

# **REQUIREMENTS and SPECIFICATIONS**

## **TO CONSTRUCT**

**RE-ROOFING TROOP COMMAND BUILDINGS #1 & #2  
WAIAWA ARMORY CA-1219-C**

FOR THE

**STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
HAWAII ARMY NATIONAL GUARD**

**DARRYLL D.M. WONG  
MAJOR GENERAL  
ADJUTANT GENERAL STATE OF HAWAII**

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Architect  
Environmental

Sansei Architects, Inc.  
Environmeteo Services, Inc.

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## **DIVISION 1 - GENERAL REQUIREMENTS**

### **SECTION 01330 - SUBMITTAL PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY**

- A. Comply with the GENERAL CONDITIONS "Shop Drawings and Other Submittals" section and "Material Samples" section.
- B. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

##### **1.02 SUBMITTAL PROCEDURES**

- A. Coordinate Work and Submittals: Contractor shall certify the submittals were reviewed and coordinated.
- B. Submittal Certification: Provide in MS Word when submitting electronically. Project Manager will provide an electronic copy of the Submittal Certification. Provide a reproduction (or stamp) of the "Submittal Certification" and furnish the required information with all submittals. Include the certification on:
  - 1. The title sheet of each shop drawing, or on
  - 2. The cover sheet of submittals in 8-1/2 inch x 11-inch format, or on
  - 3. One face of a cardstock tag (minimum size 3-inch x 6-inch) tied to each sample. On the sample tag, identify the sample to ensure sample can be matched to the tag if accidentally separated. The opposite face of the tag will be used by the Project Manager to receive, review, log stamp and include comments.
- C. Variances: The Contractor shall request approval for a variance. Clearly note any proposed deviations or variances from the Specifications, Drawings, and other Contract Documents on the submittal and also in a separately written letter accompanying the submittal.

D. Submittal Certification Form (stamp or digital)

CONTRACTOR'S NAME: \_\_\_\_\_  
PROJECT: \_\_\_\_\_  
JOB NO: \_\_\_\_\_

**As the General Contractor, we checked this submittal and we certify it is correct, complete, and in compliance with Contract Drawings and Specifications. All affected Contractors and suppliers are aware of, and will integrate this submittal into their own work.**

SUBMITTAL NUMBER \_\_\_\_\_ DATE RECEIVED \_\_\_\_\_  
REVISION NUMBER \_\_\_\_\_ DATE RECEIVED \_\_\_\_\_  
SPECIFICATION SECTION NUMBER /PARAGRAPH NUMBER \_\_\_\_\_  
DRAWING NUMBER \_\_\_\_\_  
SUBCONTRACTOR'S NAME \_\_\_\_\_  
SUPPLIER'S NAME \_\_\_\_\_  
MANUFACTURER'S NAME \_\_\_\_\_

**NOTE: DEVIATIONS FROM THE CONTRACT DOCUMENTS ARE PROPOSED AS FOLLOWS (Indicate "NONE" if there are no deviations)**

CERTIFIED BY	
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Note: Form can be combined with Design Consultant's Review stamp. This is available from the Project Manager.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.01 SUBMITTAL REGISTER AND TRANSMITTAL FORM**

- A. Contractor shall use submittal register and transmittal forms as directed by the Project Manager.
- B. The listing of required submittals within this Section is provided for the Contractor's convenience. Review the specification technical sections and prepare a comprehensive listing of required submittals. Furnish submittals to the Project Manager for review.
- C. Contractor shall separate each submittal item by listing all submittals in the following groups with the items in each group sequentially listed by the specification section they come from:
  - 1. Administrative
  - 2. Data
  - 3. Tests
  - 4. Closing

- D. Contractor shall separate all different types of data as separate line items all with the column requirements.
- E. Contractor shall send monthly updates and reconciled copies electronically to the Project Manager and the Design Consultant in MS Word or MS Excel or other format as accepted by the Project Manager.

Section No. – Title	Shop Drawings & Diagrams	Samples	Certificates (Material, Treatment, Applicator, etc.)	Product Data, Manufacturer's Technical Literature and Brochures	MSDS Sheets	Calculations	Reports (Testing, Maintenance, Inspection, etc.)	Test Plan	O & M Manual	Equipment or Fixture Listing	Schedules (Project Installation)	Maintenance Service Contract	Field Posted As-Built Drawings	Others	Guaranty or Warranty	Manufacturer's Guaranty or Warranty (Greater than one year)
01330 – Submittal Procedures			■											■		
01400-Quality Requirements			■				■									
02073 – Patching, Repair, & Restoration				■	■											
05500- Metal Fabrications	■															
06070-Wood Treatment				■												
06100-Carpentry	■		■	■												
07530-TPO Single ply Membrane Roofing	■	■		■			■							■	■	■
07600-Flashing & Sheet Metal	■			■												
07720-Roof Accessories	■	■		■												
07920 – Joint Sealants		■		■											■	
09901 - Painting		■	■	■	■									■		
13280-Removal and Disposal of Asbestos-Containing Materials	■	■	■				■				■			■		
13283-Disturbance of Lead-Based and Lead-Containing Material		■	■								■			■		
15160-Storm Drainage	■			■												

END OF SECTION

## **SECTION 01400 - QUALITY REQUIREMENTS**

### **PART 1 – GENERAL**

#### **1.01 SUMMARY**

- A. This Section includes administrative and procedural requirements for quality assurance and for Contractor's Quality Control [(CQC) Program,] responsibilities and duties.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements of this section or by the Department or authorities having jurisdiction, do not limit the Contractor's responsibility to provide quality-control services.

#### **1.02 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Project Manager.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

#### **1.03 SUBMITTALS**

- A. Qualification Data: For QC Manager (alternate QC Manager), inspection and testing agencies, furnish evidence to demonstrate their capabilities and experience. Include proof of qualifications in the form of education, certifications, and license. For the testing agencies, include a recent report on the inspection of the testing agency by a recognized authority.
  - 1. The Project Manager may disapprove any QC Manager (alternate QC Manager), inspection or testing agency or individual employed by the agency when the Project Manager determines it is in the best interest of the State. The Contractor is not entitled to any claim or cost increase or time extension due to the Project Manager's disapproval of an agency or individual.

- B. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Ambient conditions at time of sample taking and testing and inspecting.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- C. Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
- D. Quality Control (QC) Plan: Submit a QC Plan within 30 calendar days after receipt of Notice of Award.
1. The QC Plan shall include a preliminary submittal of the list of definable features of work and the Quality Control Checklist that covers the first [90] days of construction.
  2. Submit the completed list of definable features of work and the Quality Control Checklist in conjunction with the completed Construction Schedule or CPM schedule.]
- E. Any approval by the Department of the QC Plan is considered an “approved as noted, resubmittal required” and will be in effect only until the completed list of definable work features are received and approved. If the completed list of definable work features and completed Construction Schedule are not received within the time indicated, the QC Plan will be disapproved and all work will stop, except for work authorized in article 1.09 in the paragraph entitled “Preliminary Work Authorized Prior to Approval.”

#### **1.04 SCHEDULE FOR SUBMITTING INFORMATION AND REPORTS**

- A. Deliver the original and two copies each of the following to the Department:
  - 1. Combined Contractor Production and Contractor Quality Control Report, (one sheet): By 10:00 AM the next working day after each day that work is performed.
  - 2. Field Test Reports: Within two working days after the test is performed, attached to the Contractor Quality Control Report;
  - 3. Monthly Summary Report of Tests: 2 copies attached to the Contractor Quality Control Report;
  - 4. Testing Plan and Log: 2 copies, at the end of each month;
  - 5. Rework Items List: 2 copies, by the last working day of the month;
  - 6. Quality Control meeting minutes: 2 copies, within 2 working days after the meeting and;
  - 7. Quality Control Certifications: As required by the paragraph titled "Quality Control Certifications.

#### **1.05 QUALITY ASSURANCE**

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Professional Project Manager or Engineer Qualifications: A professional Project Manager or engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing Project Manager or engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- D. Inspection and Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E-548, and that specializes in types of tests and inspections to be performed.
- E. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Project Manager.
  - 2. Notify Project Manager seven (7) days in advance of dates and times when mockups will be constructed.



3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Project Manager's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

#### **1.06 QUALITY CONTROL**

- A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
  1. Engage qualified inspection or testing agencies to perform quality-control services and implement the Quality Control Plan, unless services are indicated as the Department's responsibility.
  2. Notify Project Manager and the inspection or testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Submit certified written reports of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- C. Retesting and Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with the Department and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  1. Notify the Project Manager and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.

5. Do not perform any duties of Contractor.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field-curing of test samples.
  5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  6. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. Approval of the QC Plan: Obtain approval of the QC plan prior to the start of construction. The Project Manager may require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work is achieved.

#### **1.07 QUALITY CONTROL MANAGER**

- A. Duties: Provide a Quality Control Manager at the work site to implement and manage the QC Program. In addition to implementing and managing the QC Program, the QC Manager may perform the duties of the Project Superintendent. The QC Manager is required to; [attend the Coordination and Mutual Understanding Meeting,] conduct the QC meetings, perform submittal review, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating [the QC specialists,] Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.
- B. Qualifications: An individual with a minimum of 10 years of experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have experience in the areas of hazard identification and safety compliance. It is desirable that the QC Manager completed the course "Construction Quality Management for Contractors" offered by the Navy or the Army Corps of Engineers or other similar course.

- C. Approval: QC Manager shall be subject to the approval of the Project Manager. Unless the Contractor has a QC Manager on staff, the Contractor shall provide the names of at least three individuals, and shall rank the individuals based on the Contractor's preference to work with or hire. The Project Manager may approve all or any one of the individuals. If any individual is presently working for the Contractor as a QC Manager, the Contractor may choose to submit only one individual, and that individual is subject to approval.
1. Furnish evidence showing the individual(s) meets the qualifications, experience, training and other criteria required by this section.

#### **1.08 QUALITY CONTROL PROGRAM REQUIREMENTS**

- A. Establish and maintain a Quality Control (QC) Program consisting of:
1. Quality Control organization,
  2. QC Plan,
  3. Testing,
  4. Completion inspections,
  5. Quality Control meetings,
  6. Submittal review and approval, and
  7. Quality Control certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations, which comply with the requirements of this Contract.
- B. The QC Program shall cover on-site and off-site work and shall be keyed to the work sequence.
- C. No work or testing may be performed unless the Quality Control Manager is on the work site.
- D. Unless the QC Manager and Project Superintendent are the same individual, the QC Manager shall report to the Project Superintendent as the Project Superintendent will be held responsible for the quality of work on the job and with quality requirements specified in the contract. Besides the requirements of the General Conditions, the Project Superintendent is charged with the responsibility for the overall management of the project including quality and production.
- E. Preliminary Work Authorized Prior to Approval: The only work that is authorized to proceed prior to the approval of the QC Plan is mobilization of storage and office trailers, temporary utilities and surveying, unless otherwise directed by the Project Manager.
- F. Notification of Changes: Notify the Project Manager of any proposed QC Plan change, including changes in the Quality Control organization personnel. Send written notification a minimum of seven days prior to a proposed change. Proposed changes are subject to acceptance by the Project Manager.

#### **1.09 QUALITY CONTROL ORGANIZATION**

- A. Quality Control Manager: Meet the qualifications and duties required by this Section.
- B. Alternate QC Manager Duties and Qualification: Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. Limit the time the QC Manager is absent to a period not exceed a single duration of two consecutive weeks, and in aggregate not more than 45 days during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC Manager.
- C. Safety Specialist: Provide a Safety Specialist at the work site to perform safety management, surveillance, inspections and safety enforcement for the contractor. The Safety Specialist shall be at the work site at all times whenever work or testing is being performed, shall conduct daily safety inspections and shall have no other duties other than safety management, inspections, and safety enforcement on this Contract.

#### **1.10 QUALITY CONTROL (QC) PLAN**

- A. Requirements: Provide a QC Plan covering both on-site and off-site work. Bind the Plan in a 3-ring binder with pages numbered sequentially, and provide an electronic version of the plan in MS Word (or PDF) format.
- B. Table of Contents (TOC): List and identify the major sections identified with tabs. Format the TOC in the order of the following paragraphs.
- C. QC Organization: A chart showing the Quality Control organizational structure.
- D. Names and Qualifications: In resume format, for each person in the Quality Control organization.
- E. Duties, Responsibility and Authority of QC Personnel: List duties, responsibilities and authorities of each person in the quality control organization.
- F. Outside Organizations: List outside organizations such as, Project Managerural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
- G. Appointment Letters: Signed by an officer of the firm appointing the Quality Control Manager and Alternate Quality Control Manager and stating that they are responsible for implementing and managing the QC Program. Include in this letter the responsibility of the Quality Control Manager and Alternate Quality Control Manager and authority to stop work which is not in compliance with the contract. Also, provide letters from the Quality Control Manager to all other Quality Control specialists outlining their duties, authorities, and responsibilities.
- H. Submittal Procedures and Initial Submittal Register: Detail the procedures for reviewing, approving and managing submittals. Provide the name(s) of the person(s) in the Quality Control organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register.
- I. Testing Laboratory Information: Include applicable testing laboratory information required by this Section.

- J. Testing Plan and Log: Include the tests required, referenced by the specification section and paragraph number requiring the test, the frequency, and the person responsible for each test.
- K. Procedures to Complete Rework Items: Detail the procedures to identify, record, track and complete rework items.
- L. Documentation Procedures: Establish documentation procedures, including proposed report formats.
- M. Definable Features of Work: List the definable features of work as a checklist. A definable feature of work (DFOW) is a task, which is separate and distinct from other tasks and requires separate quality control requirements. DFOW could be identified by different trades or disciplines or by an item or activity on the construction schedule. Although each specification section could be considered a DFOW there frequently are more than one DFOW under a particular section. Cross-reference the list to the Construction Schedule and the specification sections.
- N. Quality Control Checklists: For each definable feature of work, develop a list of quality control activities broken down by preparatory, initial and follow-up phases. Each list shall include a breakdown of quality checks that will be used when performing the quality control functions, inspections, and tests required by the contract. Develop Quality Control Checklists to obtain quality construction by planning ahead and identifying potential problems for each definable feature of work.
- O. Personnel Matrix: For each section of the specification, show the person(s) who reviews and approve submittals, and who performs and document the testing.

#### **1.11 COORDINATION AND MUTUAL UNDERSTANDING MEETING**

- A. After submission of the QC Plan, and prior to the start of construction, meet with the Department's Representatives to present the QC Program. The purpose of this meeting is to develop a mutual understanding of the quality control details, including documentation, administration for on-site and off-site work, and coordination of the Contractor's management, production and quality control personnel. At the meeting, the Contractor will be required to explain in detail the quality control for each definable feature of work. As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the project manager, project superintendent, Quality Control Manager, Alternate Quality Control Manager, and subcontractor representatives. Each subcontractor who will be assigned quality control responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor and the Department's Representative. The Contractor shall provide a copy of the signed minutes to all attendees. Repeat the coordination and mutual understanding meeting if a new QC Manager is appointed.

#### **1.12 QUALITY CONTROL MEETINGS**

- A. QC Manager shall conduct Quality Control (QC) Meetings at least once every two weeks at the work site with the Project Superintendent. Notify the Department's Representative at least 48 hours in advance of each meeting to

allow their attendance at these meetings. As a minimum, accomplish the following at each meeting:

1. Review the minutes of the previous meeting.
2. Review the schedule and the status of work since the last meeting, including; work or testing accomplished, rework items identified and rework items completed.
3. Review the status of submittals. Address reviewed and approved submittals and submittals required in the near future
4. Review the work to be accomplished in the next three weeks and the documentation required including the status of off-site work or testing. Establish completion dates for rework items.
5. Update the schedule showing planned and actual dates of the preparatory, initial and follow-up phases, including testing and any other inspection required by this contract.
6. Discuss construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work.
7. Resolve quality control and production problems, including assisting in resolving Request for Information (RFI) issues.
8. Address items that may require revising the QC Plan such as changes in quality control organization personnel or changes in procedures.
9. Review health and safety plan. Discuss upcoming activities that create or disturb hazardous materials.

#### **1.13 PHASES OF CONTROL**

- A. Three Phases are used to ensure quality control measures are provided for each definable feature of work, which includes both on-site and off-site work. Notify the Engineer at least 4 days prior to each phase.
- B. Preparatory Phase – Includes a meeting conducted by the QC Manager and attended by the superintendent, and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report. Perform the following prior to beginning work on each definable feature of work:
  1. Review the contract drawing and each paragraph of the applicable specification sections.
  2. Verify that shop drawings and submittals for materials and equipment are submitted and approved. Verify receipt of approved factory test results, when required.
  3. Review the testing plan. Ensure that the required quality control testing provisions are made.

4. Examine the work area. Ensure that the required preliminary work is completed.
  5. Examine and ensure the required materials, equipment, and sample work conforms to the approved shop drawings and submitted data. Ensure that the materials and equipment are available at the jobsite.
  6. Discuss construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction. Plan ahead and identify potential problems for each definable feature of work.
  7. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.
- C. Initial Phase – The initial phase starts when construction crews are ready to start work on a definable feature of work. Meet with, the superintendent, and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor Quality control Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:
1. Establish the quality of workmanship required.
  2. Resolve conflicts.
  3. Ensure that testing is performed *by the approved laboratory*.
  4. Check work procedures for compliance with the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met.
- D. Follow-Up Phase – For on-going work, perform the following activities daily, or more frequently if necessary, until the completion of each definable feature of work. Document the work in the daily Contractor Quality Control Report:
1. Ensure that the work is in compliance with Contract requirements.
  2. Maintain the quality of workmanship required.
  3. Ensure that testing is performed *by the approved laboratory*.
  4. Ensure that rework items are being corrected.
  5. Perform safety inspections.
- E. Conduct additional Preparatory and Initial Phases on the same definable features of work if the quality of on-going work is unacceptable, or if there are changes in the applicable quality control organization, or if work on a definable feature is resumed after substantial period of inactivity, or if other problems develop.
- F. For Off-Site Work – Notify the Engineer at least two weeks prior to the start of the preparatory and initial phases.

#### **1.14 TESTING**

- A. Perform sampling and testing required in this section and as otherwise required by these specification.
- B. Testing Laboratory Requirements:
  - 1. Inspection of Testing Laboratories: Prior to approving a non-accredited laboratory, the Department may conduct an inspection of the proposed testing laboratory records and facilities. Records subject to inspection include; equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal quality control procedures.
  - 2. Capability Check: The Department may check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this contract.
  - 3. Test Results:
    - a. Cite applicable contract requirements, tests or analytical procedures used.
    - b. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Project Manager immediately.
    - c. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specifications and contract requirements. Indicate the applicable specification section.
    - d. The authorized testing laboratory representative shall sign and certified the test results and reports.
    - e. Furnish the signed reports, certifications, and other documentation to the Project Manager via the QC Manager.
  - 4. Test Reports and Monthly Summary Report of Tests - The QC Manager shall furnish the signed reports, certifications and a monthly summary report of field tests. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

#### **1.15 COMPLETION INSPECTIONS**

- A. Pre-Final Inspection: Near completion of the Work or any increment Work, the QC Manager shall conduct an inspection to identify items, which do not conform to the contract requirements. Include any remaining items on the "Rework Items List" which were not corrected. The QC Manager shall make follow-on inspections to ascertain that all deficiencies have been corrected.
- B. Final Inspection: Comply with the General Conditions section titled "SUBSTANTIAL COMPLETION AND FINAL INSPECTION." Verify that the facility is substantially complete and ready for final inspection. The QC Manager, the superintendent or other primary contractor management personnel, shall ensure that all deficient items are corrected prior to notifying the Department for a final inspection.



## **1.16 DOCUMENTATION**

- A. Maintain current and complete records of on-site and off-site activities.
- B. A Contractor Production Report is required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Account for each calendar day throughout the life of the Contract. Use terminology consistent with the construction schedule to report the work. The Contractor Production Report is to be prepared, signed and dated by the project superintendent and shall contain the following information:
  - 1. Report date, report number, contractor's name, project title, job number, project location and superintendent present.
  - 2. Weather conditions in the morning and in the afternoon including; maximum and minimum temperatures, durations and estimated rainfall, and prevailing wind directions and speed.
  - 3. Identify work performed by corresponding schedule activity number, post contract number, change order number, and other items.
  - 4. A list of Contractor and subcontractor personnel on the work site. Include their trades, work location, description of work performed, hours worked by trade, daily total work hours on work site, and total work hours from start of construction.
  - 5. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results, and address the following:
    - a. Was a job safety meeting held? If yes, attach a copy of the meeting minutes.
    - b. Were there any lost time accidents? If yes, attach a copy of the completed OSHA report and the Department's "Contractor Significant Incident Report".
    - c. Was any crane, trenching, scaffold, high voltage electrical, or high work done? If yes, attach a statement or checklist showing inspection(s) performed.
    - d. Were there hazardous material(s) or waste released into the environment? If yes, attach descriptions, accident reports, notifications required and made.
    - e. List safety actions taken today and safety inspections conducted.
  - 6. A list of equipment or material received each day that is incorporated into the job.
  - 7. A list of equipment and plant equipment on the work site including the number of hours used, idle and down for repair.
  - 8. Include a "remarks" section in this report. Address pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site.

- C. A Contractor Quality Control Report is required for each day that work is performed and for every seven consecutive calendar days of no-work period and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. Use terminology consistent with the construction schedule to report the work. The Contractor Quality Control Report is prepared, signed and dated by the QC Manager and shall contain the following information:
1. Identify the control phase and the definable feature of work.
  2. Results of the Preparatory Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work, the drawings and specifications have been reviewed, submittals approved, materials comply with approved submittals, materials are stored properly, preliminary work is done correctly, the testing plan was reviewed, work methods and schedule were discussed, and that safety and hazard analysis were addressed.
  3. Results of the Initial Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work the preliminary work was done correctly, samples were prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract, work complies with safety requirements, and the required testing was performed including a list of who performed the tests.
  4. Results of the Follow-Up Phase inspections held including the location of the definable feature of work. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing was performed including a list of who performed the tests.
  5. Results of the Phases of Control for off-site work, if applicable, including action taken.
  6. List the rework items identified, but not corrected by close of the day's work.
  7. List the rework items corrected from the rework items list along with the corrective action taken.
  8. Include a "remarks" section in this report. Address pertinent information including directions received, quality control problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgment that as-built drawings have been updated, corrective direction given by the QC organization and corrective action taken by the Contractor.
  9. Provide Contractor Quality Control Report certification.
- D. Testing Plan and Log: As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Department remarks and acknowledgment that an accredited or approved testing laboratory was used. Attach a copy of the

updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.

- E. Rework Items List: The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor Quality Control Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by State.
- F. Report Forms: Furnish the proposed forms to be used to the Project Manager for review and approval.
  - 1. Contractor Production Report and Contractor Quality Control Report, with separate continuation sheet. These forms may be combined.
  - 2. Testing Plan and Log.
  - 3. Rework Items List.

#### **1.17 RECORD (As-Builts) DRAWINGS**

- A. The QC Manager is required to ensure the record drawings and jobsite record sets are kept current on a daily basis.

#### **1.18 NOTIFICATION OF NON-COMPLIANCE**

- A. Contractor will be notified of any detected non-compliance items. Take immediate corrective action after receipt of such notice.

### **PART 2 - PRODUCTS (Not Used)**

### **PART 3 - EXECUTION**

#### **3.01 REPAIR AND PROTECTION**

- A. General: On completion testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

#### **3.02 DEPARTMENT'S AUTHORITY**

- A. Review and removal of Quality Control Personnel:
  - 1. All Quality Control organization personnel are subject to review by Project Manager; and the Project Manager may interview any member of the Quality Control organization at any time in order to verify the submitted qualifications.

2. The Project Manager has the authority to have the QC Manager replaced at any time for cause. Justifications may include, but are not limited to: not being on site when QC Manager's duties are required, or wrongfully approving substandard and noncompliant work.
3. The Contractor is not entitled to any claim or cost increase or time extension due to the Project Manager's disapproval of an agency or individual.

END OF SECTION





**EnvironMETeo Services, Inc.**  
Environmental / Industrial Health & Safety

## **Asbestos and Lead Survey Report**

**For:**

**Sansei Architects, Inc.  
1436 Young Street, Suite 304  
Honolulu, Hawaii 96814**

**Facility Surveyed:**

**Waiawa Armory  
96-1210 Waihona Street  
Pearl City, Hawaii 96720**

**Project:**

**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory  
State of Hawaii, Department of Defense, Hawaii Army National Guard  
Job No.: CA-1219-D**

**Conducted by:**

**EnvironMETeo Services, Inc. (EMET)  
94-520 Ukee Street, Suite A  
Waipahu, Hawaii 96797**

**Date of Report: January 16, 2013**

**EMET ID: 1205241**

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## **Certification of Report**

We certify that this report is based on a physical survey of EMET scope of work areas at Waiawa Armory, located at 96-1210 Waihona Street, Pearl City, Hawaii for asbestos-containing materials (ACM) and lead-painted surfaces/building components.

The survey was conducted by EnvironMETeo Services, Inc. (EMET) on December 7, 2012 and was limited to the following scope of work:

### **Asbestos/Lead Paint Investigation**

1. Inspection, evaluation, and sample collection of suspect asbestos-containing materials by EPA-accredited and State of Hawaii certified inspector(s) in accordance with H.A.R. 11-501 from the following:

#### **Buildings #1 & #2**

##### **Interior**

- no work

##### **Exterior**

- roof system (including parapet walls, downspout and gutters)
- perimeter wall (excludes window/window frames and door/door frames)

2. Lead paint inspection by EPA-accredited inspector(s) from the following:

#### **Buildings #1 & #2**

##### **Interior**

- no work



#### Exterior

- painted surfaces at roof (including parapet walls, downspout and gutters)
- painted surfaces at perimeter wall (excludes window/window frames and door/door frames)
- painted surfaces at “bird hole” vents

The survey results are based on analyses of samples of suspect materials collected from visually- and physically-accessible areas/materials.

Bulk samples of suspect asbestos-containing materials taken during the survey were analyzed for asbestos content by a National Institute of Standards and Technology (NIST)-accredited laboratory under the National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos fiber analysis. Laboratory analyses performed by Polarized Light Microscopy (PLM) for asbestos identification are in accordance with U.S. Environmental Protection Agency (EPA) Test Method 600/R-93/116.

Painted surfaces were tested for lead concentrations using an X-Ray Fluorescence (XRF) spectrum analyzer, a testing methodology approved by the EPA and the U.S. Department of Housing and Urban Development (HUD).

EMET makes no warranty and assumes no liability for the inappropriate use or misuse of this document.



Joseph Iopa

Asbestos Building Inspector

Hawaii State Certification # HIASB-0585

## Summary

EnvironMETeo Services, Inc. (EMET) conducted a survey for asbestos-containing materials (ACM) and lead-painted surfaces/building components, at EMET's scope of work areas at Waiawa Armory, located at 96-1210 Waihona Street, Pearl City, Hawaii, on December 7, 2012. The survey was conducted by Joseph Iopa, Andrew Uyeda, and Arnaldo Estrada of EMET in accordance with Hawaii Administrative Rules (HAR) 11-501 and EMET's scope of work.

The survey was requested and authorized by Mr. Miles Shimabukuro of Sansei Architects, Inc. and performed in preparation for planned renovations.

The following materials in boldface were identified as ACM during this survey:

### Building #1 Low Roof

- **gray patch/sealant**, found at various gutter seams on the lower roof (non-friable, ± 13 sf)

### Building #1 High Roof

- **gray patch/sealant**, found at downspout and gutter seams (non-friable, ± 2 lf)

Lead-containing paint was found. No lead-based paint was found.

## Asbestos-Containing Material

The State of Hawaii and the EPA define ACM as any material containing more than one percent (>1%) asbestos by area. This definition can be found in the following regulations:

- HAR, Title 11, Department of Health, Chapter 501 (11-501), Asbestos Requirements
- HAR, Title 12, Department of Labor and Industrial Relations, Subtitle 8, Hawaii Occupational Safety and Health Division (HIOSH), Part 3, Construction Standards, Chapter 145.1 (12-145.1), Asbestos
- EPA 40 CFR Part 61, Subpart M - National Emission Standards for Hazardous Air Pollutants (NESHAP), revised July 1, 1990, Asbestos NESHAP Revision Final Rule

### **Asbestos Bulk Sampling**

Eighty-one (81) samples of suspect ACM were collected and analyzed. The samples were placed in plastic containers with a unique identification number assigned to each sample and entered on a field data sheet. The sample locations were indicated on field drawings and shown in Appendix B. Photographs of the materials are provided in Appendix C.

Samples were collected of the following observed suspect asbestos-containing material:

#### **Building #1 Low Roof Suspect Materials**

white weather membrane built-up roofing system	gray patch/sealant
--	--------------------

#### **Building #1 High Roof Suspect Materials**

white weather membrane built-up roofing system	gray patch/sealant
gray caulking	

### Building #2 Low Roof Suspect Materials

white weather membrane built-up roofing system	beige mineral capsheet built-up roof system
gray caulking	gray patch/sealant
black patch/sealant	

### Building #2 Middle Roof Suspect Materials

white weather membrane built-up roofing system
--

### Building #2 High Roof Suspect Materials

white weather membrane built-up roofing system	tan caulking
beige caulking	

## Asbestos Analyses

The samples were analyzed for asbestos using Polarized Light Microscopy (PLM) for the identification of asbestos, in accordance with EPA Test Method 600/R-93/116. Laboratory analytical data sheets are provided in Appendix A.

The following building materials were found to be ACM:

### ACM

Material Description	Quantity	Material Location	Condition; Friable/Non Friable
gray patch/sealant	± 13 sf	Building #1 low roof on some gutter seams on the north and south edges of the roof that face the inner courtyard	no damage; non-friable
gray patch/sealant	± 2 lf	Building #1 high roof at some gutter and downspout seams	no damage; non-friable

See Table 1 for a summary of the PLM analytical data.

### **Lead Paint**

HUD regulations, 24 CFR Parts 35, 200, 881, and 886, guidelines for the evaluation and control of lead-based paint (LBP) hazards in housing, revised April 1, 1999, define LBP as paint with a lead content of 1.0 mg/cm<sup>2</sup> or greater by XRF analyzer, or 0.5% wt. or 5000 ppm by Atomic Absorption (AA) analysis. The EPA regulations 40 CFR Part 745, revised July 1, 1999, similarly defined LBP as stated in HUD regulations.

However, the Occupational Safety and Health Administration (OSHA) and HIOSH regulate any activity disturbing paint that contains lead (referred to as lead-containing paint or LCP), even if the lead content is below the EPA/HUD standard for lead-based paint.

XRF test results of painted surfaces equal to or greater than 1.0 mg/cm<sup>2</sup> are defined as LBP in accordance with EPA and HUD regulations.

### **Lead Paint Sampling and Analyses**

Painted surfaces were analyzed for lead using an XRF analyzer. A total of thirty-one (31) analyses of painted surfaces/building components and calibrations were performed. A unique identification number was assigned to each test location and entered on a field data sheet and a field drawing. The ID number, location, description, and lead concentration of each sample are indicated in the XRF Analyzer Test Results, which are provided in Appendix D.

The test results indicate that none of the sampled painted surfaces / building components contained a lead content equal to or greater than 1.0 mg/cm<sup>2</sup>.

