REQUIREMENTS and SPECIFICATIONS TO CONSTRUCT

GROUP 1: BRAVO 117
WINDOW SYSTEM REPLACEMENT
BUILDING 117 KALAELOA

FOR THE **STATE OF HAWAII**
DEPARTMENT OF DEFENSE
HAWAI`I ARMY NATIONAL GUARD

100%FINAL SUBMITTAL

March 08, 2016.

Architect: Mason Architects
Structural: Martin & Chock
Environmental: EMET Environmeteo Services

TABLE OF CONTENTS

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: _____

HIARNG 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	

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			■											■		
03370 Concrete Repair				■	■		■									
05120 Structural Steel	■		■				■									
05515 Fixed Metal Ladders	■			■												
07410 Metal Wall Panels	■	■		■												
07620 Sheet Metal Flashing and Trim	■															
07920 Joint Sealants		■		■										■	■	
08510 Steel Windows	■	■	■				■							■	■	■
08800 Glazing		■		■												
09511 Suspended Acoustical Ceilings				■												
09900 Paints and Coatings		■		■	■									■		
13283 Disturbance of Lead-Based and Lead-Containing Material		■	■								■			■		

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 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.

E. 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.

F. 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.

1.06 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 architect or engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing architect 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.

F. 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 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 Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, 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.

1.08 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 Contact. 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 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.

1.10 QUALITY CONTROL ORGANIZATION

A. Quality Control Manager: Meet the qualifications and duties required by this section. 01400.

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, architectural 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.

1.12 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.

1.14 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.

1.15 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 and in the Quality Control Checklist:
   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, HIARNG 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 an 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 HIARNG.

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 in accordance with Section 01770 – Closeout Procedures.

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

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

1.02 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to HIARNG. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.03 PROJECT CONDITIONS

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify HIARNG of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to HIARNG the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to HIARNG.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations; and _____.

2. Grid or axis for structures.

3. Building foundation, column locations, ground floor elevations, and _____.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:

1. Complete the work.

2. Fit products together to integrate with other work.

3. Provide openings for penetration of mechanical, electrical, and other services.

4. Match work that has been cut to adjacent work.

5. Repair areas adjacent to cuts to required condition.

6. Repair new work damaged by subsequent work.

7. Remove samples of installed work for testing when requested.

8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07840, to full thickness of the penetrated element.

I. Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.08 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

SECTION 01715 - EXISTING CONDITIONS - ASBESTOS / LEAD / HAZARDOUS MATERIAL SURVEY

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the results of the State's survey for Asbestos, Lead and / or other Hazardous materials and is provided for the Contractor's information.

B. Related Sections include the following:

1. SECTION 13283 - DISTURBANCE OF LEAD-BASED AND LEAD-CONTAINING MATERIAL for requirements of all work which disturbs the LCP. Also refer to the drawings.

2. SECTION 13288 - TESTING/AIR MONITORING for Testing and air monitoring requirements. Also, refer to the drawings.

1.02 ASBESTOS

A. The structure or structures to be renovated or modified under this contract were surveyed for the presence of asbestos containing building materials (ACBM), using AHERA requirements. A copy of the initial survey report, as well as any subsequent supplemental survey report(s) if performed, are included in this Section.
   1. The report(s) are included, even when no ACBM was found, for the Contractor's information. Review the attached report(s) for the basis on which the negative ACBM finding was made. Contractor may perform further surveys at its own expense, if ACBM not shown in the report(s) is suspected in the areas of the building(s) in which work will be performed. If ACBM is found, notify the Project Manager immediately. The State will reimburse the Contractor for the testing cost if ACBM is found.
   2. If there is ACBM outside of the areas in which work will be performed, this ACBM shall not be disturbed in any way.

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

C. In the event that work is required in any building or buildings on the site other than the one(s) designated within this project scope, request copies of the asbestos survey report(s) for such building(s) from the Project Manager. Based on the information contained in the additional survey(s), notify affected personnel per paragraph 1.02 B.

1.03 LEAD CONTAINING PAINT

A. Inform employees, Subcontractors and all other persons engaged in the project that lead containing paints (LCP) is present in the existing building(s) and at the job site. Follow the requirements of Title 12 (Department of Labor and Industrial Relations), Subtitle 8 (Division of Occupational Safety and Health), Chapter 148 (Lead Exposure in Construction), Hawaii Administrative Rules.

B. Review the attached lead testing data which identify locations LCP was found. Lead testing was for design purposes only, and the results do not satisfy any of the requirements of Chapter 12-148.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SURVEY attached, 88 pages, dated 17 March 17, 2015, prepared by EnvironMETeo Services, Inc. (EMET).

END OF SECTION

EnvironMETeo Services, Inc.
Environmental / Industrial Health & Safety

Limited Asbestos and Lead Paint Survey Report

For:

Mason Architects, Inc.
119 Merchant Street, Suite 501
Honolulu, Hawaii 96813

Facility Surveyed:

Building 117
Hawaii Army National Guard (HIARNG)
Barbers Point, Hawaii

Project:

HIARNG CA-1425-C
Barbers Point Building 117 - Replace Windows

Conducted by:

EnvironMETeo Services, Inc. (EMET)
94-520 Uke'e Street, Suite A
Waipahu, Hawaii 96797

Date of Report: March 17, 2015

EMET ID: 1409339

Table of Contents

Certification of Report

We certify that this report is based on a physical survey of EMET scope of work areas at Hawaii Army National Guard (HIARNG) Building 117, located at Barbers Point Naval Air Station, Kalaeloa, Hawaii. The survey included an inspection for asbestos-containing materials (ACM) and lead-painted surfaces/building components.

The survey was conducted by EnvironMETeo Services, Inc. (EMET) on January 26 and 28, 2015 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 inspectors(s) in accordance with H.A.R. 11-501 from the following:

   Building 117

   - Interior: Areas affected by window removal.
   - Exterior: Roof

2. Lead paint inspection by EPA-accredited inspectors(s) from the areas indicated in item 1.

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.

Arnaldo Estrada
Asbestos Building Inspector
Hawaii State Certification # HIASB-0966
Lead Based Paint Risk Assessor
Hawaii Lead Certificate # PB-0138

Summary

EnvironMETeo Services, Inc. (EMET) conducted a survey for asbestos-containing materials (ACM) and lead-painted surfaces/building components at EMET scope of work areas at Hawaii Army National Guard (HIARNG) Building 117, located at Barbers Point Naval Air Station, Kalaeloa, Hawaii on January 26 and 28, 2015. The survey was conducted by Arnaldo Estrada, Joseph Iopa III and Peter Pascal III of EMET in accordance with Hawaii Administrative Rule (H.A.R) 11-501 and EMET's scope of work.

The survey was requested and authorized by Barbara Shideler of Mason Architects, Inc. and performed in preparation for planned renovations.

Based on the visual inspection and laboratory results of the samples collected, ACM was not detected.

Lead-based paint was found on the following surfaces:

- **off white metal column** located at interior
- **off white metal window frame** located at interior
- **off white metal window sill** located at interior
- **off white metal window muntin** located at interior
- **tan metal window frame** located at exterior
- **tan metal muntin** located at exterior
- **off white metal muntin** located at west interior
- **tan metal door** located at west exterior
- **off white window sill** located at interior
- **tan concrete window sill** located at exterior
- **off white concrete window sill** located at exterior
- **off white metal window frame** located at exterior

- **off white metal wall** located at interior
- **beige metal window frame** located at exterior
- **beige metal mullion** located at exterior
- **off white metal crank pipe** located at interior
- **off white metal crank bracket** located at interior
- **off white metal mullion** located at interior
- **off white metal beam** located at interior
- **cross beam** located at interior
- **crank bracket** located at interior
- **crank pipe** located at interior

Lead-containing paint was found on each of the remaining painted surfaces.

Asbestos-Containing Material

The State of Hawaii and 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

A total of 48 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 the field drawings shown in Appendix B.

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

Floor 1 Suspect Asbestos-containing Materials Visually Observed

gray interior window glaze (painted beige)	beige interior window glaze (painted beige)
white caulking	white gypsum wallboard/mudjoint wall system

Lower Roof Suspect Asbestos-containing Materials Visually Observed

gray mineral capsheet built-up roof system	

Middle Roof Suspect Asbestos-containing Materials Visually Observed

gray mineral capsheet built-up roof system	

West Roof Suspect Asbestos-containing Materials Visually Observed

gray mineral capsheet built-up roof system	

High Roof Suspect Asbestos-containing Materials Visually Observed

gray mineral capsheet built-up roof system	

Asbestos Analyses

Bulk 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.

Based on the visual inspection and laboratory results of the samples collected, ACM was not detected.

Lead Paint

HUD regulations, 24 CRF 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^2 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^2 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 138 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 C.

The test results indicate that a lead content equal to or greater than 1.0 mg/cm^2 was detected in the following:

Lead-Based Paint

XRF No. and Location	Testing Combination Component/Substrate	Condition	Color
463, Bldg 117, interior	column / metal	fair	off white
464, Bldg 117, interior	window frame / metal	fair	off white
467, Bldg 117, interior	window sill / metal	fair	off white
468, Bldg 117, interior	window muntin / metal	poor	off white
470, Bldg 117, north interior	column / metal	fair	off white
472, Bldg 117, north interior	window frame / metal	fair	off white
476, Bldg 117, north exterior	window frame / metal	fair	tan
477, Bldg 117, north exterior	muntin / metal	fair	tan
483, Bldg 117, north exterior	window frame / metal	fair	tan
485, Bldg 117, north exterior	muntin / metal	fair	tan
488, Bldg 117, west exterior	window frame / metal	fair	tan
490, Bldg 117, west exterior	muntin / metal	fair	tan
495, Bldg 117, west interior	window frame / metal	fair	off white
497, Bldg 117, west interior	muntin / metal	fair	off white
498, Bldg 117, west interior	column / metal	fair	off white
501, Bldg 117, west interior	column / metal	fair	off white
503, Bldg 117, west interior	window frame / metal	fair	off white
504, Bldg 117, west interior	muntin / metal	fair	off white
507, Bldg 117, west exterior	window frame / metal	fair	tan
508, Bldg 117, west exterior	muntin / metal	fair	tan
511, Bldg 117, west exterior	window frame / metal	fair	tan

XRF No. and Location	Testing Combination Component/Substrate	Condition	Color
512, Bldg 117, west exterior	muntin / metal	fair	tan
515, Bldg 117, west exterior	door / metal	fair	tan
519, Bldg 117, west interior	window sill /	fair	off white
520, Bldg 117, west interior	window frame / metal	fair	off white
521, Bldg 117, west interior	muntin / metal	fair	off white
522, Bldg 117, east interior mezzanine	window sill / metal	fair	off white
523, Bldg 117, east interior mezzanine	window frame / metal	fair	off white
525, Bldg 117, east interior mezzanine	muntin / metal	fair	off white
526, Bldg 117, east interior mezzanine	column / metal	fair	off white
528, Bldg 117, east exterior	window sill / concrete	fair	tan
529, Bldg 117, east exterior	window frame / metal	fair	tan
530, Bldg 117, east exterior	muntin / metal	fair	tan
534, Bldg 117, east exterior	window sill / concrete	fair	off white
536, Bldg 117, east exterior	window frame / metal	fair	off white
537, Bldg 117, east exterior	muntin / metal	fair	off white
538, Bldg 117, east interior	column / metal	fair	off white
539, Bldg 117, east interior	wall / metal	fair	off white
544, Bldg 117, east exterior clerestory windows	muntin / metal	fair	tan
547, Bldg 117, east exterior clerestory windows	window frame / metal	fair	tan
548, Bldg 117, east exterior clerestory windows	muntin / metal	fair	tan
552, Bldg 117, west exterior clerestory windows	window frame / metal	fair	tan
556, Bldg 117, west exterior clerestory windows	window frame / metal	fair	tan

XRF No. and Location	Testing Combination Component/Substrate	Condition	Color
557, Bldg 117, west exterior clerestory windows	muntin / metal	fair	tan
588, Bldg 117, exterior, west side	window frame / metal	fair	beige
590, Bldg 117, exterior, west side	mullion / metal	fair	beige
591, Bldg 117, interior, west side	crank pipe / metal	fair	off white
592, Bldg 117, interior, west side	crank bracket / metal	fair	off white
594, Bldg 117, interior, west side	window frame / metal	fair	off white
595, Bldg 117, interior, west side	mullion / metal	fair	off white
596, Bldg 117, interior, west side	beam / metal	fair	off white
599, Bldg 117, exterior, north side	window frame / metal	fair	beige
601, Bldg 117, exterior, north side	mullion / metal	fair	beige
603, Bldg 117, interior, north side	beam / metal	fair	off white
604, Bldg 117, interior, north side	window frame / metal	fair	off white
605, Bldg 117, interior, north side	mullion / metal	fair	off white
606, Bldg 117, interior, north side	cross beam / metal	fair	off white
607, Bldg 117, interior, north side	crank bracket /	fair	off white
608, Bldg 117, interior, north side	crank pipe /	fair	off white

The remaining sampled painted surfaces/components showed a lead content of less than 1.0 mg/cm^2 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 in terms of the condition and degree of damage. The 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.

This report is not a specification and should not be used as such.

Appendix A

Asbestos Survey Report

Building Information Sheet

Job Code /EMET ID	Client Name	Inspection date
1409339	Mason Architects, Inc.	1/26/2015, 1/28/2015

Building Number	Bldg Name	No. of Floors Surveyed
117	building 117	1

Location

Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

No. of Other Levels Surveyed: 4

Building Construction Type

STEEL FRAME

Structural Concrete with: Metal Decks, Flat Slab, Beam/Joist or Waffle Slabs; Structural Tees
Steel Frame
Wood Frame
Load Bearing Masonry

Building Use		% Floor Space
Use #1	offices	20
Use #2	equipment bays	80
Use #3		

Academic Classes, Administration Offices, Food Services, Dormitory, Mechanical Spaces, Gymnasium, Laboratory, Library, Residential or Other (Specify)

ACBM PRESENT?

