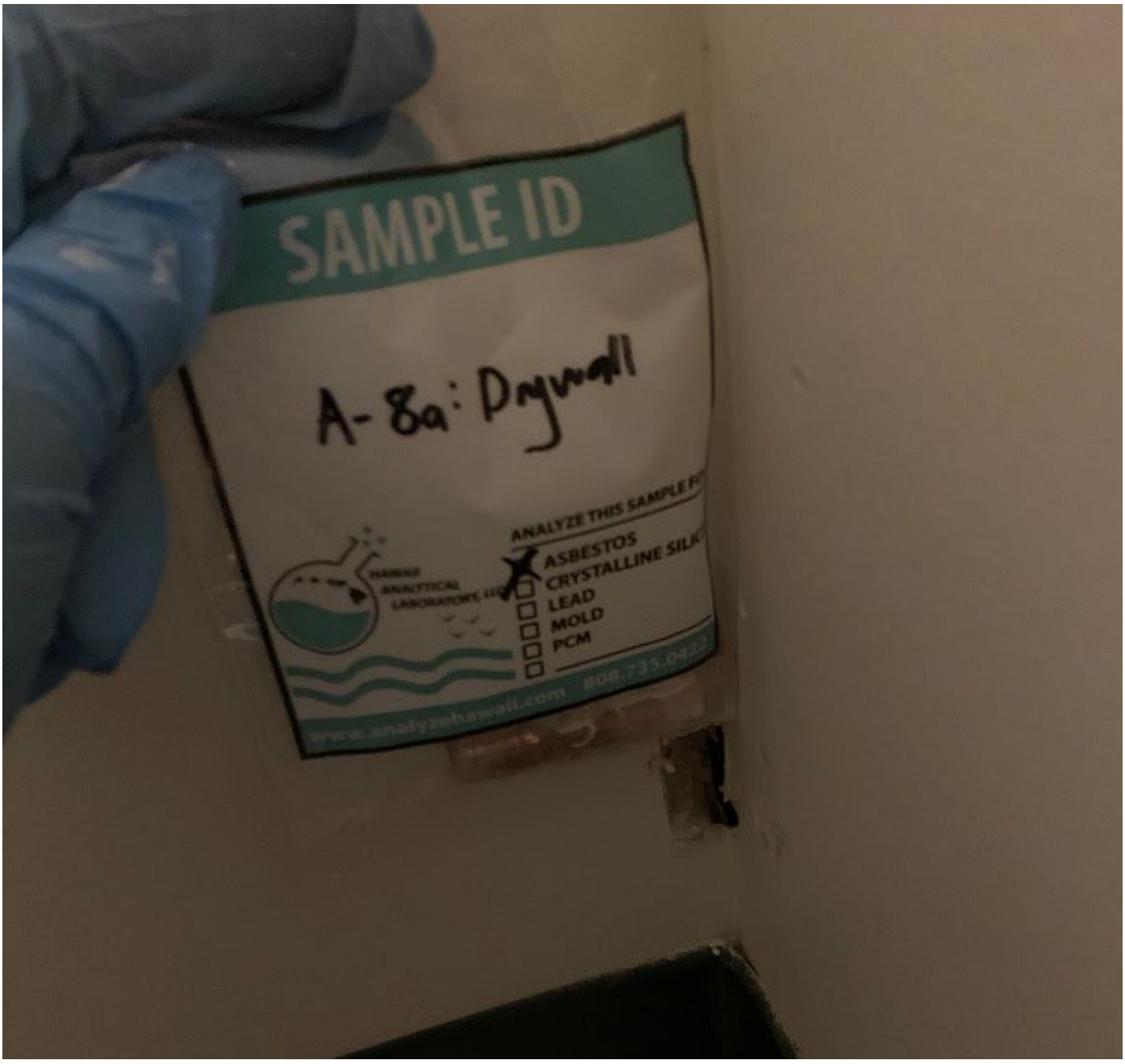

Photo 9

Asbestos Bulk Sample 8: Drywall Wall Assembly

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 26, 2021

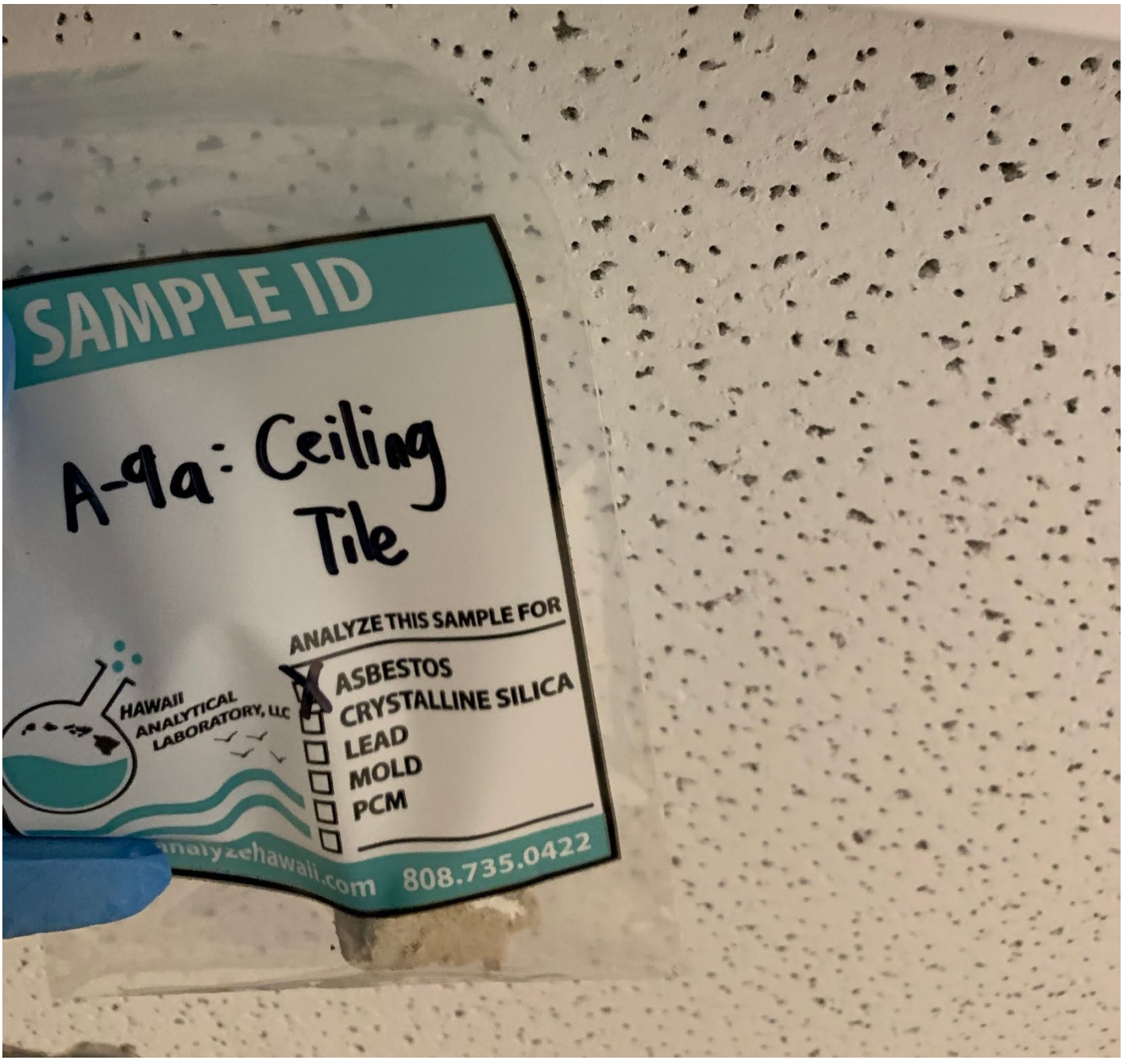