However, the sampled painted surfaces/components showed a lead content of less than 1.0 mg/cm<sup>2</sup> and are considered to be lead-containing paint (LCP).

Painted surfaces may vary in paint type, color and condition, and any damaged painted surfaces may vary significantly from area to area in terms of the condition and degree of damage. The LBP and LCP results provide the lead content of all paint layers in a tested surface, as there may be more than one layer of paint on the tested surface.

### **Limitations**

This hazardous materials survey was performed to identify suspect materials in areas scheduled for planned renovations. Original building plans and specifications and those for past renovations, if any, were not available for review. Therefore, because of these limitations, the highly variable nature of building construction, and the limits to the survey as defined by EMET's scope of work, the potential remains for undiscovered hazardous materials. Hidden materials encountered during renovation or demolition not characterized in this survey or previous surveys should be assumed to be hazardous until analyzed and proven otherwise.

This report is not a specification for the removal of ACM or lead, and should not be used as such.

**Table 1**  
**Summary of PLM Analytical Data**

ND = none detected

**Building #1 Low Roof**

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
241-BLDG1-LRA1 241-BLDG1-LRA2 241-BLDG1-LRA3	white weather membrane built-up roofing system	throughout the roof	ND ND ND
241-BLDG1-LRB1 241-BLDG1-LRB1 241-BLDG1-LRB1	gray patch/sealant	along the gutter seams on the north and south sides that face the inner courtyard	chrysotile 2% chrysotile 2% chrysotile 3%

**Building #1 High Roof**

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
241-BLDG1-HRA1 241-BLDG1-HRA1 241-BLDG1-HRA1	white weather membrane built-up roofing system	throughout the high roof	ND ND ND
241-BLDG1-HRB1 241-BLDG1-HRB1 241-BLDG1-HRB1	gray patch/sealant	patches in the downspout and gutter at the west edge of the high roof	chrysotile 3% chrysotile 2% chrysotile 2%
241-BLDG1-HRC1 241-BLDG1-HRC1 241-BLDG1-HRC1	gray caulking	gutter seams at the north side of the high roof	ND ND ND

### Building #2 Lower Roof

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
241-BLDG2-LRA1 241-BLDG2-LRA1 241-BLDG2-LRA1	white weather membrane built-up roofing system	throughout the low roof	ND ND ND
241-BLDG2-LRB1 241-BLDG2-LRB1 241-BLDG2-LRB1	beige mineral capsheet built-up roof system	throughout small portion of low roof at the middle of the west side of the building	ND ND ND
241-BLDG2-LRC1 241-BLDG2-LRC1 241-BLDG2-LRC1	gray caulking	on roof vent flashings on the low roof at the northeastern corner of the building	ND ND ND
241-BLDG2-LRD1 241-BLDG2-LRD1 241-BLDG2-LRD1	gray patch/sealant	scattered patches on small portion of low roof at the middle of the west side of the building	ND ND ND
241-BLDG2-LRE1 241-BLDG2-LRE1 241-BLDG2-LRE1	black patch/sealant	scattered patches on small portion of low roof at the middle of the west side of the building	ND ND ND

### Building #2 Middle Roof

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
241-BLDG2-MRA1 241-BLDG2-MRA1 241-BLDG2-MRA1	white weather membrane built-up roofing system	throughout the middle roof level	ND ND ND



## Building #2 High Roof

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
241-BLDG2-HRA1 241-BLDG2-HRA1 241-BLDG2-HRA1	white weather membrane built-up roofing system	throughout the high roof	ND ND ND
241-BLDG2-HRB1 241-BLDG2-HRB1 241-BLDG2-HRB1	tan caulking	seams of round pitch pocket covers on the high roof	ND ND ND
241-BLDG2-HRC1 241-BLDG2-HRC1 241-BLDG2-HRC1	beige caulking	seams of square pitch pocket covers on the high roof	ND ND ND

## **Appendix A**

### **Asbestos Survey Report**

Re-roof Troop Command Buildings #1 & #2  
Waiawa Armory, Job No. CA-1219-D

Asbestos & Lead Survey  
EMET: 1205241

## Building/Area/Space Surveyed Information Sheet

<b>EMET ID</b>	<b>ID</b>	<b>Name</b>
1205241	Bldg1	Building 1
<b>Inspection Date</b>	<b>Location</b>	
12/7/2012	Waiawa Armory 96-1210 Waihona Street Pearl City, HI 96782	
<b>Client Name</b>		
Sansei Architects Incorporated		
<b>ACM PRESENT?</b>		
YES		
YES = PRESENT NO = NOT PRESENT		

<b>Building/Space Uses</b>	<b>% Floor Space</b>	<b>No. of Floors/Levels in Area Surveyed</b>	<b>No. of Roof Levels (if applicable)</b>
warehouse	100		2
		<b>Specific Areas of Building Surveyed</b>	
		roofs and exterior walls	

### Inspector #1 Identification

Name: Joseph Iopa III  
State of HI Certification No.: HIASB-0585  
State of HI Certification Expiration Date: 4/25/2013  
Building Inspector Certification Exp. Date: 3/9/2013

### Inspector #2 Identification

Name: Arnaldo Estrada  
State of HI Certification No.: HIASB-0966  
State of HI Certification Expiration Date: 1/30/2013  
Building Inspector Certification Exp. Date: 5/3/2013

### Inspector #3 Identification

Name: Andrew Uyeda  
State of HI Certification No.: HIASB-2432  
State of HI Certification Expiration Date: 6/1/2013  
Building Inspector Certification Exp. Date: 3/9/2013

### Inspector Comments

EMET's scope of work was limited to the areas listed above in Specific Areas Surveyed. This report is not a specification for the removal of asbestos-containing material and should not be used as such. Results of the presence or absence of asbestos are based on the survey and on analyses of the suspect materials encountered. Original building plans and specifications were not available for review. Therefore, because of these limitations and the highly variable nature of building construction, the potential remains for undiscovered ACM. EMET makes no warranty and assumes no liability for the inappropriate use or misuse of this document.

# Unified Homogeneous/Sample Area ACM - Space and Salient Cross Reference

EMET ID

1205241

Building ID and Name

Bldg1 Building 1

Document Number

Building Location

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

For the ACM - Space Identified as:

241-Bldg1-HR

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Friable	T	DC	PD		Removal	Replacement
241-Bldg1-HRA (L1)	white weather membrane built-up roofing system (layer 1)		Yes	No ACM							
241-Bldg1-HRA (L2)	white weather membrane built-up roofing system (layer 2)		Yes	No ACM							
241-Bldg1-HRA (L3)	white weather membrane built-up roofing system (layer 3)		Yes	No ACM							
241-Bldg1-HRB	gray patch/sealant		Yes	ACM	No	M	ND	PSD	8		
241-Bldg1-HRC	gray caulking		Yes	No ACM							

* Refers to Material Type and Damage Conditions	** Recommended Response Actions
<p>T = Material Type: S = Surfacing M = Miscellaneous T = Thermal Systems</p> <p>DC = Damage Condition: ND = No Damage D = Damaged SD = Significant Damage</p> <p>PD = Potential Damage Condition: NPD = No Potential Damage PD = ACBM w/ Potential Damage PSD = Potential Significant Damage</p>	<ol style="list-style-type: none"> <li>1. Isolate area and restrict access. Remove or repair ASAP.</li> <li>2. Continue Operations and Maintenance (O&amp;M) program.</li> <li>3. Remove or repair ASAP, or reduce potential for disturbance.</li> <li>3-5. Repair, continue O&amp;M. Lower number indicates higher priority if all repair cannot be done immediately.</li> <li>6-7. Continue O&amp;M. Take preventive measures to reduce disturbance. Number indicates priority for removal.</li> <li>8. Continue O&amp;M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change.</li> </ol> <p>Note: An O&amp;M program may include enclosure and encapsulation.</p>

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg1-HRA (L1)	white weather membrane built-up roofing system (layer 1)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg1-HRA(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 1)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2		
Square Feet of Ceiling Materials				
Square Feet of Wall Materials				
Square Feet of Floor Surface				
Linear Feet of TSI				
Square Feet of Structural Steel Coatings (including over-spray)				
Square Feet of Other ACM				
Linear Feet of Other ACM				
Total square and/or linear feet of ACM:				

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-HRa(L1)1, 241-Bldg1-HRa(L1)2, 241-Bldg1-HRa(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

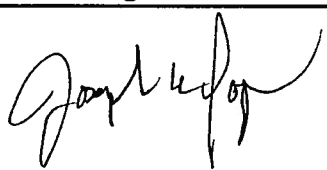
### EMET ID

1205241
---------

### Sample Area/Lot Number and Name

241-Bldg1-HRa(L1)	white weather membrane built-up roofing system (layer 1)
-------------------	---

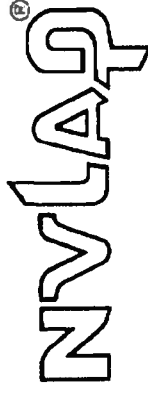
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-HRa(L1)1	0	white weather membrane built-up roofing system (layer 1)	southeast corner of high roof
241-Bldg1-HRa(L1)2	0	white weather membrane built-up roofing system (layer 1)	southwest corner of high roof
241-Bldg1-HRa(L1)3	0	white weather membrane built-up roofing system (layer 1)	northwest corner of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-HRA(L1) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-001	241-Bldg1-HRa(L1)1	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-002	241-Bldg1-HRa(L1)2	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-003	241-Bldg1-HRa(L1)3	white	Yes	No	-	-	misc. part.	
					<1	-	100	

\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
	Sample Area/Lot Number and Name		
Document Number	241-Bldg1-HRA (L2)	white weather membrane built-up roofing system (layer 2)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg1-HRA(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 2)

Not Applicable

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-HRA(L2)1, 241-Bldg1-HRa(L2)2, 241-Bldg1-HRa(L2)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

**EMET Services, Inc. • 94-520 Uke`e Street, Suite A • Waipahu, Hawaii 96797**

**Phone: (808) 671-8383 • FAX: (808) 671-7979**



## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

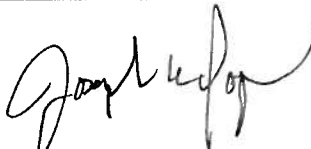
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg1-HRA(L2)	white weather membrane built-up roofing system (layer 2)
-------------------	---

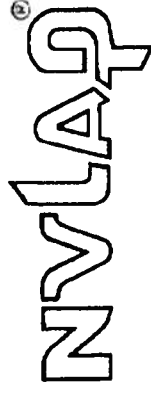
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-HRa(L2)1	0	white weather membrane built-up roofing system (layer 2)	southeast corner of high roof
241-Bldg1-HRa(L2)2	0	white weather membrane built-up roofing system (layer 2)	southwest corner of high roof
241-Bldg1-HRa(L2)3	0	white weather membrane built-up roofing system (layer 2)	northwest corner of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-HRA(L2)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-004	241-Bldg1-HRa(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-005	241-Bldg1-HRa(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-006	241-Bldg1-HRa(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	25	75	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg1-HRA (L3)	white weather membrane built-up roofing system (layer 3)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg1-HRA(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 3)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-HRa(L3)1, 241-Bldg1-HRa(L3)2, 241-Bldg1-HRa(L3)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

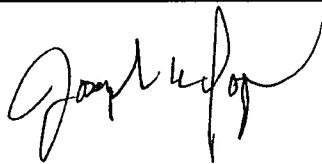
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg1-HRa(L3)	white weather membrane built-up roofing system (layer 3)
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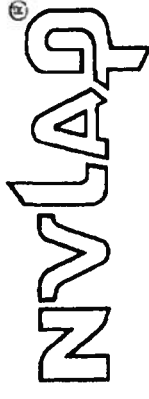
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-HRa(L3)1	0	white weather membrane built-up roofing system (layer 3)	southeast corner of high roof
241-Bldg1-HRa(L3)2	0	white weather membrane built-up roofing system (layer 3)	southwest corner of high roof
241-Bldg1-HRa(L3)3	0	white weather membrane built-up roofing system (layer 3)	northwest corner of high roof

Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-HRA(L3)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-007	241-Bldg1-HRa(L3)1	black	Yes	No	-	glass	misc. part.	
					<1	30	70	
241-008	241-Bldg1-HRa(L3)2	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-009	241-Bldg1-HRa(L3)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg1-HRB	gray patch/sealant	
	Drawing/Sketch Number and Name		241-Bldg1-HRB
	241-Bldg1-HR	241-Bldg1-HR	

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

<p style="text-align: center;">gray patch/sealant</p> <p>patches in the downspout and gutter on the west edge of the high roof</p>	<p style="text-align: center;">See Sketch 241-Bldg1-HR</p>
--	--

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM	± 2		
Total square and/or linear feet of ACM:	±2		

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
Miscellaneous	None	Significant
Visible	Reachable	Water Damage
More than 10%	Within reach	None
Barriers	Ventilation	If Yes
None	No	No
		Category I
Air Movement	Proximity to Repair Items	Activity
High	Less than 1 ft.	Low

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	YES
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-HRb1, 241-Bldg1-HRb2, 241-Bldg1-HRb3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

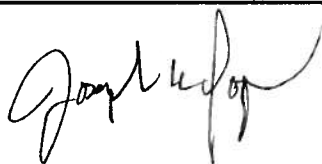
### EMET ID

1205241
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### Sample Area/Lot Number and Name

241-Bldg1-HRB	gray patch/sealant
---------------	--------------------

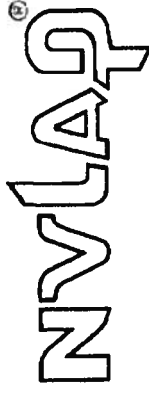
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-HRb1	2	gray patch/sealant	patch in gutter at northwest corner of high roof
241-Bldg1-HRb2	2	gray patch/sealant	downspout seam at middle of west edge of high roof
241-Bldg1-HRb3	2	gray patch/sealant	downspout seam near middle of west edge of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-HRB

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-010	241-Bldg1-HRB1	gray	Yes	Yes	chrysotile 2	cellulose 3	misc. part. 95	
241-011	241-Bldg1-HRB2	gray	Yes	Yes	chrysotile 2	cellulose 2	misc. part. 96	
241-012	241-Bldg1-HRB3	gray	Yes	Yes	chrysotile 2	cellulose 2	misc. part. 96	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241



## Sample Area Report -- Area Master

EMET ID	Building Number and Name	Inspection Date
1205241	Bldg1      Building 1	12/7/2012
Document Number	Sample Area/Lot Number and Name	Unified Sample Area Number
	241-Bldg1-HRC      gray caulking	
	Drawing/Sketch Number and Name	241-Bldg1-HRC

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

gray caulking	Not Applicable
---------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2		
Square Feet of Ceiling Materials				
Square Feet of Wall Materials				
Square Feet of Floor Surface				
Linear Feet of TSI				
Square Feet of Structural Steel Coatings (including over-spray)				
Square Feet of Other ACM				
Linear Feet of Other ACM				
Total square and/or linear feet of ACM:				

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--    --
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-HRc1, 241-Bldg1-HRc2, 241-Bldg1-HRc3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

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**Phone: (808) 671-8383 • FAX: (808) 671-7979**

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

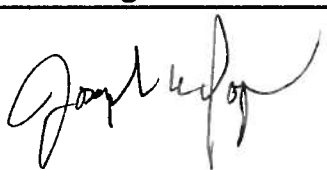
### EMET ID

1205241
---------

### Sample Area/Lot Number and Name

241-Bldg1-HRC	gray caulking
---------------	---------------

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-HRc1	0	gray caulking	gutter seam at middle of north edge of high roof
241-Bldg1-HRc2	0	gray caulking	gutter seam at middle of north edge of high roof
241-Bldg1-HRc3	0	gray caulking	gutter seam at middle of north edge of high roof

Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**


# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 1  
Address: 1436 Young Street, Suite 304 Waiawa Armory  
Honolulu, HI 96814 96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-HRC Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-013	241-Bldg1-HRC1	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-014	241-Bldg1-HRC2	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-015	241-Bldg1-HRC3	gray	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

# Unified Homogeneous/Sample Area ACM - Space and Salient Cross Reference

EMET ID

1205241

Document Number

Building ID and Name

Bldg1 Building 1

Building Location

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

For the ACM - Space Identified as:

241-Bldg1-LR

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Friable	T	DC	PD		Removal	Replacement
241-Bldg1-LRA (L1)	white weather membrane built-up roofing system (layer 1)		Yes	No ACM							
241-Bldg1-LRA (L2)	white weather membrane built-up roofing system (layer 2)		Yes	No ACM							
241-Bldg1-LRA (L3)	white weather membrane built-up roofing system (layer 3)		Yes	No ACM							
241-Bldg1-LRB	gray patch/sealant		Yes	ACM	No	M	ND	PSD	8		

## \* Refers to Material Type and Damage Conditions

T = Material Type:  
S = Surfacing  
M = Miscellaneous  
T = Thermal Systems

DC = Damage Condition:  
ND = No Damage  
D = Damaged  
SD = Significant Damage

PD = Potential Damage Condition:  
NPD = No Potential Damage  
PD = ACBM w/ Potential Damage  
PSD = Potential Significant Damage

## \*\* Recommended Response Actions

1. Isolate area and restrict access. Remove or repair ASAP.
  2. Continue Operations and Maintenance (O&M) program. Remove or repair ASAP, or reduce potential for disturbance.
  - 3-5. Repair, continue O&M. Lower number indicates higher priority if all repair cannot be done immediately.
  - 6-7. Continue O&M. Take preventive measures to reduce disturbance. Number indicates priority for removal.
  8. Continue O&M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change.
- Note: An O&M program may include enclosure and encapsulation.

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg1-LRA (L1)	white weather membrane built-up roofing system (layer 1)	
	Drawing/Sketch Number and Name		241-Bldg1-LRA(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 1)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-LRa(L1)1, 241-Bldg1-LRa(L1)2, 241-Bldg1-LRa(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

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**Phone: (808) 671-8383 • FAX: (808) 671-7979**

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

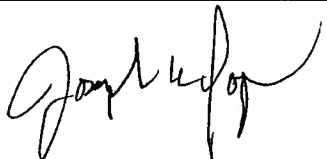
### EMET ID

1205241
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### Sample Area/Lot Number and Name

241-Bldg1-LRA(L1)	white weather membrane built-up roofing system (layer 1)
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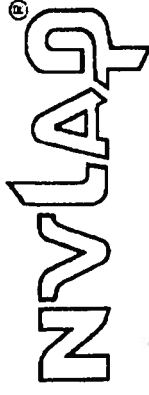
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-LRa(L1)1	0	white weather membrane built-up roofing system (layer 1)	middle of north edge of south wing of low roof
241-Bldg1-LRa(L1)2	0	white weather membrane built-up roofing system (layer 1)	middle of west edge of east wing of low roof
241-Bldg1-LRa(L1)3	0	white weather membrane built-up roofing system (layer 1)	northwest corner of north wing of low roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-LRa(L1)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-016	241-Bldg1-LRa(L1)1	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-017	241-Bldg1-LRa(L1)2	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-018	241-Bldg1-LRa(L1)3	white	Yes	No	-	-	misc. part.	
					<1	-	100	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
	Sample Area/Lot Number and Name		
Document Number	241-Bldg1-LRA (L2)	white weather membrane built-up roofing system (layer 2)	Unified Sample Area Number
	Drawing/Sketch Number and Name		
			241-Bldg1-LRA(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 2)

Not Applicable

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM: <span style="border: 1px solid black; padding: 2px 20px;"></span>			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg1-LRa(L2)1, 241-Bldg1-LRa(L2)2, 241-Bldg1-LRa(L2)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features



## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

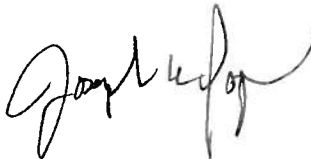
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg1-LRA(L2)	white weather membrane built-up roofing system (layer 2)
-------------------	---

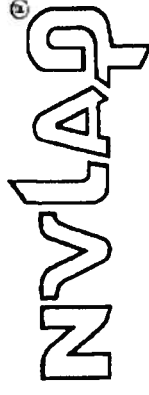
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-LRa(L2)1	0	white weather membrane built-up roofing system (layer 2)	middle of north edge of south wing of low roof
241-Bldg1-LRa(L2)2	0	white weather membrane built-up roofing system (layer 2)	middle of west edge of east wing of low roof
241-Bldg1-LRa(L2)3	0	white weather membrane built-up roofing system (layer 2)	northwest corner of north wing of low roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-LRa(L2) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-019	241-Bldg1-LRa(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	30	70	
241-020	241-Bldg1-LRa(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-021	241-Bldg1-LRa(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg1-LRA (L3)	white weather membrane built-up roofing system (layer 3)	
	Drawing/Sketch Number and Name		241-Bldg1-LRA(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 3)

Not Applicable

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

--

How many square feet of ACM is never accessed by anyone?

--

How many square feet of the ACM is accessed only by maintenance personnel?

--

Explain any abnormal access features

--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
IS ASBESTOS-CONTAINING MATERIAL PRESENT?	NO
Samples Collected by	EMET
Sample Numbers	241-Bldg1-LRa(L3)1, 241-Bldg1-LRa(L3)2, 241-Bldg1-LRa(L3)3
Samples Analyzed by	EMET
Number of Sallent Designations	

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

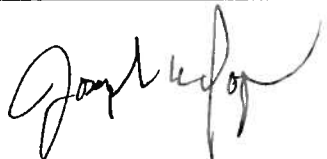
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg1-LRa(L3)	white weather membrane built-up roofing system (layer 3)
-------------------	---

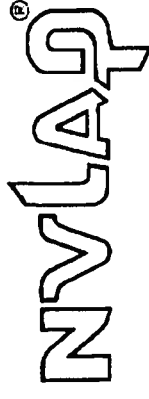
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-LRa(L3)1	0	white weather membrane built-up roofing system (layer 3)	middle of north edge of south wing of low roof
241-Bldg1-LRa(L3)2	0	white weather membrane built-up roofing system (layer 3)	middle of west edge of east wing of low roof
241-Bldg1-LRa(L3)3	0	white weather membrane built-up roofing system (layer 3)	northwest corner of north wing of low roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-LRa(L3)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-022	241-Bldg1-LRa(L3)1	black	Yes	No	-	glass <1	misc. part. 70	
241-023	241-Bldg1-LRa(L3)2	black	Yes	No	-	glass <1	misc. part. 70	
241-024	241-Bldg1-LRa(L3)3	black	Yes	No	-	glass <1	misc. part. 70	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory. Interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg1	Building 1	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg1-LRB	gray patch/sealant	
	Drawing/Sketch Number and Name		
	241-Bldg1-LR	241-Bldg1-LR	241-Bldg1-LRB

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

gray patch/sealant  at various gutter seams	See Sketch 241-Bldg1-LR
---	-------------------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			±13
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			±13

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
Miscellaneous	None	Significant
Visible	Reachable	Water Damage
More than 10%	Within reach	None
Barriers	Ventilation	If Yes
None	No	
		Friable
		No Category I
Air Movement	Proximity to Repair Items	Activity
High	Less than 1 ft.	Low

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
IS ASBESTOS-CONTAINING MATERIAL PRESENT?	YES
Samples Collected by	EMET
Sample Numbers	241-Bldg1-LRb1, 241-Bldg1-LRb2, 241-Bldg1-LRb3
Samples Analyzed by	EMET
Number of Sallent Designations	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?
How many square feet of the ACM is accessed only by maintenance personnel?
Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg1	Building 1
-------	------------

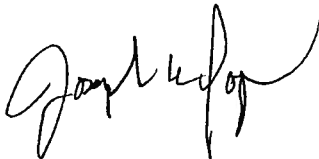
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg1-LRB	gray patch/sealant
---------------	--------------------

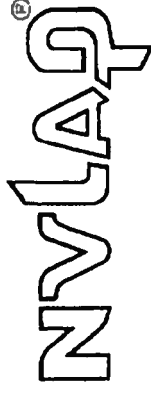
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg1-LRb1	2	gray patch/sealant	gutter seam at southwestern corner of north wing of low roof
241-Bldg1-LRb2	2	gray patch/sealant	gutter seam at middle of south edge of north wing of low roof
241-Bldg1-LRb3	3	gray patch/sealant	gutter seam at north edge of south wing of low roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 1

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg1-LRB

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-025	241-Bldg1-LRB1	gray	Yes	Yes	chrysotile 2	-	misc. part. 96	
241-026	241-Bldg1-LRB2	gray	Yes	Yes	chrysotile 2	-	misc. part. 96	
241-027	241-Bldg1-LRB3	gray	Yes	Yes	chrysotile 3	-	misc. part. 95	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241



## Building/Area/Space Surveyed Information Sheet

<b>EMET ID</b>	<b>ID</b>	<b>Name</b>
1205241	Bldg2	Building 2
<b>Inspection Date</b>	<b>Location</b>	
12/7/2012	Waiawa Armory 96-1210 Waihona Street Pearl City, HI 96782	
<b>Client Name</b>		
Sansei Architects Incorporated		
<b>ACM PRESENT?</b>		
NO		
YES = PRESENT NO = NOT PRESENT		

<b>Building/Space Uses</b>	<b>% Floor Space</b>	<b>No. of Floors/Levels in Area Surveyed</b>	<b>No. of Roof Levels (if applicable)</b>
warehouse	100		3
		<b>Specific Areas of Building Surveyed</b>	
		roofs and exterior walls	

### Inspector #1 Identification

Name: Joseph Iopa III  
State of HI Certification No.: HIASB-0585  
State of HI Certification Expiration Date: 4/25/2013  
Building Inspector Certification Exp. Date: 3/9/2013

### Inspector #2 Identification

Name: Arnaldo Estrada  
State of HI Certification No.: HIASB-0966  
State of HI Certification Expiration Date: 1/30/2013  
Building Inspector Certification Exp. Date: 5/3/2013

### Inspector #3 Identification

Name: Andrew Uyeda  
State of HI Certification No.: HIASB-2432  
State of HI Certification Expiration Date: 6/1/2013  
Building Inspector Certification Exp. Date: 3/9/2013

### Inspector Comments

EMET's scope of work was limited to the areas listed above in Specific Areas Surveyed. This report is not a specification for the removal of asbestos-containing material and should not be used as such. Results of the presence or absence of asbestos are based on the survey and on analyses of the suspect materials encountered. Original building plans and specifications were not available for review. Therefore, because of these limitations and the highly variable nature of building construction, the potential remains for undiscovered ACM. EMET makes no warranty and assumes no liability for the inappropriate use or misuse of this document.

# Unfiled Homogeneous/Sample Area ACM - Space and Salient Cross Reference

EMET ID

1205241

Building ID and Name

Bldg2

Building 2

Document Number

Building Location

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

For the ACM - Space Identified as:

241-Bldg2-HR

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Frangible	T	DC	PD		Removal	Replacement
241-Bldg2-HRA (L1)	white weather membrane built-up roofing system (layer 1)		Yes	No ACM							
241-Bldg2-HRA (L2)	white weather membrane built-up roofing system (layer 2)		Yes	No ACM							
241-Bldg2-HRA (L3)	white weather membrane built-up roofing system (layer 3)		Yes	No ACM							
241-Bldg2-HRA (L4)	white weather membrane built-up roofing system (layer 4)		Yes	No ACM							
241-Bldg2-HRB	tan caulking		Yes	No ACM							
241-Bldg2-HRC	beige caulking		Yes	No ACM							

## \* Refers to Material Type and Damage Conditions

T = Material Type:  
S = Surfacing  
M = Miscellaneous  
T = Thermal Systems

DC = Damage Condition:  
ND = No Damage  
D = Damaged  
SD = Significant Damage

PD = Potential Damage Condition:  
NPD = No Potential Damage  
PD = ACBM w/ Potential Damage  
PSD = Potential Significant Damage

## \*\* Recommended Response Actions

1. Isolate area and restrict access. Remove or repair ASAP.
  2. Continue Operations and Maintenance (O&M) program. Remove or repair ASAP, or reduce potential for disturbance.
  - 3-5. Repair, continue O&M. Lower number indicates higher priority if all repair cannot be done immediately.
  - 6-7. Continue O&M. Take preventive measures to reduce disturbance. Number indicates priority for removal.
  8. Continue O&M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change.
- Note: An O&M program may include enclosure and encapsulation.