NO

YES = PRESENT
NO = NOT PRESENT
ASM = ASSUMED

Inspector Identification

Name: Arnaldo Estrada
State of HI Certification No. HIASB-0966
State of HI Certification Expiration Date: 1/30/2016
Building Inspector Certification Exp. Date: 4/18/2015

Specific areas surveyed

Interior: Area affected by removal of windows
Exterior: Roofs

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

Building ID and Name: 117 — building 117

Building Location: Hawaii Army National Guard (HIARNG) Barbers Point, HI 96862

EMET ID: 1409339

For the ACM - Space Identified as: 339-117-1

Inspection Date: 1/26/2015, 1/28/2015

Unified Sample Area	Homogeneous Sample Area or Salient Description	Comments	ACBM Present			Material Type*			Response Action	Estimated Cost to Remove
			Suspected	Confirmed	Friable	T	DC	PD		
339-117-1A	gray interior window glaze (Painted Beige)		YES	NO ACM						
339-117-1B	beige interior window glaze (Painted Beige)		YES	NO ACM						
339-117-1C	white caulking		YES	NO ACM						
339-117-1D	white gypsum wallboard/mudjoint wall system		YES	NO ACM						

*** Refers to Material Type and Damage Conditions**

T = Material Type:	DC = Damage Condition:	PD = Potential Damage Condition:
S = Surfacing	ND = No Damage	NPD = No Potential Damage
M = Miscellaneous	D = Damaged	PD = ACBM w/ Potential Damage
T = Thermal Systems	SD = Significant 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
1409339	117	building 117	1/26/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-1A	gray interior window glaze (Painted Beige)	339-117-1A
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray interior window glaze (Painted Beige)	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 in this Sample Space:			

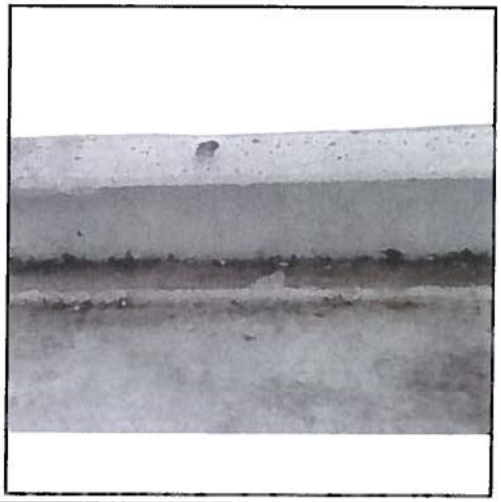
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-1A1, 339-117-1A2, 339-117-1A3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-1A	gray interior window glaze (Painted Beige)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-1A1	0	gray interior window glaze (Painted Beige)	See Sketch 339-117-1
339-117-1A2	0	gray interior window glaze (Painted Beige)	See Sketch 339-117-1
339-117-1A3	0	gray interior window glaze (Painted Beige)	See Sketch 339-117-1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/26/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-1A Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-001	339-117-1A1	beige/ gray	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-002	339-117-1A2	beige/ gray	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-003	339-117-1A3	beige/ 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.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/26/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-1B	beige interior window glaze (Painted Beige)	339-117-1B
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
beige interior window glaze (Painted Beige)	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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-1B1, 339-117-1B2, 339-117-1B3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-1B	beige interior window glaze (Painted Beige)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-1B1	0	beige interior window glaze (Painted Beige)	See Sketch 339-117-1
339-117-1B2	0	beige interior window glaze (Painted Beige)	See Sketch 339-117-1
339-117-1B3	0	beige interior window glaze (Painted Beige)	See Sketch 339-117-1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/26/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-1B Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-004	339-117-1B1	beige/ gray	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-005	339-117-1B2	beige/ gray	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-006	339-117-1B3	beige/ 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.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/26/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-1C	white caulking	339-117-1C
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
white 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 in this Sample Space:			

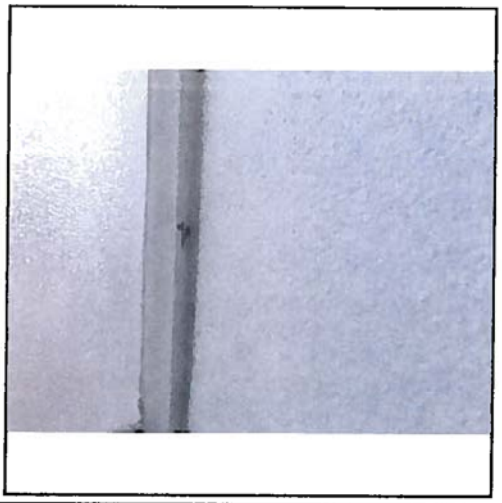
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-1C1, 339-117-1C2, 339-117-1C3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-1C	white caulking

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-1C1	0	white caulking	See Sketch 339-117-1
339-117-1C2	0	white caulking	See Sketch 339-117-1
339-117-1C3	0	white caulking	See Sketch 339-117-1

Inspector's Name	Signature	Date Samples Collected
Amaldo Estrada		1/26/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-1C | Analysis Date: 2/2/2015 | Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-007	339-117-1C1	white	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-008	339-117-1C2	white	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-009	339-117-1C3	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.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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. *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.	*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. *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/26/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-1D	white gypsum wallboard/mudjoint wall system	339-117-1D
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
white gypsum wallboard/mudjoint wall system	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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
- -	- -	- -
Visible	**Reachable**	**Texture**
- -	- -	- -
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
- -	- - / - -	- - / - -
Air Movement	**Proximity to Repair Items**	**Activity**
- -	- -	- -

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-1D1, 339-117-1D2, 339-117-1D3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-1D	white gypsum wallboard/mudjoint wall system

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-1D1	0	white gypsum wallboard/mudjoint wall system	See Sketch 339-117-1
339-117-1D2	0	white gypsum wallboard/mudjoint wall system	See Sketch 339-117-1
339-117-1D3	0	white gypsum wallboard/mudjoint wall system	See Sketch 339-117-1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/26/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-1D Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-010	339-117-1D1	white	Yes	No	-	cellulose	misc. part.	
					<1	10	90	
339-011	339-117-1D2	white	Yes	No	-	cellulose	misc. part.	
					<1	10	90	
339-012	339-117-1D3	white	Yes	No	-	cellulose	misc. part.	
					<1	10	90	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

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

Building ID and Name: 117 — building 117

Building Location: Hawaii Army National Guard (HIARNG) Barbers Point, HI 96862

EMET ID: 1409339

For the ACM - Space Identified as: 339-117-R1

Inspection Date: 1/26/2015, 1/28/2015

Unified Sample Area	Homogeneous Sample Area or Salient Description	Comments	ACBM Present			Material Type*			Response Action	Estimated Cost to Remove
			Suspected	Confirmed	Friable	T	DC	PD		
339-117-R1A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)		YES	NO ACM						
339-117-R1A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)		YES	NO ACM						
339-117-R1A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)		YES	NO ACM						

*** Refers to Material Type and Damage Conditions**

T = Material Type:	DC = Damage Condition:	PD = Potential Damage Condition:
S = Surfacing	ND = No Damage	NPD = No Potential Damage
M = Miscellaneous	D = Damaged	PD = ACBM w/ Potential Damage
T = Thermal Systems	SD = Significant 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
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R1A (L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	339-117-R1A(L1)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
- -	- -	- -
Visible	**Reachable**	**Texture**
- -	- -	- -
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
- -	- - / - -	- - / - -
Air Movement	**Proximity to Repair Items**	**Activity**
- -	- -	- -

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R1A(L1)1, 339-117-R1A(L1)2, 339-117-R1A(L1)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R1A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R1A(L1)1	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R1
339-117-R1A(L1)2	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R1
339-117-R1A(L1)3	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R1A(L1) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-013	339-117-R1A(L1)1	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-016	339-117-R1A(L1)2	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-019	339-117-R1A(L1)3	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

- *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.
- *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.
- *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.
- *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R1A (L2)	gray mineral capsheet built-up roof system (Roofing Layer)	339-117-R1A(L2)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material

gray mineral capsheet built-up roof system (Roofing Layer)

Location of Confirmed, Assumed, or New ACM within Building

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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation**	**If Yes** / **Friable Surface**
--	--	-- / -- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R1A(L2)1, 339-117-R1A(L2)2, 339-117-R1A(L2)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R1A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R1A(L2)1	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R1
339-117-R1A(L2)2	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R1
339-117-R1A(L2)3	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R1A(L2) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-014	339-117-R1A(L2)1	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-017	339-117-R1A(L2)2	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-020	339-117-R1A(L2)3	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R1A (L3)	gray mineral capsheet built-up roof system (Insulation Layer)	339-117-R1A(L3)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Insulation Layer)	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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R1A(L3)1, 339-117-R1A(L3)2, 339-117-R1A(L3)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R1A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R1A(L3)1	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R1
339-117-R1A(L3)2	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R1
339-117-R1A(L3)3	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R1

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R1A(L3) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-015	339-117-R1A(L3)1	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-018	339-117-R1A(L3)2	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-021	339-117-R1A(L3)3	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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. *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.	*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. *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

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

Building ID and Name: 117 — building 117

Building Location: Hawaii Army National Guard (HIARNG), Barbers Point, HI 96862

EMET ID: 1409339

For the ACM - Space Identified as: 339-117-R2

Inspection Date: 1/26/2015, 1/28/2015

Unified Sample Area	Homogeneous Sample Area or Salient Description	Comments	ACBM Present			Material Type*			Response Action	Estimated Cost to Remove
			Suspected	Confirmed	Friable	T	DC	PD		
339-117-R2A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)		YES	NO ACM						
339-117-R2A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)		YES	NO ACM						
339-117-R2A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)		YES	NO ACM						

*** Refers to Material Type and Damage Conditions**

T = Material Type:	DC = Damage Condition:	PD = Potential Damage Condition:
S = Surfacing	ND = No Damage	NPD = No Potential Damage
M = Miscellaneous	D = Damaged	PD = ACBM w/ Potential Damage
T = Thermal Systems	SD = Significant 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
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R2A (L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	339-117-R2A(L1)

Drawing/Sketch Number:

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	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 in this Sample Space:			

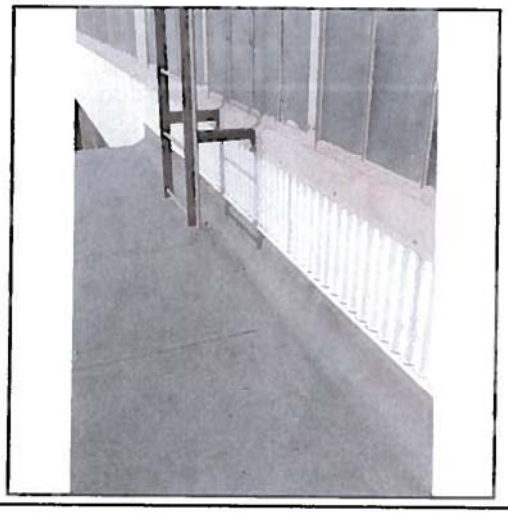
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R2A(L1)1, 339-117-R2A(L1)2, 339-117-R2A(L1)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R2A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R2A(L1)1	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R2
339-117-R2A(L1)2	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R2
339-117-R2A(L1)3	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R2

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R2A(L1) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-022	339-117-R2A(L1)1	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	
339-025	339-117-R2A(L1)2	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	
339-028	339-117-R2A(L1)3	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R2A (L2)	gray mineral capsheet built-up roof system (Roofing Layer)	339-117-R2A(L2)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Roofing Layer)	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 in this Sample Space:			

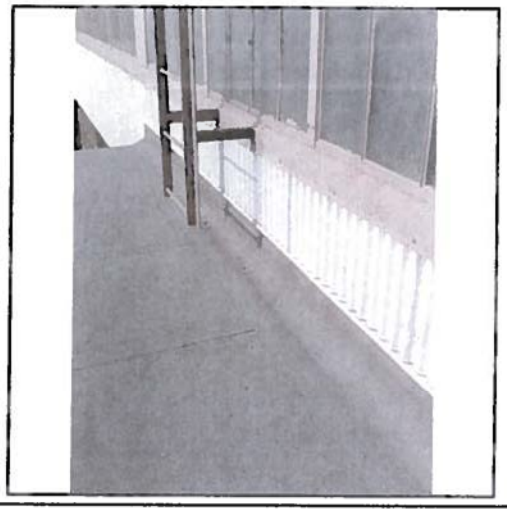
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R2A(L2)1, 339-117-R2A(L2)2, 339-117-R2A(L2)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R2A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R2A(L2)1	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R2
339-117-R2A(L2)2	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R2
339-117-R2A(L2)3	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R2

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R2A(L2) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-023	339-117-R2A(L2)1	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-026	339-117-R2A(L2)2	black	Yes	No	-	fibrous glass	misc. part.	
					<1	25	75	
339-029	339-117-R2A(L2)3	black	Yes	No	-	fibrous glass	misc. part.	
					<1	25	75	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R2A (L3)	gray mineral capsheet built-up roof system (Insulation Layer)	339-117-R2A(L3)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Insulation Layer)	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 in this Sample Space:			

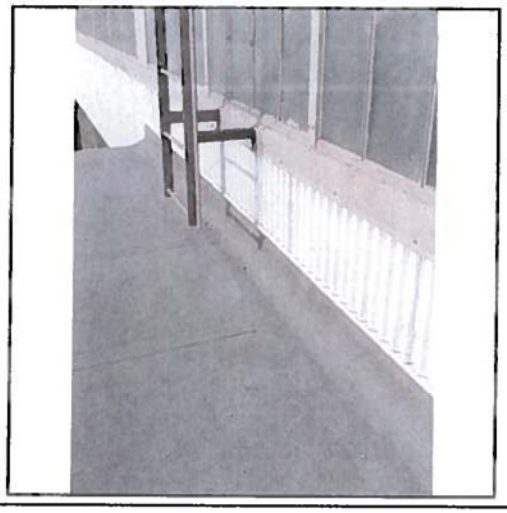
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage		
- -	- -	- -		
Visible	Reachable	Texture		
- -	- -	- -		
Barriers	Ventilation	If Yes	Friable Surface	
- -	- -	- -	- -	- -
Air Movement	Proximity to Repair Items	Activity		
- -	- -	- -		

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R2A(L3)1, 339-117-R2A(L3)2, 339-117-R2A(L3)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R2A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R2A(L3)1	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R2
339-117-R2A(L3)2	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R2
339-117-R2A(L3)3	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R2

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R2A(L3) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-024	339-117-R2A(L3)1	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-027	339-117-R2A(L3)2	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-030	339-117-R2A(L3)3	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

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

Building ID and Name: 117 — building 117

Building Location: Hawaii Army National Guard (HIARNG) Barbers Point, HI 96862

EMET ID: 1409339

For the ACM - Space Identified as: 339-117-R3

Inspection Date: 1/26/2015, 1/28/2015

Unified Sample Area	Homogeneous Sample Area or Salient Description	Comments	ACBM Present			Material Type*			Response Action	Estimated Cost to Remove
			Suspected	Confirmed	Friable	T	DC	PD		
339-117-R3A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)		YES	NO ACM						
339-117-R3A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)		YES	NO ACM						
339-117-R3A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)		YES	NO ACM						

*** Refers to Material Type and Damage Conditions**

T = Material Type:	DC = Damage Condition:	PD = Potential Damage Condition:
S = Surfacing	ND = No Damage	NPD = No Potential Damage
M = Miscellaneous	D = Damaged	PD = ACBM w/ Potential Damage
T = Thermal Systems	SD = Significant 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
1409339	117	building 117	1/28/2015

Material ID and Description		Document Number	Unified Sample Area Number
339-117-R3A (L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)		339-117-R3A(L1)

Drawing/Sketch Number:

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.

Unified Sample Area/Homogeneous Material

gray mineral capsheet built-up roof system (Mineral Capsheet Layer)

Location of Confirmed, Assumed, or New ACM within Building

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 in this Sample Space:			

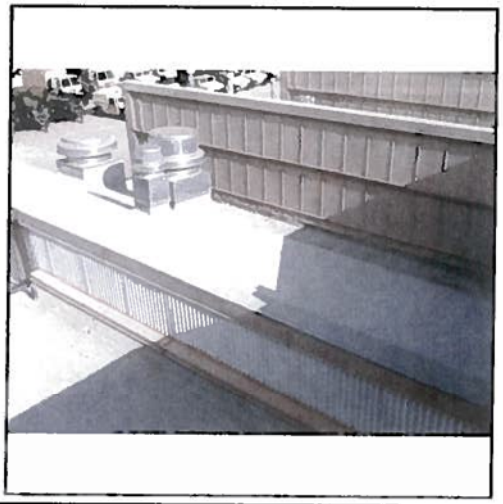
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation**	**If Yes** / **Friable Surface**
--	--	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R3A(L1)1, 339-117-R3A(L1)2, 339-117-R3A(L1)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R3A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R3A(L1)1	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R3
339-117-R3A(L1)2	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R3
339-117-R3A(L1)3	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R3

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R3A(L1) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-031	339-117-R3A(L1)1	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-034	339-117-R3A(L1)2	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-037	339-117-R3A(L1)3	gray	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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. *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.	*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. *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R3A (L2)	gray mineral capsheet built-up roof system (Roofing Layer)	339-117-R3A(L2)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Roofing Layer)	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 in this Sample Space:			

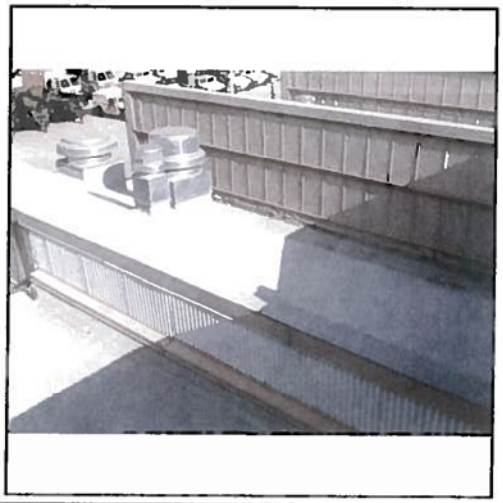
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
- -	- -	- -
Visible	**Reachable**	**Texture**
- -	- -	- -
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
- -	- - / - -	- - / - -
Air Movement	**Proximity to Repair Items**	**Activity**
- -	- -	- -