Photo 10

Asbestos Bulk Sample 9: Ceiling Tile

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 29, 2021

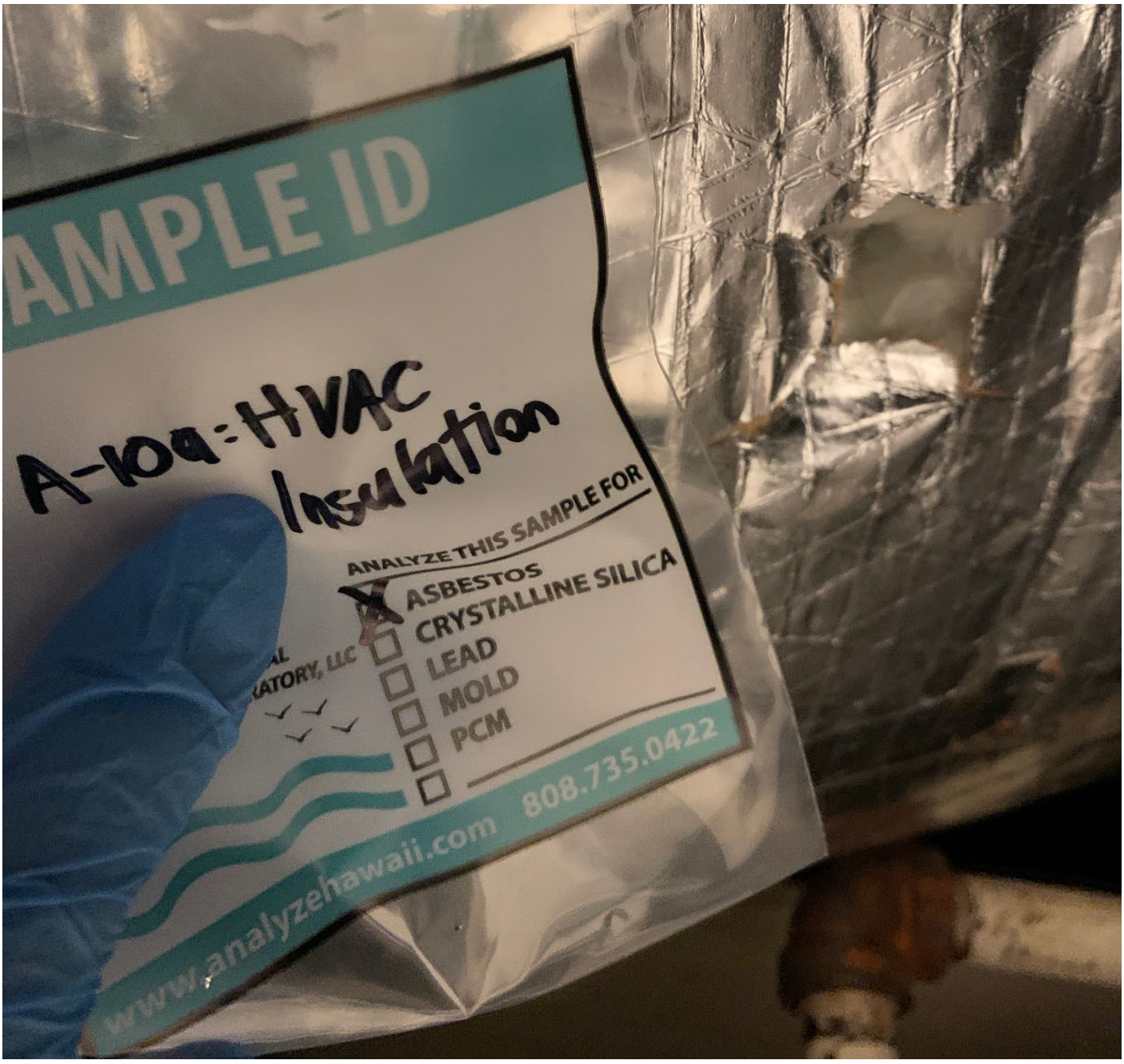

Photo 11

Asbestos Bulk Sample 10: HVAC Duct Thermal Insulation