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-HRA (L1)	white weather membrane built-up roofing system (layer 1)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-HRA(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 1)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRa(L1)1, 241-Bldg2-HRa(L1)2, 241-Bldg2-HRa(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

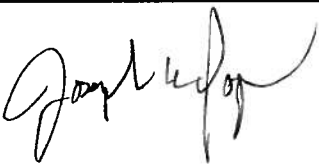
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-HRA(L1)	white weather membrane built-up roofing system (layer 1)
-------------------	---

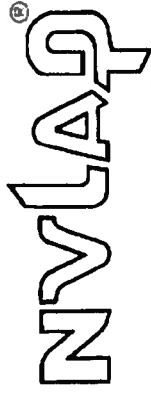
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRa(L1)1	0	white weather membrane built-up roofing system (layer 1)	southern corner of high roof
241-Bldg2-HRa(L1)2	0	white weather membrane built-up roofing system (layer 1)	middle of west side of high roof
241-Bldg2-HRa(L1)3	0	white weather membrane built-up roofing system (layer 1)	middle of north side of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Waialua Army  
96-1210 Waihoana Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-HRa(L1)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-028	241-Bldg2-HRa(L1)1	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-029	241-Bldg2-HRa(L1)2	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-030	241-Bldg2-HRa(L1)3	white	Yes	No	-	-	misc. part.	
					<1	-	100	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg2-HRA (L2)	white weather membrane built-up roofing system (layer 2)	
	Drawing/Sketch Number and Name		
			241-Bldg2-HRA(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 2)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRa(L2)1, 241-Bldg2-HRa(L2)2, 241-Bldg2-HRa(L2)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

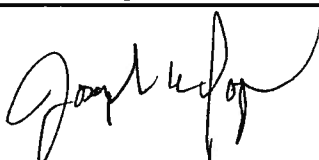
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-HRA(L2)	white weather membrane built-up roofing system (layer 2)
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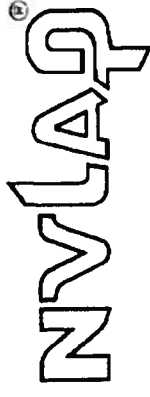
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRa(L2)1	0	white weather membrane built-up roofing system (layer 2)	southern corner of high roof
241-Bldg2-HRa(L2)2	0	white weather membrane built-up roofing system (layer 2)	middle of west side of high roof
241-Bldg2-HRa(L2)3	0	white weather membrane built-up roofing system (layer 2)	middle of north side of high roof

Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**


# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 2  
Address: 1436 Young Street, Suite 304 Waiawa Armory  
Honolulu, HI 96814 96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-HRA(L2) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-031	241-Bldg2-HRa(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-032	241-Bldg2-HRa(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-033	241-Bldg2-HRa(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HiOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241



## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-HRA (L3)	white weather membrane built-up roofing system (layer 3)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-HRA(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 3)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRa(L3)1, 241-Bldg2-HRa(L3)2, 241-Bldg2-HRa(L3)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

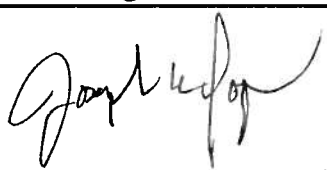
### EMET ID

1205241
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### Sample Area/Lot Number and Name

241-Bldg2-HRA(L3)	white weather membrane built-up roofing system (layer 3)
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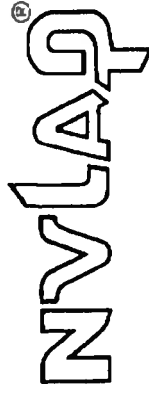
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRa(L3)1	0	white weather membrane built-up roofing system (layer 3)	southern corner of high roof
241-Bldg2-HRa(L3)2	0	white weather membrane built-up roofing system (layer 3)	middle of west side of high roof
241-Bldg2-HRa(L3)3	0	white weather membrane built-up roofing system (layer 3)	middle of north side of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-HRA(L3)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-034	241-Bldg2-HRa(L3)1	black	Yes	No	-	-	misc. part.	
					<1	-	100	
241-035	241-Bldg2-HRa(L3)2	black	Yes	No	-	-	misc. part.	
					<1	-	100	
241-036	241-Bldg2-HRa(L3)3	black	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-HRA (L4)	white weather membrane built-up roofing system (layer 4)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-HRA(L4)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 4)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRa(L4)1, 241-Bldg2-HRa(L4)2, 241-Bldg2-HRa(L4)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

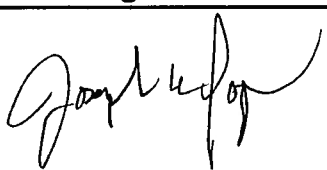
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-HRA(L4)	white weather membrane built-up roofing system (layer 4)
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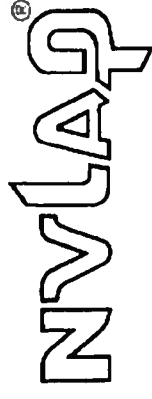
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRa(L4)1	0	white weather membrane built-up roofing system (layer 4)	southern corner of high roof
241-Bldg2-HRa(L4)2	0	white weather membrane built-up roofing system (layer 4)	middle of west side of high roof
241-Bldg2-HRa(L4)3	0	white weather membrane built-up roofing system (layer 4)	middle of north side of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-HRA(L4)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-037	241-Bldg2-HRA(L4)1	black	Yes	No	-	glass	misc. part.	
					<1	30	70	
241-038	241-Bldg2-HRA(L4)2	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-039	241-Bldg2-HRA(L4)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg2-HRB	tan caulking	
	Drawing/Sketch Number and Name		
			241-Bldg2-HRB

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

tan caulking	Not Applicable
--------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRB1, 241-Bldg2-HRB2, 241-Bldg2-HRB3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?
How many square feet of the ACM is accessed only by maintenance personnel?
Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

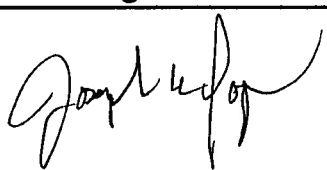
### EMET ID

1205241
---------

### Sample Area/Lot Number and Name

241-Bldg2-HRB	tan caulking
---------------	--------------

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRb1	0	tan caulking	round pitch pocket cover under A/C unit at middle of west side of high roof
241-Bldg2-HRb2	0	tan caulking	round pitch pocket cover under A/C unit at center of high roof
241-Bldg2-HRb3	0	tan caulking	round pitch pocket cover under A/C unit at southwestern corner of high roof

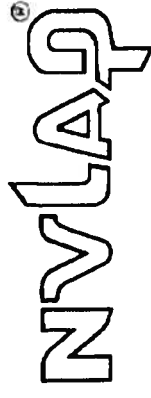
Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**



# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

NVLAP LAB CODE 101807-0

Approved Signatory:

Sample/Homogeneous Area: 241-Bldg2-HRB Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-040	241-Bldg2-HRB1	tan	Yes	No	-	-	misc. part.	
					<1	-	100	
241-041	241-Bldg2-HRB2	tan	Yes	No	-	-	misc. part.	
					<1	-	100	
241-042	241-Bldg2-HRB3	tan	Yes	No	-	-	misc. part.	
					<1	-	100	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HiOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Document Number	Sample Area/Lot Number and Name		Unified Sample Area Number
	241-Bldg2-HRC	beige caulking	
	Drawing/Sketch Number and Name		241-Bldg2-HRC

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

beige caulking	Not Applicable
----------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-HRC1, 241-Bldg2-HRC2, 241-Bldg2-HRC3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

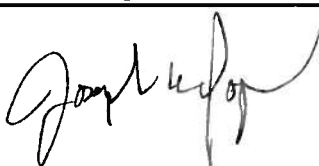
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-HRC	beige caulking
---------------	----------------

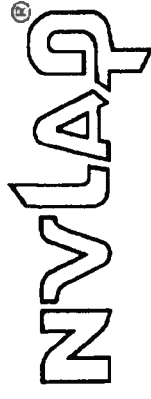
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-HRC1	0	beige caulking	square pitch pocket cover under duct at middle of west side of high roof
241-Bldg2-HRC2	0	beige caulking	square pitch pocket cover under duct at southeastern corner of high roof
241-Bldg2-HRC3	0	beige caulking	square pitch pocket cover under duct at southwestern corner of high roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-HRC

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-043	241-Bldg2-HRC1	beige	Yes	No	-	-	misc. part.	
					<1	-	100	
241-044	241-Bldg2-HRC2	beige	Yes	No	-	-	misc. part.	
					<1	-	100	
241-045	241-Bldg2-HRC3	beige	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

# Unified Homogeneous/Sample Area ACM - Space and Salient Cross Reference

EMET ID

1205241

Building ID and Name

Bldg2 Building 2

Document Number

Building Location

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

241-Bldg2-LR

For the ACM - Space Identified as:

241-Bldg2-LR

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Friable	T	DC	PD		Removal	Replacement
241-Bldg2-LRA (L1)	white weather membrane built-up roofing system (layer 1)		Yes	No ACM							
241-Bldg2-LRA (L2)	white weather membrane built-up roofing system (layer 2)		Yes	No ACM							
241-Bldg2-LRA (L3)	white weather membrane built-up roofing system (layer 3)		Yes	No ACM							
241-Bldg2-LRB (L1)	beige mineral capsheet built-up roof system (layer 1)		Yes	No ACM							
241-Bldg2-LRB (L2)	beige mineral capsheet built-up roof system (layer 2)		Yes	No ACM							
241-Bldg2-LRB (L3)	beige mineral capsheet built-up roof system (layer 3)		Yes	No ACM							

## \* Refers to Material Type and Damage Conditions

T = Material Type:  
S = Surfacing  
M = Miscellaneous  
T = Thermal Systems

DC = Damage Condition:  
ND = No Damage  
D = Damaged  
SD = Significant Damage

PD = Potential Damage Condition:  
NPD = No Potential Damage  
PD = ACBM w/ Potential Damage  
PSD = Potential Significant Damage

## \*\* Recommended Response Actions

1. Isolate area and restrict access. Remove or repair ASAP.
2. Continue Operations and Maintenance (O&M) program. Remove or repair ASAP, or reduce potential for disturbance.
- 3-5. Repair, continue O&M. Lower number indicates higher priority if all repair cannot be done immediately.
- 6-7. Continue O&M. Take preventive measures to reduce disturbance. Number indicates priority for removal.
8. Continue O&M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change. Note: An O&M program may include enclosure and encapsulation.

# Unified Homogeneous/Sample Area ACM - Space and Salient Cross Reference

EMET ID

1205241

Building ID and Name

Bldg2

Building 2

Document Number

Building Location

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

For the ACM - Space Identified as:

241-Bldg2-LR

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Friable	T	DC	PD		Removal	Replacement
241-Bldg2-LRC	gray caulking		Yes	No ACM							
241-Bldg2-LRD	gray patch/sealant		Yes	No ACM							
241-Bldg2-LRE	black patch/sealant		Yes	No ACM							

## \* Refers to Material Type and Damage Conditions

T = Material Type:  
S = Surfacing  
M = Miscellaneous  
T = Thermal Systems

DC = Damage Condition:  
ND = No Damage  
D = Damaged  
SD = Significant Damage

PD = Potential Damage Condition:  
NPD = No Potential Damage  
PD = ACBM w/ Potential Damage  
PSD = Potential Significant Damage

## \*\* Recommended Response Actions

1. Isolate area and restrict access. Remove or repair ASAP.
  2. Continue Operations and Maintenance (O&M) program. Remove or repair ASAP, or reduce potential for disturbance.
  - 3-5 Repair, continue O&M. Lower number indicates higher priority if all repair cannot be done immediately.
  - 6-7. Continue O&M. Take preventive measures to reduce disturbance. Number indicates priority for removal.
  8. Continue O&M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change.
- Note: An O&M program may include enclosure and encapsulation.

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRA (L1)	white weather membrane built-up roofing system (layer 1)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRA(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 1)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2		
Square Feet of Ceiling Materials				
Square Feet of Wall Materials				
Square Feet of Floor Surface				
Linear Feet of TSI				
Square Feet of Structural Steel Coatings (including over-spray)				
Square Feet of Other ACM				
Linear Feet of Other ACM				
Total square and/or linear feet of ACM:				

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRa(L1)1, 241-Bldg2-LRa(L1)2, 241-Bldg2-LRa(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

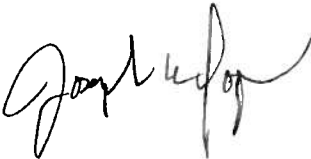
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRA(L1)	white weather membrane built-up roofing system (layer 1)
-------------------	---

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRa(L1)1	0	white weather membrane built-up roofing system (layer 1)	southeast corner of northeastern portion of low roof
241-Bldg2-LRa(L1)2	0	white weather membrane built-up roofing system (layer 1)	middle of east side of northeastern portion of low roof
241-Bldg2-LRa(L1)3	0	white weather membrane built-up roofing system (layer 1)	northeast corner of northeastern portion of low roof

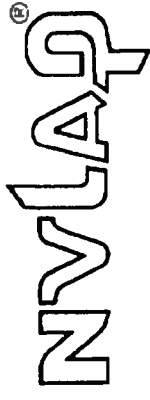
Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**



# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory:

Sample/Homogeneous Area: 241-Bldg2-LRA(L1) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-046	241-Bldg2-LRa(L1)1	black	Yes	No	-	-	misc. part.	
					<1	-	100	
241-047	241-Bldg2-LRa(L1)2	black	Yes	No	-	-	misc. part.	
					<1	-	100	
241-048	241-Bldg2-LRa(L1)3	black	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Samples analyzed as received by the laboratory. Interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRA (L2)	white weather membrane built-up roofing system (layer 2)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRA(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 2)	Not Applicable
--	----------------

### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRa(L2)1, 241-Bldg2-LRa(L2)2, 241-Bldg2-LRa(L2)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

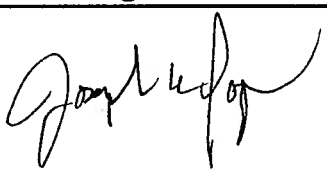
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRA(L2)	white weather membrane built-up roofing system (layer 2)
-------------------	---

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRa(L2)1	0	white weather membrane built-up roofing system (layer 2)	southeast corner of northeastern portion of low roof
241-Bldg2-LRa(L2)2	0	white weather membrane built-up roofing system (layer 2)	middle of east side of northeastern portion of low roof
241-Bldg2-LRa(L2)3	0	white weather membrane built-up roofing system (layer 2)	northeast corner of northeastern portion of low roof

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 2  
Address: 1436 Young Street, Suite 304 Waiawa Armory  
Honolulu, HI 96814 96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory:

Sample/Homogeneous Area: 241-Bldg2-LRa(L2) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-049	241-Bldg2-LRa(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-050	241-Bldg2-LRa(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-051	241-Bldg2-LRa(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRA (L3)	white weather membrane built-up roofing system (layer 3)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRA(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 3)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRa(L3)1, 241-Bldg2-LRa(L3)2, 241-Bldg2-LRa(L3)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

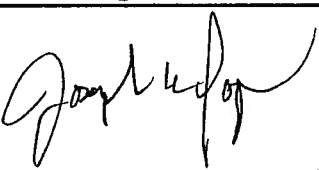
### EMET ID

1205241
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### Sample Area/Lot Number and Name

241-Bldg2-LRA(L3)	white weather membrane built-up roofing system (layer 3)
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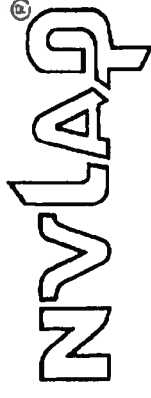
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRa(L3)1	0	white weather membrane built-up roofing system (layer 3)	southeast corner of northeastern portion of low roof
241-Bldg2-LRa(L3)2	0	white weather membrane built-up roofing system (layer 3)	middle of east side of northeastern portion of low roof
241-Bldg2-LRa(L3)3	0	white weather membrane built-up roofing system (layer 3)	northeast corner of northeastern portion of low roof

Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

NVLAP LAB CODE 101807-0

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRa(L3)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-052	241-Bldg2-LRa(L3)1	black	Yes	No	-	cellulose 20	misc. part. 80	
241-053	241-Bldg2-LRa(L3)2	black	Yes	No	-	cellulose 20	misc. part. 80	
241-054	241-Bldg2-LRa(L3)3	black	Yes	No	-	cellulose 25	misc. part. 75	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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**EMET Services, Inc. 94-520 Uke'e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 671-7979**

EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRB (L1)	beige mineral capsheet built-up roof system (layer 1)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRB(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

beige mineral capsheet built-up roof system (layer 1)	Not Applicable
---	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRB(L1)1, 241-Bldg2-LRB(L1)2, 241-Bldg2-LRB(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	



## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

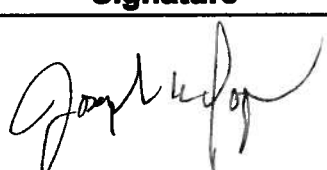
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRB(L1)	beige mineral capsheet built-up roof system (layer 1)
-------------------	---

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRb(L1)1	0	beige mineral capsheet built-up roof system (layer 1)	northwest corner of portion of low roof at middle of west side of building
241-Bldg2-LRb(L1)2	0	beige mineral capsheet built-up roof system (layer 1)	middle of portion of low roof at middle of west side of building
241-Bldg2-LRb(L1)3	0	beige mineral capsheet built-up roof system (layer 1)	southwest corner of portion of low roof at middle of west side of building

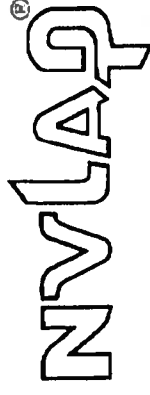
Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**

**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRB(L1) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-055	241-Bldg2-LRB(L1)1	beige	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-056	241-Bldg2-LRB(L1)2	beige	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-057	241-Bldg2-LRB(L1)3	beige	Yes	No	-	glass	misc. part.	
					<1	25	75	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRB (L2)	beige mineral capsheet built-up roof system (layer 2)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRB(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

beige mineral capsheet built-up roof system (layer 2)	Not Applicable
---	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b> 241-Bldg2-LRB(L2)1, 241-Bldg2-LRB(L2)2, 241-Bldg2-LRB(L2)3	
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

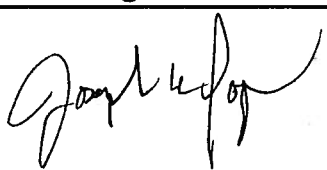
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRB(L2)	beige mineral capsheet built-up roof system (layer 2)
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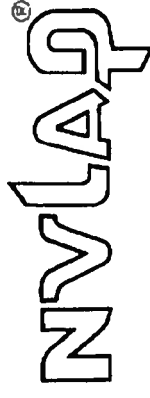
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRb(L2)1	0	beige mineral capsheet built-up roof system (layer 2)	northwest corner of portion of low roof at middle of west side of building
241-Bldg2-LRb(L2)2	0	beige mineral capsheet built-up roof system (layer 2)	middle of portion of low roof at middle of west side of building
241-Bldg2-LRb(L2)3	0	beige mineral capsheet built-up roof system (layer 2)	southwest corner of portion of low roof at middle of west side of building

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRB(L2) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-058	241-Bldg2-LRB(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-059	241-Bldg2-LRB(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-060	241-Bldg2-LRB(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	25	75	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory. Interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRB (L3)	beige mineral capsheet built-up roof system (layer 3)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRB(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

beige mineral capsheet built-up roof system (layer 3)	Not Applicable
---	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRB(L3)1, 241-Bldg2-LRB(L3)2, 241-Bldg2-LRB(L3)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Salient Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

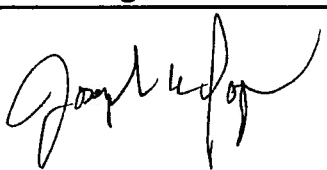
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRB(L3)	beige mineral capsheet built-up roof system (layer 3)
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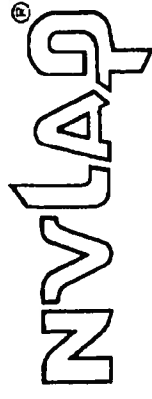
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRb(L3)1	0	beige mineral capsheet built-up roof system (layer 3)	northwest corner of portion of low roof at middle of west side of building
241-Bldg2-LRb(L3)2	0	beige mineral capsheet built-up roof system (layer 3)	middle of portion of low roof at middle of west side of building
241-Bldg2-LRb(L3)3	0	beige mineral capsheet built-up roof system (layer 3)	southwest corner of portion of low roof at middle of west side of building

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRB(L3)

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-061	241-Bldg2-LRB(L3)1	black	Yes	No	-	cellulose 20	misc. part. 80	
241-062	241-Bldg2-LRB(L3)2	black	Yes	No	-	cellulose 20	misc. part. 80	
241-063	241-Bldg2-LRB(L3)3	black	Yes	No	-	cellulose 20	misc. part. 80	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241



## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRC	gray caulking	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRC

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

gray caulking	Not Applicable
---------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRc1, 241-Bldg2-LRc2, 241-Bldg2-LRc3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?
How many square feet of the ACM is accessed only by maintenance personnel?
Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

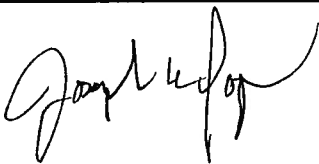
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRC	gray caulking
---------------	---------------

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRc1	0	gray caulking	roof vent flashing at northeast portion of low roof
241-Bldg2-LRc2	0	gray caulking	roof vent flashing at northeast portion of low roof
241-Bldg2-LRc3	0	gray caulking	roof vent flashing at northeast portion of low roof

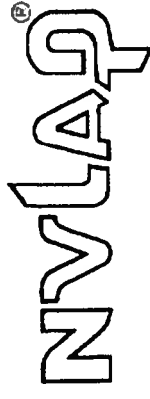
Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**

**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRC

Analysis Date: 12/11/2012

Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-064	241-Bldg2-LRc1	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-065	241-Bldg2-LRc2	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-066	241-Bldg2-LRc3	gray	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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**EMET Services, Inc. 94-520 Uke'e Street, Suite A, Walpahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 671-7979**

EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRD	gray patch/sealant	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-LRD

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

gray patch/sealant	Not Applicable
--------------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRd1, 241-Bldg2-LRd2, 241-Bldg2-LRd3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?
How many square feet of the ACM is accessed only by maintenance personnel?
Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

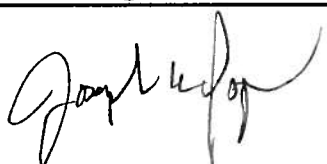
### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-LRD	gray patch/sealant
---------------	--------------------

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRd1	0	gray patch/sealant	patch at northeast corner of portion of low roof at middle of west side of building
241-Bldg2-LRd2	0	gray patch/sealant	patch at northeast corner of portion of low roof at middle of west side of building
241-Bldg2-LRd3	0	gray patch/sealant	patch at middle of portion of low roof at middle of west side of building

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**

**Phone (808) 671-8383 Fax (808) 671-7979**


# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 2  
Address: 1436 Young Street, Suite 304 Waiawa Armory  
Honolulu, HI 96814 96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRD Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-067	241-Bldg2-LRd1	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-068	241-Bldg2-LRd2	gray	Yes	No	-	-	misc. part.	
					<1	-	100	
241-069	241-Bldg2-LRd3	gray	Yes	No	-	-	misc. part.	
					<1	-	100	

\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory. Interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-LRE	black patch/sealant	Unified Sample Area Number
	Drawing/Sketch Number and Name		
			241-Bldg2-LRE

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

black patch/sealant	Not Applicable
---------------------	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-LRe1, 241-Bldg2-LRe2, 241-Bldg2-LRe3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?
How many square feet of the ACM is accessed only by maintenance personnel?
Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

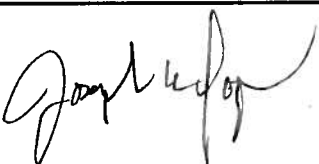
### EMET ID

1205241
---------

### Sample Area/Lot Number and Name

241-Bldg2-LRE	black patch/sealant
---------------	---------------------

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-LRe1	0	black patch/sealant	patch at middle of portion of low roof at middle of west side of building
241-Bldg2-LRe2	0	black patch/sealant	patch at middle of portion of low roof at middle of west side of building
241-Bldg2-LRe3	0	black patch/sealant	patch at middle of portion of low roof at middle of west side of building

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

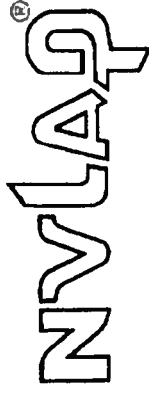
**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**

**Phone (808) 671-8383 Fax (808) 671-7979**



# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-LRE Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-070	241-Bldg2-LRe1	black	Yes	No	-	glass	misc. part.	
					<1	3	97	
241-071	241-Bldg2-LRe2	black	Yes	No	-	glass	misc. part.	
					<1	3	97	
241-072	241-Bldg2-LRe3	black	Yes	No	-	glass	misc. part.	
					<1	3	97	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Unified Homogeneous/Sample Area ACM - Space and Salient Cross Reference

Building ID and Name

For the ACM - Space Identified as:

EMET ID

1205241

Bldg2

Building 2

Document Number

Building Location

241-Bldg2-MR

Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

Unified Sample Area or Salient ID	Homogeneous Sample Area/ Lot or Salient Description	Comments	ACBM Present			Material Type*			Recommended Response Action	Estimated Costs (Approx.)	
			Suspected	Confirmed	Friable	T	DC	PD		Removal	Replacement
241-Bldg2-MRA (L1)	white weather membrane built-up roofing system (layer 1)		Yes	No ACM							
241-Bldg2-MRA (L2)	white weather membrane built-up roofing system (layer 2)		Yes	No ACM							
241-Bldg2-MRA (L3)	white weather membrane built-up roofing system (layer 3)		Yes	No ACM							

* Refers to Material Type and Damage Conditions	** Recommended Response Actions
<p>T = Material Type: S = Surfacing M = Miscellaneous T = Thermal Systems</p> <p>DC = Damage Condition: ND = No Damage D = Damaged SD = Significant Damage</p> <p>PD = Potential Damage Condition: NPD = No Potential Damage PD = ACBM w/ Potential Damage PSD = Potential Significant Damage</p>	<ol style="list-style-type: none"> <li>1. Isolate area and restrict access. Remove or repair ASAP.</li> <li>2. Continue Operations and Maintenance (O&amp;M) program. Remove or repair ASAP, or reduce potential for disturbance.</li> <li>3-5. Repair, continue O&amp;M. Lower number indicates higher priority if all repair cannot be done immediately.</li> <li>6-7. Continue O&amp;M. Take preventive measures to reduce disturbance. Number indicates priority for removal.</li> <li>8. Continue O&amp;M until major renovation or demolition requires removal under NESHAPS, or until hazard assessment factors change.</li> </ol> <p>Note: An O&amp;M program may include enclosure and encapsulation.</p>

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-MRA (L1)	white weather membrane built-up roofing system (layer 1)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-MRA(L1)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 1)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-MRa(L1)1, 241-Bldg2-MRa(L1)2, 241-Bldg2-MRa(L1)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------

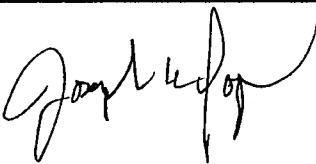
### EMET ID

1205241
---------

### Sample Area/Lot Number and Name

241-Bldg2-MRA(L1)	white weather membrane built-up roofing system (layer 1)
-------------------	---

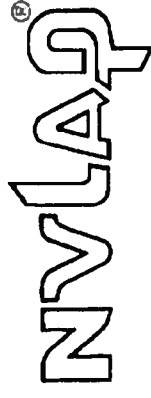
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-MRa(L1)1	0	white weather membrane built-up roofing system (layer 1)	northeast corner of middle roof level
241-Bldg2-MRa(L1)2	0	white weather membrane built-up roofing system (layer 1)	middle of north side of middle roof level
241-Bldg2-MRa(L1)3	0	white weather membrane built-up roofing system (layer 1)	northwest corner of middle roof level

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 2  
Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814  
Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory:

Sample/Homogeneous Area: 241-Bldg2-MRA(L1) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-073	241-Bldg2-MRa(L1)1	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-074	241-Bldg2-MRa(L1)2	white	Yes	No	-	-	misc. part.	
					<1	-	100	
241-075	241-Bldg2-MRa(L1)3	white	Yes	No	-	-	misc. part.	
					<1	-	100	

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\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241

## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-MRA (L2)	white weather membrane built-up roofing system (layer 2)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-MRA(L2)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 2)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2		
Square Feet of Ceiling Materials				
Square Feet of Wall Materials				
Square Feet of Floor Surface				
Linear Feet of TSI				
Square Feet of Structural Steel Coatings (including over-spray)				
Square Feet of Other ACM				
Linear Feet of Other ACM				
Total square and/or linear feet of ACM: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>				

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
		Friable
		--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-MRa(L2)1, 241-Bldg2-MRa(L2)2, 241-Bldg2-MRa(L2)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

**Building Number and Name**

Bldg2	Building 2
-------	------------

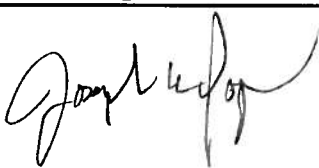
**EMET ID**

1205241
---------

**Sample Area/Lot Number and Name**

241-Bldg2-MRA(L2)	white weather membrane built-up roofing system (layer 2)
-------------------	--

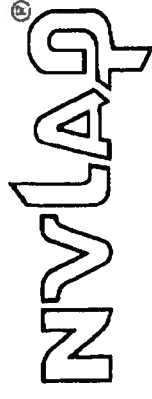
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-MRa(L2)1	0	white weather membrane built-up roofing system (layer 2)	northeast corner of middle roof level
241-Bldg2-MRa(L2)2	0	white weather membrane built-up roofing system (layer 2)	middle of north side of middle roof level
241-Bldg2-MRa(L2)3	0	white weather membrane built-up roofing system (layer 2)	northwest corner of middle roof level

Inspector's Name	Signature	Date Samples Collected
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**


# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116



Client: Sansei Architects Incorporated Building: Building 2  
Address: 1436 Young Street, Suite 304 Waiawa Armory  
Honolulu, HI 96814 96-1210 Waiihona Street  
Pearl City, HI 96782

NVLAP LAB CODE 101807-0

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-MRA(L2) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-076	241-Bldg2-MRa(L2)1	black	Yes	No	-	glass	misc. part.	
					<1	25	75	
241-077	241-Bldg2-MRa(L2)2	black	Yes	No	-	glass	misc. part.	
					<1	20	80	
241-078	241-Bldg2-MRa(L2)3	black	Yes	No	-	glass	misc. part.	
					<1	20	80	

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\*Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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EMET ID 1205241



## Sample Area Report -- Area Master

EMET ID	Building Number and Name		Inspection Date
1205241	Bldg2	Building 2	12/7/2012
Sample Area/Lot Number and Name			
Document Number	241-Bldg2-MRA (L3)	white weather membrane built-up roofing system (layer 3)	Unified Sample Area Number
	Drawing/Sketch Number and Name		241-Bldg2-MRA(L3)

A Sample Area should contain material of one, and only one, composition or matrix. An exception can be made in the case of layered applications of materials, such as occurs with a Three Coat Plaster system, that generally matches the same physical locations. Special care must be taken while collecting samples of layered materials, to enable the analysis to discern the several matrices present. Such conditions should be described in detail on the Sample Notes form for the analyst.

### Location of Confirmed, Assumed, or New ACM within Building

#### Sample Area Suspect Material

white weather membrane built-up roofing system (layer 3)	Not Applicable
--	----------------

#### SAMPLING STRATEGY DATA

Ceiling Height #1		#2	
Square Feet of Ceiling Materials			
Square Feet of Wall Materials			
Square Feet of Floor Surface			
Linear Feet of TSI			
Square Feet of Structural Steel Coatings (including over-spray)			
Square Feet of Other ACM			
Linear Feet of Other ACM			
Total square and/or linear feet of ACM:			

#### RISK ASSESSMENT DETERMINATION

Material Type	Damage Condition	Potential Damage
--	--	--
Visible	Reachable	Water Damage
--	--	--
Barriers	Ventilation	If Yes
--	--	--
Air Movement	Proximity to Repair Items	Activity
--	--	--

#### SAMPLE ANALYSIS SUMMARY SECTION

Total number of samples collected	3
Total number of samples analyzed	3
<b>IS ASBESTOS-CONTAINING MATERIAL PRESENT?</b>	NO
<b>Samples Collected by</b>	EMET
<b>Sample Numbers</b>	241-Bldg2-MRa(L3)1, 241-Bldg2-MRa(L3)2, 241-Bldg2-MRa(L3)3
<b>Samples Analyzed by</b>	EMET
<b>Number of Sallent Designations</b>	

#### GENERAL OCCUPANCY CHARACTERISTICS

Record description of the most important factors observed in this sample area that may increase the likelihood of fiber release.

How many square feet of ACM is never accessed by anyone?

How many square feet of the ACM is accessed only by maintenance personnel?

Explain any abnormal access features

## Sample Log and Notes

### Building Number and Name

Bldg2	Building 2
-------	------------


### EMET ID

1205241

### Sample Area/Lot Number and Name

241-Bldg2-MRA(L3)	white weather membrane built-up roofing system (layer 3)
-------------------	---

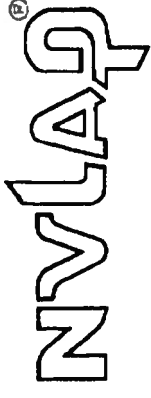
Sample Number	% Asbestos	Description of Sampled Material	Sample Location
241-Bldg2-MRa(L3)1	0	white weather membrane built-up roofing system (layer 3)	northeast corner of middle roof level
241-Bldg2-MRa(L3)2	0	white weather membrane built-up roofing system (layer 3)	middle of north side of middle roof level
241-Bldg2-MRa(L3)3	0	white weather membrane built-up roofing system (layer 3)	northwest corner of middle roof level

Inspector's Name	Signature	Date Samples Collected
		
Joseph Iopa III		12/7/2012

**EMET Services, Inc. 94-520 Uke`e Street, Suite A Waipahu, HI 96797**  
**Phone (808) 671-8383 Fax (808) 671-7979**

# LABORATORY REPORT

Asbestos Bulk Sample Analysis by Polarized Light Microscopy  
in accordance with Test Methods EPA 600/M4-82-020 and EPA 600/9-93/116




Client: Sansei Architects Incorporated

Building: Building 2

NVLAP LAB CODE 101807-0

Address: 1436 Young Street, Suite 304  
Honolulu, HI 96814

Address: Waiawa Armory  
96-1210 Waihona Street  
Pearl City, HI 96782

Approved Signatory: 

Sample/Homogeneous Area: 241-Bldg2-MRa(L3) Analysis Date: 12/11/2012 Report Date: 12/11/2012

Lab ID	Sample ID	Color	Homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	Comments
241-079	241-Bldg2-MRa(L3)1	black	Yes	No	-	glass <1	misc. part. 80	
241-080	241-Bldg2-MRa(L3)2	black	Yes	No	-	glass <1	misc. part. 80	
241-081	241-Bldg2-MRa(L3)3	black	Yes	No	-	glass <1	misc. part. 80	

**\*Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.**

\*Laboratory test report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government

\*Laboratory test report relates only to items tested.