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R3A(L2)1, 339-117-R3A(L2)2, 339-117-R3A(L2)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R3A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R3A(L2)1	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R3
339-117-R3A(L2)2	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R3
339-117-R3A(L2)3	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R3

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R3A(L2) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-032	339-117-R3A(L2)1	black	Yes	No	-	fibrous glass	misc. part.	
					<1	25	75	
339-035	339-117-R3A(L2)2	black	Yes	No	-	fibrous glass	misc. part.	
					<1	25	75	
339-038	339-117-R3A(L2)3	black	Yes	No	-	fibrous glass	misc. part.	
					<1	25	75	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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. *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.	*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. *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R3A (L3)	gray mineral capsheet built-up roof system (Insulation Layer)	339-117-R3A(L3)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material

gray mineral capsheet built-up roof system (Insulation Layer)

Location of Confirmed, Assumed, or New ACM within Building

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 in this Sample Space:			

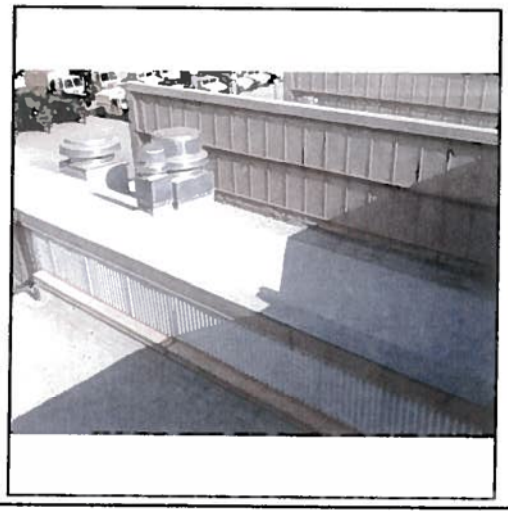
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
- -	- -	- -
Visible	**Reachable**	**Texture**
- -	- -	- -
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
- -	- - / - -	- - / - -
Air Movement	**Proximity to Repair Items**	**Activity**
- -	- -	- -

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R3A(L3)1, 339-117-R3A(L3)2, 339-117-R3A(L3)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R3A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R3A(L3)1	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R3
339-117-R3A(L3)2	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R3
339-117-R3A(L3)3	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R3

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R3A(L3) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-033	339-117-R3A(L3)1	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-036	339-117-R3A(L3)2	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-039	339-117-R3A(L3)3	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

- *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.
- *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.
- *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.
- *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

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

Building ID and Name: 117 — building 117

Building Location: Hawaii Army National Guard (HIARNG) Barbers Point, HI 96862

EMET ID: 1409339

For the ACM - Space Identified as: 339-117-R4

Inspection Date: 1/26/2015, 1/28/2015

Unified Sample Area	Homogeneous Sample Area or Salient Description	Comments	ACBM Present			Material Type*			Response Action	Estimated Cost to Remove
			Suspected	Confirmed	Friable	T	DC	PD		
339-117-R4A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)		YES	NO ACM						
339-117-R4A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)		YES	NO ACM						
339-117-R4A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)		YES	NO ACM						

*** Refers to Material Type and Damage Conditions**

T = Material Type:	DC = Damage Condition:	PD = Potential Damage Condition:
S = Surfacing	ND = No Damage	NPD = No Potential Damage
M = Miscellaneous	D = Damaged	PD = ACBM w/ Potential Damage
T = Thermal Systems	SD = Significant 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
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R4A (L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	339-117-R4A(L1)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material	Location of Confirmed, Assumed, or New ACM within Building
gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	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 in this Sample Space:			

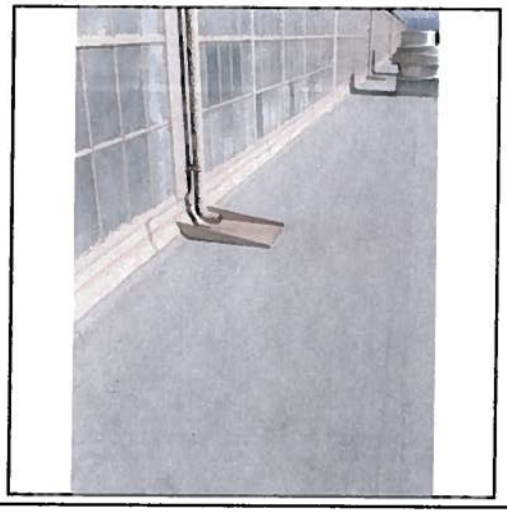
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R4A(L1)1, 339-117-R4A(L1)2, 339-117-R4A(L1)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R4A(L1)	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R4A(L1)1	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R4
339-117-R4A(L1)2	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R4
339-117-R4A(L1)3	0	gray mineral capsheet built-up roof system (Mineral Capsheet Layer)	See Sketch 339-117-R4

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R4A(L1) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-040	339-117-R4A(L1)1	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	
339-043	339-117-R4A(L1)2	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	
339-046	339-117-R4A(L1)3	gray	Yes	No	-	fibrous glass	misc. part.	
					<1			
						20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R4A (L2)	gray mineral capsheet built-up roof system (Roofing Layer)	339-117-R4A(L2)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material

gray mineral capsheet built-up roof system (Roofing Layer)

Location of Confirmed, Assumed, or New ACM within Building

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 in this Sample Space:			

RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R4A(L2)1, 339-117-R4A(L2)2, 339-117-R4A(L2)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH

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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R4A(L2)	gray mineral capsheet built-up roof system (Roofing Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R4A(L2)1	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R4
339-117-R4A(L2)2	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R4
339-117-R4A(L2)3	0	gray mineral capsheet built-up roof system (Roofing Layer)	See Sketch 339-117-R4

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R4A(L2) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-041	339-117-R4A(L2)1	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-044	339-117-R4A(L2)2	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	
339-047	339-117-R4A(L2)3	black	Yes	No	-	fibrous glass	misc. part.	
					<1	20	80	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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.
*Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.

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

EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Sample Area Report - Area Master

EMET ID	Building Number and Name		Inspection Date
1409339	117	building 117	1/28/2015

Document Number	Material ID and Description		Unified Sample Area Number
	339-117-R4A (L3)	gray mineral capsheet built-up roof system (Insulation Layer)	339-117-R4A(L3)
	Drawing/Sketch Number		

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.

Unified Sample Area/Homogeneous Material

gray mineral capsheet built-up roof system (Insulation Layer)

Location of Confirmed, Assumed, or New ACM within Building

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 in this Sample Space:			

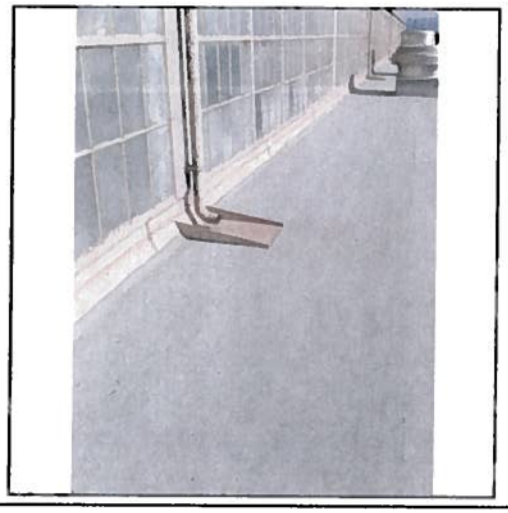
RISK ASSESSMENT DETERMINATION

Physical Condition	Potential Damage	Water Damage
--	--	--
Visible	**Reachable**	**Texture**
--	--	--
Barriers	**Ventilation** / **If Yes**	**Friable Surface**
--	-- / --	-- / --
Air Movement	**Proximity to Repair Items**	**Activity**
--	--	--

SAMPLE ANALYSIS SUMMARY SECTION

Total Number of Samples Collected	3
Total Number of Samples Analyzed	3
ASBESTOS-CONTAINING MATERIAL ?	NO
Samples Collected by	EMET
Sample Numbers	339-117-R4A(L3)1, 339-117-R4A(L3)2, 339-117-R4A(L3)3
Samples Analyzed by	EMET
Number of Salient Designations	

PHOTOGRAPH



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		EMET ID
117	building 117	1409339

Sample Area/Lot Number and Name	
339-117-R4A(L3)	gray mineral capsheet built-up roof system (Insulation Layer)

Sample Number	% Asbestos	Description of Sampled Material	Sample Location
339-117-R4A(L3)1	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R4
339-117-R4A(L3)2	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R4
339-117-R4A(L3)3	0	gray mineral capsheet built-up roof system (Insulation Layer)	See Sketch 339-117-R4

Inspector's Name	Signature	Date Samples Collected
Arnaldo Estrada		1/28/2015

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

NVLAP®

NVLAP LAB CODE 101807-0

Client: Mason Architects, Inc.
Address: 119 Merchant St., Suite 501

Building: building 117
Address: Hawaii Army National Guard (HIARNG)
Barbers Point, HI 96862

Approved Signatory:

Sample/Homogeneous Area: 339-117-R4A(L3) Analysis Date: 2/2/2015 Report Date: 2/2/2015

Lab ID	Sample ID	Color	homogeneity	Asbestos Present	Asbestos (Type) Area %	Fibrous Components Area %	Non-fibrous Components Area %	comments
339-042	339-117-R4A(L3)1	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-045	339-117-R4A(L3)2	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	
339-048	339-117-R4A(L3)3	yellow	Yes	No	-	-	misc. part.	
					<1			
						-	100	

Accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the scope specific under Lab Code 101807-0.
State of Hawaii Asbestos Requirements mandates all samples to be collected by a certified Asbestos Inspector in accordance with § 11-501, 11-502, and 11-504. Results of samples collected by someone other than a certified Asbestos Inspector may be invalid.
Note: EPA, OSHA, and HIOSH define "asbestos-containing material" as any material or product which contains more than one percent asbestos.

*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. *Asbestos fiber percentage is approximate - performed by visual observation only, unless otherwise indicated.	*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. *Samples analyzed as received by the laboratory, interpretation is responsibility of the client.

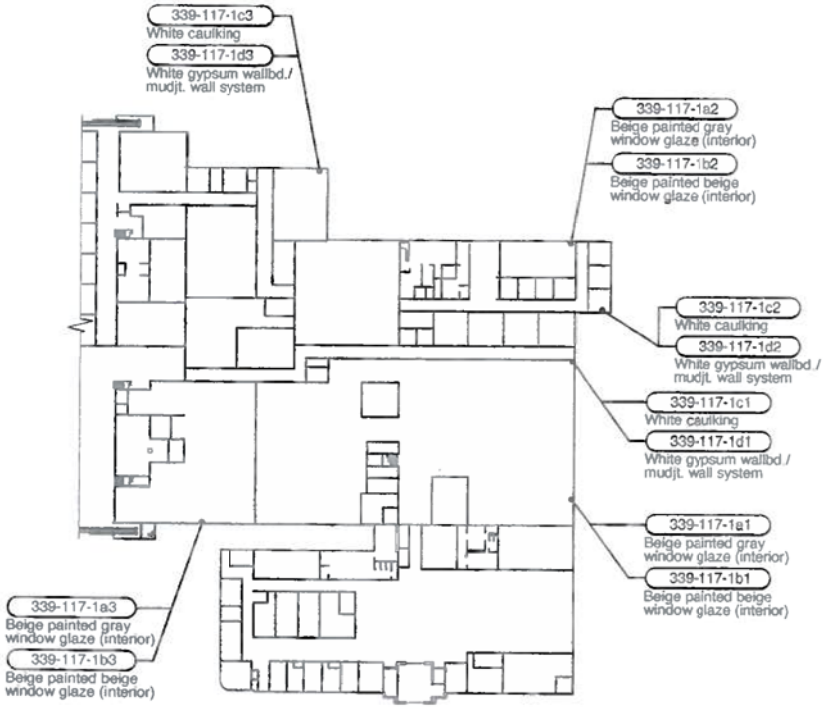
EMET Services, Inc. 94-520 Uke`e Street, Suite A, Waipahu, Hawaii 96797 Phone: (808) 671-8383 FAX: (808) 6717979

Appendix B

Asbestos Survey Sample Locations Sketch

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
117	BUILDING 117	HIRANG BARBERS POINT BARBERS POINT, HAWAII	339-117-1 1 OF 1



LEGEND

ACM: SAMPLE #

NON-ACM: SAMPLE #

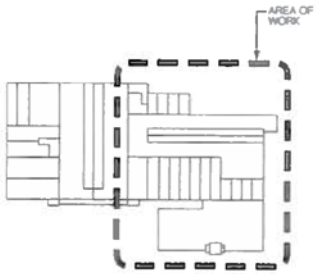
NORTH

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: HIRANG (DEPARTMENT OF DEFENSE) - BLDG. 117

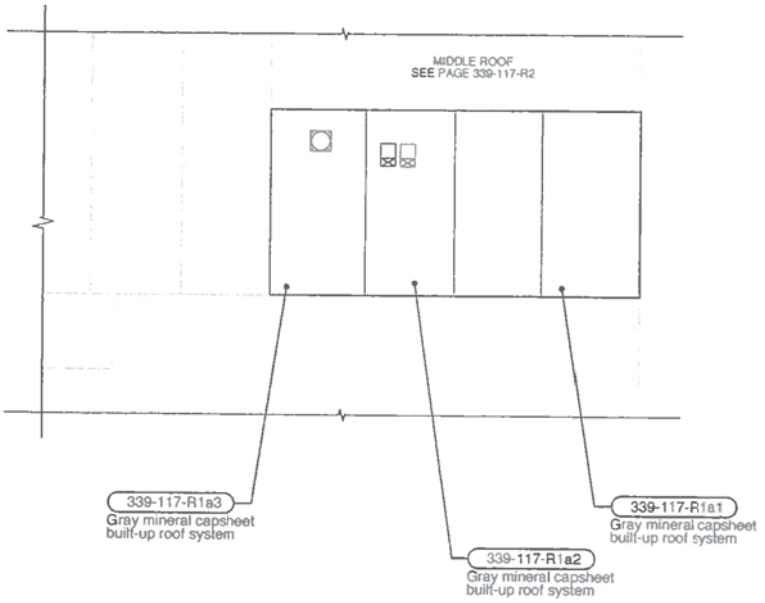
HIRANG BARBERS POINT
BUILDING 117 - PARTIAL FIRST FLOOR PLAN
NOT TO SCALE

EMET I.D. #1409339

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

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
117	BUILDING 117	HIRANG BARBERS POINT BARBERS POINT, HAWAII	339-117-R1 1 OF 1



LEGEND

ACM: ← SAMPLE #

NON-ACM: ← SAMPLE #

NORTH

GOOSENECK VENT

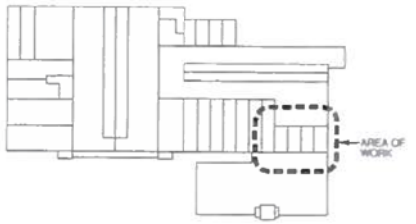
EXHAUST FAN

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: HIRANG (DEPARTMENT OF DEFENSE) - BLDG. 117