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 29, 2021

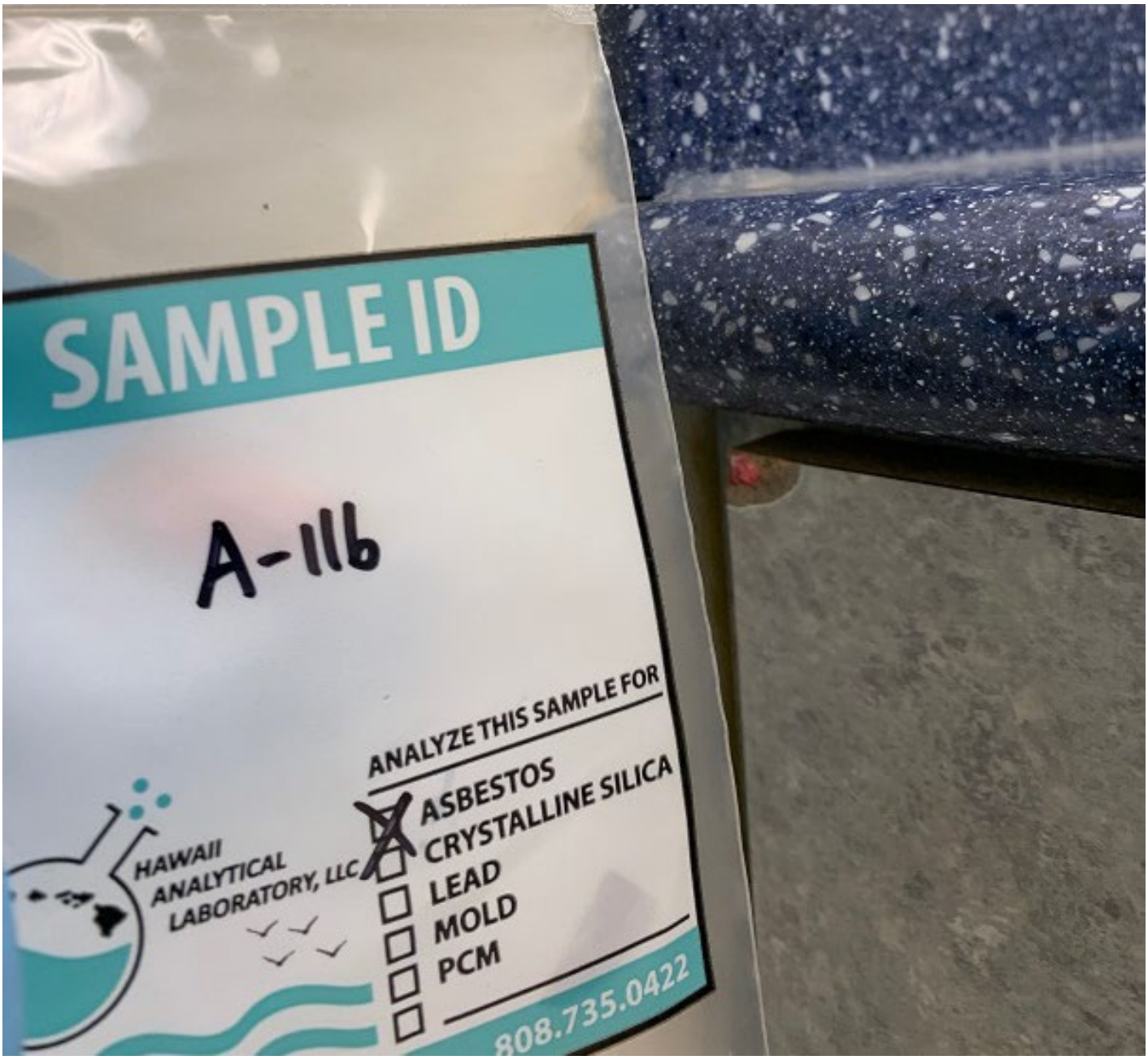

Photo 12

Asbestos Bulk Sample 11: Gray Wood Laminate with Associated Mastics