\*Samples analyzed as received by the laboratory. Interpretation is responsibility of the client.

\*Asbestos fiber percentage approximate - performed by visual observation only.

\*This method is not reliable for analysis of tile or other materials when fiber size is less than 10 microns and/or below detection limit (appr. 1%) of current PLM techniques

Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

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**EMET Services, Inc. 94-520 Uke'e Street, Suite A, Walpahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 671-7979**

EMET ID 1205241

## **Appendix B**

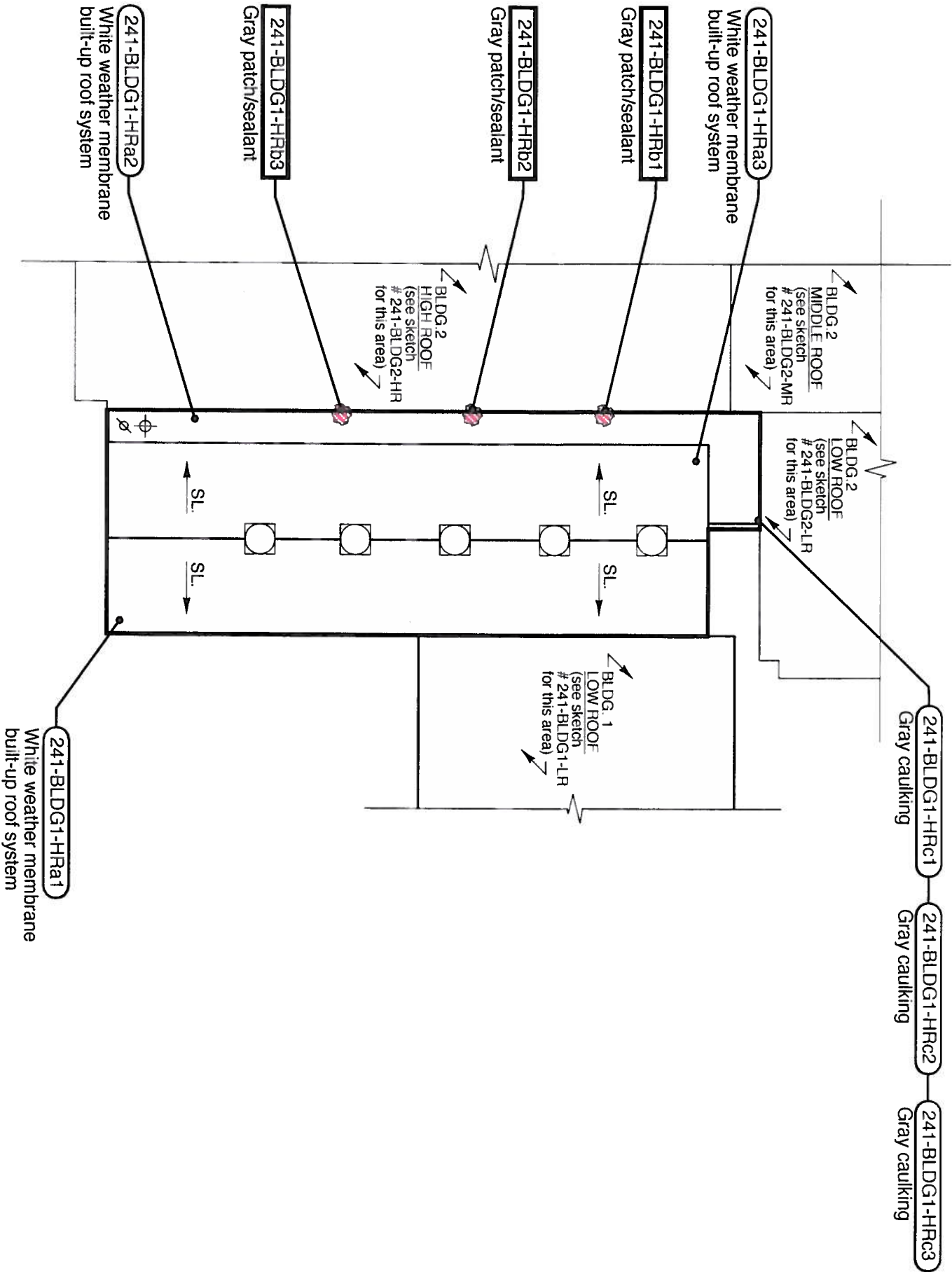
### **Asbestos Survey Sample Locations Sketch**

Re-roof Troop Command Buildings #1 & #2  
Waiawa Armory, Job No. CA-1219-D


Asbestos & Lead Survey  
EMET: 1205241


ASBESTOS SAMPLE LOCATION PLAN


BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
BLDG1	WAIAWA ARMY NATIONAL GUARD ARMORY	96-1210 WAIHONA STREET PEARL CITY, HI 96782	241-BLDG1-HR 1 OF 1





LEGEND

ACM:  SAMPLE #

NON-ACM:  SAMPLE #


 EXHAUST FAN

 ROOF DRAIN

 OVERFLOW DRAIN

ASBESTOS-CONTAINING MATERIALS (ACM)\* :

\* ACM are described in this Legend in **boldface text**;  
Non-ACM (listed here only if layered with ACM) are described in plain text.

 **SAMPLE AREA 241-BLDG1-HRB:**  
GRAY PATCH/SEALANT

\* ASBESTOS-CONTAINING MATERIAL (ACM) IS DEFINED AS ANY MATERIAL CONTAINING > 1 % ASBESTOS.

THIS SURVEY WAS LIMITED IN SCOPE TO SPECIFIC AREAS AFFECTED BY PLANNED RENOVATION ACTIVITIES ONLY; THEREFORE, THIS REPORT MAKES NO WARRANTY FOR AREAS OF THE BUILDING WHICH WERE NOT INCLUDED IN THE SCOPE OF THE SURVEY.

\*\* DUE TO SMALL SIZES OF SOME MATERIAL OCCURRENCES, LOCATIONS OF ACM SHOWN GRAPHICALLY OR LISTED VERBALLY HERE MAY NOT BE EXHAUSTIVE; CONTRACTOR SHOULD SITE-VERIFY ACM LOCATIONS AND EXTENT PRIOR TO BIDDING AND ABATEMENT.

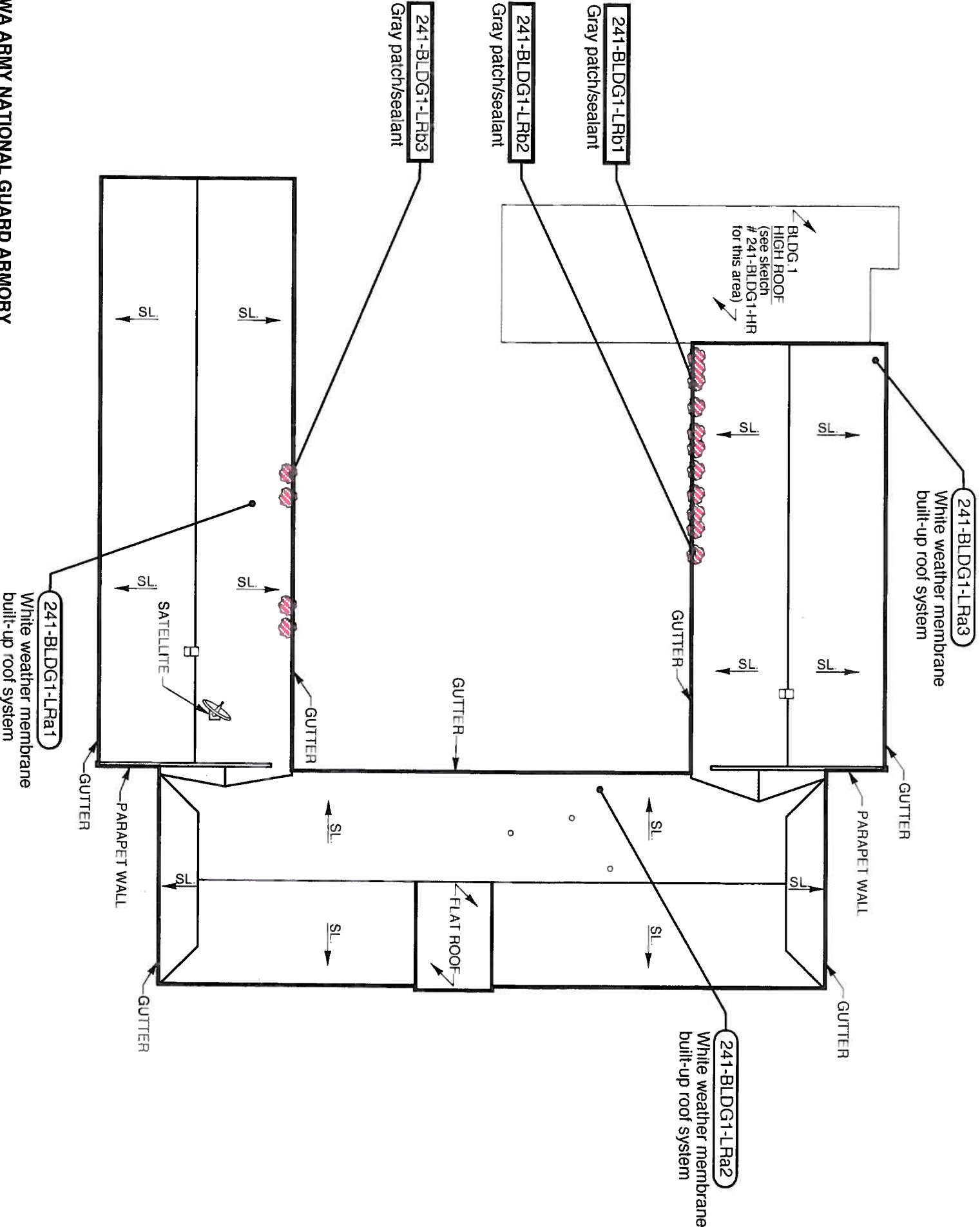
WAIAWA ARMY NATIONAL GUARD ARMORY  
BUILDING 1 - HIGH ROOF PLAN (HR)  
NOT TO SCALE

EnvironMETeo (EMET) Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, Hawaii 96797 Phone: (808) 671-8383 Fax: (808) 671-7979

EMET I.D. #1205241

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
BLDG1	WAIAWA ARMY NATIONAL GUARD ARMORY	96-1210 WAIHONA STREET PEARL CITY, HI 96782	241-BLDG1-LR 1 OF 1



WAIAWA ARMY NATIONAL GUARD ARMORY  
BUILDING 1 - LOW ROOF PLAN (LR)  
NOT TO SCALE

LEGEND

ACM: SAMPLE #

NON-ACM: SAMPLE #

VTR

GOOSENECK VENT

ASBESTOS-CONTAINING MATERIALS (ACM)\*:

\*ACM are described in this Legend in **boldface** text; Non-ACM (listed here only if layered with ACM) are described in plain text.

**SAMPLE AREA 241-BLDG1-LRB:**  
**GRAY PATCH/SEALANT**

\* ASBESTOS-CONTAINING MATERIAL (ACM) IS DEFINED AS ANY MATERIAL CONTAINING > 1 % ASBESTOS.

THIS SURVEY WAS LIMITED IN SCOPE TO SPECIFIC AREAS AFFECTED BY PLANNED RENOVATION ACTIVITIES ONLY; THEREFORE, THIS REPORT MAKES NO WARRANTY FOR AREAS OF THE BUILDING WHICH WERE NOT INCLUDED IN THE SCOPE OF THE SURVEY.

\*\* DUE TO SMALL SIZES OF SOME MATERIAL OCCURRENCES, LOCATIONS OF ACM SHOWN GRAPHICALLY OR LISTED VERBALLY HERE MAY NOT BE EXHAUSTIVE. CONTRACTOR SHOULD SITE-VERIFY ACM LOCATIONS AND EXTENT PRIOR TO BIDDING AND ABATEMENT.

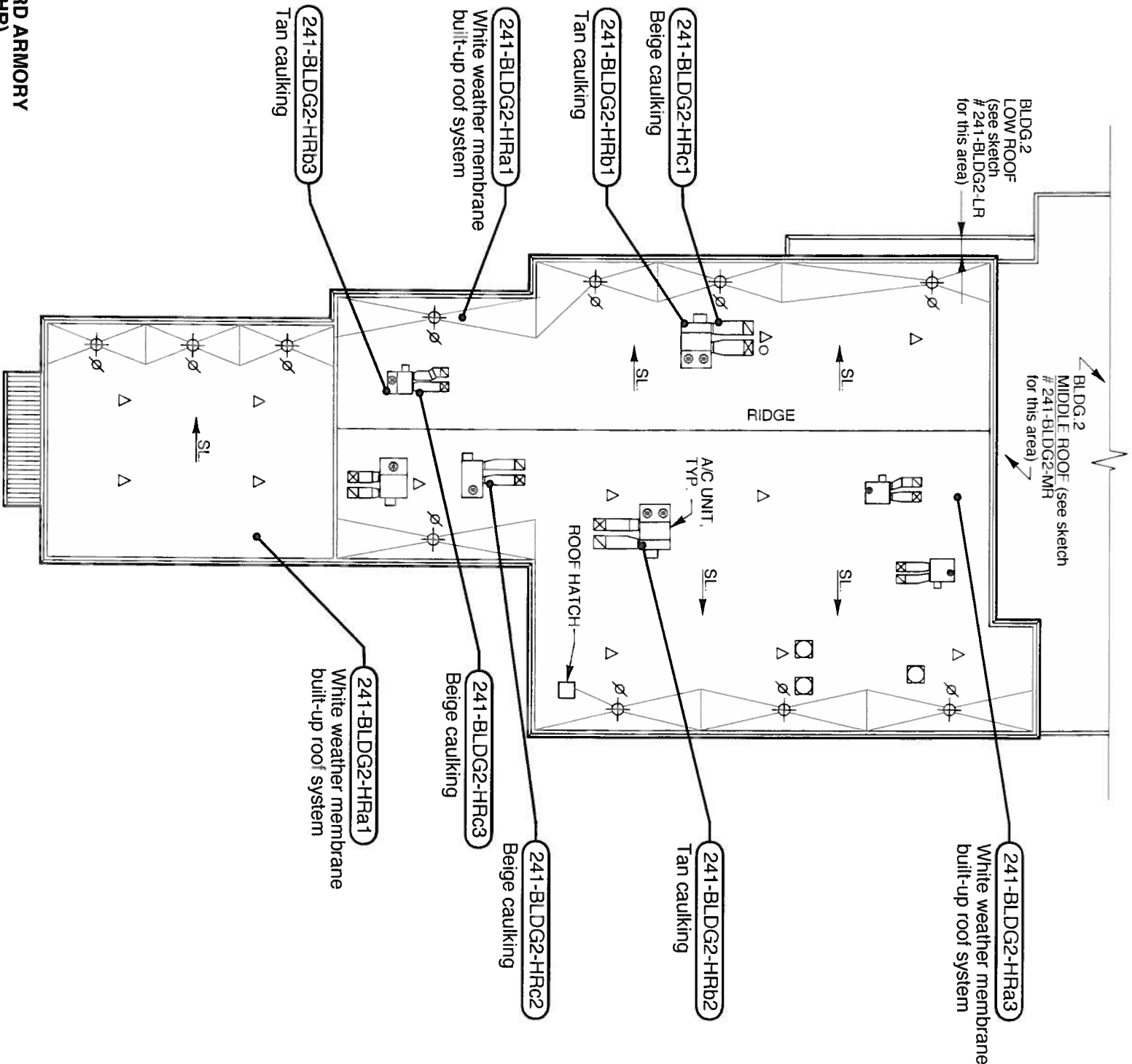
KEY PLAN  
SHADED PORTION IS  
AREA CONSIDERED

EnvironMETeo (EMET) Services, Inc. 94-520 Uke'e Street, Suite A Waipahu, Hawaii 96797 Phone: (808) 671-8383 Fax: (808) 671-7979

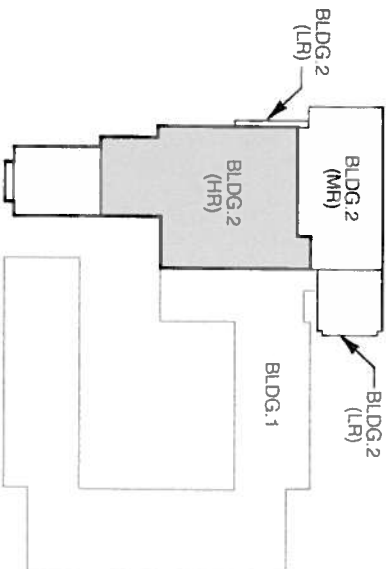
EMET I.D. #1205241

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
BLDG2	WAIAWA ARMY NATIONAL GUARD ARMORY	96-1210 WAIHONA STREET PEARL CITY, HI 96782	241-BLDG2-HR 1 OF 1



LEGEND		
ACM:		SAMPLE #
NON-ACM:		SAMPLE #
VTR		
ROOF VENT		
EXHAUST FAN		
ROOF DRAIN		
OVERFLOW DRAIN		
ASBESTOS-CONTAINING MATERIALS (ACM)* :		
NO ACM DETECTED IN AREAS SAMPLED		
* ASBESTOS-CONTAINING MATERIAL (ACM) IS DEFINED AS ANY MATERIAL CONTAINING > 1 % ASBESTOS.		
THIS SURVEY WAS LIMITED IN SCOPE TO SPECIFIC AREAS AFFECTED BY PLANNED RENOVATION ACTIVITIES ONLY; THEREFORE, THIS REPORT MAKES NO WARRANTY FOR AREAS OF THE BUILDING WHICH WERE NOT INCLUDED IN THE SCOPE OF THE SURVEY.		

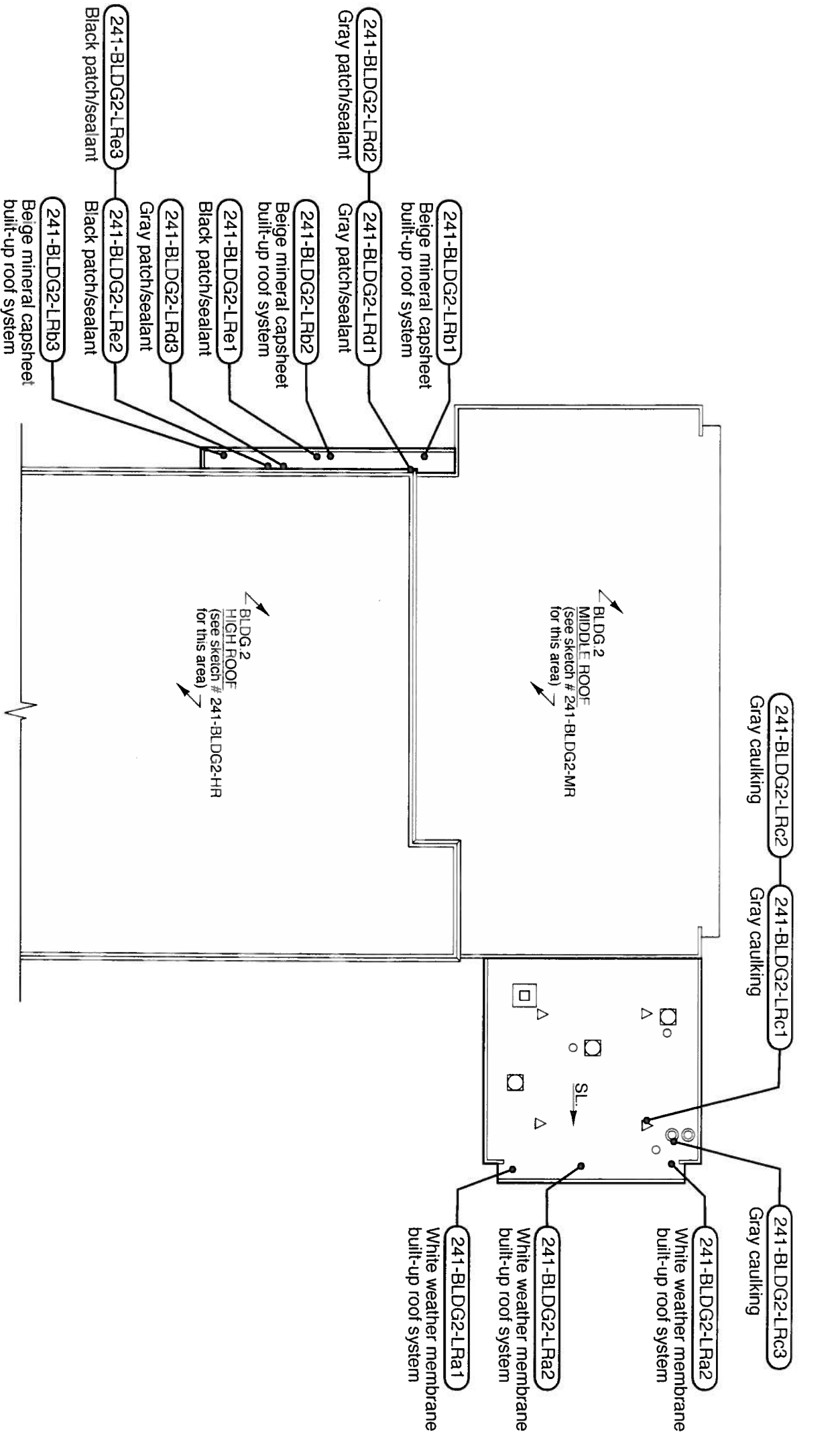


KEY PLAN  
SHADED PORTION IS  
AREA CONSIDERED

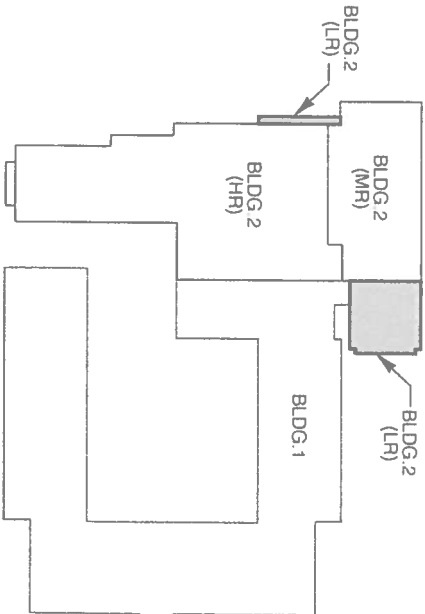
WAIAWA ARMY NATIONAL GUARD ARMORY  
BUILDING 2 - HIGH ROOF PLAN (HR)  
NOT TO SCALE

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
BLDG2	WAIAWA ARMY NATIONAL GUARD ARMORY	96-1210 WAIHONA STREET PEARL CITY, HI 96782	241-BLDG2-LR 1 OF 1



LEGEND	
ACM:  SAMPLE #	
NON-ACM:  SAMPLE #	
VTR ROOF VENT EXHAUST FAN	
ASBESTOS-CONTAINING MATERIALS (ACM)* :	
NO ACM DETECTED IN AREAS SAMPLED	
* ASBESTOS-CONTAINING MATERIAL (ACM) IS DEFINED AS ANY MATERIAL CONTAINING > 1 % ASBESTOS.	
THIS SURVEY WAS LIMITED IN SCOPE TO SPECIFIC AREAS AFFECTED BY PLANNED RENOVATION ACTIVITIES ONLY; THEREFORE, THIS REPORT MAKES NO WARRANTY FOR AREAS OF THE BUILDING WHICH WERE NOT INCLUDED IN THE SCOPE OF THE SURVEY.	



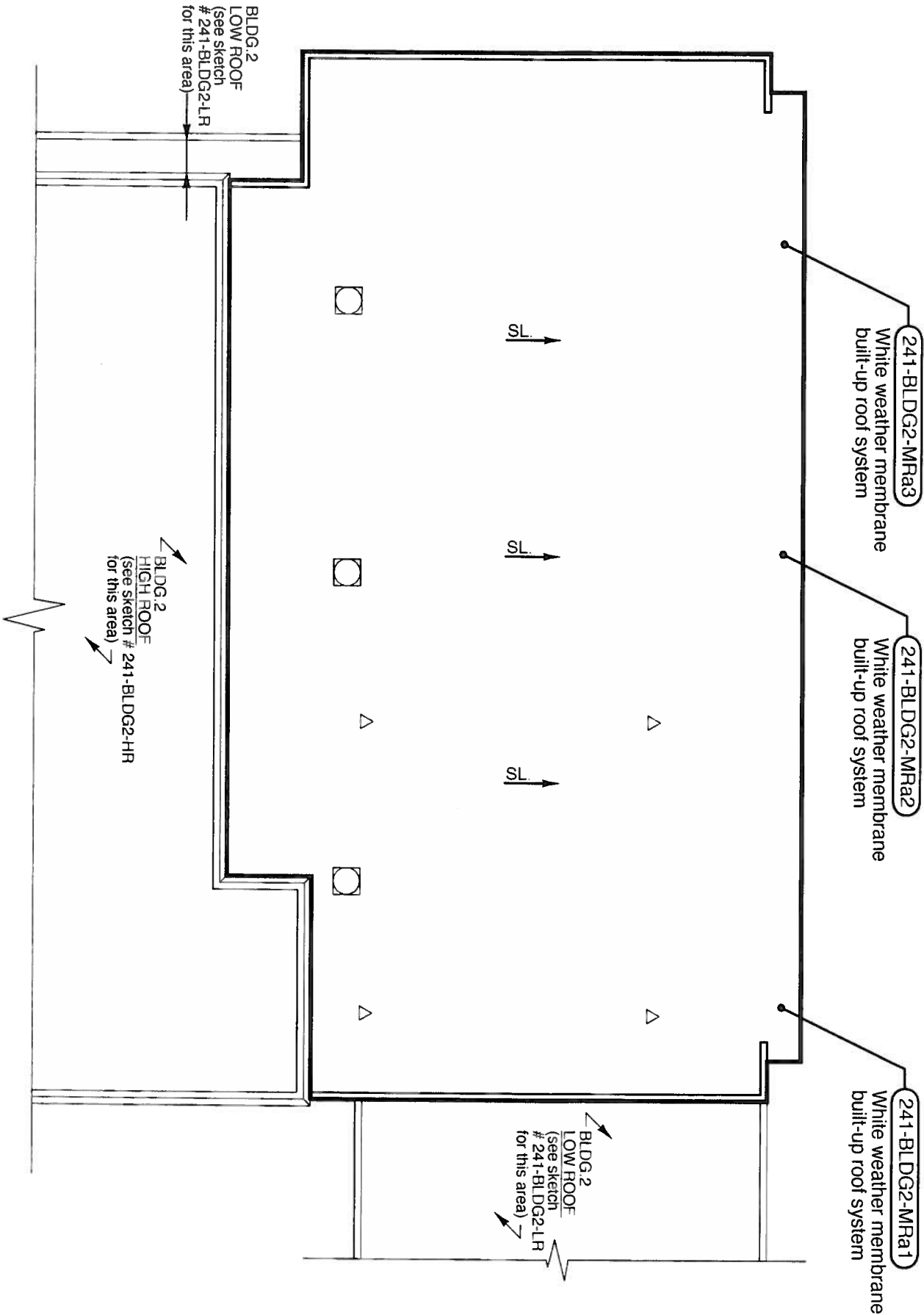
KEY PLAN  
SHADED PORTION IS  
AREA CONSIDERED






WAIAWA ARMY NATIONAL GUARD ARMORY  
BUILDING 2 - LOW ROOF PLAN (LR)  
NOT TO SCALE

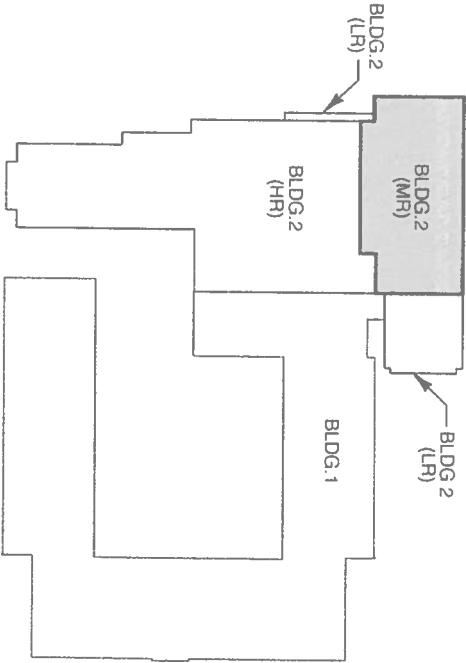


ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
BLDG2	WAIAWA ARMY NATIONAL GUARD ARMORY	96-1210 WAIHONA STREET PEARL CITY, HI 96782	241-BLDG2-MR 1 OF 1



LEGEND	
ACM:  SAMPLE #	 NORTH
NON-ACM:  SAMPLE #	
 ROOF VENT	
 EXHAUST FAN	
<b>ASBESTOS-CONTAINING MATERIALS (ACM)* :</b>	
NO ACM DETECTED IN AREAS SAMPLED	
* ASBESTOS-CONTAINING MATERIAL (ACM) IS DEFINED AS ANY MATERIAL CONTAINING > 1 % ASBESTOS.	
THIS SURVEY WAS LIMITED IN SCOPE TO SPECIFIC AREAS AFFECTED BY PLANNED RENOVATION ACTIVITIES ONLY; THEREFORE, THIS REPORT MAKES NO WARRANTY FOR AREAS OF THE BUILDING WHICH WERE NOT INCLUDED IN THE SCOPE OF THE SURVEY.	