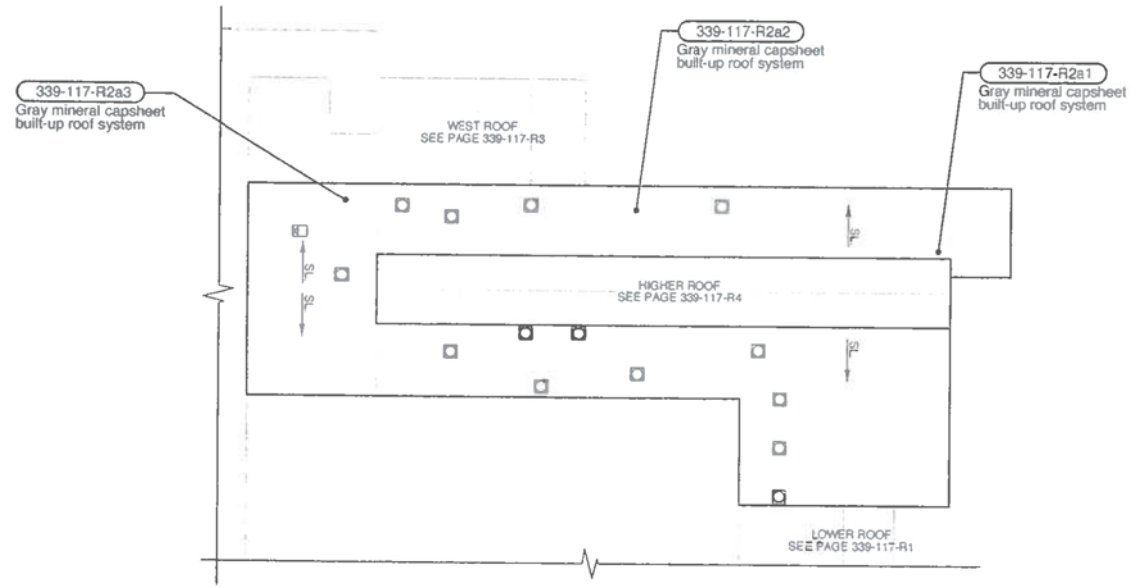
HIRANG BARBERS POINT
BUILDING 117 - PARTIAL ROOF PLAN (LOWER ROOF)
NOT TO SCALE

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. #1409339

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
117	BUILDING 117	HIRANG BARBERS POINT BARBERS POINT, HAWAII	339-117-R2 1 OF 1



LEGEND

ACM: SAMPLE #

NON-ACM: SAMPLE #

NORTH

GOOSENECK VENT

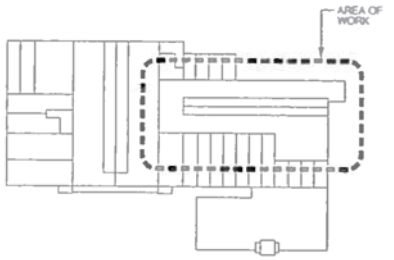
EXHAUST FAN

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: HIRANG (DEPARTMENT OF DEFENSE) - BLDG. 117

HIRANG BARBERS POINT
BUILDING 117 - PARTIAL ROOF PLAN (MIDDLE ROOF)
NOT TO SCALE

EMET I.D. #1409339

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

ASBESTOS SAMPLE LOCATION PLAN
BLDG # NAME OF BUILDING
117 BUILDING 117
ADDRESS
HIRANG BARBERS POINT
BARBERS POINT, HAWAII
SKETCH #
339-117-R3
1 OF 1
LEGEND
ACM: SAMPLE #
NON-ACM: SAMPLE #
NORTH
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.
339-117-R3a1
Gray mineral capsheet
built-up roof system
339-117-R3a2
Gray mineral capsheet
built-up roof system
339-117-R3a3
Gray mineral capsheet
built-up roof system
SL
MIDDLE ROOF
SEE PAGE 339-117-R2
AREA OF WORK
KEY PLAN - HIRANG (DEPARTMENT OF DEFENSE) - BLDG. 117
HIRANG BARBERS POINT
BUILDING 117 - PARTIAL ROOF PLAN (WEST ROOF)
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. #1409339

ASBESTOS SAMPLE LOCATION PLAN

BLDG #	NAME OF BUILDING	ADDRESS	SKETCH #
117	BUILDING 117	HIRANG BARBERS POINT BARBERS POINT, HAWAII	339-117-R4 1 OF 1

LEGEND

ACM: ← SAMPLE #

NON-ACM: ← SAMPLE #

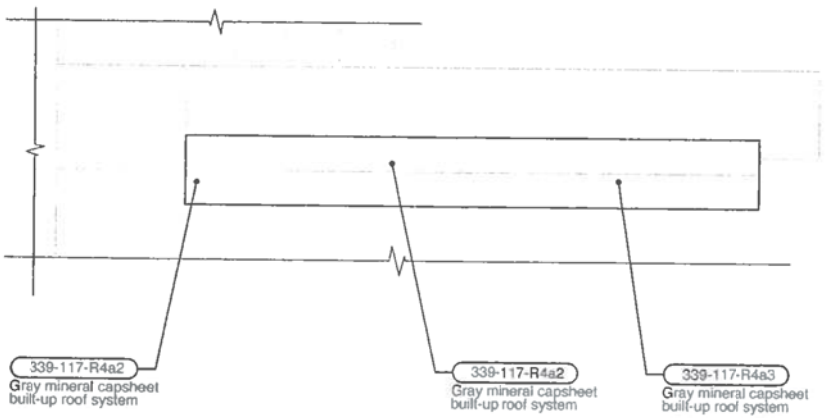
NORTH

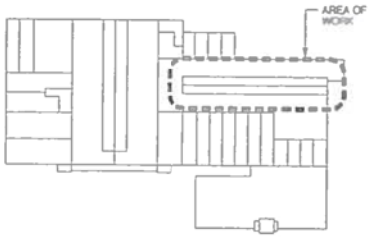
ASBESTOS-CONTAINING MATERIALS (ACM)* :

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.





HIRANG BARBERS POINT
BUILDING 117 - PARTIAL ROOF PLAN (HIGH ROOF)
NOT TO SCALE

KEY PLAN: HIRANG (DEPARTMENT OF DEFENSE) - BLDG. 117

EMET I.D. #1409339

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

Appendix C

Lead Survey Report

Laboratory Report

Painted Surfaces Total Elemental Lead Analyses
by X-Ray Fluorescence

EMET ID: 1409339

Test Date: January 26, 2015

Hawaii Army National Guard (HIARNG)
Barbers Point, Bldg 117 - Replace Windows

XRF#	Location	Component	Substrate	Condition	Color	PbC (mg/cm²)	Lead-based Paint?	Lead-containing Paint?
453	Calibration					1.00 ± 0.10		
454	Calibration					1.00 ± 0.10		
455	Calibration					1.00 ± 0.10		
456	building 117, north interior	door	metal	fair	beige	0.02 ± 0.08	no	yes
457	building 117, interior	door frame	metal	fair	beige	0.00 ± 0.02	no	yes
458	building 117, interior	window sill	metal	fair	off white	0.15 ± 0.11	no	yes
459	building 117, interior	window frame	metal	fair	off white	0.00 ± 0.02	no	yes
460	building 117, interior	window muntin	metal	fair	off white	0.00 ± 0.02	no	yes
461	building 117, interior	window glaze	caulking	fair	off white	0.00 ± 0.02	no	yes
462	building 117, interior	wall	metal	fair	off white	0.00 ± 0.02	no	yes
463	building 117, interior	column	metal	fair	off white	6.10 ± 4.20	yes	yes
464	building 117, interior	window frame	metal	fair	off white	1.50 ± 0.40	yes	yes
465	building 117, interior	door	metal	fair	beige	0.00 ± 0.02	no	yes
466	building 117, interior	door frame	metal	fair	beige	0.00 ± 0.02	no	yes
467	building 117, interior	window sill	metal	fair	off white	1.60 ± 0.60	yes	yes
468	building 117, interior	window muntin	metal	poor	off white	26.90 ± 25.90	yes	yes
469	NULL					0.80 ± 0.40		
470	building 117, north interior	column	metal	fair	off white	8.20 ± 5.20	yes	yes
471	NULL					0.90 ± 0.40		
472	building 117, north interior	window frame	metal	fair	off white	5.20 ± 3.30	yes	yes
473	building 117, north interior	wall	metal	fair	off white	0.00 ± 0.02	no	yes
474	building 117, north exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
475	building 117, north exterior	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
476	building 117, north exterior	window frame	metal	fair	tan	4.60 ± 2.20	yes	yes
477	building 117, north exterior	muntin	metal	fair	tan	3.20 ± 1.60	yes	yes
478	building 117, north exterior	door	metal	fair	tan	0.00 ± 0.02	no	yes
479	building 117, north exterior	door frame	metal	fair	tan	0.00 ± 0.03	no	yes
480	NULL					0.00 ± 0.02		
481	building 117, north exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
482	building 117, north exterior	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
483	building 117, north exterior	window frame	metal	fair	tan	8.20 ± 6.90	yes	yes
484	building 117, north exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
485	building 117, north exterior	muntin	metal	fair	tan	5.70 ± 3.80	yes	yes
486	building 117, west exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
487	building 117, west exterior	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
488	building 117, west exterior	window frame	metal	fair	tan	14.10 ± 11.70	yes	yes
489	building 117, west exterior	downspout	metal	fair	tan	0.00 ± 0.02	no	yes
490	building 117, west exterior	muntin	metal	fair	tan	3.60 ± 2.20	yes	yes
491	building 117, west exterior		metal	fair	tan	0.00 ± 0.02	no	yes
492	building 117, west exterior	door frame	metal	fair	tan	0.00 ± 0.02	no	yes
493	building 117, west interior	window sill	wood	fair	off white	0.01 ± 0.03	no	yes
494	NULL					1.10 ± 0.40		
495	building 117, west interior	window frame	metal	fair	off white	2.00 ± 0.90	yes	yes
496	building 117, west interior	muntin	metal	fair	off white	0.00 ± 0.02	no	yes
497	building 117, west interior	muntin	metal	fair	off white	2.30 ± 1.20	yes	yes

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^2 (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^2 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.

Serial #7798, Source Date 4/2014

EMET ID: 1409339 **Test Date: January 26, 2015**

Hawaii Army National Guard (HIARNG)
Barbers Point, Bldg 117 - Replace Windows

XRF#	Location	Component	Substrate	Condition	Color	PbC (mg/cm²)	Lead-based Paint?	Lead-containing Paint?
498	**building 117, west interior**	**column**	**metal**	**fair**	**off white**	**16.80 ± 12.80**	**yes**	**yes**
499	building 117, west interior	door	metal	fair	beige	0.00 ± 0.02	no	yes
500	building 117, west interior	door frame	metal	fair	beige	0.00 ± 0.02	no	yes
501	**building 117, west interior**	**column**	**metal**	**fair**	**off white**	**9.30 ± 5.60**	**yes**	**yes**
502	building 117, west interior	wall	gypboard	fair	off white	0.00 ± 0.02	no	yes
503	**building 117, west interior**	**window frame**	**metal**	**fair**	**off white**	**2.60 ± 1.30**	**yes**	**yes**
504	**building 117, west interior**	**muntin**	**metal**	**fair**	**off white**	**2.00 ± 1.00**	**yes**	**yes**
505	building 117, west exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
506	building 117, west exterior	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
507	**building 117, west exterior**	**window frame**	**metal**	**fair**	**tan**	**6.80 ± 5.00**	**yes**	**yes**
508	**building 117, west exterior**	**muntin**	**metal**	**fair**	**tan**	**5.40 ± 4.30**	**yes**	**yes**
509	building 117, west exterior	wall	metal	fair	tan	0.00 ± 0.02	no	yes
510	building 117, west exterior	window sill	metal	fair	tan	0.00 ± 0.04	no	yes
511	**building 117, west exterior**	**window frame**	**metal**	**fair**	**tan**	**2.50 ± 1.40**	**yes**	**yes**
512	**building 117, west exterior**	**muntin**	**metal**	**fair**	**tan**	**3.70 ± 2.20**	**yes**	**yes**
513	building 117, west exterior	door	metal	fair	tan	0.00 ± 0.02	no	yes
514	building 117, west exterior	door frame		fair	tan	0.00 ± 0.02	no	yes
515	**building 117, west exterior**	**door**	**metal**	**fair**	**tan**	**6.40 ± 4.80**	**yes**	**yes**
516	building 117, west exterior	wall	concrete	fair	tan	0.06 ± 0.07	no	yes
517	building 117, west exterior	wall	concrete	fair		0.30 ± 0.68	no	yes
518	building 117, west interior	wall	metal	fair	off white	0.00 ± 0.02	no	yes
519	**building 117, west interior**	**window sill**		**fair**	**off white**	**2.10 ± 1.10**	**yes**	**yes**
520	**building 117, west interior**	**window frame**	**metal**	**fair**	**off white**	**3.60 ± 2.50**	**yes**	**yes**
521	**building 117, west interior**	**muntin**	**metal**	**fair**	**off white**	**2.90 ± 1.30**	**yes**	**yes**
522	**building 117, east interior mezzanine**	**window sill**	**metal**	**fair**	**off white**	**1.40 ± 0.40**	**yes**	**yes**
523	**building 117, east interior mezzanine**	**window frame**	**metal**	**fair**	**off white**	**1.50 ± 0.50**	**yes**	**yes**
524	NULL					1.40 ± 0.30		
525	**building 117, east interior mezzanine**	**muntin**	**metal**	**fair**	**off white**	**2.70 ± 1.30**	**yes**	**yes**
526	**building 117, east interior mezzanine**	**column**	**metal**	**fair**	**off white**	**8.10 ± 5.30**	**yes**	**yes**
527	building 117, east interior mezzanine	wall	concrete	fair	off white	0.06 ± 0.05	no	yes
528	**building 117, east exterior**	**window sill**	**concrete**	**fair**	**tan**	**3.20 ± 2.20**	**yes**	**yes**
529	**building 117, east exterior**	**window frame**	**metal**	**fair**	**tan**	**10.10 ± 8.20**	**yes**	**yes**
530	**building 117, east exterior**	**muntin**	**metal**	**fair**	**tan**	**7.30 ± 5.00**	**yes**	**yes**
531	building 117, east exterior	wall	concrete	fair	tan	0.03 ± 0.06	no	yes
532	building 117, east exterior	door	metal	fair	tan	0.00 ± 0.02	no	yes
533	building 117, east exterior	door frame	metal	fair	tan	0.00 ± 0.02	no	yes
534	**building 117, east exterior**	**window sill**	**concrete**	**fair**	**off white**	**2.10 ± 0.90**	**yes**	**yes**
535	NULL					1.40 ± 0.40		
536	**building 117, east exterior**	**window frame**	**metal**	**fair**	**off white**	**10.10 ± 6.00**	**yes**	**yes**
537	**building 117, east exterior**	**muntin**	**metal**	**fair**	**off white**	**10.70 ± 5.90**	**yes**	**yes**
538	**building 117, east interior**	**column**	**metal**	**fair**	**off white**	**10.80 ± 6.10**	**yes**	**yes**
539	**building 117, east interior**	**wall**	**metal**	**fair**	**off white**	**3.20 ± 1.70**	**yes**	**yes**
540	building 117, east interior	door	metal	fair	tan	0.00 ± 0.02	no	yes
541	building 117, east interior	door frame	metal	fair	tan	0.00 ± 0.02	no	yes
542	building 117, east exterior clerestory windows	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
543	**building 117, east exterior clerestory windows**	**window frame**	**metal**	**fair**	**tan**	**4.00 ± 2.60**	**yes**	**yes**
544	**building 117, east exterior clerestory windows**	**muntin**	**metal**	**fair**	**tan**	**4.00 ± 2.60**	**yes**	**yes**
545	building 117, east exterior clerestory windows	wall	metal	fair	off white	0.00 ± 0.02	no	yes
546	building 117, east exterior clerestory windows	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
547	**building 117, east exterior clerestory windows**	**window frame**	**metal**		**tan**	**6.10 ± 4.10**	**yes**	**yes**

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^2 (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^2 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.

EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-529 Uke Street, Suite A Waipahu, Hawaii U.S.A. 96797-1203
(808) 676-8583 Telephone (808) 671-7956 Facsimile

EMET ID: 1409339 **Test Date: January 26, 2015**

Hawaii Army National Guard (HIARNG)
Barbers Point, Bldg 117 - Replace Windows

XRF#	Location	Component	Substrate	Condition	Color	PbC (mg/cm²)	Lead-based Paint?	Lead-containing Paint?
548	**building 117, east exterior clerestory windows**	**muntin**	**metal**	**fair**	**tan**	**6.10 ± 4.20**	**yes**	**yes**
549	building 117, east exterior clerestory windows	wall	metal	fair	off white	0.00 ± 0.02	no	yes
550	building 117, east exterior clerestory windows	downspout	metal	fair	tan	0.00 ± 0.03	no	yes
551	building 117, east exterior clerestory windows	wall	metal	fair	off white	0.00 ± 0.02	no	yes
552	**building 117, west exterior clerestory windows**	**window frame**	**metal**	**fair**	**tan**	**2.90 ± 1.40**	**yes**	**yes**
553	building 117, west exterior clerestory windows	window	metal	fair	tan	0.00 ± 0.02	no	yes
554	building 117, west exterior clerestory windows	header	metal	fair	tan	0.00 ± 0.02	no	yes
555	building 117, west exterior clerestory windows	window sill	metal	fair	tan	0.00 ± 0.02	no	yes
556	**building 117, west exterior clerestory windows**	**window frame**	**metal**	**fair**	**tan**	**8.50 ± 7.10**	**yes**	**yes**
557	**building 117, west exterior clerestory windows**	**muntin**	**metal**	**fair**	**tan**	**8.20 ± 5.40**	**yes**	**yes**
558	building 117, west exterior clerestory windows	wall	metal	fair	off white	0.00 ± 0.02	no	yes
559	building 117, west exterior clerestory windows	downspout	metal	fair	tan	0.00 ± 0.02	no	yes
560	Calibration					1.00 ± 0.10		
561	Calibration					1.10 ± 0.10		
562	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^2 (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^2 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.

Serial #7798, Source Date 4/2014

EnvironMETech (EMET) Services, Inc. · Waipio Gentry Business Park · 94-520 Uke'e Street, Suite A · Waipahu, Hawaii, U.S.A. 96797-4200 · (808) 671-8858 · Telephone · (808) 671-2929 · Facsimile

Laboratory Report

Painted Surfaces Total Elemental Lead Analyses
by X-Ray Fluorescence

EMET ID: 1409339 **Test Date: January 28, 2015**

Hawaii Army National Guard (HIARNG)
Barbers Point, Bldg 117 - Replace Windows

XRF#	Location	Component	Substrate	Condition	Color	PbC (mg/cm²)	Lead-based Paint?	Lead-containing Paint?
584	Calibration					1.10 ± 0.10		
585	Calibration					1.00 ± 0.10		
586	Calibration					1.00 ± 0.10		
587	exterior, west side	wall	metal	fair	off white	0.00 ± 0.02	no	yes
588	**exterior, west side**	**window frame**	**metal**	**fair**	**beige**	**8.20 ± 5.10**	**yes**	**yes**
589	exterior, west side	flashing	metal	fair	beige	0.00 ± 0.02	no	yes
590	**exterior, west side**	**mullion**	**metal**	**fair**	**beige**	**8.00 ± 5.40**	**yes**	**yes**
591	**interior, west side**	**crank pipe**	**metal**	**fair**	**off white**	**4.90 ± 3.00**	**yes**	**yes**
592	**interior, west side**	**crank bracket**	**metal**	**fair**	**off white**	**4.10 ± 2.10**	**yes**	**yes**
593	interior, west side	cross beam	metal	fair	off white	0.60 ± 0.40	no	yes
594	**interior, west side**	**window frame**	**metal**	**fair**	**off white**	**1.50 ± 0.50**	**yes**	**yes**
595	**interior, west side**	**mullion**	**metal**	**fair**	**off white**	**3.10 ± 1.80**	**yes**	**yes**
596	**interior, west side**	**beam**	**metal**	**fair**	**off white**	**1.10 ± 0.20**	**yes**	**yes**
597	interior, west side	wall	metal	fair	off white	0.00 ± 0.02	no	yes
598	exterior, north side	wall	metal	fair	off white	0.00 ± 0.02	no	yes
599	**exterior, north side**	**window frame**	**metal**	**fair**	**beige**	**7.20 ± 5.00**	**yes**	**yes**
600	exterior, north side	flashing	metal	fair	beige	0.00 ± 0.03	no	yes
601	**exterior, north side**	**mullion**	**metal**	**fair**	**beige**	**6.50 ± 5.20**	**yes**	**yes**
602	interior, north side	wall	metal	fair	off white	0.25 ± 0.25	no	yes
603	**interior, north side**	**beam**	**metal**	**fair**	**off white**	**7.50 ± 5.40**	**yes**	**yes**
604	**interior, north side**	**window frame**	**metal**	**fair**	**off white**	**7.30 ± 5.20**	**yes**	**yes**
605	**interior, north side**	**mullion**	**metal**	**fair**	**off white**	**7.30 ± 5.00**	**yes**	**yes**
606	**interior, north side**	**cross beam**	**metal**	**fair**	**off white**	**6.70 ± 5.00**	**yes**	**yes**
607	**interior, north side**	**crank bracket**	**metal**	**fair**	**off white**	**7.90 ± 5.30**	**yes**	**yes**
608	**interior, north side**	**crank pipe**	**metal**	**fair**	**off white**	**6.70 ± 4.60**	**yes**	**yes**
609	Calibration					1.00 ± 0.10		
610	Calibration					1.00 ± 0.10		
611	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^2 (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^2 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.

Serial #7798, Source Date 4/2014

EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-520 Ukee Street, Suite A Waipahu, Hawaii, USA 96797-4203
(808) 671-8887 Telephone (808) 671-5929 Facsimile

Appendix D

Certifications

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

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 Communique dated January 2009).

2014-07-01 through 2015-06-30

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Institute of Standards and Technology

NVLAP-01C (REV 2009-01-28)

STATE OF HAWAI'I

DEPARTMENT OF HEALTH

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, 2013.

Date of Issue: **FEBRUARY 21, 2012**
Certification # **PBF-0024**

FOR DIRECTOR OF HEALTH

NON-TRANSFERABLE

REVOCABLE FOR CAUSE

State of Hawai'i
Asbestos Certification

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	04/18/15	PM	04/15/15

W= Worker
CS= Cont./Sup.
INS= Inspector
PD= Project Designer
MP= Mgmt Planner
PM= Project Monitor

Estrada
Arnaldo
EnvironMETeo Services, Inc.
HIASB-0966
State Exp. Date

State of Hawai'i
Lead Based Paint Activities Certification

Expiration Dates:

Inspector- n/a
Supervisor- 06/01/2016
Risk Assessor- 10/16/2016
Project Designer- n/a
Worker- n/a

Estrada
Arnaldo
Certification # PB-0138

State of Hawai'i
Asbestos Certification

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	03/20/16	PM	01/09/16

Iopa
Joseph K. III
EnvironMETeo Services, Inc.
HIASB-0585
State Exp. Date

W = Worker
CS= Cont /Sup
INS= Inspector
PD= Project Designer
MP= Mgmt Planner
PM= Project Monitor

State of Hawai'i
Lead Based Paint Activities Certification

Expiration Dates:

Inspector- n/a
Supervisor- n/a
Risk Assessor- 10/16/2016
Project Designer- n/a
Worker- n/a

Iopa, III
Joseph
Certification # PB-0668

State of Hawai'i
Asbestos Certification

Training Course Exp. Dates

W	n/a	MP	n/a
CS	n/a	PD	n/a
INS	02/20/16	PM	01/09/16

Pascal
Peter K. III
EnvironMETeo Services, Inc.
HIASB-0584
State Exp. Date

W= Worker
CS= Cont /Sup
INS= Inspector
PD= Project Designer
MP= Mgmt Planner
PM= Project Monitor

State of Hawai'i
Lead Based Paint Activities Certification

Expiration Dates:

Inspector n/a
Supervisor n/a
Risk Assessor 10/1/2016
Project Designer n/a
Worker n/a

Pascal, III

Peter

Certification # PB-0670

End of Report

(This page intentionally left blank.)

SECTION 01730

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01700 - Execution Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

B. 01715 - Existing Conditions Asbestos/Lead/Hazardous Material Surveys Asbestos/Lead/Hazardous Material Survey

C. Section 13283 – Disturbance of Lead-Containing Materials

D. Section 13288 Testing/Air Monitoring.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

A. Recycling Plan: Describe the means by which materials to be diverted from landfills will be prepared for acceptance by designated facilities.

B. Recycled and Salvaged Material Records:

1. Identification of material, including those retrieved by installer for use on other projects.

2. Include manifests, weight tickets, receipts, and invoices as evidence of quantity.

3. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements:

1. 29 CFR 1926

2. NFPA 241

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. Remove portions of existing building required for alterations.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.

2. Comply with applicable requirements of NFPA 241.

3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

4. Provide, erect, and maintain temporary barriers and security devices.

5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.

6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

7. Do not close or obstruct roadways or sidewalks without permit.

8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.

1. Provide bracing and shoring.

2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.

D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.

F. Perform demolition in a manner that maximizes salvage and recycling of materials.

1. Recycle or salvage steel window components removed.

2. Dismantle existing construction and separate materials.

3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as shown.

2. Report discrepancies to Architect before disturbing existing installation.

3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01500 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.

1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.

2. Remove items indicated on drawings.

E. Remove existing systems and equipment as indicated.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.

2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

F. Protect existing work to remain.

1. Prevent movement of structure; provide shoring and bracing if necessary.

2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.

4. Patch as specified for patching new work.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03730

CONCRETE REPAIRS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. As specified in Division 01.

1.02 SECTIONS INCLUDES

A. This Section covers the requirements for furnishing all necessary materials, tool, labor, equipment, and all other incidental and appurtenant work to repair concrete. The Contractor shall inspect the existing building for all needed concrete surface repairs. All work shall be in strict conformance with manufacturer's recommendations, including surface preparation, mixing, application, curing, finishing, and all pertinent work.

1.03 SAFETY PRECAUTIONS

A. Contractor shall use gloves, face shields, and other appropriate protective clothing necessary to prevent any possibility of skin contact with uncured resin and components.

B. Place clothing contaminated with uncured resin components in closed containers for storage until it can be discarded or until provision is made for the removal of contaminants from the clothing.

C. Non-impervious clothing which becomes contaminated with uncured epoxy resin components shall be removed immediately and not re-worn until the contaminant is removed from the clothing.

D. Use splash proof safety goggles where there is any possibility of liquid resin contacting the eyes.

E. Where there is any possibility that Contractor personnel may be exposed to liquid resin components, provide a portable eyewash fountain within the immediate work area for emergency use.

F. Skin that become contaminated with liquid resin components shall be immediately washed or showered with soap or mild detergent and water to remove any contaminant.

G. Do not permit eating and smoking in areas where resin components are handled, processed, of stored.

1.04 SUBMITTALS

Submit in accordance with Section 01300 - SUBMITTALS.

1.05 DELIVERY AND STORAGE

Inspect materials delivered to site for damage, unload and store with a minimum of handling. Deliver all components and aggregate materials in original sealed containers and store in dry covered areas at temperatures below 90 degrees F.

1.06 WEATHER LIMITATIONS

Work shall not proceed when weather conditions detrimentally affect the quality of patching of bonding concrete. Apply epoxy resin materials only when the contact surfaces are completely dry and if the atmospheric temperature range is suitable for the specified type of epoxy adhesive of grout material.

1.07 PROTECTION

A. Precautions should be taken to avoid damage to any surface near the work zone due to spillage.

B. Leave finished work in neat, clean condition with no evidence of spill-overs onto adjacent exposed surfaces.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials shall be prepared, installed and cured in strict accordance with the manufacturers' recommendations. Alternative products are listed in the Structural Drawings.

B. Patch Materials:

1. Use cast-in-place mix with water/cement ratio not exceeding 0.40, and calcium nitrate admixture, and shrinkage reducing admixture with 3/8 in. size coarse aggregates. Aggregates shall be clean, well graded, saturated surface dry material having low absorption and high density.

2. For shallow patches to the top of horizontal surfaces, less than 1" deep, use Sika 222 or pre-approved equal without the coarse aggregates.

3. For patches on vertical and overhead surfaces, use Sika Repair 223 or pre-approved equal.

C. Grout: Cementitious grout shall be SikaGrout 212, or pre-approved equal.

D. Epoxy: Epoxy used as a grout material for dowels shall be Hilti RE 500-SD, or pre-approved equal.

E. Bonding Agent: Water-based epoxy bonding agent for concrete surfaces shall be Sika Armatec 110, or pre-approved equal.

F. Curing compound shall be Unicure, manufactured by Unitex, or pre-approved equal.

G. Crack Penetrating Sealer: Sonneborn Epofil SLV or pre-approved equal.

PART 3 - EXECUTION

3.01 CONSTRUCTION PROCEDURES

A. Spall Repair Procedure:

1. The Contractor shall sound all surfaces at designated areas shown on the drawings to identify spalls and delaminations.

2. Provide shoring for severely spalled areas to provide additional support to planks prior to concrete removal.

3. The spalled and delaminated concrete shall be completely removed. The Contractor shall take the necessary precautions, including the use of chipping hammers not exceeding 15 lbs. in weight, to avoid damaging the underlying sound concrete or breaking into the precast deck slab, or damaging the bearing thereof.

4. The spalled and delaminated edges shall be squared by grinding the concrete at the perimeter beyond the removal area to a minimum depth of ½ inch. Avoid cutting any existing embedded steel reinforcing in the slab. At areas where concrete cover is less than ½ inch over the steel reinforcing, the perimeter shall be carefully ground to a safe depth away from the reinforcing, and the remaining depth chipped away with a light weight chipping hammer to square the edge. Angles between adjacent cuts around the perimeter shall not be less than 90 degrees and the shape of each patch shall not be irregular.

5. Additional concrete shall be removed to the depth of the cut.

6. All exposed surfaces shall be needle gunned to remove all materials that would inhibit bonding. All rust scale shall be removed from reinforcing steel.

7. Any reinforcement to receive less than ½ in. of new concrete cover or which has lost more than 20 percent of its cross-sectional area shall be brought to the attention of the Engineer.

8. Prepare all surface requiring patching so that they will be structurally sound, clean, and free of dirt, loose mortar particles, paint, films, protective coatings, efflorescence, laitance, and other matter detrimental to proper adhesive.

9. Apply water based epoxy bonding agent to exposed rebar and concrete. Follow manufacturers' instructions.

10. Prior to placement of patch material, the exposed concrete surface shall be saturated surface dry with no water accumulation.

11. Apply the repair material to fill the voids.

12. For patch depths in excess of 1 in., 3/8 in. aggregates shall be added to the repair mortar used.

13. The mortar shall be vibrated, rodded or tamped during placement to consolidate the pour and fill all corners of the patch and beneath the reinforcing.

14. For vertical and overhead patches, form and place concrete in the patch area. Externally and/or internally vibrate the concrete as it is placed in the forms to achieve proper consolidation and fill all corners of the forms.

15. The surface finish shall be textured or ground to match adjacent conditions.

16. The repair mortar shall be cured by generously applying a dissipating water-based curing compound approved by the Engineer or by covering the surface with a polyethylene sheet over wet burlap.

17. Remove the forms after five days of curing. Carefully inspect the patch for improper consolidation or cracking around the perimeter or in the patch. If these conditions exist, notify the Engineer for possible remedial action.

18. The Contractor shall develop a repair procedure that results in crack-free patches. Any patches with excessive cracking, in the opinion of the Engineer, shall be removed and replaced at no cost to the government.

END OF SECTION

DIVISION 5 METALS

SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Division 01.

1.02 SECTION INCLUDES

Work of this Section includes all labor, materials, equipment and services necessary to complete the structural steel as shown on the drawings and specified herein, including but not limited to the following:

1. Structural steel.

2. All shop and field connections.

1.03 QUALITY ASSURANCE

A. Perform work accordance with governing codes, laws, regulations, and directions of governing bodies; however, where in these specifications reference is made to performance conforming to other standards, the most stringent shall apply.

B. Comply with the provisions of the following specifications and standards.

1. American Welding Society (AWS) D1.1 - Structural Welding Code, Steel.

2. International Building Code, 2012 Edition.

C. The Contractor shall secure all field measurements necessary for the completion of this work. The Contractor shall be responsible for all errors of detailing and fabrication and for the correct fitting of the structural members to each other and to their supports.

D. Use only certified welders for all welding performed under this section. Perform work in accordance with AWS D1.1. Qualify welders in accordance with AWS D1.1 for each process. Evidence of previous qualifications of welders, welding operators and tackers shall be submitted. Engineer may require new qualification tests at Contractor's expense should the quality of welds be deficient.