Photo 13

Asbestos Bulk Sample 12: Blue Wood Laminate with Associated Mastics

Project Number: 2107-00256-HAZ

Samuel Mahelona Memorial Hospital, Radiology Suite

4800 Kawaihau Road

Date of Photos: July 29, 2021

Photo 14

Asbestos Bulk Sample 13: Floral Wallpaper with Associated Mastics

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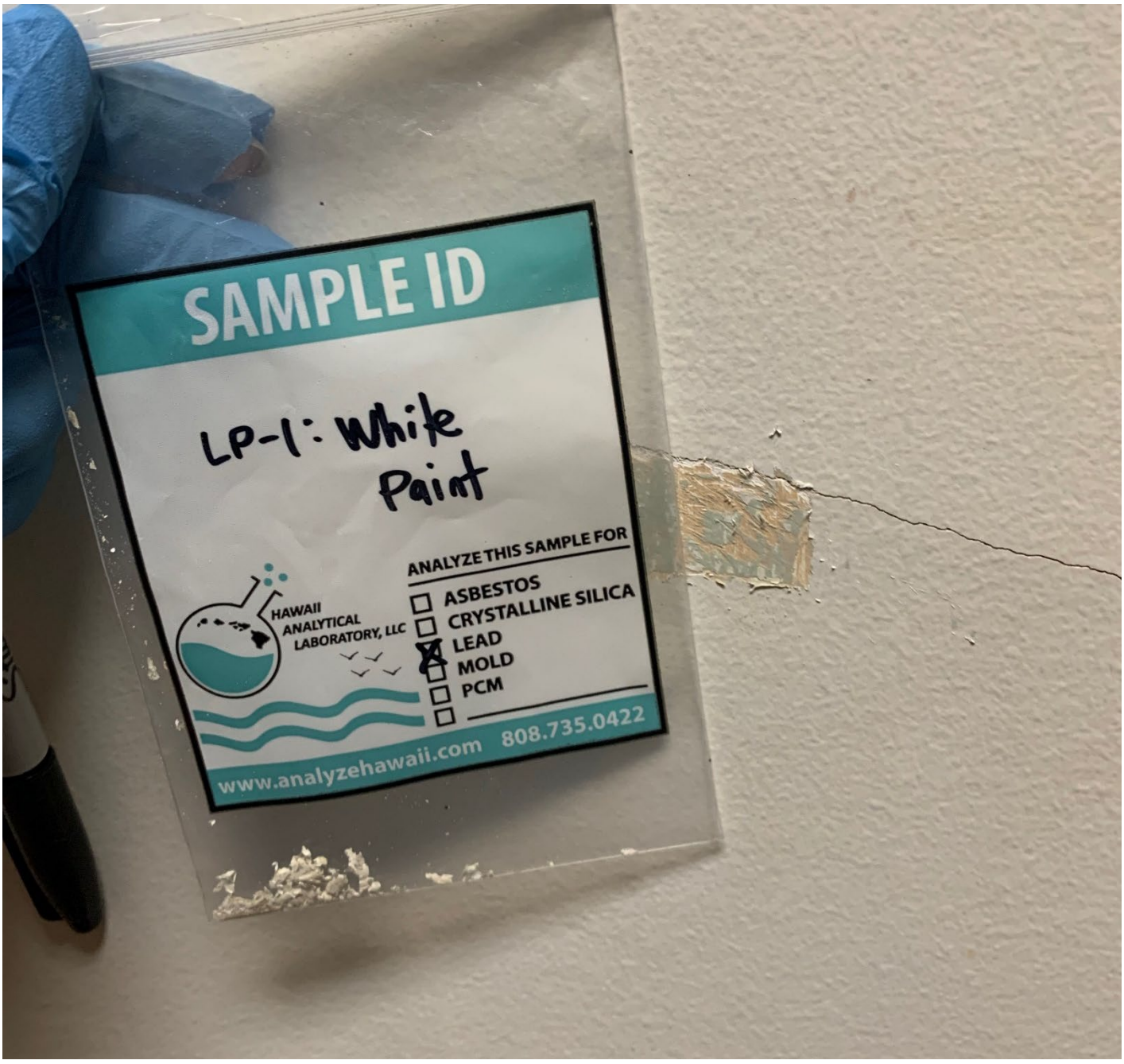