KEY PLAN  
SHADED PORTION IS  
AREA CONSIDERED

WAIAWA ARMY NATIONAL GUARD ARMORY  
BUILDING 2 - MIDDLE ROOF PLAN (MR)  
NOT TO SCALE

## **Appendix C**

### **Photographs**

**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**

Building: Bldg1, Floor: HR



Sample Area 241-Bldg1-HRA

white weather membrane built-up  
roofing system



Sample Area 241-Bldg1-HRB

gray patch/sealant

**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**



Sample Area 241-Bldg1-HRC

gray caulking

Building: Bldg1, Floor: LR



Sample Area 241-Bldg1-LRA

white weather membrane built-up  
roofing system

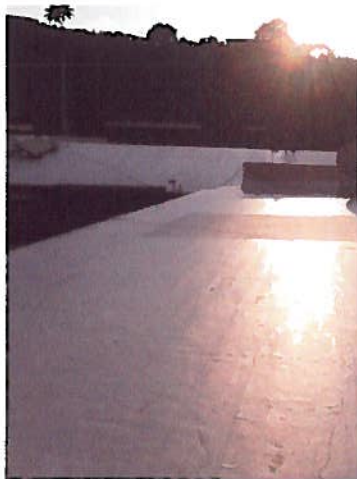
**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**



Sample Area 241-Bldg1-LRB

gray patch/sealant

Building: Bldg2, Floor: HR



Sample Area 241-Bldg2-HRA

white weather membrane built-up  
roofing system

**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**



Sample Area 241-Bldg2-HRB

tan caulking



Sample Area 241-Bldg2-HRC

beige caulking

**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**

Building: Bldg2, Floor: LR



Sample Area 241-Bldg2-LRA

white weather membrane built-up  
roofing system



Sample Area 241-Bldg2-LRB

beige mineral capsheet built-up roof  
system



**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**



Sample Area 241-Bldg2-LRC

gray caulking



Sample Area 241-Bldg2-LRD

gray patch/sealant



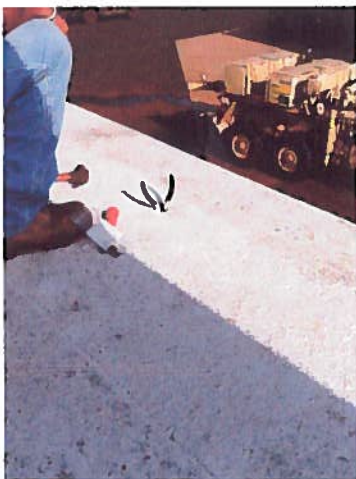
Sample Area 241-Bldg2-LRE

black patch/sealant



**Re-roof Troop Command Buildings #1 & #2 at Waiawa Armory, Job No. CA**

Building: Bldg2, Floor: MR



Sample Area 241-Bldg2-MRA

white weather membrane built-up  
roofing system

## **Appendix D**

### **Lead Survey Report**

Re-roof Troop Command Buildings #1 & #2  
Waiawa Armory, Job No. CA-1219-D

Asbestos & Lead Survey  
EMET: 1205241



EMET ID: 1205241

Test Date: December 7, 2012

Re-roof Troop Command Buildings #1 & #2, Waiawa Armory  
State of Hawaii, Department of Defense, Hawaii National Guard, Job No. CA-1219-D

XRF#	Location	Component	Substrate	Condition	Color	PbC (mg/cm <sup>2</sup> )	Lead-based Paint?	Lead- containing Paint?
647	Calibration					1.00 ± 0.10		
648	Calibration					1.00 ± 0.10		
649	Calibration					1.00 ± 0.10		
650	Building 1, roof	east parapet wall	CMU	intact	beige	-0.30 ± 0.84	no	yes
651	Building 1, roof	east parapet wall	CMU	intact	white	-0.01 ± 0.80	no	yes
652	Building 1, roof	west parapet wall	CMU	intact	beige	-0.19 ± 0.92	no	yes
653	Building 1, roof	west parapet wall	CMU	intact	white	0.03 ± 0.93	no	yes
654	Building 1, roof	north parapet wall	CMU	intact	beige	-0.19 ± 0.83	no	yes
655	Building 1, roof	north parapet wall	CMU	intact	white	0.00 ± 0.02	no	yes
656	Building 1, exterior wall	wall	CMU	intact	beige	0.00 ± 0.02	no	yes
657	Building 1, exterior wall	wall	CMU	intact	brown	0.00 ± 0.02	no	yes
658	Building 1, exterior wall	wall	CMU	intact	beige	0.10 ± 0.88	no	yes
659	Building 1, exterior wall	wall	CMU	intact	brown	-0.01 ± 0.85	no	yes
660	Building 1, exterior wall	wall	CMU	intact	beige	0.00 ± 0.02	no	yes
661	Building 1, exterior wall	wall	CMU	intact	brown	0.00 ± 0.02	no	yes
662	Building 1, exterior wall	wall	CMU	intact	beige	-0.16 ± 0.85	no	yes
663	Building 1, exterior wall	wall	CMU	intact	brown	-0.06 ± 0.85	no	yes
664	Building 2, middle roof	wall	CMU	intact	beige	0.00 ± 0.02	no	yes
665	Building 2, middle roof	wall	CMU	intact	beige	0.00 ± 0.02	no	yes
666	Building 2, middle roof	wall	CMU	intact	white	0.00 ± 0.02	no	yes
667	Building 2, middle roof	wall	CMU	intact	white	0.00 ± 0.02	no	yes
668	Building 2, lower roof	wall	CMU	intact	beige	0.00 ± 0.02	no	yes
669	Building 2, lower roof	wall	concrete	intact	brown	0.00 ± 0.02	no	yes
670	Building 2, high roof	wall	concrete	intact	beige	0.00 ± 0.02	no	yes
671	Building 2, exterior wall	wall	concrete	intact	beige	0.00 ± 0.02	no	yes
672	Null							
673	Building 2, exterior wall	wall	concrete	intact	beige	0.00 ± 0.02	no	yes
674	Building 2, exterior wall	wall	concrete	intact	beige	0.00 ± 0.02	no	yes
675	Calibration					1.00 ± 0.10		
676	Calibration					1.00 ± 0.10		
677	Calibration					1.00 ± 0.10		

Determination of paint as lead-based paint by the U. S. Department of Housing and Urban Development (HUD) is based on the values in the "PbC" column reported in mg/cm<sup>2</sup> (milligrams per square centimeter). HUD regulations; 24 CFR Parts 35, 200, 881, and 886; and Guidelines for the Evaluation and Control of Lead-based Paint (LBP) Hazards in Housing, dated June 1995, define LBP as paint with a lead content of 1.0 mg/cm<sup>2</sup> or greater.

However, OSHA and HIOSH regulate activities disturbing paint that contains lead (lead-containing paint), even if the content is below the HUD standard.

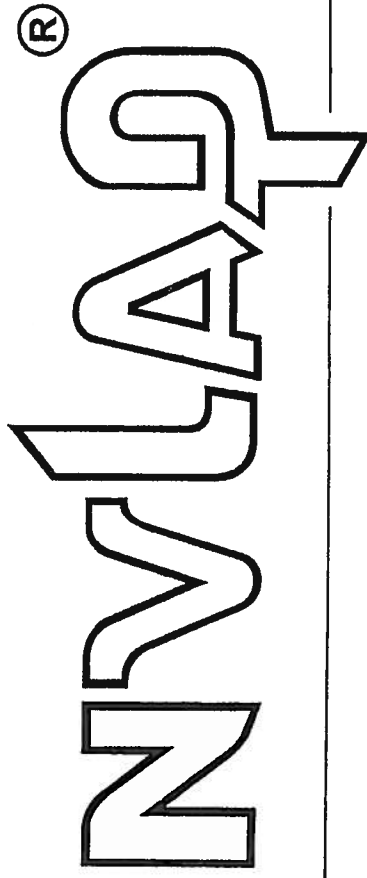
## **Appendix E**

### **Certifications**

Re-roof Troop Command Buildings #1 & #2  
Waiawa Armory, Job No. CA-1219-D

Asbestos & Lead Survey  
EMET: 1205241

United States Department of Commerce  
National Institute of Standards and Technology



## Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101807-0

**EnvironMETeo Services Inc.**

Waipahu, HI

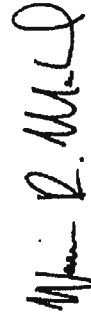
is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:

### **BULK ASBESTOS FIBER ANALYSIS**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).

2012-07-01 through 2013-06-30

Effective dates

A handwritten signature in black ink, appearing to read "Michael D. McL...".

For the National Institute of Standards and Technology



## Lead-Based Paint Activities Firm Certification

THIS IS TO CERTIFY THAT

### EnvironMETeo Services, Inc.

has fulfilled the requirements of Chapter 11-41 Hawaii Administrative Rules and the Toxic Substance Control Act (TSCA) Section 402(a)(2), and has received certification as a firm pursuant to §11-41-4, HAR to conduct lead-based paint activities in Hawaii.

This certification is valid from the date of issuance and expires on JUNE 19, 2015.

Date of Issue: FEBRUARY 21, 2012  
Certification # PBF-0024

NON-TRANSFERABLE

FOR DIRECTOR OF HEALTH

REVOCABLE FOR CAUSE



**Estrada**

Arnaldo  
EnvironMETeo Services, Inc.  
HIASB-0966  
State Exp. Date: 01/30/2013

**State of Hawai'i  
Asbestos Certification**

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	05/08/12	PM	04/09/13
<p>W = Worker CS = Cont./Sup. INS = Inspector PD = Project Designer MP = Mgmt. Planner PM = Project Monitor</p>			



**Uyeda**  
Andrew H.  
EnvironMETeo Services, Inc.  
**HIASB-2432**  
State Exp. Date: 06/01/2013

## State of Hawai'i Asbestos Certification

### Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	03/09/13	PM	01/04/14

W= Worker

CS= Cont./Sup

INS= Inspector

PD= Project Designer

MP= Mgmt. Planner

PM= Project Monitor





## State of Hawai'i Asbestos Certification

### Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	03/09/13	PM	01/04/14

W= Worker  
CS= Cont./Sup  
INS= Inspector  
PD= Project Designer  
MP= Mgmt Planner  
PM= Project Monitor

**Iopa**

Joseph K. III

EnvironMETeo Services, Inc.

**HIASB-0585**

**State Exp. Date:** 04/25/2013

End of Report

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## **SECTION 01731 - CUTTING AND PATCHING**

### **PART 1 – GENERAL**

#### **1.01 WORK DESCRIPTION**

- A. The work to be performed under this section shall consist of furnishing all labor, materials, equipment, tools and incidentals necessary for cutting and patching as indicated and as specified herein.
- B. This Section includes procedural requirements for cutting and patching.
- C. See Divisions 1 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

#### **1.02 QUALITY ASSURANCE.**

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
  - 1. Do not cut steel framing, or structural steel components unless indicated on drawings. Shore and brace all structural steel components indicated to be cut prior to cutting and remove when structural component is replaced.
  - 2. Do not cut structural concrete or CMU, or structural steel reinforcing unless indicated on drawings.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Project Manager's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

#### **1.03 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

### **PART 2 – PRODUCTS**

#### **2.01 MATERIALS**

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use new materials identical to existing materials. For

exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

- C. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Temporary Support: Provide shoring and bracing and temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

### **3.03 PERFORMANCE**

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

END OF SECTION

## **SECTION 01732 - SELECTIVE DEMOLITION**

### **PART 1 - GENERAL**

#### **1.01 WORK DESCRIPTION**

- A. The work to be performed under this section shall consist of furnishing all labor, materials, equipment, tools and incidentals necessary for selective demolition as indicated and as specified herein.
- B. Asbestos and lead containing materials have been detected in materials to be removed and handled. Coordinate work with the following sections:
  - 1. Section 01715 Existing Conditions – Asbestos/Lead/Hazardous Material Survey
  - 2. Section 13280 - Removal and disposal of Asbestos Containing Materials
  - 3. Section 13283 – Disturbance of Lead-Containing Materials
  - 4. Section 13288 - Testing/Air Monitoring

#### **1.02 SUMMARY**

- A. This Section includes demolition and removal of the following:
  - 1. Existing roofing system down to existing structural decking including insulation, cover board, flashing, etc. where occurs. Note portions of existing roofing contains ACM, removal shall be as per specification Section 13280 Removal and Disposal of Asbestos-Containing Materials.
  - 2. Existing roofing accessories – roof access hatch, and roof access ladder.
- B. This section includes removal for reinstallation of the following:
  - 1. Existing gutters, leaders, downspouts, and associated fasteners and brackets.
  - 2. Existing electrical and communication raceways, wiring, supports, guy wires, mounting brackets, and devices, including CCTV cameras, antennas, electrical cabinets, disconnect switches, etc.
  - 3. Existing mechanical ducts, vents, equipment, condensate drains, etc.

#### **1.03 RELATED SECTIONS**

- A. Section 01715 Existing Conditions – Asbestos/Lead/Hazardous Material Survey
- B. Section 01731 – Cutting and Patching.
- C. Section 13280 - Removal and disposal of Asbestos Containing Materials
- D. Section 13283 – Disturbance of Lead-Containing Materials

E. Section 13288 Testing/Air Monitoring

**1.04 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

**1.05 MATERIALS OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain State's property, demolished materials shall become Contractor's property and shall be removed from Project site.

**1.06 QUALITY ASSURANCE**

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.

**1.07 PROJECT CONDITIONS**

- A. Provide not less than 72 hours' notice to the Project Manager of activities that will affect User's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
  - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. The State assumes no responsibility for condition of areas to be selectively demolished.
- D. Storage or sale of removed items or materials on-site will not be permitted.
- E. Utility Service: Maintain existing utilities in service and protect them against damage during selective demolition operations.
- F. Shore and brace existing structure to prevent damage to existing construction to remain.

## **1.08 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

## **PART 2 - PRODUCTS**

### **2.01 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials.
  - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials with installed performance that is equal or surpasses that of existing materials.
  - 3. Repair shall be at no additional cost to the State.
  - 4. Repair shall be to the satisfaction of the Project Manager at no additional cost.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Project Manager.
- E. Engage a professional engineer to survey 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 selective demolition operations.

### **3.02 UTILITY SERVICES**

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Project Manager and authorities having jurisdiction.



Provide temporary services during interruptions to existing utilities, as acceptable to Project Manager and to authorities having jurisdiction.

1. Provide at least 72 hours' notice to the Project Manager if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
1. Arrange to shut off indicated utilities with utility companies.
  2. If utility services are required to be removed, relocated, or abandoned, provide temporary utilities before proceeding with selective demolition that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

### **3.03 PREPARATION**

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Project Manager and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
  2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
  3. Protect existing site improvements, appurtenances, and landscaping to remain.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- E. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or

collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

### **3.04 POLLUTION CONTROLS**

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

### **3.05 SELECTIVE DEMOLITION**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.
  - 1. 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.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  - 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- A. Existing Facilities: Comply with Project Manager's requirements for using and protecting stairs, walkways, building entries and other building facilities during selective demolition operations.
- B. Removed and Reinstalled Items:
  - 1. Clean and repair items to functional condition adequate for intended reuse. Paint to match existing or color as scheduled.
  - 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.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Project Manager, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### **3.06 PATCHING AND REPAIRS**

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

### **3.07 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off property and legally dispose of them.

### **3.08 SALVAGED MATERIAL**

- A. General: Cut and Pack items indicated to be salvaged in containers or boxes and deliver to user for salvaging.

END OF SECTION

## **SECTION 02073 - PATCHING, REPAIR AND RESTORATION**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. This section includes patching, repair and restoration.

#### **1.02 GENERAL REQUIREMENTS**

- A. Furnish all labor, materials, tools and equipment necessary to complete all patching, repair and restoration work complete, including but not limited to the following:
  - 1. Defects of existing physical damage left as a result of construction operations.
  - 2. Patching of existing concrete left by removal of existing fasteners.
  - 3. Patching of existing termite damaged roof decking not indicated to be removed.

#### **1.03 QUALITY ASSURANCE**

- A. Worker Qualifications:
  - 1. The workers shall be skilled and competent in the trade involved, and shall be familiar with the materials and the nature of the work.

#### **1.04 SUBMITTALS**

- A. Product Data: Provide product data and application instructions as applicable.
  - 1. Provide manufacturer's Material Safety Data Sheets.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- A. All materials used for patching and repair work shall be new, of the same base material and finish, of a quality equal to and compatible with the material it intends to patch and/or replace.
- B. Concrete patching compound: Fast-setting cement-based repair mortar, BASF Thorite® or equal.
- C. Primer and Paint: Primer and paint shall be as specified in SECTION 09901 - PAINTING.
- D. Wood filler: Waterproof exterior grade, Abatron WoodEpoxy® or LiquidWood or equal.
- E. Wood glue: Polyaliphatic resin polymer wood glue, ANSI Type II Water-resistant. Titebond II or equal.

## **PART 3 - EXECUTION**

### **3.01 PATCHING, REPAIR AND RESTORATION**

- A. All work damaged or caused to be defective by the construction operations, and which is not indicated to be replaced or included with new construction, shall be completely repaired, patched, or filled-in as required to match the adjoining existing surfaces. Replaced or repaired work shall conform to the requirements of the appropriate Sections of these Specifications. Where the method of repair is not indicated or specified, the Contractor shall perform the repair work in accordance with the best recognized and adopted workmanlike practices, and in a manner approved by the Project Manager.
- B. Patch all termite damaged wood surfaces indicated on drawings. Replace termite damaged wood where replacing of member is practical. Repair termite damaged wood surfaces by cutting out damaged surfaces and patching with glued and nailed cut wood plank decking pieces of same wood species. Fill cuts with wood filler and finish to match existing adjacent surface texture and finish. Patch ceiling plank decking to match wood decking v-groove, plane and sand patches flush with adjacent surfaces.

### **3.02 CLEAN-UP**

- A. Clean and remove any excess materials and contaminants ready to receive the specified finish. Remove daily from the project site any excessive accumulation of rubbish, debris, fines, etc.

END OF SECTION

## **SECTION 05500 - METAL FABRICATION**

### **PART 1 - GENERAL**

#### **1.01 WORK DESCRIPTION**

- A. The work to be performed under this section consist of furnishing all labor, materials, equipment, tools and incidentals necessary to install and complete the Miscellaneous metal and metal fabrication work including but not limited to fabrication and installation of antennae guy wire hold downs. Metal fabrication and miscellaneous metal items not indicated or specified shall be provided in accordance with the intent of the Drawings and Specifications and as required to complete the Work.

#### **1.02 QUALITY ASSURANCE**

- A. Metal fabrications shall comply with the standard practice and specifications of the American Institute of Steel Construction and the American Welding Society AWS D1.1 "Code for Welding in Building Construction." Use only certified welders.
- B. Take field fabrication measurements prior to preparation of shop drawings and fabrication. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assemble. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installations.

#### **1.03 SUBMITTALS**

- A. Shop Drawings: Furnish shop drawings as required for all work in accordance with the contract drawings to the Architect for approval. Shop drawings shall be referenced to sheet and detail being depicted. Show manner in which Contractor intends to fabricate work; show size and extent of all welds, fastener sizes and locations, field verified dimensions, etc., make all necessary corrections to drawings as required. No work is to be fabricated, started or ordered without approval.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes, including pitting, seam marks, roller marks, rolled trade names and roughness.
- B. Plates, angles, tubular steel, and bars: ASTM A36 - all purpose carbon grade steel.
- C. Pipe: ASTM A53 Type E or S, Grade B, Schedule 80
- D. Bolts, Nuts, Studs and Rivits: ASME/ANSI B18.2.2 and ASTM A 687 or ASTM A 307.
- E. Plain Washers: ASME/ANSI B18.22MASME/ANSI B18.22.1.

- F. Lock Washers: ASME/ANSI B18.21.2m ASME/ANSI B18.21.1.
- G. Hot-dip galvanize: All metal to be zinc-coated except stainless steel material. ASTM A123, ASTM A153/A 153M or ASTM A 653/A 653M, Z257 G90, as applicable.
- H. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.
- I. Galvanizing Repair Paint: SSPC-Paint 20, High-zinc-dust-content paint for re-galvanizing welds in steel.

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

Installer must examine the areas and conditions under which miscellaneous metal items are to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

### **3.02 PREPARATION**

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.
- B. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate deliver of such items to project site.

### **3.03 FABRICATION, GENERAL**

- A.. Workmanship: Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in the finished product. Work to dimensions shown or accepted on the shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for the various components of the Work.
- B. Form exposed work true to line and level, with accurate angles and surfaces and with straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing works.
- C. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush; match and blend with adjoining surfaces.
- D. Form exposed connections with hairline joints, flush and smooth. using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not

shown, use square recesses flat-head (counter-sunk) screws or bolts.

- G. Provide for anchorage of the type shown, coordinate with supporting structure. Fabricate, space anchoring devices to provide adequate support for intended use. Cut all exposed threaded fastener ends flush with nut. Remove all sharp edges.
- H. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

### **3.04 FINISHES**

- A. Steel and Iron Finishes:
  - 1. Hot-dip galvanize fabricated window sub-frame, window plate trims to comply with ASTM A123/A123M or ASTM A 153/A 153M.
  - 2. Shop Painting: As specified in Section 09900 - Painting.
    - a. All steel work shall be thoroughly cleaned of loose mill scale and rust by wire brushing, oil and grease removed with proper solvent, dirt with water and brush.
    - b. After erection, all bolts anchors, spacers and abrasions to shop coat shall be painted ;with same primer and finish paint used at the shop.
    - c. Paint shall be applied neatly to all metal surfaces.

### **3.05 INSTALLATION**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.
- B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free from rack measured from established lines and levels. Provide temporary bracing or anchors in form work for items which are to be built into concrete, masonry or similar construction.
- C. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of transporting size limitations. Grind exposed joints smooth, and touch-up shop paint coat.
- D. Field Welding: Will not be allowed.
- E. Touch-Up Painting: Immediately after erection and before painting, thoroughly clean all surfaces of all grease, rust, welding droppings and loose mill scale by sand-blasting, wire-brushing, solvents or other approved means in accordance with SSPC-SP1,, SP2, or SP3, respectively. Clean field welds, bolted connections and abraded areas of shop paint and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide minimum



dry film thickness of 2.0 mils.

- F. Protection: Provide insulation of metal from contact with masonry, concrete and different metals from contact with each other to prevent corrosion, by means of gaskets, a heavy-duty coat of alkali-resistant coating, or bituminous paint on the contact surfaces.

### **3.06 CLEAN-UP**

After erection, clean all mud, oil, grease and dirt from all surfaces. Remove unused materials, tools, scaffolding and debris from the premises and leave broom clean.

END OF SECTION

## **DIVISION 6 – WOOD AND PLASTICS**

### **SECTION 06070 – WOOD TREATMENT**

#### **PART 1 - GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Plant preservative and insecticide treatment of lumber and other wood products specified in other Sections of this Specification by pressure and dip methods.
- B. Field treatment of field cut or drilled lumber.

##### **1.02 RELATED SECTIONS**

- A. Section 06100 - Carpentry: Lumber products and preservative treatment of lumber products.

##### **1.03 REFERENCES**

- A. American Wood-Preservers' Association
  - 1. AWPA C2-00: Lumber, Timber, Bridge Ties and Mine Ties-Preservative Treatment by Pressure Processes.
  - 2. AWPA C9-00: Plywood-Preservative Treatment by Pressure Processes.
  - 3. AWPA C31-00: Lumber Used out of Contact with the Ground and Continuously Protected from Liquid Water-Treatment by Pressure Processes.
  - 4. AWPA M4-01: Care of Preservative-Treated Wood Products.
  - 5. AWPA C20-99: Structural Lumber- Fire Retardant Treatment by Pressure Process.
  - 6. AWPA N1-01: All millwork, Preservative Treatment by Non-Pressure Process.
  - 7. AWPA N2-00: Composite Wood Products, Preservative Treatment by Non-Pressure Process.

##### **1.04 SUBMITTALS**

- A. Product Data: Provide data on all treatment products, including field application instructions if applicable.
  - 1. Provide manufacturer's Material Safety Data Sheets on all products, and hazardous materials.
  - 2. Provide ICBO approvals for treatment solutions used.

- B. Preserver Certifications:
  - 1. Provide a Certificate of Treatment showing compliance with these specifications for the following:
    - a. Kiln drying
    - b. Method of treatment performed, including dip treatment.
- C. Contractor's Certification: Provide a certification letter stating that all wood used on this job including cuts and penetration were treated and coated with preservatives in compliance with requirements of this contract.
- D. Guarantee: Guarantee form for written guarantee.

#### **1.05 REGULATORY REQUIREMENTS**

- A. Comply with State OSHL (Occupancy Safety and Health Law) and pollution controls regulations of the State Department of Health and EPA.

#### **1.06 QUALITY ASSURANCE**

- A. Treatment methods shall be approved by ICBO. Preservatives shall be EPA registered.
- B. Do not use preservatives containing arsenic or other EPA banned chemicals.
- C. Do not use Perma-Clear 65 or other zinc naphthanate and permethrin products.

#### **1.07 DELIVERY STORAGE AND HANDLING**

- A. Protect AWPA C31 inorganic boron treated wood from contact with the ground, rain or other sources of liquid water until permanent installation of covering construction.

#### **1.08 GUARANTEE**

- A. Provide a two year guaranty to replace all treated wood which is attacked by subterranean termites up to a total cost of \$20,000.00 over the guaranty period (as verified by General Conditions Force Account Method cost accounting).
- B. Provide a five year guaranty to replace all treated wood which is attacked by dry wood termites or deteriorates due to dry rot. The Surety shall not be held liable beyond two years of the project acceptance date.

### **PART 2 - PRODUCTS**

#### **2.01 GENERAL**

- A. Mill lumber to finish size and shape prior to treating, and treat before assembly. Plywood may be treated in regular panel sizes.

- B. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
  - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece, or omit marking and provide certificates of treatment compliance issued by inspection agency.

## **2.02 PRESSURE TREATMENT WITH WATER-BORNE PRESERVATIVES**

- A. Treating solutions:
  - 1. Copper azole, Type A (CBA-A).
  - 2. Inorganic boron (SBX).
- B. Treatment Methods:
  - 1. General:
    - a. All water-borne treatment methods require incising of lumber of nominal 2 inch thickness (1-1/2 inches actual dimension).
    - b. Choice of treatment method and conditions of use of each treating solution shall conform to the treatment schedule contained in Part 3.
  - 2. CBA-A: Treatment methods, depth of penetration and treating solution retention shall conform to AWPA C2 for lumber and C9 for plywood.
  - 3. SBX: Treatment method shall conform to AWPA C31. Treating solution retention shall be a minimum of 0.28 pounds per cubic foot (equivalent to 0.42 DOT).
- C. Drying:
  - 1. Before Treatment:
    - a. CBA-A Treatment: Wood shall be air dried or kiln-dried before treatment to an average moisture content of 28 percent or less per AWPA standards.
    - b. SBX Treatment: Wood having a moisture content higher than 28% is acceptable when treating with SBX.
  - 2. After Treatment:
    - a. All 1 inch and 2 inch lumber and all plywood shall be dried to a moisture content of 19 percent or less after treatment.

## **2.03 PRESSURE TREATMENT WITH OIL-BORNE PRESERVATIVES**

- A. Treating Solution:
  - 1. 0.50 percent by weight chlorpyrifos, 0.75 percent by weight 3-iodo-2-propynyl butyl carbamate (IPBC). The solvent used in formulating the preservative solution shall meet the requirements of AWPA hydrocarbon solvent Type C, Standard P9, Paragraph 3.1.
  - 2. For interior application use low odor mineral spirits as solvent.

B. Treatment Methods:

1. Treated wood shall attain the following net retention requirements: 0.0175 pounds of Chlorpyrifos per cubic foot of wood, 0.035 pound of 3-Iodo-2-propynyl butyl carbamate per cubic foot of wood.

C. Drying:

1. Before Treatment: All wood treated with oil-borne preservatives shall be kiln-dried to an average moisture content of 12% to 15% per AWP standards.
2. After Treatment: Wood shall be thoroughly dried and virtually odor-free prior to installation.

## **2.04 PRESERVATION BY DIP TREATMENT**

A. Treating Solution:

1. Any of the Oil-Borne Preservatives listed above.
2. A solution of 1 quart chlorpyrifos in 55 gallons of a 0.50 percent IPBC solution.

B. Treatment Methods:

1. Immersion treat for a minimum period of 15 minutes. Hollow-core flush wood doors shall be immersion treated for a period of 5 minutes.
2. Do not incise lumber scheduled to be left unpainted or receive a clear finish.

C. Drying:

1. After Treatment: Wood shall be thoroughly dried and virtually odor-free prior to installation.

## **2.05 FIELD TREATMENT**

A. Treatment Method:

1. Treat in accordance with AWP Standard M4-98 using two heavy brush coats of a treating solution.

## **PART 3 - EXECUTION**

### **3.01 SCHEDULE OF TREATMENTS**

A. Species:

1. Treat all wood species except all-heart redwood.
2. All water-borne and oil-borne treatment solutions are applicable to douglas-fir and hem-fir species except for CBA-A treatment which is acceptable for hem-fir species only.

B. Application:

1. Pressure Treatment:
  - a. General: Unless otherwise stipulated, all lumber and plywood shall be pressure treated.

- b. Hardwood flooring and exposed lumber 1-1/2" (net thickness) and over that will be unpainted or receive a clear finish shall be and pressure treated with oil-borne preservative. Do not incise lumber.
  - c. SBX treated wood shall not be used in areas exposed to direct precipitation (e.g. exposed decking, trellises, fencing, etc.) unless painted or covered with a finish material.
- 2. Dip Treatment: All finish lumber under 1-1/2 inch net thickness (except hardwood flooring); doors (solid wood and solid-core flush wood doors); finish plywood; and mill work items, such as for cabinet work, shelving and similar wood work that will be exposed to view in the finished work.
  - 3. Field Cuts: Treat end cuts, notches and penetrations into treated lumber or plywood. Exception: Cuts and penetrations made in SBX treated wood 2 inches or less in nominal thickness need not be field treated.

END OF SECTION

## **SECTION 06100 - CARPENTRY**

### **PART 1 GENERAL**

#### **1.01. SUMMARY**

- A. This section includes rough carpentry.

#### **1.02. GENERAL REQUIREMENTS**

- A. Furnish all labor, materials, tools and equipment necessary to complete all rough carpentry work, including framing and installation of rough hardware as indicated on the contract drawings and as specified herein, including but not limited to the following:
  - 1. Installation of wood fascias, framing, blocking, wood nailers, trims, etc.
  - 2. Replacement of existing deteriorated/dry rotted or termite damaged roof wood framing as indicated on drawings or as required to repair existing framing to complete new work as required by the Project Manager.
  - 3. Miscellaneous carpentry work.

#### **1.03. SUBMITTALS**

- A. Shop Drawings: The Contractor shall prepare shop drawings showing complete arrangements and details in accordance with the contract drawings and shall submit six (6) copies of such drawings to the Project Manager for approval. Shop drawings shall include reference to the sheet and detail they depict on the contract drawings. Photocopies of the contract drawings will not be accepted as shop drawings. No fabrication shall be done prior to the approval of the shop drawings by the Project Manager.
- B. Grading Marks: Each piece of lumber shall be factory marked with the type, grade, mill and grading agency identification. At the Contractor's option, a certificate of inspection and grading by a recognized agency may be substituted with each shipment in lieu of factory marking.
  - 1. Lumber exposed to view: A certificate of inspection and grading, certifying that the materials have been inspected and graded in accordance with the requirements of this Section, shall be submitted in lieu of factory mark on surfaces to receive a transparent finish and/or exposed to view.
- C. Certificates: Submit a certificate of treatment attesting compliance with the Specifications.

#### **1.04. PRODUCT DELIVERY AND HANDLING**

- A. Materials of this Section shall be delivered to the project site in 6 mil minimum polyethylene wrap on all six sides and secured with banding (not staples) for each delivery. All materials shall be factory marked and/or accompanied by the applicable certificate(s) as stipulated in Subparagraphs 1.03 B. and 1.03 C.
- B. All materials of this Section shall be protected against damage before, during and after installation. Materials shall be stored off the ground, under cover and kept dry at all times. Protect against exposure to weather and contact with damp and wet surfaces. Stack lumber to allow air to circulate within stacks.