F. Testing of Mill Order Steel:

1. Where structural steel member are identifiable by heat or melt numbers and are accompanied by mill analysis test reports, they may be used without further tests.

2. Where material cannot be identified as specified above, make tension and bend tests of the materials in accordance with ASTM standards (one for each 5 tons), either locally or at the mill, as specified hereafter for unidentified local stock. Costs for such testing shall be the Contractor's responsibility.

G. Testing of Local Stock Steel:

1. In the event local stock structural steel can be identified by heat or melt numbers and is accompanied by mill analysis test reports, it may be used without testing.

2. Where material cannot be identified, or its source is questionable, make one tension and one bend test for each 5 tons or fraction thereof, of each shape, heat, or melt of stock used.

3. Arrange to have test specimens made by the Independent Testing Laboratory.

H. Welding Electrodes: Check electrodes for conditions, suitability, and compliance with the specifications.

I. Fabrication Inspection:

1. Visually inspect steel shapes and plates for defects such as laminations and non-metallic inclusions. Use ultrasonic equipment to determine extent of defects.

2. Confirm that sections used conform to specified dimensional standards.

3. The Engineer reserves the right, any time before final acceptance, to reject material not in compliance with the specified requirements.

4. Perform welding inspection as specified in Article 3.08, below.

J. Defective Work:

1. Work found to be defective, missing or damaged shall immediately be replaced with proper work. Such replaced work and the inspection for same shall be at the expense of the Contractor.

2. Straightening of any material, if necessary, shall be done by a process and in a manner that will not injure the materials, and which is approved by the Engineer. Sharp kinks or bends shall be cause for rejection. Heating will not be allowed.

3. Delamination and other rolling defects in structural shapes and plates shall be cause for rejection when, in the judgment of the Engineer, repairs are not feasible or acceptable.

4. If defects or damaged work cannot be corrected in the field, the material shall be returned to the shop or new parts furnished. The Contractor shall replace all work at his own expense.

1.04 SUBMITTALS

A. Shop Drawings:

1. Submit complete shop drawings of all structural steel work to the Engineer for review and approval before fabrication. Detail all members and connections not specifically shown but which are required to complete the work. Include complete information necessary for the fabrication and erection of the component parts of the structure, including the location, type, and size of all bolts and welds. Include all welds by standard welding symbols of the AWS.

2. Review of shop drawings is only for review of general conformance with the design concept of the project and Contract Documents, but not the checking of dimensions. Corrections or comments made on shop drawings do not relieve the contractor from compliance with the requirements of the drawings and specifications. Should more than one submittal be required, clearly identify on subsequent submittals materials added or revised after previous submittal.

B. Submit mill analysis test reports or tension and bend tests as specified in Article 1.04.

C. Certificates of Conformance: Submit certificates of conformance for the following:

1. Welding Electrodes and Rods

2. Non-Shrink Grout

3. Structural Steel

4. Bolts

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle, ship, and store materials in a manner that will prevent distortion or other damage.

B. Store material in a clean, properly drained location out of contact with the ground.

C. Replace all damaged material with new material or repair the damaged material in an approved manner.

PART 2 – PRODUCTS HOT DIP GALVANIZE AFTER FABRICATION

2.01 STEEL

A. Materials not otherwise specified herein shall conform to the AISC "Manual of Steel Construction."

1. High-Strength Low-Alloy Steel: W and WT sections, ASTM A992, Grade 50 as indicated.

2. Steel for Rolled Shapes, Channels and Angles: ASTM A36.

2.02 BOLTS, NUTS, AND WASHERS

A. Machine Bolts and Nuts: ASTM A307.

B. Circular Washers for Common Bolts: ASTM F436.

2.03 ACCESSORIES

A. Welding Electrodes and Rods: AWS Code D1.1, E70 5/16-inch maximum diameter.

B. Non-Shrink Grout: As specified in Section 03300 for non-metallic shrinkage-resistant grout.

C. Primer Paint: See Section 09900.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions where structural steel is to be installed and notify the Engineer of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the Engineer.

3.02 FABRICATION

A. Fabricate in accordance with the applicable provisions of the Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings as set forth in Part 5 of the AISC Manual of Steel Construction for Structural Steel and Pipes.

1. Welding of Structural Steelwork: General: AWS D1.1 for structural steel and pipes and AWS D1.3 for sheet steel. Weld only in accordance with approved WPSs, which are to be available to welders and inspectors during the production process.

2. Thermal and Air-Arc Cutting: Provide positive preheat of 150 degrees F minimum when thermal cutting beam copes, weld access holes, or other surface. Grind smooth with the removal of a minimum of 1/32-inch of material.

3. After punching or working component parts of a member, remove twists or bends prior to assembly. Make all holes by punching or drilling. Burned holes are not permitted. Make holes, cuts, and sheared edges free of kinks, burrs, and warped edges.

4. Keep assembled structural steel member free from twists, bends, nicks, scars, dents, and defective workmanship.

5. Fastening Holes:

   a. Make unfinished bolt holes 1/16-inch larger than the nominal bolt diameter with full bearing on the unthreaded shank.

   b. Make holes for anchor bolts no greater than 5/16-inch larger than the anchor bolt nominal diameter.

   c. Holes may be punched if the material thickness is not greater than the nominal bolt diameter plus 1/8-inch. Drill holes in thicker material from solid or sub-punched elements and ream. Remove burrs from holes for high-strength bolts by grinding.

3.03 PAINTING

A. Paint: Deliver paint to shop in original, sealed containers marked with manufacturer's name and brand identification.

B. Prime Painting: After inspection and approval of structural steel, apply shop coats as follows:

1. Thoroughly clean surfaces of rust, mill scale, and foreign matter. Clean by brushing, blasting, or solvents in accordance with the SSPC's Painting Manual for solvent and hand or power tool cleaning. Allow to dry before painting.

Apply primer in the shop where possible and touch-up in the field at connections prior to application of finish paint system.

2. Apply paint thoroughly and evenly and well into joints and open spaces.

3. See Section 09900 for paint schedule.

3.04 ERECTION

A. Except as modified herein, erect steel in accordance with the AISC Manual of Steel Construction.

1. Where parts cannot be assembled or fitted properly as a result of errors in fabrication or of deformation due to handling or transportation, report such condition immediately to the Engineer and obtain approval therefrom for the methods of correction before proceeding with making any corrections. Drain steelwork properly; fill pockets in structures exposed to the weather with an approved waterproof material. Provide safety belts and lines for workmen and inspectors aloft on high structures unless safe working platforms or safety nets are provided. Do not use impact torque wrenches to tighten anchor bolts set in concrete.

2. Connections: Provide bolts and other connections between the structural steel and foundations properly and build them into connecting work. Use metal templates to establish bolt group spacing to avoid conflict with existing reinforcing. The Contractor shall furnish instructions for the setting of bolts and shall ascertain that the items are properly set during the progress of the work.

3. Notification: Notify the Project Manager at least 5 working days in advance of steel erection.

4. Gas Cutting: Do not use gas cutting torches in the field for correcting fabrication errors on structural framing members without prior written approval of the Engineer.

5. Bolt Holes:

   a. Locate bolt holes accurately to ensure passage of bolts through assembled materials without drifting.

   b. Drifting to enlarge holes will not be permitted.

   c. Mismatching of holes greater than 1/8-inch will be cause for rejection of the work. For mismatched holes less than 1/8-inch, ream the hole for the next larger size bolt.

6. Welding:

a. Preparation: Clean all surfaces so that they are free of rust, scale, paint, and foreign matter. Remove paint and scale by wire brushing, chipping, or hammering, as required. Chip clean and wire brush burned or flame-cut edges before welding. Clamp member as required, space and alternate welds as necessary to avoid warping and misalignment. Preheat materials.

b. Weld Quality: Welds shall present a uniform surface, free of imperfections, and without undercutting or over-lapping and free of excessive oxides, gas pockets and non-metallic inclusions. Welds shall be made with the proper number of beads or passes to secure sound, thoroughly fused joints. For manual welding, each deposit shall not exceed 5/16 inch of weld for each pass or bead. Preceding layers shall be cleaned by wire brushing or peening to remove scale and slag, before placing any new weld metal.

c. Sequence of Welding: When welds enclose or partially enclose the perimeter or portion of the surface of a member, the weld bead shall be made in sequence, or staggered, so as to minimize internal stresses.

d. Faulty and Defective Welding: Chip out and replace any welding showing cracks, slag inclusion, lack of fusion, bad undercut, or other defects, as ascertained by visual or other means of inspection.

7. Remove temporary welds and run-off plates and backing strips.

8. File or grind corners, edges, welds and other rough portions and make smooth. Repair damaged zinc and prime coats. Apply prime coat to connections, previously unprimed areas and abraded areas.

9. Tolerances: In accordance with the AISC Code of Standard Practice.

3.05 FIELD COATING

A. Remove weld splatters, loose weld slag and other deleterious material.

B. Touch up abraded, burned or otherwise damaged shop coats and welded joints and refinish with the applicable shop coating noted above.

C. Apply paint with a hand brush, thoroughly worked into all joints, corners and open spaces and well brushed over the surfaces. Do not apply paint to wet or damp surfaces. Make sure paint is dry when the material is loaded for delivery to the work.

3.06 TESTS AND INSPECTIONS

A. Welding shall be inspected by a qualified inspector employed by the Testing Laboratory. This inspector shall confirm the qualifications of welders, the use of AWS qualified procedures, the manufacturer's recommended use of automatic equipment and the proper use of preheat, and will verify that welds are made in accordance with approved WPSs.

B. Notify the Engineer to visually inspect welding after the welding is completed. Hand or power wire brush welds, and thoroughly clean them before inspection.

3.07 FIELD QUALITY ASSURANCE

A. Provide opportunity for inspection in a timely manner in accordance with Building Code requirements.

B. All field welding shall be inspected.

C. Promptly correct defective work at no additional cost to the Government.

3.08 CLEANUP

A. After erection, clean surfaces and leave free of mud, dirt, oil, and grease. Remove unused materials, tools, scaffolding, and debris from the premises.

END OF SECTION

SECTION 05515

FIXED METAL LADDERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prefabricated ladders.

1.02 REFERENCE STANDARDS

A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

E. ASTM C109 / C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars; 2013.

F. ASTM C157 / C157M - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete; 2014.

G. OSHA 1910.27 – Fixed Ladders.

1.03 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1.04 QUALITY ASSURANCE

A. Designer Qualifications: Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Product Qualification: Product design shall comply with OSHA 1910.27 minimum standards for fixed ladders and authority having jurisdiction.

C. Safety Requirements:

1. OSHA 1910.27

2. ANSI A14.3

1.05 WARRANTY

A. Manufacturer's Warranty: Correct defects in materials, workmanship and deterioration of material beyond ordinary wear and tear with performance below minimum OSHA standards for a period of 5 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:

1. Allaco Ladder Company; www.alacoladder.com.

2. O'Keefe's Inc.; www.okeeffes.com.

3. I. D. Cotterman Company; www.cotterman.com.

4. Precision Ladders, LLC; www.precisionladders.com.

5. UPNOVR, Inc; www.upnovr.com.

6. Or accepted manufacturer.

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5005 alloy, H34 temper.

2.03 PREFABRICATED LADDERS

A. Design:

1. Match existing historically significant ladders.

2. Design Loads: Provide for concentrated load of 300 pounds.

3. Notify project manager if any matching existing elements conflict with OSHA 1910.27 and ANSI A14.3 safety requirements.

B. Components: Manufacturer's standard rails, rungs, treads, handrails. returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.

1. Rungs: As indicated

2. Channel Side Rails: 2 inch aluminum channels.

C. Finish: Mill finish aluminum to be field painted.

2.04 FABRICATION

A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.

B. Fit and shop assemble items in largest practical sections, for delivery to site.

C. Fabricate items with joints tightly fitted and secured.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).

C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).

D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).

E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

2.06 ACCESSORIES

A. Fasteners: Stainless Steel as required by manufacturer for fabrication and installation of ladder.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

A. Install ladder and accessories in accordance with manufacturer's instructions.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Isolate aluminum from contact with grout and cement based materials with bituminous paint or manufacturer approved material.

D. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch (6 mm).

C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI (AWS) for Custom Grade.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Interior Woodwork Items:

1. Window Sills: Clear poplar; prepare for painted finish.

2.02 LUMBER MATERIALS

A. Softwood Lumber: poplar species, quality suitable for painted finish.

2.03 WOOD TREATMENT

A. Treating solutions: Inorganic boron (SBX) conforming to AWPA C31. Treating solution retention shall be a minimum of 0.28 pounds per cubic foot (equivalent to 0.42 DOT

B. Redry wood after pressure treatment to maximum 19 percent moisture content.

2.04 FABRICATION

A. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.6 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

END OF SECTION

SECTION 07410

METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured metal panels for walls, with accessory components.

1.02 RELATED REQUIREMENTS

A. Section 07920 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

1.03 REFERENCE STANDARDS

A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data: Provide manufacturer documentation on structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.

D. Samples: Submit two samples of wall panel, 12 inch (300 mm) by 12 inch (300 mm) in size.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that may cause discoloration or staining of products.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Sub-contractor and General Contractor Warranty: Correct defective Work within a five year period after Date of Substantial Completion, including defects in water tightness and integrity of seals.

C. Manufacturer's Warranty

1. Twenty (20) year panel warranty from deterioration of steel base material to extent that would cause panel to no longer be able to provide wind and live load resistance for which it was designed, and that would cause panel to leak

2. Correct defective work within a five year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

3. Manufacturer shall either recoat or replace allegedly non-complying material.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:

1. Centria: www.centria.com.

2. HGM Custom Metal Roofing: www.hpmhawaii.com.

3. MBCI: www.mbci.com.

4. Petersen Aluminum Corporation: www.pac-clad.com.

5. Or accepted manufacturer.

2.02 PERFORMANCE AND DESIGN REQUIREMENTS

A. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall.

1. Design Pressure: In accordance with applicable codes.

2. Wall Wind loads: 80 mph, Exposure C.

B. Water Penetration: No significant, uncontrolled leakage at 4 lbs. per sq. ft. pressure with spray test.

C. Air Infiltration: 0.02 cfm per square foot for gross roof areas, with 4 pounds per square foot differential pressure.

D. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.

E. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

F. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.

2.03 METAL PANELS

A. Profile: Vertical; [to match existing profile].

B. Exterior Color: To match existing.

C. Interior Color: Off White.

D. Material: 24 gauge steel, AZ50/AZM150 coated ASTM A792/A792M, minimum grade 33.

E. Factory Finish:

1. Exterior: Fluoropolymer Coating System: Manufacturer’s standard multi-coat thermocured coating system, including minimum 70 percent fluoropolymer color topcoat, AAMA 605.2 with minimum total dry film thickness of 1.0 mil (0.025 mm)

2. Interior: 1.0 dry mil polyester coating.

2.04 ACCESSORIES

A. Flashing and Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

C. Sealants:

1. Exposed Sealant: See section 07920 Sealants

2. Seam Sealant: Manufacturer recommended sealant.

D. Fasteners:

1. Exposed Fasteners: Stainless steel No. 14, soft neoprene washers, factory finished to match panel color.

2. Concealed Fasteners: Manufacturer's standard non-corrosive type.

E. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, stainless steel. Exposed fasteners same finish as panel system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building framing members are ready to receive panels.

3.02 INSTALLATION

A. Install panels on walls in accordance with manufacturer's instructions.

B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

C. Fasten panels to structural supports; aligned, level, and plumb.

D. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.03 TOLERANCES

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch (1.6 mm).

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch (6 mm).

3.04 CLEANING

A. Remove site cuttings from finish surfaces.

B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings and counterflashings.

1.02 RELATED REQUIREMENTS

A. Section 07920 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

B. Section 09 9000 - Painting and Coatings: Painted finish for flashing fabrications.

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012)e1.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA 1793 and CDA A4050 requirements and standard details, except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Stainless Steel: ASTM A666 Type 304, soft temper, 0.015 inch (0.4 mm) thick; smooth No. 4 finish.