Photo 15

Lead Paint Chip Sample LP1: White Paint (Interior)

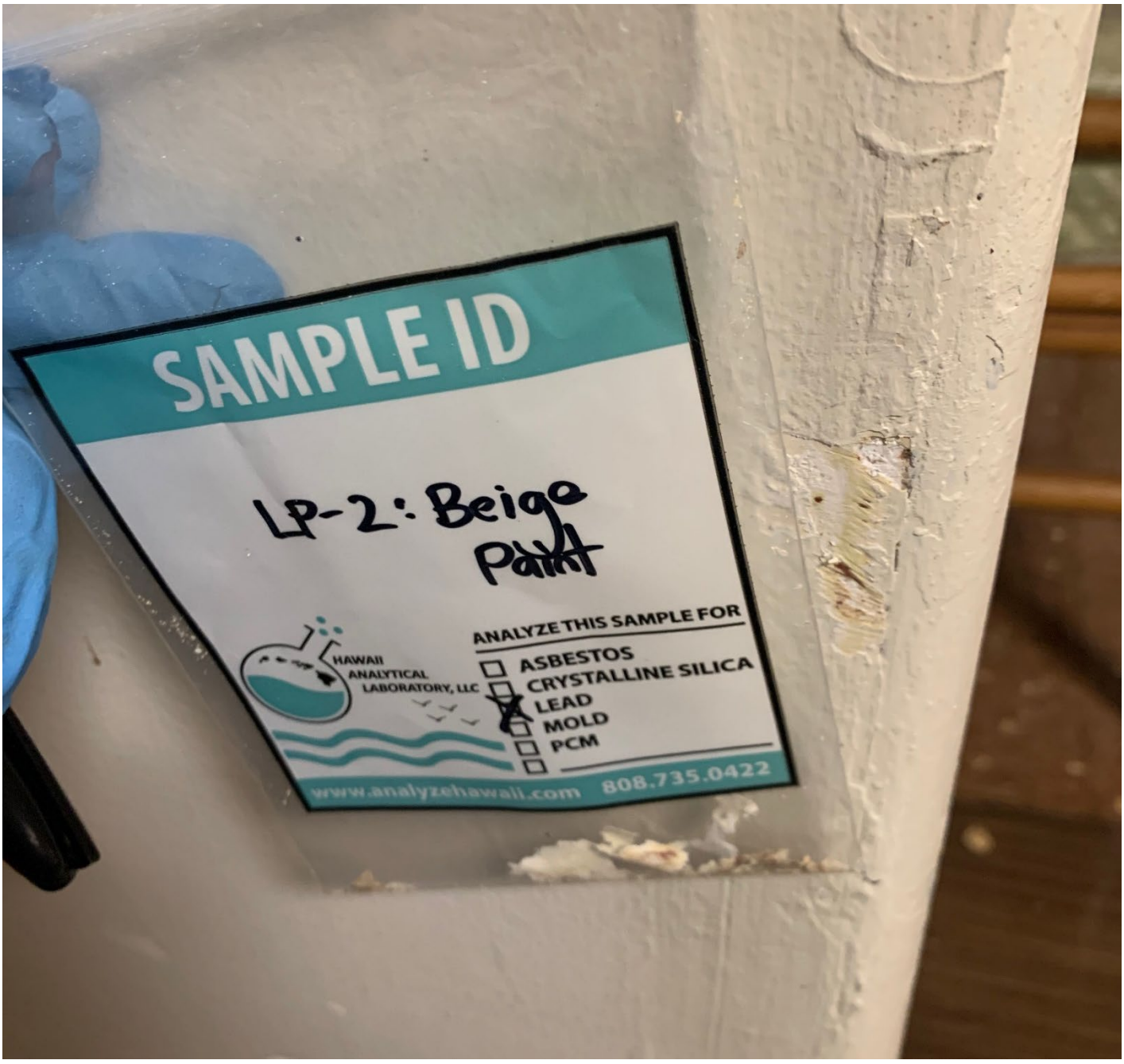

Photo 16

Lead Paint Chip Sample LP2: Beige Paint (Interior)