### **1.05. QUALITY ASSURANCE**

#### **A. Codes and Standards:**

1. All workmanship and materials of this Section shall conform to the requirements of the applicable provisions of the International Building Code (IBC) as they apply to construction in the City and County of Honolulu.

#### **B. Qualifications of Personnel:**

1. Throughout the progress of the work of this Section, the Contractor shall provide workers thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills.
2. In actual installation of the work of this Section, the Contractor shall use an adequate number of skilled workmen to ensure installation is in strict accordance with the approved design and recommendations of the materials manufacturer.

#### **C. Protection:**

1. The Contractor shall protect all work of this Section as well as the work of other trades against damage.
2. The Contractor shall execute all means necessary to protect the materials of this Section with due consideration for the surrounding areas, surfaces and part of the building. In the event of damage due to work performed under this Section or failure on the part of the Contractor to provide the necessary protection, the Contractor shall immediately repair or replace damage item or items to the satisfaction of the Project Manager and at no additional cost to the State.

### **1.06. COORDINATION**

- #### **A.**
- Before commencing with the work, the Contractor shall verify existing conditions under which work of this Section will be performed and report all discrepancies and/or defective conditions to the Project Manager for interpretation and/or corrective measures.

#### **B.**

Carpentry work shall be coordinated with the following Sections:

1. Selective Demolition .....Section 01732
2. Patching, repair and restoration .....Section 02073
3. Wood Treatment.....Section 06070
4. TPO Single Ply Membrane Roofing.....Section 07530
5. Flashing and sheet metal.....Section 07600
6. Joint Sealants.....Section 07920
7. Painting .....Section 09901
8. Electrical work .....Section 16010



## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Lumber: Lumber shall be new, sound, dry, well-seasoned, free from all defects impairing strength and appearance, and of the following types:
  - 1. General: The following species and cuts, graded and stamped in accordance with applicable associations shall be provided for the various items of work indicated or scheduled on the contract drawings and specified herein:
  - 2. Factory mark each piece of lumber with type, grade, mill and grading agency, except omit marking on surfaces to be exposed to view or with transparent or without finish.
  - 3. Nominal sizes are as indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
  - 4. Provide dressed lumber, S4S, unless otherwise indicated.
  - 5. Provide seasoned lumber with the maximum average moisture content allowed at the time of dressing, and be uniform as hereinafter specified.
- B. Softwood Lumber: Comply with the standards of Rule Book No. 16, "Standard Grading Rules for West Coast Lumber", latest edition, including Supplements I through IV of the West Coast Lumber Inspection Bureau.
  - 1. Structural framing lumber, 2" to 4" thick, 6" and wider, shall be the following species and grade:
    - a. Douglas Fir, S4S, Grade No. 1 for exposed members.
  - 2. Finished wood for fascias and trims shall be the following species and grade:
    - a. Douglas Fir, S4S, "C and Better", kiln-dried.
- C. Tongue-and-groove heavy timber roof decking, shall be Douglas Fir, Select Quality. Plank shall be simple span, from bearing to bearing, AITC 112-93, 4x6 nominal V-joint pattern, drilled for 8 inch spikes at 30" o.c..
- D. Fasteners and Rough Hardware: Commercial standard of sizes indicated or required by the contract drawings and as specified herein:
  - 1. Fasteners and anchors: Provide size, type, material and finish as indicated and as recommended by and complying with applicable standards for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended number and size of nails.
  - 2. Unless indicated and/or specified otherwise, fasteners shall be hot-dipped galvanized steel conforming to ASTM A 153.
  - 3. Fasteners and other anchoring devices in contact with dissimilar metals and/or into concrete, masonry and steel substrates shall be out of stainless steel conforming to ASTM A 167.

4. Fasteners into concrete or masonry substrates shall be wedge, stud, sleeve anchors or expansion shields with exposed nut head countersunk below the exposed face. Concrete or masonry screws, "Tapcon", "Tapcrete" or approved equal, of sufficient diameter and length will be acceptable provided they do not come into contact with any dissimilar metals. Lead, plastic or wood plugs will not be allowed.
- E. Moisture Barrier: 30# saturated roofing felt.
- F. Glue: Exterior wood glue.
- G. Wood Filler: Exterior grade wood filler or dough.
- H. Primer: Primer shall be furnished as specified in SECTION 09901- PAINTING.

## 2.02 WOOD TREATMENT

- A. Termite Treatment: All rough lumber shall be treated in accordance with SECTION 06070 – Wood Treatment.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Before any work in this Section has begun, the Contractor shall inspect the existing areas, surfaces and/or conditions of which work under this Section shall be performed. The Contractor shall report any defective conditions and send a copy to the Project Manager for corrective measures. The Contractor shall not proceed until the unsatisfactory conditions have been corrected. Proceeding with the work shall imply acceptance of the existing conditions. Coordinate work with other trades as necessary.
- B. Examine existing substrate to receive new rough carpentry work.
  1. Verify that the substrate is sound and will be able to secure the new rough carpentry work with the specified fastener and/or hardware.

### 3.02 WORKMANSHIP

- A. All rough carpentry work shall be accurately cut and erected to the required lines and levels, plumb to true planes and rigidly fastened with the specified hardware. Rough carpentry work shall be installed in a proper and workable manner.
- B. Preparation of cuts: All cuts shall be treated as specified in SECTION 06070 – WOOD TREATMENT.
- C. Moisture protection: A 30# saturated roofing felt shall be installed with any wood members bearing directly on concrete, masonry, steel and/or between dissimilar metals.
- D. End grain: All rough carpentry work exposed to view shall be installed so that end grain is not visible. Fascias and trims for both inside and outside corners shall be mitered.
- E. Back priming: All rough carpentry work that will be exposed to the weather, such as fascias, etc., shall be painted a primer specified in SECTION 09901 -

PAINTING on all surfaces before installation. Should any installed specified work found not to be primed, the Contractor shall be responsible to remove and reinstall the work after priming operation has been completed and at no additional cost to the State.

- F. Preparation of fasteners: All exposed nail heads shall be set to receive the specified putty, caulking and/or wood filler. Screw/Bolt head or nut shall be countersunk below the face of the material to receive the specified wood filler material.

### **3.03 INSTALLATION**

- A. General: Discard units of material with defects which may impair quality of work, and units which are too small to use in fabrication work with minimum joints or optimum joint arrangement.
- B. Securely attach and secure rough carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.
- C. Use common galvanized nails, except as otherwise noted. Select fasteners of a size that will not penetrate members where the opposite side will be exposed to view or will receive finish material. Make tight connections between members. Install fasteners without splitting wood members; pre-drill wood members as required.

### **3.04 ROUGH CARPENTRY**

- A. General: Install framing members of sizes and at spacing shown, and frame openings as shown, or if not shown, comply with recommendations of the "Manual for House Framing" of the National Forest Products Association. Structural members shall not be spliced between supports.
- B. Wood Nailer: Install where indicated on the contract drawings and/or specified in other related work, or as required as the work progresses. Align top to levels as required. Install wood nailers fastened to wood decking and/or fascia for attachment of roofing and sheet metal work.

### **3.05 FASTENING**

- A. Nailing: Unless otherwise shown on the drawings, all nailing shall be as scheduled in Table 2304.9.1 of the latest adopted edition of the International Building Code (IBC).
  - 1. Only common galvanized wire nails or spikes shall be used unless indicated and/or specified otherwise.
  - 2. All nails shall be installed without splitting wood members, pre-drill or pre-bore wood members as required. Any wood members found to be split due to the Contractor's failure to pre-drill or pre-bore wood members shall be replaced at the Contractor's expense.
- B. Bolting:
  - 1. Holes for bolts shall be drilled 1/16-inch larger in diameter than the diameter of the bolt shank being installed. Holes shall be drilled straight and true from one side only, without splintering opposite side of wood member.

2. Bolt threads shall not bear on wood members; washers under head and nut shall be installed where both bear on metal connectors; washers shall be installed under all nuts.
- C. Screws (Lag Screws):
1. Pilot holes for lag and wood screws shall be pre-drilled or pre-bored the same diameter as the root of the thread, and the bore enlarged to the shank diameter to receive the length of shank.
  2. All lag and wood screws shall be screwed into wood members and not driven in by hammering. Should any lag or wood screws found to be improperly installed by driving the fastener, the Contractor shall be responsible to remove the improperly installed fastener and any associated materials damaged by the operation, and reinstall new materials and properly installed fasteners at no additional cost to the State.
- 3.06 Installation of Tongue-and-groove heavy timber roof decking.
- A. Installation shall be in accordance with American Institute of Timber Construction AITC 112-93 for simple span construction.
1. Tongue-and-groove decking is to be installed with tongues up on sloped roofs. It is to be laid with pattern faces down and exposed on the underside.
  2. Each piece shall be square-end trimmed.
- B. Fastening Schedule
1. Each piece shall be face screwed with 5/16" diameter recessed lag bolt and toe nailed with 40d at each bearing. Courses shall be spiked to each other with 8 inch spikes at intervals not to exceed 30 inches through predrilled edge holes with one spike at a distance not exceeding 10 inches from each piece.
- 3.07 CLEAN-UP**
- A. At the end of each work day, as directed by the Project Manager and at the completion of the removal work, the Contractor shall remove from the project site all rubbish, debris, fines, etc., accumulated from the work of this Section and leave the area neat and clean to the satisfaction of the Project Manager.

END OF SECTION

## **DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

### **SECTION 07530 - TPO SINGLE PLY MEMBRANE ROOFING**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY**

- A. This Section includes the following:
  - 1. New roofing system, consisting of:
    - a. TPO membrane
    - b. Barrier Board
    - c. Rigid insulation
    - d. Substrate board
    - e. Underlayment
    - f. TPO flashing
- B. Related Sections include the following:
  - 1. Section 06100 "Carpentry" for wood nailers, cants, curbs, and blocking.
  - 2. Section 07600 "Flashing and Sheet Metal" for metal items incorporated into the roofing system and for attached metal copings, cap flashing, gutters and downspouts.

##### **1.02 PERFORMANCE REQUIREMENTS**

- A. General: Provide installed roofing membrane and flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
  - 1. Roofing assembly shall be approved combinations and assemblies listed in FM Global Property loss Prevention Approval Guide for minimum compliance to FM Global.
    - a. Where roofing assembly applied over concrete assembly shall be FM Global listed with a minimum listed rating of 1A-210.
    - b. Where roofing assembly applied over wood decking assembly shall be FM Global listed with a minimum listed rating of 1A-60.
- B. Fire-Test-Response Performance: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure: Class A or B ; ASTM E 108-04, for application and roof slopes indicated.
- C. Manufacturer 10 year warranty

### 1.03 SUBMITTALS

- A. Product Data and Material Safety Data Sheets (MSDS): For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
  - 1. Base flashings, edge flashings, inside and outside corner flashings, penetration flashings, and membrane terminations.
  - 2. Layout of tapered insulation, including slopes.
  - 3. Crickets, saddles, and tapered edge strips, including slopes.
  - 4. Substrate board fastening patterns.
- C. Warranty Drawings: Provide record drawings with information sufficient to satisfy the requirements of the manufacturer's warranty.
- D. Samples for Verification: For the following products:
  - 1. TPO single ply membrane roofing system.
  - 2. Barrier Board if required by system proposed.
  - 3. Insulation.
  - 4. Substrate board.
  - 5. Underlayment
  - 6. Six fasteners of each type, length, and finish for membrane, and installation as required by assembly proposed.
- E. Certificates:
  - 1. Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
  - 2. Signed by roofing system manufacturer certifying that its representative is authorized to act on and make commitments on behalf of the manufacturer.
  - 3. Signed by roofing system manufacturer certifying that the independent roofing auditor/inspector is authorized to act and make commitments in the manufacturer's behalf.
  - 4. Signed by adhesive manufacturer showing that roofer is a trained and authorized applicator of the assembly only for condition where insulation is be adhesive applied onto metal decking. The certificate shall also reference the Project, type of deck, insulation and adhesive materials being used.
- F. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of meeting performance requirements.
- G. Maintenance Data: For roofing system to include in maintenance manuals.
- H. Warranties: Special warranties specified in this Section.
- I. Inspection Report: Copy of roofing system manufacturer representative's or independent roofing inspection progress and final inspection reports.

#### 1.04 **SYSTEM DESCRIPTION**

- A. Thermoplastic Polyolefin (TPO) single ply reinforced membrane roofing designed to be adhesive applied to cover board. Cover board to be mechanically fastened to structural wood deck over rigid insulation over underlayment over wood decking.
  - 1. FM Global approved and listed for wind uplift class as indicated on drawings, and Exterior fire class A or B rating.
- B. Thermoplastic Polyolefin (TPO) single ply reinforced membrane roofing designed to be adhesive applied to cover board. Cover board to be adhesive applied to rigid insulation shall be adhesive applied to concrete deck.
  - 1. FM Global approved and listed for wind uplift class 1-210, and Exterior fire class A or B rating.

#### 1.05 **COORDINATION WITH OTHER SECTIONS**

- A. Coordinate installation of TPO coated metal edging with SHEET METAL Section.
- B. Coordinate installation of treated wood nailer, curbs and blocking related to roofing with Section 06100 CARPENTRY.

#### 1.06 **QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has a UL listing for roofing system identical to that used for this Project.
- C. Source Limitations: Materials shall be as tested and listed in FM Global Approval guide of approved combinations and assemblies.

#### 1.07 **PRE-INSTALLATION MEETING:** The General Contractor, the authorized roofing and roofing adhesive manufacturers' representatives or their independent roofing inspectors shall attend a pre-installation meeting at Project site. Include other related trades, such as sheet metal contractor, as applicable. Confirm the required participants with the Project Manager. Notify participants at least five days prior to meeting.

- A. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
- B. Review and finish construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- C. Review odor and air quality mitigation procedures, including location of ventilation openings and air flow.
- D. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
- E. Review structural loading limitations of roof deck during and after roofing.

- F. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
- G. Review governing regulations and requirements for insurance and certificates if applicable.
- H. Review temporary protection requirements for roofing system during and after installation.
- I. Review roof observation and repair procedures after roofing installation.

1.08 **ROOFING SYSTEM MANUFACTURER'S PROJECT PARTICIPATION:** General Contractor, Roofing Installer and Roofing System Manufacturer Representative or their independent roofing inspector shall inspect the roof surfaces at the following times:

- A. At the start of installation of substrate board, insulation and barrier board.
- B. At the start of the roofing application over installed insulation, barrier board and nailers.
- C. And as required by Roofing System Manufacturer for warranty provisions.

#### 1.09 **DELIVERY, STORAGE, AND HANDLING**

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.
- B. General: Each package of modified bitumen roof covering materials shall bear the label of a recognized agency having a service for the inspection of material and finished products during manufacture (e.g., ASTM, UL, etc.)
- C. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- D. Protect roll goods, roof insulation and any other materials that absorb or are affected by moisture from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation. Do not use wet materials and/or materials which appear to have been deteriorated after getting wet.
- E. Storage of Materials at Job Site
  - 1. Except when placed on roof decks immediately prior to installation, store roofing materials above the supporting surfaces, such as on pallets.
  - 2. Store materials containing solvents in a dry, cool area with proper fire and safety precautions.
  - 4. Distribute materials stored on other than the ground, so that their resultant weight does not exceed the design live load on the deck (normally 20 lbs. per square foot on roofs and 40 lbs. per square foot on floors).



### **1.10 PROJECT CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Operational restrictions to mitigate odor and air quality problems with asphalt or adhesive fumes:

### **1.11 WARRANTY**

- A. The warranty provisions and number of years for the warrantee required by this article shall take precedence over the standard provisions in the GENERAL CONDITIONS.
- B. Special Warranty: Roofing Installer and Manufacturer(s), bonded warranty without monetary limitation, in which roof installer and manufacturer(s) agree to repair or replace components of roofing system that fail in materials or workmanship within the specified warranty period. Failure includes roof leaks, and materials and adhesion failure due to wind conditions
  - 1. Special warranty includes roofing membrane system, backer board, insulation and other components of the roofing system.
  - 2. Warranty Period: Twenty years from the Project Acceptance Date.
  - 3. Wind Conditions: FM Global class as indicated.
  - 4. Warranty shall state the Manufacturer's acceptance that the roof was installed in accordance with the contract requirements and that the State's personnel were properly instructed in the maintenance procedures.
  - 5. In the event of a failure State, Roofing Installer and Manufacturer shall mutually agree and determine roof system failures and remedies.
- C. Special Project Warranty: Submit Contractor's bonded warranty, covering work of this section, including all components of roof system such as roofing membrane, roofing membrane accessories, roof insulation, fasteners, and barrier boards, for the following warranty period and conditions:
  - 1. Warranty Period: Two years from the Project Acceptance Date.
  - 2. Warranty shall cover repairs or replacement of damages to the building and its finishes due to leaks.
- D. Warranty Roof Inspections: Conduct a yearly inspection with the State representative just prior to the first, third, fifth and tenth year anniversary of the Project Acceptance Date. The purpose of the inspections are to identification and correct deficiencies in all components of the roofing and flashing system.

### **3.01 JOB SITE CONSIDERATIONS**

- A. Keep all adhesives, sealants and cleaning materials away from All ignition sources (i.e., flames, fire, sparks, etc.) Do not smoke while using these materials. Do not use heat guns or open flames to dry adhesives and primers.
- B. Do not use oil-based or bituminous-base roof cement with TPO membrane.

## **PART 2 - PRODUCTS**

### **2.01 TPO SINGLE PLY MEMBRANE ROOFING MATERIALS**

- A. Thermoplastic Polyolefin roofing membrane with polyester reinforcement, heat weldable, .060 mil (2.0 mm) thick (nominal) minimum, meets or exceeds the minimum requirements of ASTM D-6878.

### **2.02 Cover Board:** as required for EPS insulation in FM Global approved assemblies for ASTM E 108-04 Class A or B rating for assembly proposed.

- 1. Water resistant and silicone treated gypsum core with glass fiber facers embedded on both sides. Thickness as approved by FM Global for assembly proposed.
  - a. GP Dense-Deck Roof Board, GP Dense Deck Primed Roof Board, or approved equal. Minimum ½" thick

### **2.03 INSULATION:** as approved in FM Global approved assembly proposed.

- A. ASTM C-578 Type IX, High density expanded polystyrene board (EPS) with barrier board.
  - 1. Compressive strength: 25 psi nominal.
  - 2. Board Density: 1.8 lb per cubic foot minimum.
- B. Rigid polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289.

### **2.04 Substrate board:** At wood decking shall be as required for FM Global class as indicated on drawings and as approved assemblies for ASTM E 108-04 Class A or B rating for assembly proposed.

- 1. Water resistant and silicone treated gypsum core with glass fiber facers embedded on both sides. Thickness as approved by FM Global for assembly proposed.
  - a. GP Dense-Deck Roof Board, GP Dense Deck Primed Roof Board, or approved equal. Minimum 1/2" thick.

### **2.05 Substrate board mechanical fasteners:**

- 1. Fasten to existing 1-1/4" thick x 5-1/2" T&G wood plank decking, minimum penetration ¾".
- 2. Substrate board fastening as per FM and UL uplift assembly ratings. Minimum fastening:
  - a. Field: 8 fasteners per 4 x 8 board.
  - b. Edges: 15 fasteners per 4 x 8 board.
  - c. Corners: 18 fasteners per 4 x 8 board.
- 3. Fasteners penetrating thru wood decking shall be cut flush with underside of decking and underside of decking shall be patched and painted to match.

### **2.06 Underlayment:** At wood decking shall be Grace Ultra self-adhered roofing underlayment, 30 mil thick, tensile strength 250 psi ASTM D3767 method A, Elongation 250% ASTM D412 (Die C modified, adhesion to plywood 3.0 lbs/in.

ASTM D903, adhesive – Butyl based. ([www.graceconstruction.com](http://www.graceconstruction.com)) or approved equal.

## **2.07 AUXILIARY ROOFING MEMBRANE MATERIALS**

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
  - 1. TPO Preformed Vent Pipe boots
  - 2. TPO Preformed inside and outside corners.
  - 3. TPO Cover patch
  - 4. TPO Coated pre-finished zinc-alum coated metal flashing.
- B. Membrane Adhesive: Manufacturer's bonding adhesive.
- C. TPO Membrane Flashing: Polyester scrim reinforced thermoplastic polyofin membrane, nominal .060 inch thickness, meets or exceeds minimum requirements of ASTM D-6878.
- D. Mastic Sealant: Polyisobutylene, plain or modified bitumen, non-hardening, non-migrating, non-skinning, and nondrying.
- E. Fasteners: FM Global approved fasteners as per FM Global approved assembly proposed. Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing membrane components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- F. Metal Flashing Sheet: TPO Coated Metal flashing sheet is specified in Section 07620 "Sheet Metal Flashing and Trim."
- G. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

## **2.08 INSULATION ACCESSORIES**

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Substrate Fasteners (at wood decking): Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Substrate Joint Tape: 6- or 8-inch-150- or 200-mm- wide, coated, glass-fiber joint tape.
- D. Roof Insulation Adhesive Use to Secure Insulation to Substrate Board, Insulation to Insulation, and Insulation to Facing Boards: Adhesive shall be asbestos-free, solvent-free, waterproof (non-emulsifying), single component polyurethane type, compatible with the insulation and substrate as recommended by the adhesive and roof insulation manufacturer, specially designed for adhering insulation boards to the specified substrate (metal deck, insulation or facing boards) and conforming to the wind uplift and fire rating requirements of Underwriters Laboratories 1897 or Factory Mutual.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
  - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
  - 2. Verify that cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  - 3. Verify that roof construction and surface meets the requirements of the roofing manufacturer.
  - 4. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch 1.6 mm out of plane relative to adjoining deck.
  - 5. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 DECK PREPARATION**

- A. Power broom and vacuum all surfaces, removing all loose foreign substances.
- B. Remove moisture from decking.

### **3.03 ROOFING UNDERLAYMENT INSTALLATION**

- A. Install roofing underlayment as per manufacturer's installation instructions.

### **3.04 SUBSTRATE BOARD INSTALLATION (at wood decking)**

- A. Install mechanically fastened substrate board over underlayment. Fastening as per FM Global 1-90.
  - 1. Minimum fastening for 5/8" thick 4 x 8 substrate board:
    - a. Field – 8 fasteners
    - b. Edges - 15 fasteners
    - c. Corners- 18 fasteners.

### **3.05 INSULATION INSTALLATION**

- A. Substrate board must be clean, dry, smooth, free of sharp edges, fins loose or foreign materials, oil, and grease.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
  - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

- E. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness exceeds NRCA recommendations for a single layer or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches 150 mm in each direction.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- H. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
  - 1. Set each layer of insulation in a cold fluid-applied adhesive.
- I. Install cover (barrier) boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches 150 mm in each direction. Loosely butt cover (barrier) boards together and fasten to roof deck. Tape joints if required by roofing system manufacturer.
  - 1. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
  - 2. Apply adhesive to underside and immediately bond barrier board to substrate.

### **3.06 ROOFING MEMBRANE INSTALLATION, GENERAL**

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and manufacturer's FM Global class approved assembly meeting performance requirements of this section.
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Coordinate installing roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
  - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with membrane with joints and edges sealed.
  - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
  - 3. Remove and discard temporary seals before beginning work on adjoining roofing.

### **3.07 MEMBRANE APPLICATION – GENERAL**

- A. Substrate must be clean, dry, smooth, free of sharp edges, fins loose or foreign materials, oil, and grease.

- B. Installation of membrane system shall be in accordance with manufacturer's recommendations and installation instructions and in accordance with FM Global approved assembly requirements for listed class and ASTM E 108-04 class A or B requirements.
- C. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer. Place membrane panel, without stretching, over the acceptable substrate and allow to relax for a minimum of 30 minutes before splicing or attaching.
- D. Fold membrane Back: After making sure the sheet is placed in its final position allowing for the minimum lap width per manufacturer's specifications, fold it back evenly onto itself without wrinkles to expose the underside mating surface of the sheet.
- E. Remove Dusting Agent and Dirt: Sweep the mating surfaces with a stiff broom to remove any dusting agent or dirt that may have accumulated.
- F. Apply the bonding adhesive: Apply bonding adhesive with either a 9" wide solvent-resistant paint roller or a commercial grade adhesive sprayer. Adhesive must be applied in a relatively uniform thickness to both surfaces at approximately the same time. If adhesive is spray-applied, it must be back-rolled with a paint roller to assure proper contact and coverage.
- G. Stop Bonding Adhesive Short of Seam Area: Care must be taken not to apply bonding adhesive over an area that is to be later spliced to another sheet or flashing. All bonding adhesive must be completely removed from the seam area.
- H. Apply Bonding Adhesive at Specified Coverage Rate: Refer to container label and Technical Information Sheet for specific application requirements and coverage rates.
- I. Test Bonding Adhesive for Readiness (Touch-Push Test): Allow the bonding adhesive to flash-off. Touch the adhesive surface in the thickest area with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, the adhesive is not ready for mating. Flash-off time will vary depending on ambient conditions.
- J. Bond the Membrane to the Substrate: Starting at the fold, roll the previously coated portion of the membrane into the coated substrate slowly and evenly to minimize wrinkles.
- K. Broom the Membrane: To assure proper contact, compress the bonded half of the membrane to the substrate with a stiff push broom.
- L. Repeat Procedure to Complete the Membrane Installation: Fold the un-adhered half of the membrane back onto itself, and repeat the procedure.
- M. Splice the Lap: Splice the outside edge of the top sheet.

### **3.08 MEMBRANE SEAMING**

- A. Clean the Lap Splice Area: Using a clean white cotton rag dampened with Spice wash, thoroughly clean an area on both sheets at least 6 inches wide if seam

area has become contaminated with dirt, debris, moisture, etc. Membrane left exposed for more than 12 hours must be cleaned prior to any welding activity.

C. Hot Air Weld Lap Spices:

1. Horizontal field splices: Where ever possible, all field spices on the horizontal surface (including flashing) should be completed using an automatic heat welder that has been designated for hot air welding of thermoplastic membranes.
2. Seam width requirements:
  - a. Seams made with the automatic welder must be minimum of 1-1/2" wide.
  - b. Seams made with hand welders must be minimum of 2" wide. Use silicone and rollers to assure proper mating of surfaces as hand heat welding proceeds.
3. Vertical field splices: Hand held welders can only be used on vertical welds or where an automatic welder is not practical or cannot be used.

D. Seam Inspection: Probe all completed welds using a slotted screw driver or dull cotter pin puller type tool to verify seam integrity daily. Do not probe welds until they have time to cool. Any welds found to be insufficiently welded need to be repaired on a daily bases.

E. T-Joint Patches: T-joint patches must be installed at all intersections of field seams if .060 or thicker membrane is used.

### **3.09 ADDITIONAL MEMBRANE SECUREMENT AND BASE TIE-IN FLASHING**

- A. Ridge and Hip: Mechanically secure membrane at hip and ridge with 2-3/8" Barbed Seam Plates.
- B. TPO Coated Metal Flashing: Fasten TPO coated metal to wood nailers as indicated in drawings or as required by manufacturer's standard detail for FMG class requirements. Heat weld membrane to TPO coated metal flashing.

### **3.10 ROOF PENETRATIONS**

- A. Plumbing vents: Flash pipes with manufacturer's TPO Pre-molded Pipe Flashing or TPO pipe flashing as per manufacturer's details.

### **3.11 FLASHING INSTALLATION**

- A. TPO Coated Metal Edge Flashing: TPO Coated Metal Edging and Incorporated Flashing: Securely fasten flange to edge nailing strips using stainless steel or exterior grade coated wood screws
- B. Incorporated Items:
  1. Wood Nailers: Install where shown on the plans and shall be secured to the deck with appropriate sized wood screws and spaced at maximum 12 inches on center with minimum 2 inch penetration in 4x wood decking.
  2. Install metal penetration flashing in accordance with roofing system manufacturer's written instructions.

### **3.12 FIELD QUALITY CONTROL - INSPECTIONS**

- A. Progress Roof Inspections:

WAIAWA ARMORY

RE-ROOFING TROOP COMMAND BUILDING #1 & #2

TPO Single Ply Membrane Roofing

07530- 11

1. Contractor, roofing installer, Project Manager, roofing system manufacturer's technical personnel shall inspect the roof surfaces at the following times.
  - a. At the actual start of the roofing insulation installation. Representative shall approve prepared substrate for installation of insulation in writing for compliance to manufacturer's warranty requirements.
  - b. At the start of roofing installation: manufacturer's representative shall inspect roofing substrate prior to installation. Representative shall approve substrate prior to roofing installation in writing for compliance to manufacturer's warranty requirements.
  - c. Notify Project Manager 48 hours in advance of date and time of inspection.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Project Manager and to roofing manufacturer as needed to meet warranty requirement.
  1. Notify Project Manager 48 hours in advance of date and time of inspection.
  2. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.
  3. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.13 FIELD QUALITY CONTROL - TESTING**

- A. Testing Agency: At Project Manager's discretion the State may at its own expense engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Manufacturer's Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Project Manager.
  1. Notify Project Manager 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.14 PROTECTING AND CLEANING**

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Project Manager.
- B. Cleaning
  1. Remove debris from roofing work from the premises and dispose at the end of each working day and upon completion of the work to the satisfaction of the Project Manager. Leave roof in good, clean condition.



2. Roofing adhesives and coatings, shall be removed completely from all surfaces other than the roofing, especially those to which sealants must be bonded and/or metal flashings which are to be painted.
3. Cleaned out gutters, downspouts, roof drains, and scuppers and remove all blockages prior to acceptance of the project.

END OF SECTION

## **SECTION 07600 - FLASHING AND SHEET METAL**

### **PART 1 – GENERAL**

#### **1.01 SUMMARY**

- A. This section includes gutter, downspouts, flashing and sheet metal fabrication and installation work.

#### **1.02 SUBMITTALS**

- A. Shop Drawing: The Contractor shall prepare shop drawings showing complete arrangements and details in accordance with the contract drawings and six (6) copies of such drawings shall be submitted to the Project Manager for approval. Shop drawings shall include reference to the sheet and detail of the contract drawings which they depict. Photocopies of the contract drawings will not be accepted as shop drawings.
- B. No ordering, fabrication and delivery of materials to the project site shall be done until all of the submittal(s) specified above have been approved by the Project Manager.

#### **1.03 QUALITY ASSURANCE**

- A. Guaranty: The Contractor shall furnish to the Project Manager a written guaranty signed jointly by the Roofing Subcontractor, Sheet Metal Subcontractor, Sealant Subcontractor and the General Contractor as specified in SECTION 07530 – TPO Single Ply Membrane Roofing. The Sheet Metal Subcontractor's guaranty of two years after final acceptance shall be for work related to the sheet metal roof flashing, roof accessory/equipment flashing, sheet metal gutters, leaders and downspouts.
- B. Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

#### **1.04 COORDINATION**

- A. Before commencing with any work of this Section, the Contractor shall inspect the existing areas, surfaces and/or conditions of which work under this Section will be performed. The Contractor shall report any defective conditions and send a copy to the Project Manager for interpretation and corrective measures. The Contractor shall not proceed until the unsatisfactory conditions have been corrected. Proceeding with the work shall imply acceptance of the existing conditions. Coordinate work with other trades as necessary.