2.02 ACCESSORIES

A. Fasteners: Stainless steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Protective Backing Paint: Zinc molybdate alkyd.

D. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.

E. Sealant to be Exposed in Completed Work: ASTM C920; elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; clear.

F. Plastic Cement: ASTM D4586, Type I.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.

F. Finish

PART 3 EXECUTION

3.01 PREPARATION

A. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.02 INSTALLATION

A. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Seal metal joints watertight.

3.03 PROTECTION

A. Protect finished flashings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

SECTION 07920

JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. 07410 - Metal Wall Panels: Sealant at metal wall panel joints.

B. Section 08510 - Steel Windows: Glazing sealants and accessories.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.

D. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).

E. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).

F. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.

2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.

4. Substrates the product should not be used on.

5. Substrates for which use of primer is required.

6. Substrates for which laboratory adhesion and/or compatibility testing is required.

7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from HIARNG and submit at least two physical samples for verification of color of each required sealant.

F. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

H. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

I. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

C. Field Testing Agency Qualifications: Experienced in performing the inspections/testing specified, with qualified technicians on staff.

D. Preinstallation Field Adhesion Test: Provide destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants.

E. Field Quality Control Plan:

1. Visual inspection of entire length of sealant joints.

2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.

a. For each different sealant and substrate combination, allow for one test every 12 inches (305 mm) in the first 10 linear feet (3 linear meters) of joint and one test every 24 inches (610 mm) thereafter.

b. If any failures occur in the first 10 linear feet (3 linear meters), continue testing at 12 inch (305 mm) intervals at no extra cost to HIARNG.

F. Field Adhesion Test Procedures:

1. Allow sealants to fully cure as recommended by manufacturer before testing.

2. Have a copy of the test method document available during tests.

3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.

4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to HIARNG.

G. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.

H. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

1.06 WARRANTY

A. Special Installer's Warranty:

1. 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.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty:

1. 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.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.

1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.

2. Dow Corning Corporation: www.dowcorning.com.

3. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.

4. Pecora Corporation: www.pecora.com.

5. Tremco Global Sealants: www.tremcosealants.com.

6. Sika Corporation: www.usa-sika.com.

7. Or accepted manufacturer.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.

a. Wall expansion and control joints.

b. Joints between door, window, and other frames and adjacent construction.

c. Joints between different exposed materials.

d. Openings below ledge angles in masonry.

e. Other joints indicated .

2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.

a. Joints between door, window, and other frames and adjacent construction.

b. Other joints indicated.

B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.

2.03 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.

1. Movement Capability: Plus and minus 50 percent, minimum.

2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.

3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.

4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.

5. Color: To be selected by HIARNG from manufacturer's standard range.

6. Cure Type: Single-component, neutral moisture curing.

B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.

1. Movement Capability: Plus and minus 25 percent, minimum.

2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.

3. Color: To be selected by HIARNG from manufacturer's standard range.

2.04 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.

2. Open Cell: 40 to 50 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location shown in the test plan.

1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.

2. Notify HIARNG of date and time that tests will be performed, at least 7 days in advance.

3. Record each test on Preinstallation Adhesion Test Log as indicated.

4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure

adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to HIARNG.

5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet (30 linear m), notify HIARNG immediately.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08510 - STEEL WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory finished steel windows with fixed and operating sash.

B. Operating hardware.

1.02 RELATED REQUIREMENTS

A. Section 07410 - Metal Wall Panels: Metal flashing and trim.

B. Section 07920 - Joint Sealants: Sealing joints between frames and adjacent construction.

C. Section 08800 - Glazing.

D. Section 0900 - Paints and Coatings; Field painting,

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2013.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2013.

C. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011.

D. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.

E. ASTM D522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings; 2013.

F. ASTM D523.- Standard Test Method for Specular Gloss, 2014.

G. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates, 2015.

H. ASTM D2247 = Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity, 2011.

I. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact); 2010.

J. ASTM D3359 - Standard Test Methods for Measuring Adhesion by Tape Test; 2009.

K. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test, 2011

L. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films, 2015

M. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

N. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

O. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012.

P. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2013.

Q. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2014.

R. ASTM E2248 - Standard Test Method for Impact Testing of Miniaturized Charpy V-Notch Specimens; 2013.

S. ASTM F1642 - Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings; 2012.

T. SSPC-SP 8 - Pickling; Society for Protective Coatings; 2007.

U. SSPS-SP16 - Brush-Off Blast Cleaning Of Non-Ferrous Metals; 2007.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data: Provide component dimensions, fasteners, anchors, and glass.

C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, full-sized sections, installation requirements, size and spacing of anchors, details of construction, method of glazing, details of operating hardware, and affected related work.

D. Sample: Submit one sample 24 x 24 inch (600 x 600) sample illustrating head, jamb, sill, false operable panel, mullion, divided lite, glazing, and finish, fully assembled.

E. Certificates: Certify that products of this section meet or exceed specified requirements.

F. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements.

G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in HIARNG's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing commercial windows specified in this section, with not less than five years of documented experience and a member of The Steel Window Institute.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years of experience and approved by the manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect factory finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.07 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Windows:

1. Arcadia, Inc. www.arcadiainc.com.

2. A&S Window Associates, Inc: www.aswindowassociates.com.

3. Crittall Windows Ltd: www.crittall-windows.co.uk.

4. Hope's Windows, Inc: www.hopeswindows.com.

5. Torrance Steel Window Co., Inc: www.torrancesteelwindow.com.

6. Or accepted manufacturer.

B. Glazing:

1. Cardinal Glass Industries: www.cardinalcorp.com.

2. Guardian Glass: www.guardian.com/GuardianGlass.

3. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com.

4. Or accepted manufacturer.

2.02 STEEL WINDOWS

A. Steel Windows: Hot rolled steel sections, factory fabricated, factory finished, with vision glass, infill panels, related flashings, anchorage and attachment devices.

1. Hot Rolled Steel Sections: ASTM A36/A36M

2. Sash Configuration: Fixed non-operable and projected awning out lights.

B. Performance Requirements: Provide glazed windows that comply with the following:

1. Wind Loads: Design and size components to withstand wind loads without damage or permanent set, when tested in accordance with ASTM E330/E330M, using pressure equal to 1.5 times specified design pressures, with 10 second duration of maximum load.

a. Design Pressure: In accordance with applicable codes.

b. Member Deflection: Limit member deflection to 1/200 of the longer dimension; with full recovery of glazing materials.

2. ATFP: Submit a design analysis with calculations showing that the design of each different size and type of window unit and its anchorage to the structure meets the minimum anti-terrorism standards. Windows shall meet the minimum anti-terrorism performance as specified in the paragraphs below and in accordance with the window schedule in the architectural and structural drawings, per UFC 4-010-01-12. Conformance to the performance requirements shall be validated by one of the following methods:

a. Computational Design Analysis Method: Window frames, mullions, and sashes shall be designed to the criteria listed herein. Computational design analysis shall include calculations verifying the structural performance of each window proposed for use, under the given static equivalent loads. Aluminum window framing members shall restrict deflections of the edges of glazing they support to L/60 under two times (2X) the glazing resistance

per the requirements of ASTM F2248 and ASTM E1300. Glazing resistance shall be indicated on the drawings. L denotes the length of the glazing supported edge. (L is to be based on edge length of glazing in frame and not on the distance between anchors that fasten frame to the structure.) The glazing frame bite for the window frames shall be in accordance with ASTM F 2248. Window frames shall be anchored to the supporting structure with anchors designed to resist two times (2X) the glazing resistance in accordance with ASTM F2248 and ASTM E1300.

b. Alternate Dynamic Design Analysis Method: As an alternative to the static equivalent load design approach described above, window framing members, anchors, and glazing may be designed using a dynamic analysis to prove the window system will provide performance equivalent to or better than a very low hazard rating in accordance with ASTM F1642 associated with the applicable low level of protection for the project.

c. Standard Airblast Test Method: As an alternative to either of the Computational Design Analysis Methods, each Minimum Antiterrorism window type shall be tested for evaluation of hazards generated from airblast loading in accordance with ASTM F1642 by an independent testing agency regularly engaged in blast testing. For proposed window systems that are of the same type as the tested system but of different size, the test results may be accepted provided the proposed window size is within the range from 25 percent smaller to 10 percent larger in area, than the tested window. Proposed windows of a size outside this range shall require testing to evaluate their hazard rating. Testing may be by shocktube or arena test. The test shall be performed on the entire proposed window system, which shall include, but not be limited to, the glazing, its framing system, operating devices, and all anchorage devices. Anchorage of the window frame or subframe shall replicate the method of installation to be used for the project. The minimum airblast loading parameters for the test shall be as follows: Peak positive pressure of 40 kPa and positive phase impulse of 285 kPa-msec. The hazard rating for the proposed window systems, as determined by the rating criteria of ASTM F 1642, shall not exceed the "Very Low Hazard" rating (i.e. the "No Break", "No Hazard", "Minimal Hazard" and "Very Low Hazard" ratings are acceptable. "Low Hazard" and "High Hazard" ratings are unacceptable). Results of window systems previously tested by test protocols other than ASTM F1642 may be accepted provided the required loading, hazard level rating, and size limitations stated herein are met.

d. Calculations verifying the structural performance of each window proposed for use, under the given loads, shall be prepared and signed by a registered Professional Engineer. The window components and anchorage devices to the structure, as determined by the design analysis, shall be reflected in the shop drawings.

3. Windborne Debris: Meet criteria as indicated. Exterior windows shall be tested and certified for impact resistance under ASTM E1886 and ASTM E1996 to comply with minimum Missile Level C and ICC IBC Section 1609, Wind Loads.

4. Air Infiltration: Limit air infiltration through assembly to 0.50 cfm/ft (0.77 (l / s) / m), measured at a reference differential pressure across assembly of [6.24] psf ([299] Pa) as measured in accordance with ASTM E283.

5. Water Penetration: ASTM E331, No water penetration for 15 miniutes when window subjected to a rate of flow of 5 gal./hr./sq. ft. with differential pressure across window unit of 4.50 psf.

6. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system to the exterior by a weep drainage network.

2.03 ACCESSORIES

A. Hot Rolled Steel Sections: ASTM A36/A36M

B. Glazing Beads: Extruded aluminum, Alloy 6063-T5 with a minimum thickness of .062 inches.

C. Weatherstripping: EPDM closed cell sponge, flexible silicone or polyethylene clad urethane foam.

D. Fasteners: Stainless steel.

E. Anchors, Clips, and Window Accessories: Provide stainless steel, hot-dip zinc-coated steel ASTM A123/A123M, bronze or brass as required to complete installation.

F. Sealant: See Section 07920.

2.04 GLASS AND GLAZING MATERIALS

A. Laminated Glass: ASTM C1172.

B. Outer Lite: Class 1 obscure clear float glass.

1. Kind HS heat strengthened.

2. Thickness: 6.0 mm.

3. Self-Cleaning, Low-Maintenance Coating: Pyrolytic coating on first surface.

C. Plastic Interlayer:

1. Polyvinyl Butyral (PVB)

2. Thickness: 0.090 inch (2.29 mm).

3. Interlayer Color: Clear.

D. Inner Lite: Class 1 clear float glass.

1. Kind HS heat strengthened.

2. Thickness: 6.0 mm.

E. Glazing Accessories: Shims, blocks, spacers, clips, sealants, tape and other accessories as recommended by manufacturer.

2.05 OPERATOR HARDWARE

A. Manually controlled operators to be provided by window manufacturer.

B. Straight rack arm and pinion thru wall operator controlled by vertical pipe extended to mitre gear box control within reach of floor. Provide oil enclosed type miter gear box and vertical shaft control. Gang windows with steel pipe, not less than 1-5/16" O.D, horizontal line shaft attached to grey iron pinions meshed with steel rack arms attached to ventilators. Provide steel, roller-bearing type bracket hangers as indicated for each horizontal shaft.

C. Shop finish hardware with manufacturer's standard shop coating and field paint per Section 09900.

2.06 FABRICATION

A. Fabricate all frames and sashes from solid hot-rolled steel shapes in accordance with

B. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

C. Accurately fit and secure joints and corners. Make joints flush and hairline.

D. Prepare components to receive anchor devices. Fabricate anchors.

E. Galvanize window units after fabrication.

F. Arrange fasteners to conceal from view.

G. Prepare components with reinforcement for operating hardware.

H. Reinforce mullions with internal galvanized steel members to maintain rigidity.

I. Provide internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

J. Factory/Shop-glaze window units to the extent practical in compliance with

1. Steel window and glass product manufacturer's instructions.

2. GANA Publications: GANA Laminated Division's "Laminated Glass Design Guide" and GANA's "Glazing Manual."

2.07 FINISHES

A. Finish Properties:

1. Hardness: ASTM D 3363 (pencil), H min.

2. Salt Spray: passes 3000 hours, ASTM B 117.

3. Humidity: Few #8 blisters, 3000 hours, ASTM D 2247.

4. Impact Resistance (3mm): no loss, ASTM D 2794,

5. Color Retention: 5 year less than or equal to 5 delta E, ASTM D 2244.

6. Chalk Resistance: #8 rating, ASTM D 4214.

7. Gloss Retention: greater than or equal to 30 percent, ASTM D 523.

B. Finish Process:

1. Pickle hot rolled steel complying with SSPC-SP 8.

2. Hot-dip galvanizing components, ASTM A123/A123M to create a thickness of 4 - 8 mils of cathodic protection.

3. Brush-Off Blast Cleaning: Brush-off blast clean in accordance with SSPS-SP16.

4. Primer: Fully cure primer in oven, electrostatically apply epoxy epoxy powder coat to a dry film thickness (DFT) of 2.0 - 4.0 mils within 12 hours of galvanizing treatment.

5. Top Coat: Fully cure primer in oven, electrostatically apply epoxy polyester powder coat to a dry film thickness (DFT) of 8.0 - 16.0 mils immediately after primer has cured.

C. Color: Sherwood Tan, MP07514 to match High Bay Project.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify wall openings and adjoining materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install window frames and glass and glazing in accordance with manufacturers instructions.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

D. Install operating hardware.

E. Install glass and infill panels in accordance with Section 08800, to glazing method required to achieve performance criteria.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16 inches in 3 ft (1.5 mm/m) non-cumulative or 1/8 inches per 10 ft (3 mm/3 m).

3.04 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

A. Remove labels and visible markings.

B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

3.06 PROTECTION

A. Do not permit continuing construction activities near unprotected finish surfaces.

END OF SECTION

SECTION 08800 - GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glazing units.

B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 08510 - Steel Windows: Coordination of performance requirements for glazing and window assembly.

1.03 REFERENCE STANDARDS

A. AAMA - Voluntary Specifications and Test Methods for Sealants; 2010.

B. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2011.

C. ASTM C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material; 2011.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2011).

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

F. ASTM C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories; 2011.

G. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.

H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

I. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.

J. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.

K. ASTM C1281 - Standard Specification for Preformed Tape Sealants for Glazing Applications; 2014.

L. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012a.

M. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2013.

N. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2014.

O. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2009.

P. GANA (SM) - GANA Sealant Manual; Glass Association of North America; 2008.

Q. GANA (LGDG) - Laminated Glazing Reference Manual; Glass Association of North America; 2009.

R. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units; Sealed Insulating Glass Manufacturers Association; 2004.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

C. Samples: Submit two samples 4 by 4 inch (100 by 100 mm) in size of glass units.

D. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer.

E. Test report for ASTM E1996 in accordance with test method E1886 for glazing in Section 08513.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, SIGMA TM-3000 Glazing Guidelines, and GANA Laminated Glazing Reference Manual for glazing installation methods. Maintain one copy on site.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:

1. AGC Glass Company North America, Inc: www.us.agc.com.

2. Cardinal Glass Industries: www.cardinalcorp.com.

3. Guardian Industries Corp: www.sunguardglass.com.

4. Pilkington North America Inc: www.pilkington.com/na.

5. PPG Industries, Inc: www.ppgideascapes.com.

6. Or accepted manufacturer.

B. Laminated Glass Manufacturers:

1. Cardinal Glass Industries: www.cardinalcorp.com.

2. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com.