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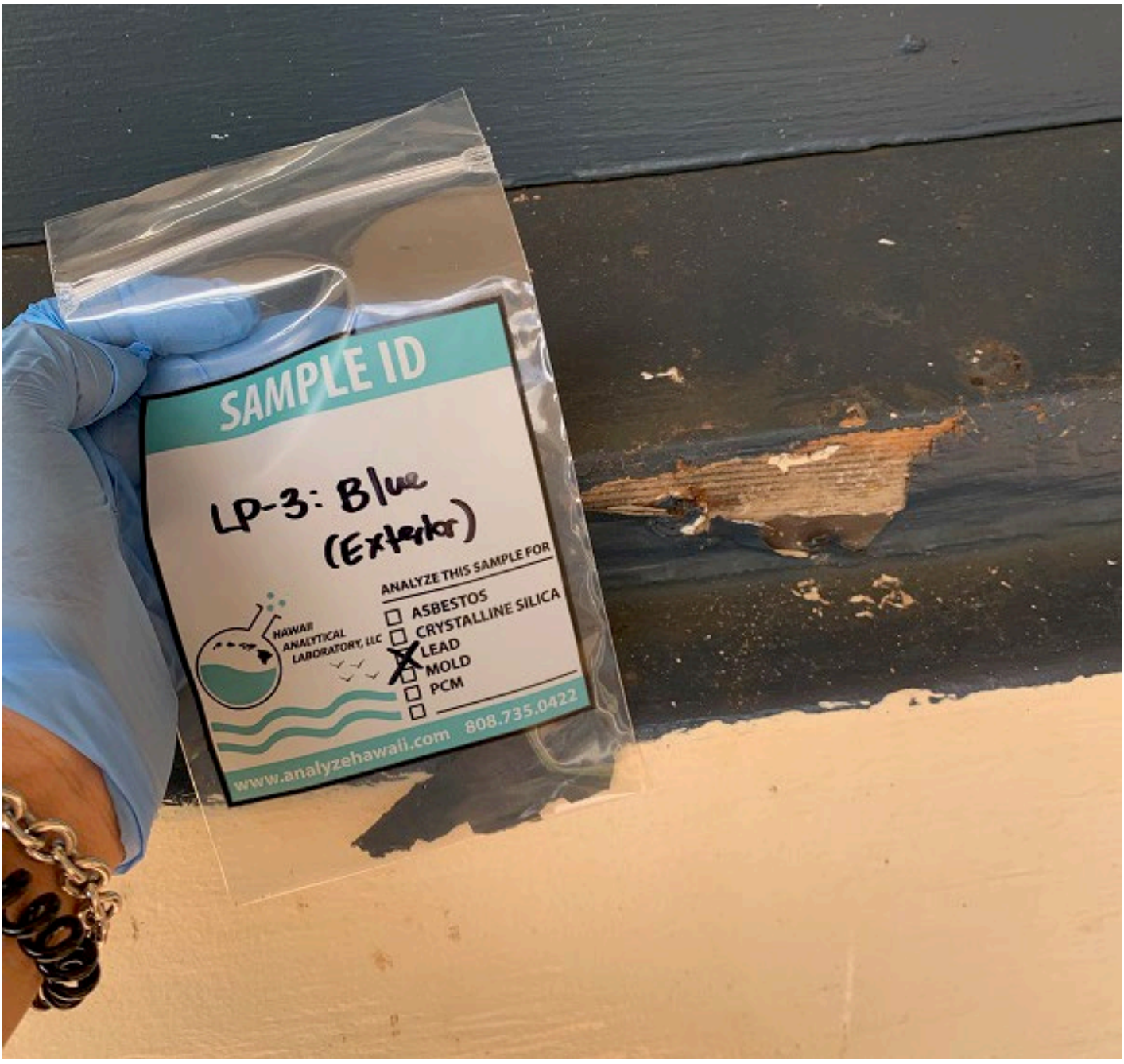

Photo 17

Lead Paint Chip Sample LP3: Blue Paint (Exterior)