- B. Flashing and sheet metal work shall be coordinated with the following Sections:

1. Selective Demolition .....Section 01732
2. Metal Fabrications .....Section 05500
3. Carpentry.....Section 06100
4. TPO Single Ply Membrane Roofing.....Section 07530
5. Joint Sealants.....Section 07900
6. Painting .....Section 09901
7. Electrical work .....Section 16010

## **1.05 PRODUCT HANDLING**

- A. Delivery and Storage: All materials shall be stored in such a manner as to afford adequate protection. Damaged materials shall not be used and shall be immediately removed from the project site.

## **PART 2 - PRODUCTS**

### **2.01 PRODUCTS**

- A. Sheet Metal Flashing:

1. Roof flashing and gutter: Sheet metal ridge and hip cap flashing, edge flashing, eave flashing, hatch cover, counter flashing, etc., shall be fabricated from factory pre-finished aluminum-zinc coated steel sheet conforming to ASTM A 792, coating Class AZ55, and pre-finished 0.80 mil minimum finish coat over a 0.80 mil minimum epoxy primer to provide a total system of 1.6 mils minimum dry film thickness. The coating shall be a "kynar 500", 70% full strength on the exterior side of 1.6 mils minimum. White polyester backer on the interior (under) side of 1.0 mil minimum. Pre-finished color shall be as selected by Project Manager from manufacturer's standard colors. Do not solder aluminum zinc coated steel sheet.
  - a. Roof flashing: 24-gauge pre-finished aluminum-zinc coated steel sheet.
  - b. Gutter: 22-gauge gauge pre-finished aluminum-zinc coated steel sheet.
  - c. TPO coat where required by manufacturer or indicated on drawings with coating accepted by roofing manufacturer.
2. Gutter brackets: Stainless steel mill finished type 302, 304, 316, or 318.
3. Gutter spacers: Stainless steel mill finished type 302, 304, 316, or 318.

- B. Heater Vent Stack and Ventilators:

1. Heater vent stack and ventilators shall be fabricated from zinc-coated (galvanized) steel sheet: ASTM A 653/A 653M, G90 coating designation; structural quality, mill phosphatized for field painting.
- C. Downspouts Leaders and Cleanout: PVC (ASTM D 1785-91) or ABS Schedule 40 as indicated or to match existing.
1. Leader and downspout fitting: Leader and downspout fittings shall be of the same material and diameter as the pipe, conforming to requirements of ASTM D 2466-90a, and types/bends indicated on the contract drawings. Cleanout tee shall be H x H x FPT and furnished with inverted cleanout plug.
  2. Downspout Brackets: Fabricated from Type #304 or #316 stainless steel from shapes and sheets as indicated.
  3. Primer and solvent cement: Primer and solvent cement shall conform to the requirements of ASTM D 2672.
- D. Solder: Solder shall be 50% virgin lead and 50% pure block tin conforming to ASTM B 52.
- E. Flux: Flux shall be non-corrosive resin type.
- F. Fastener: Fasteners shall be Type #304 or #305 stainless steel conforming to ASTM A 276 for steel or aluminum base metals, copper or brass for copper base metals, and as indicated on the contract drawings.
- G. Vent Pipe Flashing: Vent pipe flashing shall be standard manufactured vent pipe flashing as recommended by roofing manufacturer or manufacturer recommended standard detail.
- H. Separation Layer: Separation layer shall be from 30# saturated roofing felt or bituminous paint as recommended by the roofing or sheet metal flashing manufacturer/supplier.
- I. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- J. Plastic Cement: Conforming to F.S. SS-C-153, Type I.
- K. Stainless steel wire cloth strainers: series 304 or 316, No. 9 stainless steel wire
- L. Stainless steel wire cable: seven strand, stainless steel series 304 or 316. with compression type connectors, and stainless steel turn buckle

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION AND WORKMANSHIP**

- A. Surfaces to which flashing and sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from all defects that might affect the installation. Report any unsatisfactory surfaces to the Project Manager for interpretation and/or corrective measures.
- B. All accessories or other items essential to the completeness of the flashing and sheet metal installation, though not specifically indicated on the contract drawings and/or specified herein, shall be provided. All such items, unless otherwise indicated and/or specified, shall be of the same material composition as the item to be installed. Nails, screws and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.
- C. Where flashing and sheet metal abuts into adjacent dissimilar materials, the juncture shall be executed in a manner that will prevent electrolysis between the two dissimilar materials. A 30# saturated roofing felt separation layer or a bituminous coat shall be installed between dissimilar metals.
- D. Except as otherwise indicated and/or specified, the workmanship of flashing and sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc. shall conform to the standards, details and recommendations of the latest edition of the "Architectural Sheet Metal Manual" by the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
- E. All flashing and sheet metal work shall be watertight, wind-tight and/or heat-tight in compliance with the purpose intended for the items indicated on the contract drawings and/or specified herein.
- F. Cleating: Cleats for flashing and sheet metal work shall be provided where required, spaced approximately 24-inches on centers, unless otherwise indicated on the contract drawings. Cleats shall not be less than 2-inches wide nor less than 3-inches long, and of the same material and a heavier/thicker weight/gauge as the metal being installed. Cleats for soldered seams shall be pre-tinned.
- G. Bolts, Rivets, and Screws: Install bolts, rivets, and screws where indicated or required. Provide compatible washers where required to protect surface of sheet metal and to provide a watertight connection.
- H. Seams: Straight and uniform in width and height with no solder showing on the face.
- I. Soldering: Where soldering is specified it shall apply to stainless steel items. Do not solder Pre-finished Aluminum zinc coated metal. Pre-tin edges of sheet metals before soldering. Slowly solder with well heated soldering irons as to thoroughly heat the seams and completely sweat the solder through the full width of the seam. Scrape or wire-brush the edges of lead-coated material to be soldered to produce a bright surface. Flux brush the seams in before

soldering. Treat with soldering acid flux the edges of stainless steel to be pretinned. Solder immediately after application of the flux. Upon completion of soldering, the acid flux residue shall be thoroughly cleaned from the sheet metal with a solution of washing soda in water and rinsed with clean water.

J. Finish:

1. Priming: All new flashing and sheet metal surfaces and edges (except pre-finished and copper surfaces) shall be washed with metal etch conditioner, primed on all surfaces and edges whether exposed or not, and as specified in SECTION 09901 - PAINTING.

### **3.02 FLASHING**

- A. Fabricate sheet metal flashing as indicated on the contract drawings.
- B. Flashing and sheet metal joints shall be made with watertight slip joints specially formed to allow for expansion and contraction.

### **3.03 GUTTERS**

- A. Fabricate sheet metal gutter as indicated on the contract drawings.
- B. Install as indicated complete with mitered corners, end caps, outlets, brackets, and other accessories necessary for installation. Support gutters on hangers spaced not more than 36 inches on center. Adjust gutters to slope uniformly to outlets, with high points occurring midway between outlets.
- C. Gutter expansion joints: Provide Lapped, hooked, or bayonet type expansion joints as per SMACNA requirements at 50 feet maximum spacing.

### **3.04 DOWNSPOUTS AND LEADERS**

- A. Types, shapes and sizes as indicated. Provide complete including elbows cleanouts and offsets. Provide gutter outlets with stainless steel wire mesh screen strainers for each outlet. Fasten to walls with downspout brackets at top bottom and intermediate points not to exceed 5 feet on centers.

### **3.05 PROTECTION**

- A. Protect all flashing and sheet metal work until final acceptance of the project.
- B. Special care shall be taken to protect pre-finished flashing and sheet metal surfaces during fabrication, installation and until final acceptance of the project. Should flashing and sheet metal work with pre-finished surfaces become damaged, those item(s) shall be replaced with new. Touch-up of minor scratches, as recommended by the Manufacturer, will be the only acceptable repair of pre-finished surfaces.

### **3.06 CLEAN-UP**

- A. During the progress of the work, the premises shall be kept free of all debris and waste materials resulting from the work of this Section. All such debris

and rubbish shall be properly removed from the project site.

- B. After the completion of the work and before final acceptance of the project, the Contractor shall be responsible to clean-up and remove all rubbish, debris, fines, etc. from the project site resulting from the work of this Section.

END OF SECTION

## **SECTION 07720 – ROOF ACCESSORIES**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

A. This Section includes the following:

1. Roof Hatch
2. Roof Extension Ladder
3. Roof Access Caged Ladder

#### **1.02 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
- C. Coordination Drawings: Roof plans drawn to scale and coordinating penetrations and roof-mounted items.
- D. Samples: For each exposed finish.

#### **1.03 QUALITY ASSURANCE**

- A. Standards: Comply with the following:
1. SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.
  2. NRCA's "Roofing and Waterproofing Manual" details for installing units.

### **PART 2 - PRODUCTS**

#### **2.01 ROOF HATCH:**

- A. Curb: 36" x 36" x 12" high curb, 14 gage galvanized steel with 1" rigid fiberglass insulation double-wall construction, with welded or sealed mechanical corner joints.
- B. Cover: Double-wall cover construction with 1 inch thick rigid fiberglass insulation core.
- C. Opening device: Provide gasketing and equip with corrosion-resistant or hot-dip galvanized hardware, steel butt hinges with brass pin, fully enclosed compression



spring, hold-open devices, interior and exterior padlock hasps, and both interior and exterior latch handles.

- D. Finish: Galvanized steel: shop primed and painted. Coordinate painting with Section 09901 Painting. Field touch-up paint after installation.

**2.02 SAFETY LADDER EXTENSION:** Acudor Products, Inc. Model SLE-1 or approved equal or better or fabricate as detailed on drawings. Fabricated from hardened steel, pre-finished color: safety yellow, mounted to exterior of roof hatch curb.

**2.03 ROOF ACCESS CAGED LADDER:** Mill finished fixed caged ladder fabricated from 6061-T6 aluminum alloy, with aluminum rungs and cage meeting ANSI A14.3 American National Standard for Ladders – Fixed – Safety Requirements, and U.S. Occupational Safety and Health Administration (OSHA). ALACO Ladder Co. Model 560-C or accepted equal or better.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. General: Coordinate installation of roof accessories with installation of roof deck, roof insulation, flashing, roofing membranes, penetrations, equipment, and other construction to ensure that combined elements are waterproof and weathertight. Anchor roof accessories securely to supporting structural substrates so they are capable of withstanding lateral and thermal stresses, and inward and outward loading pressures. Install as per manufacturer's installation instructions and recommendations.
- B. Install roof accessory items according to construction details in NRCA's "Roofing and Waterproofing Manual," unless otherwise indicated.
- C. Separation: Separate metal from incompatible metal or corrosive substrates, including wood, by coating concealed surfaces, at locations of contact, with bituminous coating or providing other permanent separation.
- D. Hatch Flange Seals: Unless otherwise indicated, set flanges of accessory units in a thick bed of roofing cement to form seal.
- E. Operational Units: Test-operate units with operable components. Clean and lubricate joints and hardware. Adjust for proper operation.
- F. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings.

END OF SECTION

## **SECTION 07920 – JOINT SEALANTS**

### **PART 1 - GENERAL**

#### **1.01 WORK DESCRIPTION**

- A. The work to be performed under this section shall consist of furnishing all labor, materials, equipment, tools and incidentals necessary for joint sealants as indicated and specified herein.

#### **1.02 SUMMARY**

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
  - 1. Exterior joints in vertical surfaces and horizontal non-traffic surfaces.
  - 2. Interior joints in vertical surfaces and horizontal non-traffic surfaces.

#### **1.03 PERFORMANCE REQUIREMENTS**

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

#### **1.04 SUBMITTALS**

- A. Product Data: For each joint-sealant product indicated.

#### **1.05 WARRANTY**

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

### **2.02 MATERIALS, GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants. As selected by Architect from manufacturer's full range.

### **2.03 ELASTOMERIC JOINT SEALANTS**

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Single-Component Silicone Sealant:
  - 1. Type and Grade: S (single component) and NS (nonsag).
  - 2. Class: 50.
  - 3. Use Related to Exposure: NT (non-traffic).
  - 4. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
  - 5. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.
- D. Single-Component Nonsag Urethane Sealant:
  - 1. Type and Grade: S (single component) and NS (nonsag).

2. Class: 25.
3. Use Related to Exposure: NT (non-traffic).
4. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

#### **2.04 LATEX JOINT SEALANTS**

- A. Latex Sealant : Comply with ASTM C 834, Type O P, Grade NF.

#### **2.05 JOINT-SEALANT BACKING**

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are Accepted for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C closed-cell material with a surface skin or as Accepted in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

#### **2.06 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material and moisture from joint substrates that could interfere with adhesion of joint sealant.
    - a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
  2. Remove laitance and form-release agents from concrete.
    - a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### **3.02 INSTALLATION**

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are Accepted in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- F. Installation of Preformed Silicone-Sealant System: Comply with manufacturer's written instructions.
- G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.
- H. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials Accepted in writing by manufacturers of joint sealants and of products in which joints occur.

### **3.03 JOINT-SEALANT SCHEDULE**

- A. Joint-Sealant Application: Exterior perimeter joints between concrete, masonry and frames of doors, and windows.
1. Joint Sealant: Single-component neutral-curing silicone sealant or Single-component nonsag urethane sealant.
  2. Joint-Sealant Color: Color to match where not to be painted.
- B. Joint-Sealant Application: Perimeter joints between interior wall surfaces and frames of interior doors and windows.
1. Joint Sealant: Latex sealant.

END OF SECTION

## **DIVISION 9 - FINISHES**

### **SECTION 09901 - PAINTING**

#### **PART 1 GENERAL**

##### **1.01 SUMMARY**

- A. This Section includes surface preparation and field painting of new exposed exterior items and surfaces and surfaces damaged from new work.
  - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint new exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted. If a color of finish is not indicated, Project Manager will select from standard colors and finishes available.
- C. **SURFACES TO BE PAINTED**  
Paint surfaces to match existing:
  - 1. All new exposed wood trims, framing and existing wood frames removed and replaced to complete new work.
  - 2. Existing interior and exterior exposed wood ceiling where roof fasteners penetrate wood decking, where cutting of fastener ends and patching to match is required.
  - 3. Existing surfaces damaged from new work, and exposed from demolition work and exposed surfaces indicated to be patched.
  - 4. New gutters, leaders, downspouts and downspout brackets.
  - 5. New galvanized guy wire support posts. Shop paint prior to installation.
  - 6. New ventilators, new exposed galvanized sheet metal flashing and sheet metal.
  - 7. And miscellaneous surfaces as indicated on drawings and specifications.
- D. **SURFACES NOT TO BE PAINTED**  
Do not paint the following surfaces:
  - 1. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
  - 2. Existing Work to Remain not damaged from new work.

##### **1.02 REFERENCES**

- A. ASTM D16 - Definition of terms relating to Paint, Varnish, Lacquer and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.
- C. MPI (Master Painter's Institute) - Approved Product List.
- D. PCDA (Painting and Decorating Contractors of America - Painting - Architectural Specification Manual.

- E. PCA (Portland Cement Association) - Painting Concrete.
- F. SSPC (Steel Structures Painting Council - Steel Structures Painting Manual)

### **1.03 DEFINITIONS**

- G. General: Standard coating terms defined in ASTM D 16 apply to this Section.

### **1.04 SUBMITTALS**

- A. Product Data:
  - 1. Materials List: Provide an inclusive list of required patching and coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
    - a. For products with premixed colors, provide manufacturer's standard color chips for selection by Project Manager.
  - 2. Manufacturer's Information: Provide data on all listed materials, including:
    - a. Thinning and mixing instructions
    - b. Application instructions and required mil film thicknesses.
    - c. Manufacturer's Material Safety Data Sheets.
- B. Certifications: Provide a letter certifying paints and coatings are free of asbestos, lead, zinc-chromate, strontium chromate, cadmium, mercury, crystalline silica and other EPA regulated and hazardous materials. Provide a letter certifying the amounts of mildewcide added by both the paint manufacturer and paint supplier.
- C. Schedule of Finishes: Provide finish schedule including paint spread rates required to achieve final dry film thickness indicated in the schedule.
- D. Schedule of Operations: Provide a work schedule showing sequence of operation and installation dates.
- E. Samples: After color and finish sample are returned, submit paint finish samples, 8.5" x 11" in size illustrating selected colors and textures for each selection. Divide sample in horizontal strips showing prime and overlapping second and finish coats. Show coat tinting. Prepare transparent finish samples on same material as that on which coating will be applied. Identify each sample.
- F. Manufacturer's Instructions: Indicate special surface preparation procedures, and substrate conditions requiring special attention. Refer to Section 3.01.
- G. Delivery Receipts: Provide 3 copies of the delivery receipt, signed by the user's representative, attesting to delivery of extra paint as required under 1.10.



### **1.05 QUALITY ASSURANCE**

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Provide a Comprehensive Spray Plan when airless spraying is proposed. to include:
  - 1. Documentation that the individual spray applicator(s) on the project have completed an approved "Spray Applicator Certification Program" conducted by the Painting Industry of Hawaii. The certification program shall include material and equipment selection, use and maintenance, hands-on application and safety training.
  - 2. Proposed overspray protection methods.
  - 3. Paint Manufacturer's spray application instructions and recommendations for products to be used.
  - 4. Proposed schedule to shut-down and covering existing air-conditioning and ventilation equipment and existing air intake, return and diffuser grilles.

### **1.06 REGULATORY REQUIREMENTS**

- A. Comply with State OSHL (Occupational Safety and Health Law) and pollution control regulations of the State Department of Health and EPA.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
  - 1. Product name or title of material.
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's brand name and lot number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions and coverage.
  - 7. Color name and number.
  - 8. VOC content.

B. Storage

1. Non-flammable Materials: Store materials not in use in tightly covered containers in a well-ventilated area. Maintain storage containers in a clean condition, free of foreign materials and residue.
2. Flammable Materials:
  - a. Store in such a manner as to prevent damage. No paint material, empty cans, paint brushes and rollers may be stored in the building(s). Store these items in separate storage facilities away from the building(s). Contractor may furnish a separate job site storage structure, if the structure complies with the requirements of the local Fire Department. Keep the storage area shall clean. Lock any storage structures when not in use or when no visual supervision is possible.
  - b. All rejected materials shall be removed from the job site immediately.

**1.08 PROJECT CONDITIONS**

- A. Do not apply materials when surfaces and ambient temperatures are outside the ranges required by the paint product manufacturer. Do not apply exterior coatings during rain or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- B. Protect public, pedestrians and tenants from injury. Provided, erect and maintain safety barricades around scaffolds, hoists and where construction operations create hazardous conditions.
- C. Completed Work: Provide necessary protection for wet paint surfaces.
- D. Protective Covering and Enclosures: Provide and install clean sanitary drop cloth or plastic sheets to protect furniture, equipment, floor and other areas that are not scheduled for treatment. Remove any paint applied to surfaces not scheduled for treatment.
- E. Fire Safety: Contractor and its employees shall not to smoke in the vicinity of the paint storage area. Exercise precautions against fire at all times and remove waste rags, plastic (polyester sheets), empty cans, etc. from the site at the end of each day.
- F. Where airless spraying is used, ensure that protective enclosures are erected to prevent the escape of overspray from the work area.
- G. Safeguarding Property: Safeguard the work and also the property of the State and other individuals in the vicinity of Contractor's work. Make good on any damages and for losses to work or property caused by Contractor or its employee's negligence. Where damaged property cannot be cleaned and restored to its original condition (i.e. prior to being damaged) replace it with a

new product of equal quality. No prorating or use of "used" products will be permitted.

1. For painting and spray painting operation, assume that cars will not be temporarily relocated from parking areas during the painting operations.
2. Paint overspray shall not carry more than 5 lineal feet beyond the building eave line nor within 10 lineal feet of pedestrians or property and surfaces not scheduled to be painted. Immediately cease spray painting when overspray carries beyond these specified limits. Do not continue until protective barriers are erected to properly contain the overspray and damages caused by the overspray have been corrected.
3. The Contractor shall be assessed \$300.00 for each incidence of property or personal damage caused by overspray until such time that a satisfactory settlement has been agreed upon by the damaged party and corrective action has been completed. All corrective action shall be settled within 24 hours from the time the damage is discovered. Should the Contractor fail to take corrective action in a timely and expeditious manner, the Project Manager shall contact the Contractor's Insurance company to seek resolution on the matter.

#### **1.09 EXTRA MATERIALS**

- A. Provide extra paint in each of the different colors, types and surface textures of exterior and interior paint to the user / school upon completion of the project. Paint shall be in unopened one gallon containers and labeled with color, type, texture, room locations, and date in addition to manufacturer's label.
  1. .Provide 1 gallon of each color for all other areas.

#### **1.10 WARRANTY**

- A. Provide a two year guarantee that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship.

### **PART 2 - PRODUCTS**

#### **2.01 PAINT MATERIALS, GENERAL**

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Mildewcide
  1. Except for metal primers, provide primer and finish coats with suitable chemical mildewcide to the maximum amount of mildewcide per gallon of

paint permitted by the mildewcide manufacturer without adversely affecting the quality of the paint, but not less than one ounce per gallon.

- C. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
  - 1. Proprietary Names: Use of manufacturer's proprietary product names in the Paint Systems Schedule in Part 3 below to designate colors or materials, is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed products to be used.
  - 2. Equivalency: Equivalent products to the specified products are listed in the Master Painter's Institute's "Architectural Painting Specification Manual."
  - 3. Substitution: Requests for substitution of a product or product if a manufacturer is not on the "Approved Product List" will be evaluated for equivalency based on product test results per the test criteria of the Master Painter's Institute.
- D. Colors: To match existing.
- E. EPA Regulated and Hazard Materials: Do not use paint or paint products containing lead, mercury, zinc chromates, strontium-chromate, cadmium or the EPA regulated or hazard materials.

## **2.02 MISCELLANEOUS MATERIALS**

- A. Provide patching and repair materials. Compatible with paint finishes and substrates. Use weather resistant materials for exterior surfaces and surfaces exposed to moisture.
- B. Accessories
  - 1. General: Provide other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
  - 2. Thinners: Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's requirements. Do not use compound thinner, mineral oil, kerosene, refined linseed oil, or gasoline for thinning.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
  - 1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
    - a) Ensure that concrete and masonry surfaces are cured and dried to meet paint manufacturer's recommendations.
  - 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
  - 1. Notify Project Manager about anticipated problems when using the materials specified over substrates primed by others.

### **3.02 PREPARATION**

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove dust, oil and grease before cleaning.
  - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
  - 1. Provide barrier coats over incompatible primers or remove and reprime.
- D. Surface Preparation Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
  - 1. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
  - 2. Determine alkalinity and moisture content of surfaces by performing appropriate tests. Submit test results to Project Manager.

- a. Prior to painting, concrete and masonry surfaces shall be allowed to cure and dry in accordance with the paint manufacturer's instructions and recommendations.
- b. Efflorescence and laitance shall be removed from the surface.
- c. Prior to paint application, interior and exterior concrete and masonry (including grout joints) scheduled to receive paint shall be tested to determine the alkalinity level of the surface. Testing shall be performed in strict accordance with the test kit manufacturer's instructions. Submit test results to the Project Manager.
- d. Where the alkalinity level exceeds the pH level limit of the primer take one of the following three remedies at no additional cost to the State:
  - 1) If new concrete or masonry, wait until alkaline level has dropped below the limit.
  - 2) Substitute a primer that is able to resist the measured alkalinity and that is compatible with the paint finish. Alkyd based primers and top-coats or epoxy ester primers shall not be used. Submit the substitute primer to the Project Manager for review.
  - 3) Neutralize the surface in accordance with the primer manufacturer's instructions to reduce the alkaline level. However, acid washing is not permitted where the surface has been finished with a cementitious coating.
3. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
- E. Surface Preparation Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
  1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
  2. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
  3. If transparent finish is required, back prime with spar varnish.
  4. Back prime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
  5. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

- F. Surface Preparation Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
  - 1. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3..
  - 2. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
  - 3. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat. Spot priming specified here shall be in addition to full prime painting scheduled in Part 3 below.
- G. Surface Preparation Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- H. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
  - 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
  - 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- I. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

### **3.03 APPLICATION**

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
  - 1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
  - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
  - 3. Provide finish coats that are compatible with primers used.

4. The term “exposed surfaces” includes areas visible when permanent or built-in fixtures, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
  5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only unless otherwise noted.
  6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
  7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
  9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
  10. Sand lightly between each succeeding enamel or varnish coat.
  11. Ensure primers are top coated within the times required by the paint manufacturers. Top coats not applied within the recoating window may be rejected.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer’s written instructions, sand between applications.
  2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
  3. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
  4. Be aware of the requirements for, and restrictions on, spray painting contained in PROJECT CONDITIONS Paragraph.



- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
  - 1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
  - 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
  - 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- F. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- H. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
  - 1. Provide satin finish for final coats.
- I. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- J. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

### **3.04 FIELD QUALITY CONTROL TESTING**

- A. Inspection and Approvals: Obtain written approval upon completion of each phase of work (phases of work are: surface preparation and spot prime, prime, first finish coat, second finish coat) before proceeding into the next phase or work. For any particular area of work that deviates from the submitted work

schedule, notify the Project Manager one day (24 hours minimum) in advance when completing any phase of work. Provide access to areas to be inspected.

1. Failure to obtain approval of any phase of work for a work area may result in redoing the operation at no cost to the State.
  2. Right of Rejection: Non conforming work will be rejected by the Project Manager. Remove rejected material from the job site immediately. Redo rejected work at no cost to the State.
- B. Thickness Testing: The Project Manager will require all paints and their applied thickness tested determine compliance with the Contract Documents. The Project Manager will select a laboratory, and the cost of testing shall be borne by the Contractor.
1. Where the required paint thickness is deficient, provide additional coats to the affected surface(s) to meet the required paint thickness.
  2. Test schedule: As required by Project Manager.
  3. Tests shall be paid by Contractor and shall be performed by testing laboratory.

### **3.05 CLEANING**

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

### **3.06 PROTECTION**

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Project Manager.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

**3.07 PAINT SCHEDULE:** Provide the following paint finishes or accepted finishes of equal or better quality.

**EXTERIOR**

- A. New Galvanized-Coated Metal.
  - Primer            Devoe Coatings Devguard 4160 Tank & Structural Alkyd Metal Primer
  - Two Coats      Devoe Coatings DR17XXN Wonder-Shield Ext Acrylic S/G
- B. Existing Painted Galvanized-Coated Metal.
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR17XXN Wonder-Shield Ext Acrylic S/G
- C. Existing Previously Painted Concrete and Masonry Walls.
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR17xxn Wonder-Shield Ext Acrylic S/G
- D. New Wood Surfaces: wood fascias, trims and wood soffits
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR17xxn Wonder-Shield Ext Acrylic S/G
- E. Existing Painted Wood Surfaces: wood fascias, trims and wood soffits
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR17xxn Wonder-Shield Ext Acrylic S/G
- F. New ABS and PVC downspouts.
  - Primer            Devoe Coatings Tru-Glaze-WB 4030-1000 Waterborne Epoxy Primer
  - Two Coats      Devoe DR17xxn Wonder-Shield Ext Acrylic S/G

**INTERIOR**

- A. New exposed wood trims, and frames
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR39XXN Wonder-Tones Int S/G Enamel
- B. Existing painted wood trims and ceiling
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR39XXN Wonder-Tones Int S/G Enamel
- C. Existing painted CMU and Concrete
  - Primer            Devoe DR51801 Primz Kilstain-WB Primer
  - Two Coats      Devoe DR39XXN Wonder-Tones Int S/G Enamel

**3.08 SCHEDULE - COLORS**

- A. As indicated on drawings.

**END OF SECTION**

## **DIVISION 13 – SPECIAL CONSTRUCTION**

### **SECTION 13280 – REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY**

- A. Removal and disposal of asbestos-containing material prior to planned renovation activities.

##### **1.02 PRELIMINARY**

- A. In performing this asbestos abatement project, all possible safeguards, precautions, and protective measures should be utilized to prevent exposure of any individual to asbestos fibers.

##### **1.03 PATENTED DEVICES, MATERIALS AND PROCESSES**

- A. The Contractor's use of any patented devices, materials or process in the performance of the work under this contract is governed by the General Conditions as amended.

##### **1.04 WORK SPECIFIED IN THIS SECTION**

- A. Contractor is responsible for coordinating all work within this Section with contract drawings, contract specifications, and contract documents. All asbestos-containing material (ACM) as identified in SECTION 01715 – EXISTING CONDITIONS – ASBESTOS/ LEAD / 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.
- B. Furnish all labor, materials, and equipment necessary to carry out the safe removal of asbestos-containing material in compliance with all applicable laws and regulations, from all surfaces/areas as specified, including all incidental and pertinent operations to safely complete this project.
- C. Contractor shall assume all materials within the project area that are similar in appearance to ACM identified in the provided asbestos survey reports, as positive for ACM, unless proven otherwise, and is included as work under this Section as required to safely complete this project.
- D. The asbestos work shall generally include the removal and disposal, as asbestos-containing material, the following materials that are anticipated to be disturbed as part of this project:
  - 1. Building #1, Low Roof - All gray patch/sealant roofing material generally located at various gutter seams (Contractor responsible for verifying all locations) as required to safely complete this project.
  - 2. Building #1, High Roof - All gray patch/sealant roofing material generally located at various gutter seams and downspout (Contractor responsible for verifying all locations) as required to safely complete this project.

- E. Post-removal encapsulation work shall include the coating of all surfaces in the asbestos regulated area as well as on other surfaces designated on the plans and specifications.
- F. Cleaning shall include all work within the complex affected by the removal project.
- G. In general, the principal items of work shall be as follows:
  - 1. Protection of all on-site personnel and visitors.
  - 2. Preparation of work area.
  - 3. Removal and disposal of asbestos-containing material as specified.
  - 4. Encapsulation of surfaces noted.
  - 5. Cleaning.
  - 6. Removal of temporary plastic coverings.
- H. Changes to SECTION 13280 - REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL of the specifications are not permitted except by the Certified Asbestos Project Designer who designed the project.
- I. All work specified in this Section shall be performed by individual(s) who are State of Hawaii – Department of Health certified and registered asbestos workers and/or supervisors. All training and registration must be current and each individual must possess current and valid asbestos ID at all times at the project site. Individuals without a current asbestos ID card onsite shall not be permitted to perform any work relating to this Section.

#### **1.05 COORDINATION WITH OTHER SECTIONS**

- A. Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to the Contracting Officer. It will be the Contractor's responsibility to repair and/or replace to the Contracting Officer'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.

#### **1.06 SUBMITTALS**

- A. Submit in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. Submittals shall be submitted in the order listed herein. Failure to do so will result in automatic rejection of submittals.
- B. Furnish Contractor certification that the Contractor is experienced with the EPA, OSHA and HIOSH regulations related to asbestos, application, removal, disposal and treatment.
- C. Detailed Asbestos Work Schedule: Actual start and completion dates for each phase of the asbestos removal work and other work specified. The schedule shall be formulated on a day/week basis and include working hours. The

schedule shall be updated weekly and 6 copies submitted to the Contracting Officer.

- D. Notices: As early as possible prior to commencement of work and before commencement of any on-site activity, submit a written courtesy "notice/notification" of the proposed asbestos abatement work with copies to the Contracting Officer and to the following agencies:

State of Hawaii - Noise, Radiation and Indoor Air Quality, Asbestos Unit,  
591 Ala Moana Blvd., Honolulu, Hawaii 96813-2498.