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Photo 18

Polychlorinated Biphenyls (PCBs) Sample PCB1: Northeast Exterior Window Caulking

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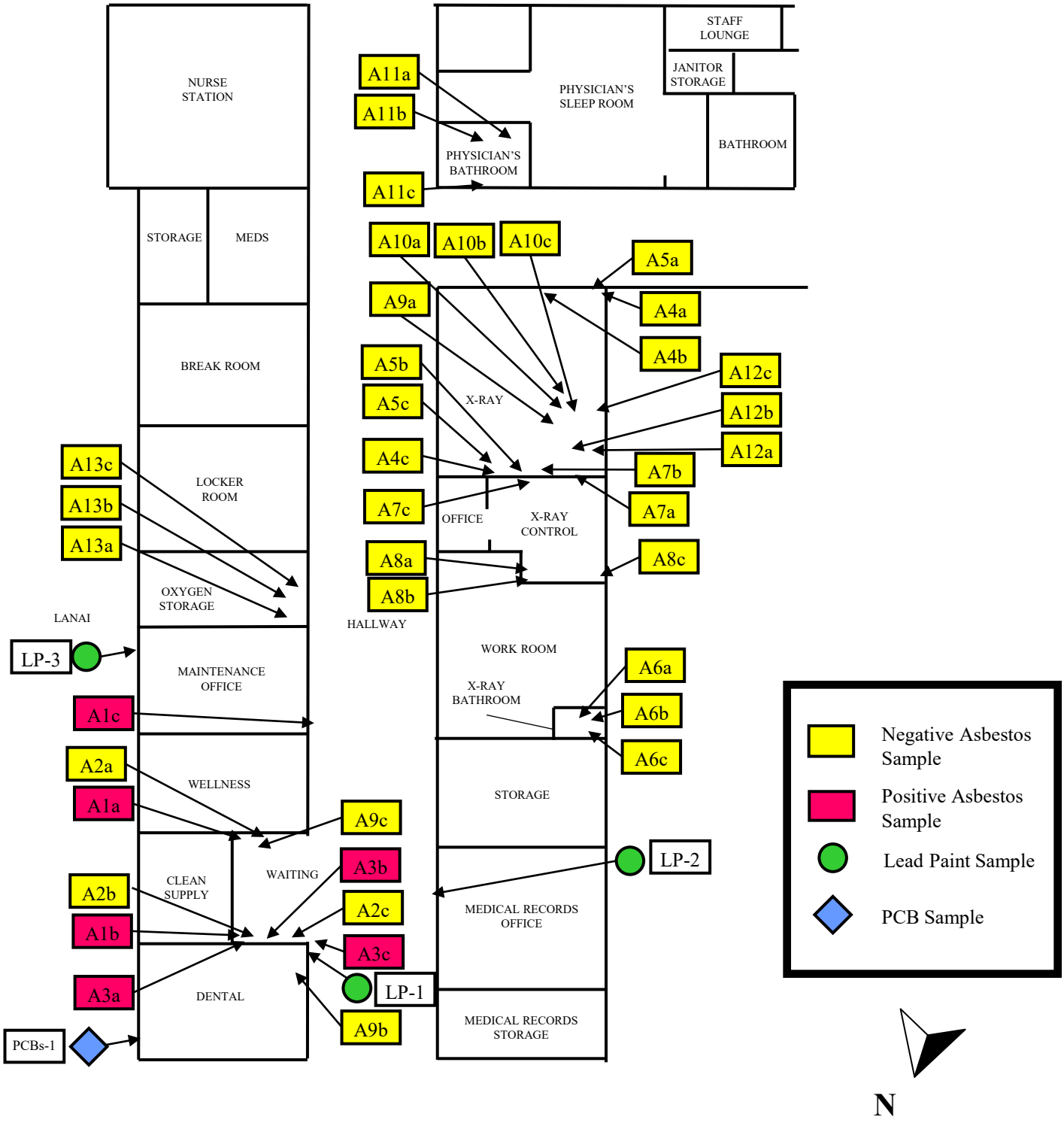

Figure 1

Asbestos, Lead, and PCBs Sampling Locations