- E. Permits: Submit six copies of all permits and arrangements for transportation and disposal of asbestos-containing or contaminated materials.
- F. Manufacturer's Data: Submit six copies of manufacturer's specifications, material safety data sheets (MSDS), installation instructions and field test procedures for each material, and all equipment related to asbestos handling and abatement, 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.
- G. Samples: Submit samples of the following items for approval prior to ordering materials:
1. Asbestos Encapsulant(s): Six copies of manufacturer's literature including all laboratory data, MSDS, and application instructions.
  2. Plastic Sheeting: Three 8-1/2- by 11-inch pieces of each thickness and type with labels indicating actual mil. thickness.
  3. Surfactant: Six copies of manufacturer's literature including all laboratory data, MSDS, mixing and application instructions.
  4. Tapes and Adhesives: Six copies of manufacturer's literature including all laboratory data.
  5. Warning Labels and Signs: Six copies of examples of all required signage.
  6. Protective Clothing: Six 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: Six copies of manufacturer's literature on all respirator equipment and one sample of each item which will be returned to the Contractor.
- H. Project Specific Descriptions and Drawings: Submit to the Contracting Officer six copies of shop drawings with the following items as a minimum:
1. Name and resume of Contractor's onsite Competent Person 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.

2. Descriptions of any equipment to be employed not discussed in this Section.
  3. Project specific work procedures (detailed plan of work procedures and methods) to be employed for this project.
  4. Location of regulated (control) work area boundaries.
  5. Location and construction of decontamination unit adjacent to the regulated work area.
- I. Documentation For Instruction: Furnish employee certification that employees have had instructions on the dangers of asbestos exposure, on respirator use, and decontamination, from an EPA approved training facility, as required 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 and 11-504.

Submit to the Contracting Officer documentation that each and every individual, including foremen, supervisors, 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 abatement activities, or who is allowed or permitted to enter areas where such exposure may occur, has had instruction on the hazards and health effects of asbestos exposure. Also submit to the Contracting Officer documentation that personnel stated above have had instructions on the nature of the activities and operations which create a risk of asbestos exposure and the necessary protective steps, on use and fitting of respirators (in accordance with qualitative procedures as detailed in HIOSH 12-145 Appendix C), Qualitative and Quantitative Fit Testing.

Procedures, on protective dress, on use of showers, 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 HIOSH 12-145, and that each and every employee understands this instruction. 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 of the State, Consultant, and Contracting Officer for any such exposure. The Contractor shall be responsible for keeping the documentation up to date and subsequent submittals to the Contracting Officer before any additional employee or individual, not currently on this list, is allowed within the project site.

- J. Documentation From Physician: Submit to the Contracting Officer 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 HIOSH 12-145-11(a). The 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 Contractor shall keep and make available to all affected individuals a record and the results of such examinations.

- K. Medical Surveillance Program: Submit to the Contracting Officer a copy of the 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.
- L. Respiratory Protection Program: Submit to the Contracting Officer a copy of the 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.
- M. Hazard Communication Program: Submit to the Contracting Officer a copy of the Contractor's hazard communication program prepared in accordance with all applicable laws.
- N. Site Emergency Action Plan: Submit to the Contracting Officer a copy of the Contractor's site emergency action plan prepared in accordance with all applicable laws.
- O. 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.
- P. Respirators: Submit notarized certifications 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.
- Q. 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 with a copy submitted to the Contracting Officer.
- R. Entry Log: 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 that the work area is asbestos free. The log shall contain the following information as a minimum and certified copies shall be submitted to the Contracting Officer 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.
- S. Daily Log: 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.
  4. Air monitoring tests and test results.
  5. Documentation of Contractor's completion of the following:
    - a. Inspection of work area preparation prior to start of removal and daily thereafter.
    - b. Progress of the work.
    - c. Contractor's inspections prior to encapsulation of the substrate from which such materials have been removed.
    - d. Removal of waste materials from work area.
    - e. Decontamination of equipment (list items).
    - f. Contractor's final.
  6. Daily certification by the Contractor's onsite competent person that all work has been performed in accordance with all applicable laws, specifications and approved work plan.
- T. 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.
- U. Air Monitoring Testing Laboratory: Submit name, address and telephone number of air monitoring testing laboratory selected for sample collection, analyses and reporting of airborne fiber concentrations along with evidence that the air monitoring testing laboratory is a successful participant in the Proficiency Analytical Testing (PAT) program.

#### **1.07 PRODUCT HANDLING**

- A. 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 Contracting Officer. 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.

## **1.08 PROTECTION**

- A. Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of Subcontractors, the Contracting Officer and his representatives, State and local 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 the Contracting Officer and any such entry shall be reported immediately to the Contracting Officer by the Contractor.
  - 2. A Visitor's Log shall be maintained.
  - 3. The Contractor shall have control, subject to approval of the Contracting Officer, of security in the work area and in proximity of 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 precaution to ensure there is no asbestos contamination to those areas not included in the work schedule.
- C. Protective Covering: The Contractor shall provide and install additional protective covering to protect the project on an "as required" or "upon request" by the Contracting Officer basis. Protective covering shall be clean plastic sheets.
- D. Safeguarding of Property: The Contractor shall take whatever steps necessary to safeguard his work and also the property of the State 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.
- E. Completed Work: The Contractor shall provide all necessary protection for surfaces encapsulated under this section.

## **1.09 ABBREVIATIONS**

- A. ANSI: American National Standards Institute, Inc.
- B. CFR: Code of Federal Regulations.
- C. HIOSH: Hawaii Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii.
- D. EPA: U.S. Environmental Protection Agency.
- E. NESHAPS: National Emission Standards for Hazardous Air Pollutants.
- F. MAP: Asbestos Model Accreditation Plan.
- G. NIOSH: National Institute for Occupational Safety and Health.
- H. OSHA: Occupational Safety and Health Administration.

#### **1.10 GENERAL REQUIREMENTS**

- A. Furnish Contractor certification, within ten consecutive calendar days from award, that the Contractor is experienced with the EPA, OSHA and HIOSH regulations related to asbestos, application, removal, disposal, and treatment.
- B. Furnish employee certification, within ten 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 required 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 and 11-504.
- C. 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. State of Hawaii: Occupational Safety and Health Standards; Title 12, Subtitle 8, Part 3, Chapter 145, Asbestos.
  - 2. Title 29, Code of Federal Regulations, Part 1926.1101 Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.
  - 3. State of Hawaii: Occupational Safety and Health Standards, Title 12, Subtitle 8, Part 1.
  - 4. State of Hawaii: Occupational Safety and Health Standards, Title 12, Chapter 203 - Hazard Communication.
  - 5. Title 40, Code of Federal Regulations, Part 61, Subparts A and M, National Emission Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA).
  - 6. Guidance for Controlling Asbestos-Containing Materials in Buildings (purple book), U.S. Environmental Protection Agency (EPA).
  - 7. 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).
  - 8. ANSI Z88.2-80 Practice for Respiratory Protection.
  - 9. EPA, Final Response to the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR, Part 763, Subpart E.
  - 10. EPA, Model Accreditation Plan, 40 CFR Part 763 Subpart E, Appendix C.
  - 11. State of Hawaii, Asbestos Requirements, Title 11, Chapter 501 – 504.
  - 12. Project plans and specifications and approved Work Plan.
- D. 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 State.

- 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 the Contracting Officer.
- F. The Contractor shall give, at a minimum, seven (7) working days notification to the State's Inspector / Air Monitoring Consultant prior to the start of any asbestos related work.
- G. The Contractor shall not begin with any work without the State's Inspector / Air Monitoring Consultant present onsite.
- H. WHENEVER APPROVAL OF THE CONTRACTING OFFICER IS REQUIRED PRIOR TO PROCEEDING WITH OTHER WORK, THE FOLLOWING SHALL BE COMPLIED WITH:
  - 1. The Contractor shall allow the Contracting Officer 24 hours from notification to respond to the request for inspection.
  - 2. The 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 the Contracting Officer 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.

#### **1.11 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.

- C. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.
- D. Authorized Visitor: The Contracting Officer, his representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.
- E. 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.
- F. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.
- G. Friable Asbestos: Asbestos-containing material which can be crumbled to dust, when dry, under hand pressure.
- H. 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.
- I. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Air (HEPA) filter.
- J. Post-Removal Encapsulation: 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).
- K. Surfactant: A chemical-wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Plastic Sheetting: 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 approved equal shall be used on polyethylene sheetting, 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 3-M #76, #77, or approved equal.
- 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/cm 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. All references to application at strengths 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 29 CFR 29 CFR 1926.1101 and HIOSH regulation 12-145. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter. Signage shall be as approved by the Contracting Officer.
- H. Protective Clothing: As specified hereinafter. The 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 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 procedures.
- 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. Paint/Encapsulant Sprayer: Airless type.
  - 1. Scaffolding and Shoring: As required to accomplish the work and meet all applicable safety regulations.
  - 2. No power driven tools/equipment (no mechanical means) shall be permitted for removal of asbestos-containing materials.
- F. Other tools and equipment as necessary.

## **2.03 PERSONNEL PROTECTION REQUIREMENTS**

- A. The 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 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.
1. Initial cleaning and work area preparation shall be performed in half mask dual cartridge negative pressure respirators approved for asbestos by NIOSH.
  2. All removal work related to the removal and bagging of all asbestos material, 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 Contracting Officer, the 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 Contracting Officer.
- E. Beards: Bearded persons will not be permitted in the regulated work area.
- F. Provide workers with two (2) sets (double suit) 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 removal through post-removal encapsulation work, until the Contractor has received acceptance of the asbestos-containing material removal and post-removal encapsulation work.

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 performing any work on the project.

- G. No visitors shall be allowed in work areas, except as authorized by the Contracting Officer and specified herein. Provide authorized visitors with suitable respirators with fresh cartridges. Provide authorized visitors with suitable 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 coverall, footwear, gloves and headgear, including hard hat when required and insulated rubber boots or equal.

The Contractor shall include in his Bid the expense of a total of four changes of clothing and respirators per day for each day of asbestos abatement work for visitor's use. The quantity shall accumulate and may be used at any time during asbestos abatement work at the discretion of the Contracting Officer.

- H. All electrical systems used for asbestos abatement operations 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 ANSI Z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

## **PART 3 - EXECUTION**

### **3.01 WORK AREA PREPARATION**

- A. Work by the Asbestos Abatement Contractor: Step 1
1. Posting of Caution Signs: Post caution signs in and around the work area to comply with 29 CFR 1910.1001, HIOSH regulation 12-145 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. Critical Seals (barriers): Seal all windows, doors, and openings to the regulated work area with plastic sheeting. Plastic sheeting is to remain in place for the duration of the asbestos abatement or until specified by the Contracting Officer or project designer.
  3. 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.
- B. Work by the Asbestos Abatement Contractor: Step 2
1. Temporary utility services are also generally specified under the General Specifications. Requirements specified herein amplify the General Specifications as they apply to the asbestos abatement operations.



2. Temporary Electricity and Lighting:
  - a. Existing electrical service to the building may be used for temporary electrical power during abatement and replacement work; however, the electrical power to the work areas will be shut down during abatement work.
  - b. The Contractor shall verify the location(s) of available electrical service outside the work areas and shall tie into the existing system at a location approved by the Contracting Officer.
  - c. Install circuit and branch wiring, with area distribution boxes located so that power is available throughout the project by use of construction-type power cords.
3. Temporary Water:
  - a. Existing domestic water service to the building may be used for temporary water during construction. Location of tie-in shall be approved by the Contracting Officer.
  - b. Install branch piping with taps as necessary throughout the construction area.
4. Temporary Sanitation Facilities:
  - a. Existing toilet facilities may be used by the Contractor's personnel during asbestos abatement work. Personnel must be in a decontaminated state before using temporary toilet facility.
  - b. Maintain toilet facility in a clean and sanitary condition in compliance with applicable codes and ordinances.
5. Temporary Fire Protection:
  - a. Provide and maintain temporary fire protection equipment during the asbestos abatement operations.
  - b. Equipment shall be of the appropriate type to fight fires associated with the existing building materials and those material used during the construction operations.

C. Work by the Asbestos Abatement Contractor: Step 3  
Cover All Ceiling and Wall Penetrations: Cover all ceiling and wall vents, air-conditioning equipment, exhaust hoods, windows, louvered and screened openings, and doors with a single layer of 10-mil polyethylene sheeting or two layers of 6-mil polyethylene sheeting.

1. Work by the Asbestos Abatement Contractor: Step 4

AFTER STEP 3 IS COMPLETED, NOTIFY THE CONTRACTING OFFICER AND GET HIS APPROVAL PRIOR TO PROCEEDING WITH REMOVAL WORK AS SPECIFIED HEREINAFTER.

Commencement of work shall not start until:

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

2. All equipment for abatement, clean-up and disposal are on hand.
3. All worker training (and certification) is completed.
4. Contractor receives written permission from the Contracting Officer to commence abatement.

### **3.02 ASBESTOS FIBER CONCENTRATIONS IN THE WORK AREA**

- A. The maximum permissible exposure to airborne concentrations of asbestos fibers within the work area shall be 0.05 f/cc. The work shall stop whenever these limits are exceeded and the Contractor shall remedy the condition prior to commencing the work. The expenses resulting from the delays shall be the Contractor's responsibility and shall not be paid by the State.

### **3.03 PRIOR TO ASBESTOS REMOVAL**

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

### **3.04 REMOVAL OF ASBESTOS-CONTAINING MATERIAL**

- A. The Contractor shall stop all work if there is the possibility of rain or high winds. The 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 Contractor perform a visual inspection and clean up any and all visible debris resulting from his work.
- C. The Contractor at all times shall utilize "wet methods" when removing, bagging and disposing of asbestos materials. The asbestos material shall be sprayed with amended water containing a wetting agent (surfactant). The use of amended water must be strictly controlled so as not to over saturate the material. A fine "mist" spray of the amended water shall be applied in small sections to reduce fiber release preceding the removal of material. Saturate the material sufficiently to wet it to the substrate without causing excessive dripping or delamination of the material. Spray the asbestos material repeatedly during the removal operations to maintain a wet condition and to minimize asbestos fiber dispersion. Mechanical means/methods of removal shall not be permitted.

The Contractor shall spray encapsulant on surfaces where asbestos material was removed.

- D. The asbestos-containing material shall be removed in small sections. Before beginning the next section, the material shall be packed while still moist into sealable leak tight double plastic bags, sealed airtight, and gently lowered to the ground. "Burrito" style wrapping of debris is not permitted. No removed material, whether bagged or unbagged, shall be allowed to fall to the ground.
- E. At the end of each work shift and if required during the work shift the Contractor shall immediately clean up any visible debris on the roof, ground level and in and around the regulated work area. All debris must be immediately cleaned up and bagged accordingly.

- F. Maintain roof in watertight condition during the course of the project. Do not leave substrate exposed during non-working hours. As a result of failure to adhere to this requirement, the Contractor shall repair any damage to the satisfaction of the State, at no cost to the State.
- G. It shall be the responsibility of the Contractor to verify the thickness/quantity and complexity of the material and satisfy himself as to the total work and/or effort to remove said material as required to safely complete this project. No additional payment will be considered by the State for any deviations of the actual thickness/quantity from any thickness/quantity noted.
- H. Protect the existing building substrates and components from damage from tools and equipment used during asbestos removal and encapsulation procedures. Damage to the buildings as a result of the Contractor's negligence will require the Contractor to repair the damage at no cost to the State.
- I. All work specified in this Section shall be performed by individuals who are State of Hawaii – Department of Health certified and registered. All training and registration must be current and each individual must possess current and valid asbestos ID at all times at the project site. Individuals without a current asbestos ID card onsite shall not be permitted to perform any work relating to this Section.

### **3.05 DECONTAMINATION PROCEDURES:**

- A. Exiting Work Area: Require all Workers to adhere to the following personal decontamination procedures whenever they leave the work area or at the end of work shift.
  - 1. Before leaving the regulated work area, require the worker to remove the first or outer layer of disposable coveralls. Disposable coveralls are placed in a bag for disposal with other contaminated material. Respiratory protection should not be removed at this time.
  - 2. The worker then proceeds to a designated area, ground level, and then removes the second set of disposable coveralls. Disposable coveralls are placed in a bag for disposal with other contaminated material. Only after leaving the designated area, respiratory protection may be removed.

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

- A. As the work progresses and waste is generated, the Contractor shall transport all waste generated each day to the authorized disposal site, unless specifically approved by the Contracting Officer to delay the disposal operation. Transport all waste to the pre-designated disposal site in accordance with EPA regulations.

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 DUST HAZARD  
CANCER AND LUNG DISEASE HAZARD**

Asbestos-containing material waste material to be transported off the facility site, shall be labeled with the name of the wastes generator and the location at which the waste was generated, as prescribed by EPA regulation 40CFR61.150 (NESHAPS). Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101, HIOSH regulation 12-145.

- 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 two 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 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 state:

**DANGER  
ASBESTOS DUST HAZARD  
CANCER AND LUNG DISEASE HAZARD  
Authorized Personnel Only**

Additionally, the legend shall conform to the NESHAP requirement specified in 40 CFR Part 61.149(d)(1)(iii).

- 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 the Contracting Officer with copies submitted to the Contracting Officer the next working day after each trip.

NOTE: IT IS THE 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 County permit(s).
- H. The Contractor shall pay the waste disposal charge for use of the landfills. All expenses for landfills shall be the complete responsibility of the Contractor. The Contractor shall provide the required advance notice of all deliveries to the landfill(s). Delivery time shall be as directed by the landfill operator.

### **3.07 CLEANING OF THE WORK AREA**

- A. Should the 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 the State, the Contracting Officer 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 Contracting Officer.

### **3.08 POST-REMOVAL ENCAPSULATION OF AFFECTED AREAS**

- A. 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 of the project where asbestos-containing materials have been removed.

### **3.09 FINAL CLEAN-UP**

- A. Remove signage required by the asbestos removal and encapsulation work. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.
- B. Completely remove all temporary materials. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore existing facilities to their original condition as approved by the Contracting Officer.

END OF SECTION

## **SECTION 13283 - DISTURBANCE OF LEAD-CONTAINING MATERIAL**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Disturbance of lead-containing materials during renovation activities.

#### **1.02 DESCRIPTION OF WORK**

- A. Whenever lead paint is being disturbed, this Section shall take precedence over others. All paint shall be considered lead-containing until proven otherwise.
- B. The preparation and treatment of existing lead-containing material on various surfaces. Lead paint removal work shall be selective and only where existing paint is peeling, blistering and/or flaking. This section is being implemented so that the planned work can be accomplished in a safe manner.
- C. All preparation of lead paint shall be identified in advance so that the preparation/treatment of surfaces will be one continuous operation.
- D. Demolition of lead painted surfaces. Lead painted surfaces shall be identified in advance so that the demolition of lead-containing materials will be one continuous operation.

#### **1.03 PATENT DEVICES, MATERIAL AND PROCESS**

- A. The Contractor's use of any patented device, materials or process in the performance of the work under this contract is governed by the Interim General Conditions of the Contract as amended.

#### **1.04 WORK SPECIFIED IN THIS SECTION**

- A. Furnish all labor, materials and equipment necessary to carry out the safe preparation and treatment of lead-containing paint 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 lead-containing until tested negative.

#### **1.05 COORDINATION WITH OTHER SECTIONS**

- A. It will be the Contractor's responsibility to repair and/or replace, to the State'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 Contracting Officer, any discrepancies in the plans and specifications prior to starting any work.

#### **1.06 CONTRACTOR USE OF PREMISES**

- A. General: The Contractor shall cooperate fully with the State, 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-containing 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 Contracting Officer to be contaminated. The Contracting Officer 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 Contracting Officer.

**1.07 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 of lead-containing paint 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 Contracting Officer.
- C. Equipment: All equipment for preparation, clean-up and disposal are on hand.

**1.08 SUBMITTALS**

- A. Submit in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. Submittals shall be submitted in the order listed herein.
- B. Failure to do so will result in automatic rejection of submittals.
- C. General: All submittals shall be made to the Contracting Officer no later than ten (10) consecutive calendar days from award date unless specified otherwise.
- D. Detailed Lead-Containing Paint 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 Contracting Officer.
  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

containing lead paint including methods to suppress dust emissions during the disturbance of lead-containing paint.

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.
- E. 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.
- F. The Contracting Officer 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.
- G. Documentation for Instructions:
1. Submit documentation satisfactory to the Contracting Officer 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-containing paint removal activities, have received training in accordance with the Hawaii Department of Occupational Safety and Health's (HIOSH) lead standard (12-148).
  2. Submit to the Contracting Officer, 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.
- H. Documentation From Physician: The Contractor shall submit documentation from a physician that all employees or agents who may be exposed to airborne lead-containing 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.

#### **1.09 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 materials by persons trained, knowledgeable and qualified in the techniques of handling and disposing of lead-containing 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.
- 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-containing 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 Contracting Officer 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 Contracting Officer before implementation.

#### **1.10 DEFINITIONS**

- A. Abatement: Procedure to control lead dust release from lead-containing paint.
- B. Removal: All herein specified procedures necessary to remove peeling, flaking and blistering lead-containing paint 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. Authorized Visitor: The Contracting Officer, their representatives, air monitoring personnel, or representative of any regulatory or other agency having jurisdiction over the project.

- F. Contaminated Area: An area where unwanted toxic or harmful substances have been introduced.
- G. Fixed Object: A unit of equipment or furniture in the area which cannot be removed from the work area without dismantling.
- H. HEPA Filter: A High Efficiency Particulate Absolute filter capable of trapping and retaining 99.97% of particulate greater than 0.3 micron in length.
- I. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Absolute (HEPA) filter.
- J. Holding Area: A secure area used for the storage of properly contained lead-containing material before removal from the project site to an approved disposal site.
- K. Lead: Metallic lead, all inorganic lead compounds, and inorganic lead soaps. Excluded are all other organic lead compounds.
- L. Lead Control Area: An Area where lead-containing 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.
- M. 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.
- N. 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. The breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.
- O. Plasticizing: Procedures necessary to use polyethylene sheeting, adhesives and (or) taping.
- P. Lead Paint: Lead-containing paint and/or lead-based paint.
- Q. Lead-containing Paint: Lead-containing paint and/or lead-based paint.

#### **1.11 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**

### **2.01 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.
- 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.

### **2.02 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 specified work.

### **2.03 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)(I-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**

#### **3.01 POTENTIAL LEAD HAZARD**

- A. The disturbance or dislocation of lead-containing 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.

#### **3.02 LEAD-CONTAINING MATERIALS**

- A. Lead-containing painted components known to be present due the age of the facility.
  - 1. This Section applies to lead-containing 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-containing paint that will not be disturbed in any manner during the work to be performed under this contract. The Contracting Officer shall have the authority to require special engineering controls described under this Section of any lead painted components that are disturbed.

### **3.03 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 lead 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.

### **3.04 LEAD-CONTAINING 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. 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.
  - 3. The Contractor shall at all times suppress dust emissions while disturbing any material containing lead paint. No visible emissions will be permitted.
  - 4. 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, and no visible lead paint debris is present.
  - 5. Ground contamination of lead-containing paint and other paint preparatory materials shall be cleaned before leaving the premises.
- B. Paint Removal: Paint removal shall only be allowed in locations where paint is peeling, blistering, cracking and/or flaking.
- C. Paint Stripping:
  - 1. Work included under this sub-section includes the furnishing of all labor, materials and equipment required to remove lead-containing 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 spray equipment or 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.
- D. Abrasive Removers Machine Sander:
1. Work included under this sub-section includes the furnishing of all labor, materials, and equipment required to remove lead-containing 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. Wet sanding shall be conducted by hand or pneumatic driven sanders. Electric powered sanders shall not be used for wet sanding.
  4. 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.
  5. All lead-containing 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 Contracting Officer for further instructions.

E. Chemical Paint Stripping:

1. Work included under this sub-section includes the furnishing of all labor, materials and equipment required to remove lead-containing paint by a non abrasive technique using PEEL-AWAY.
2. "PEEL AWAY I" shall be used to prepare lead-containing 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-containing 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-containing paint and other paint demolition materials shall be cleaned before leaving the premises.

F. Paint Preparation:

1. Work included under this Sub-Section includes the furnishing of all labor, materials and equipment required to prepare lead-containing 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-containing paint and other paint preparatory materials shall be cleaned before leaving the premises.

### **3.05 LEAD PAINT - DEMOLITION 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. 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.

3. The Contractor shall at all times suppress dust emissions while disturbing any material containing lead paint. No visible emissions will be permitted.
4. 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, and no visible lead paint debris is present.

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

### **3.06 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 paint chips debris and demolition 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 State, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill owner.
  2. If lead leachability results are above the EPA limit, 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 State, 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 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 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.

### **3.07 TESTING/AIR MONITORING**

- A. 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.
  - 2. Area air/dust monitoring and testing which becomes necessary in order to follow up on work by the Contractor that has been rejected as not conforming to the requirements shall be the responsibility of the Contractor. The full cost of additional monitoring and testing shall be borne by the Contractor, and shall be deducted from the final contract payment in the event of working double shifts to meet deadlines, working longer hours than stated in the accepted proposal, for working beyond the scheduled completion date, violating regulations, not conforming to specifications and plans, or for failing clearance test requirements.

END OF SECTION

## **SECTION 13288 - TESTING / AIR MONITORING**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Testing/air monitoring requirements during asbestos related activities.

#### **1.02 ASBESTOS INSPECTION BY CONTRACTING OFFICER**

- A. Daily air monitoring and testing shall be supplied by the Contracting Officer for the purpose of:
  - 1. Verifying compliance with the specifications listed in SECTION 13280 - REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL;
  - 2. Insuring that the State's legally required documentation is collected;
  - 3. Providing engineering control during the project.

#### **1.03 COORDINATION WITH OTHER SECTIONS**

- A. The testing/air monitoring requirements included in the scope of work for any testing/air monitoring consultants or inspectors, and all applicable Federal, State, and local regulations shall be coordinated with this section.

### **PART 2 - PRODUCTS**

Not applicable to this section.

### **PART 3 - EXECUTION**

#### **3.01 ABATEMENT CONTRACTOR RESPONSIBILITIES**

- A. The Contractor shall be responsible for providing the personal monitoring and maintaining necessary records for all of the Contractor's employees as required by OSHA (29 CFR 1926.1101), Hawaii State Law (12-145) and all other applicable law.
- B. The Contractor shall obtain the legally required reports for air monitoring as part of the contract.
- C. Monitoring information developed by the Inspector's activities while under the contract with the State shall be for the use of the Contracting Officer. The information will be available and offered to the Contractor when developed, but not thereafter, and shall not waive the Contractor's obligations stated elsewhere in this section.
- D. Air monitoring and testing which becomes necessary in order to follow up on work by the Contractor which is rejected as not conforming to the requirements shall be the responsibility of the Contracting Officer. However, the full cost of such additional monitoring and testing shall be borne by the Contractor, and shall be deducted from the final contract payment.

- E. Personal air monitoring that is part of the Inspector's (Testing/Air Monitoring Consultant) scope of work shall be accommodated by the Contractor and shall not be assumed to be the monitoring required of the Contractor by law or regulation.
- F. The Contractor shall contact in writing, the State's Air Monitoring Consultant and DAGS Construction Management within ten (10) days of Award. The Contractor shall also forward a copy of the State of Hawaii, Department of Health notification to the DAGS Construction Management no later than 10 days from mobilization.
- G. The Contractor shall give, at a minimum, seven (7) working days notification to the State's Inspector / Air Monitoring Consultant prior to the start of any asbestos related work.

**3.02 TESTING/AIR MONITORING INSPECTOR (AIR MONITORING CONSULTANT)**

- A. The Inspector (Testing/Air Monitoring Consultant) will insure that the applicable specifications are being followed using the methods and requirements of the applicable scope of work.
- B. The Inspector (Testing/Air Monitoring Consultant) shall have the authority to exercise engineering control during the project.

END OF SECTION

## **SECTION 15160 – STORM DRAINAGE PIPING**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. This Section includes storm water piping and related components.
- B. In General the following work is included:
  - 1. Installation of new roof down spout below slab storm drainage piping.
  - 2. Cutting and Patching as specified in Section 01731 Cutting and Patching.
  - 3. and as indicated and referenced in the drawings and specifications.
- C. Coordination with other Sections: Coordinate removal work with Section 1732 – Selective Demolition, Section 133280 – Removal and Disposal of Asbestos-Containing Materials.

#### **1.02 SUBMITTALS**

- A. Product Data: Include selected fixture and trim, fittings, and supports and indicate materials, dimensions, construction details.

#### **1.03 QUALITY ASSURANCE**

- A. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- B. Plumbing system including fixtures, materials, installation and workmanship shall be in accordance with the Uniform Plumbing Code.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
  - 2. Products: Subject to compliance with requirements, provide one of the products specified.
  - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

## **2.02 DRAIN PIPE AND FITTINGS**

- B. Fittings shall be long radius fittings.
- C. BURIED PIPING
  1. Cast-Iron Hubless Pipe and Fittings: CISPI 301 with CISPI 310 couplings
  2. Cast-Iron Hub and Spigot Pipe and Fittings: ASTM A 74 with ASTM C564 or CISPI HNS rubber compression gasket joints.
- D. ABOVEGROUND PIPING
  1. Cast-Iron Hub and Spigot Pipe and Fittings: CISPI 301 with CISPI 310 couplings.
  2. Clean-outs: ANSI A112.36.2; provide threaded bronze or thermoplastic or PVC plastic cleanout plugs.
  3. Pipe Hangers and Supports: Provide MSS SP-58 and MSS SP-69, Type 1 with adjustable type steel support rods. Attach to concrete with Type 18 insert or drilled expansion anchor. Spacing as required by Uniform Plumbing Code.

## **PART 3 - EXECUTION**

### **3.01 FIXTURE INSTALLATION**

- A. Assemble fixtures, trim, fittings, and other components according to manufacturers' written instructions.
- B. Install drain level and plumb according to manufacturers' written instructions and roughing-in drawings.

### **3.02 PROTECTION**

- A. Provide protective covering for installed fixtures and fittings.

END OF SECTION

## **SECTION 16010 - ELECTRICAL WORK**

### **PART 1 - GENERAL**

#### **1.01 DESCRIPTION OF WORK**

- A. Furnish all labor, materials, tools and equipment required to perform removal and installation of electrical raceways and wiring as indicated in drawings and SECTION 01732 – Selective Demolition.

#### **1.02 GENERAL REQUIREMENTS**

- A. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions and work involved.
- B. Obvious conditions which exist on the project site shall be accepted as part of the work, even though they may not be clearly indicated on the contract drawings and/or specified herein.
- C. Permits: The Contractor shall procure and pay for any necessary permits or certificates that may be required in connection with this work.

### **PART 2 - PRODUCTS (Not Applicable)**

### **PART 3 - EXECUTION**

#### **3.01 REMOVAL WORK**

- A. All work shall be executed in an orderly and careful manner, with due consideration for all item(s) scheduled to remain, and the Contractor shall be solely responsible for any damage thereto.
- B. The Contractor shall coordinate the removal and installation of rusted or damaged electrical with the removal work and installation of the new roofing and flashing. Relocate raceways and penetrations as required to install new flashings, and sheet metal curbs and sheet metal roofing.
- C. All work shall be executed in accordance with the National Electrical Code.

END OF SECTION