3. Or accepted manufacturer.

C. Interlayer Manufacturers

1. E. I. du Pont de Nemours and Company: www.dupont.com.

2. Kuraray America Inc.: www.kuraray.us.com.

3. Saflex: www.saflex.com.

4. Or accepted manufacturer.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Select type and thickness of exterior glazing assemblies to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of glass. Coordinate glazing criteria with Section 08510.

1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings.

a. Basic Wind Speed: 110 mph.

b. Exposure Category: C.

c. Minimum Design Pressure: 50 psf.

2. Impact Resistance: Small Missle D, ASTM E1996 tested in accordance with ASTM E1886. Coordinate testing for complete assembly with Section 08510.

3. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.

4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless noted otherwise.

1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.

2. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and FT.

3. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality-Q3, color and performance characteristics as indicated.

4. Thicknesses indicated are minimums, comply with requirements indicated for wind load design regardless of thickness indicated.

B. Laminated Glass: ASTM C1172.

1. Outer Lite: Class 1 clear float glass.

a. Kind HS heat strengthened.

b. Thickness: 1/8 inch (3 mm) minimum.

c. Low-E Coating:

1) Basis of Design: ClimaGuard 55/27; Guardian Industries, Corp., www.guardian.com.

2) Surface: # 2.

2. Plastic Interlayer:

a. Polyvinyl Butyral (PVB)

b. Thickness: 0.09 inch (2.29 mm), minimum.

c. Interlayer Color: Clear.

3. Inner Lite: Class 1 clear float glass.

    a. Kind HS heat strengthened.

    b. Thickness: 1/8 inch (3 mm) minimum.

2.04 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal:

    1. Neoprene, ASTM C864.

    2. EPDM, ASTM C864.

    3. Silicone, ASTM C1115.

    4. Thermoplastic polyolefin rubber, ASTM C1115.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:

    1. Neoprene.

    2. EPDM.

    3. Silicone.

    4. Thermoplastic polyolefin rubber.

2.05 GLAZING SEALANTS

A. General:

    1. Compatibility: Select glazing sealants that are compatible with other materials they will contact, including glass products, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

    2. Suitability: Comply with sealant and glass manufacturers' requirements for selecting glazing sealants suitable for application

    3. Color: As selected from manufacturer's full range.

B. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 50, Uses NT, M, A, and G.

2.06 ACCESSORIES

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicate.

B. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II.

C. Spacers and Edge Blocks: Elastomeric material of hardness required by manufacturer to maintain glass placement.

D. Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size, shape and density to control glazing sealant depth for optimum performance

E. Glazing Tapes

1. Back Bedding Mastic Glazing Tape: Preformed, butyl-based, 100 percent solids compound with or without spacer rod as recommended in writing by tape and glass manufacturers for application; ASTM C1281 and AAMA 800.

2. Expanded Cellular Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, AAMA 800, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent and designed for compression of 25 percent to effect an air barrier.

F. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

G. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 INSTALLATION, GENERAL

A. Install glazing in shop to the extent practical.

B. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

C. Install glazing sealants in accordance with ASTM C1193, GANA Sealant Manual, and manufacturer's instructions.

D. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

E. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

F. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

G. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.03 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - WET GLAZING METHOD (SEALANT AND SEALANT)

A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.

B. Place setting blocks at 1/4 points and install glazing pane or unit.

C. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch (610 mm) intervals, 1/4 inch (6.4 mm) below sight line.

D. Fill gaps between glazing and stops with silicone type sealant to depth of bite on glazing, but not more than 3/8 inch (9 mm) below sight line to ensure full contact with glazing and continue the air and vapor seal.

E. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.05 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove non-permanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to the Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

B. Remove and replace glass that is damaged during construction period prior to the Date of Substantial Completion.

END OF SECTION

SECTION 09511

SUSPENDED ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 REFERENCE STANDARDS

A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2013.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. Product Data: Provide data on suspension system components and acoustical units.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Panels:

1. Armstrong World Industries, Inc: www.armstrong.com.

2. CertainTeed Corporation: www.certainteed.com.

3. Hunter Douglas Contract: www.hunterdouglascontract.com.

4. USG: www.usg.com.

5. Or accepted manufacturer.

B. Suspension Systems:

1. Same as for acoustical units.

2. Or accepted manufacturer.

2.02 ACOUSTICAL UNITS

A. Acoustical Panels: Plastic faced mineral fiber, ASTM E1264 Type IV, with the following characteristics:

1. Basis of Design:

a. Ultima 1900; Armstrong World Industries, Inc.

b. Ultima 1903; Armstrong World Industries, Inc.

2. Sizes:

a. 24 by 24 inches (600 by 600 mm).

b. 24 by 48 inches (600 by 1200 mm).

3. Thickness: 3/4 inches (19 mm).

4. Composition: Wet felted.

5. Light Reflectance: 90, ASTM E1264.

6. NRC: 0.80, ASTM E1264.

7. Ceiling Attenuation Class (CAC): 35, ASTM E1264.

8. Backside Coating: Formaldehyde capturing coating.

9. Edge: Square.

10. Surface Color: White.

11. Suspension System: Exposed grid.

2.03 SUSPENSION SYSTEM(S)

A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with clips, splices, and perimeter moldings as required.

B. Exposed Steel Suspension System: Formed galvanized steel, commercial quality cold rolled; intermediate-duty.

1. Basis of Design: Prelude XL, Armstrong World Industries, Inc.

2. Profile: Tee; 15/16 inch (24 mm) wide face.

3. Construction: Double web.

4. Finish: White painted.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.

1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Locate system on room axis according to reflected plan.

D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members. Use of existing

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.

   1. Use longest practical lengths.

   2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:

1. Make field cut edges of same profile as factory edges.

3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior and exterior surfaces identified to be painted.

1. Paint new exposed interior framing, to match existing.

2. Paint existing window operator.

3. Paint new and existing window trim plates to match existing building color.

4. Paint all new exposed flashing to match existing building color.

5. Existing surfaces damaged from new work, and exposed from demolition work and exposed patched surfaces.

6. New patched surfaces and surfaces indicated to be painted in Specifications and Drawings.

7. Uncovered rusting steel surfaces uncovered by demolition work and steel surfaces to be covered by new work.

D. Do Not Paint or Finish the Following Items:

1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.

2. Items indicated to receive other finishes.

3. Items indicated to remain unfinished.

4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

5. Floors, unless specifically so indicated.

6. Glass.

7. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

1.03 SUBMITTALS

A. See Section 01300 - Submittals, for submittal procedures.

B. 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.

2. Manufacturer's Information: Provide data on all listed materials, including Manufacturer's Material Safety Data Sheets.

C. 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.

D. Schedule of Finishes: Provide finish schedule including paint spread rates required to achieve final dry film thickness indicated in the schedule.

E. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is not specified, discuss sheen options with HIARNG before preparing samples, to eliminate sheens definitely not required.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

C. Paints:

1. Behr Process Corporation: www.behr.com.

2. Glidden Professional, a product of PPG Architectural Coatings: www.gliddenprofessional.com.

3. Benjamin Moore & Co: www.benjaminmoore.com.

4. PPG Architectural Finishes, Inc: www.ppgaf.com.

5. Pratt & Lambert Paints: www.prattandlambert.com.

6. Sherwin-Williams Company: www.sherwin-williams.com.

7. Or accepted manufacturer.

D. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.

1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.

2. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

3. Supply each coating material in quantity required to complete entire project's work from a single production run.

4. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

5. Mildewcide: 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.

B. Primers: As recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:

1. Provide coatings that comply with the most stringent requirements specified in the following:

a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.

b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:

1) Opaque, Flat: 50 g/L, maximum.

2) Opaque, Nonflat: 150 g/L, maximum.

3) Opaque, High Gloss: 250 g/L, maximum.

4) Varnishes: 350 g/L, maximum.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

D. Colors: To match exisiting

1. Extend colors to surface edges; colors may change at any edge as directed by HIARNG.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - All Exterior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry, cement board, and metal.

1. Preparation as specified by manufacturer.

2. Two top coats and one coat primer recommended by manufacturer for substrate and top coats.

3. Primer: As recommended by top coat manufacturer for substrate.

4. Top Coats: MPI 114 Interior/Exterior Gloss Paint, Gloss ; water based, acrylic co-polymer emulsion type, pigmented, gloss coating for primed wood, plaster, masonry, concrete, trim and wall surfaces.

2.04 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry, brick, wood, uncoated steel, shop primed steel, galvanized steel, and aluminum.

1. Primer: As recommended by top coat manufacturer for substrate.

2. Two top coats and one coat primer.

3. Top Coats: MPI 151, 153, 154 Light Industrial Coating, Interior, Water based, pigmented, emulsion coating for interior primed wood and metal surfaces providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

H. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

L. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.02 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.03 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.04 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

DIVISION 13 – SPECIAL CONSTRUCTION

SECTION 13283 - DISTURBANCE OF LEAD-BASED AND LEAD-CONTAINING MATERIAL

PART 1 - GENERAL

1.01 SUMMARY

A. Disturbance of lead-based and/or lead-containing materials during renovation activities.

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

1.02 DESCRIPTION OF WORK

A. Whenever lead-based and/or lead-containing paint is being disturbed, this Section shall take precedence over others.

B. The preparation and treatment of existing lead-based and/or lead-containing material on various surfaces. Lead-based and/or lead-containing paint removal work shall be selective and only where existing paint is peeling, blistering, flaking, delaminating, in poor condition, not adhering to the existing substrate and/or going to be disturbed. In addition, Contractor shall coordinate work in this Section with contract drawings and documents to determine where painted surfaces, regardless of condition, are going to be disturbed and are required to be completely removed (deleaded) to structural substrate to complete work required. This section is being implemented so that the planned work can be accomplished in a safe manner.

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

D. Demolition of lead-based and/or lead-containing painted surfaces. Lead-based and/or lead-containing painted surfaces shall be identified in advance so that the demolition of lead-based and/or lead-containing materials will be one continuous operation.

1.03 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.

1.04 COORDINATION WITH OTHER SECTIONS

A. It will be the Contractor's responsibility to repair and/or replace, to the Owner'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 Engineer, any discrepancies in the plans and specifications prior to starting any work.

1.05 CONTRACTOR USE OF PREMISES

A. General: The Contractor shall cooperate fully with the Owner, 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 Engineer to be contaminated. The Engineer 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 Engineer.

1.06 COMMENCEMENT OF WORK

A. The Contractor shall not commence work unless the following requirements have been met. These requirements must be met each time work that calls for the disturbance 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 Engineer.

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

1.07 SUBMITTALS

A. Submit in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

B. Submittals shall be submitted in the order listed herein. Failure to do so will result in automatic rejection of submittals.

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

D. Detailed Lead-Based and/or 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 Engineer.

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-based and/or 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 Engineer 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 Engineer 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) for all workers disturbing lead-containing paint.

2. Submit to the Engineer, 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.

1.08 GENERAL REQUIREMENTS

A. The work specified herein shall include the preparation of work area, preparation and/or other special treatment procedures, demolition, and transportation and disposal procedures as required of lead-containing 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. The Contractor shall give, at a minimum, seven (7) working days notification to the Owner's Inspector / Air Monitoring Consultant prior to the start of any lead paint related work.

D. The Contractor shall not begin with any work without the Owner's Inspector / Air Monitoring Consultant present onsite.

E. 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.

F. Specific Statutory and Regulatory Requirements:

1. Department of Health, State of Hawaii, Hawaii Administrative Rules, Chapter 11-41, Lead-Based Paint Activities.

2. Title 40 Code of Federal Regulations Part 745, Lead; Renovation, Repair, and Repainting Program.

3. Environmental Protection Agency: 2008 Lead Renovation, Repair and Painting Rule.

4. 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.

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

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

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

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

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

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

11. 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.

G. 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 Engineer 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 Engineer before implementation.

1.09 DEFINITIONS

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

B. Removal: All herein specified procedures necessary to remove lead-containing and/or lead-based paint that is peeling, blistering, flaking, delaminating, in poor condition, not adhering to the existing substrate and/or going to be disturbed OR deleaded 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 Engineer, 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-based Paint: Paint or other surface coatings that contain lead equal to or in excess of one (1) milligram per square centimeter or 0.5 percent by weight.

M. Lead Paint: Lead-containing paint, lead-based paint and/or paint containing any amount of lead present.

N. Lead-containing Paint: Lead-containing paint, lead-based paint and/or paint containing any amount of lead.

O. 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.

P. 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.

Q. 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.

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

1.10 ABBREVIATIONS

A. ANSI - American National Standards Institute, Inc.

B. CFR - Code of Federal Regulations

C. EPA - U.S. Environmental Protection Agency

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

E. NIOSH - National Institute for Occupational Safety and Health

F. OSHA - Occupational Safety and health Administration

G. NESHAPS - National Emissions Standards for Hazardous Air Pollutants

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 and CFR. 55 No. 189 and as approved by the Engineer.

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)(l-II).

C. Protective Clothing:

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

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

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

PART 3 - EXECUTION

3.01 POTENTIAL LEAD HAZARD

A. The disturbance or dislocation of lead-based and/or 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-based and/or 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-BASED AND LEAD-CONTAINING MATERIALS

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

1. This Section applies to lead-based and/or 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 that will not be disturbed in any manner during the work to be performed under this contract. The Engineer shall have the authority to require special engineering controls described

under this Section of any lead-based and/or lead-containing 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 leaded dust. The isolation barriers shall provide sufficient protection from contaminating the exterior of the work area.

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

3.04 LEAD-BASED AND 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, no visible lead paint debris is present and lead dust wipe samples conducted by the Engineer and/or it's representative are below 40 micrograms per square foot (ug/ft^2) from floor surfaces, are below 250 ug/ft^2 from interior window sills, are below 400 ug/ft^2 from window troughs (wells), are below 250 ug/ft^2 from exterior concrete surfaces, and all work has been documented to the satisfaction of the Engineer and/or it's

representative. Any variation from this shall be at the Engineer’s discretion.

5. Ground contamination of lead-based and/or lead-containing paint and other paint preparatory materials shall be cleaned before leaving the premises.

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

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 Engineer for further instructions.

E. 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.

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

3.05 LEAD-BASED AND LEAD-CONTAINING 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, no visible lead paint debris is present and lead dust wipe samples conducted by the Engineer and/or it's representative are below 40 micrograms per square foot (ug/ft^2) from floor surfaces, are below 250 ug/ft^2 from interior window sills, are below 400 ug/ft^2 from window troughs (wells), are below 250 ug/ft^2 from exterior concrete surfaces, and all work has been documented to the satisfaction of the Engineer and/or it's representative. Any variation from this shall be at the Engineer's discretion.

5. Ground contamination of lead-based and/or lead-containing paint and other paint preparatory/demolition materials shall be cleaned before leaving the premises.

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

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.

3. Dumpster waste material: If waste material is to be stored in dumpster, the Contractor shall use a secured storage area for this purpose. Dumpster shall have doors that can be closed and locked to prevent vandalism. The Contractor shall only store non-hazardous waste material in the dumpster(s). The Contractor shall ensure that the dumpsters are not damaged. The Contractor shall post warning signs outside the secured storage area as required by OSHA, DOT and any other applicable Federal, State and Local regulations.

B. Waste Disposal and Landfill Requirements:

1. Representative samples (paint chips 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 Engineer, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill owner.

2. Representative samples (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 Engineer, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill owner.

3. 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 Engineer,

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.

D. Recycling of Non-Hazardous Lead-Containing Waste:

1. The Contractor is responsible for all cost relating to materials with lead painted surfaces to be recycled. It is the responsibility of the Contractor to determine which materials may or may not be re-cycled.

2. The Contractor is to perform all testing, at his own cost, to ensure the material to be recycled may be accepted and recycled in accordance the recyclers permit conditions.

   It the material cannot be recycled, the Contractor shall be responsible for the proper disposal of the debris at his own cost.

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 lead paint disturbance related activities.

1.02 LEAD PAINT DISTURBANCE INSPECTION BY ENGINEER

A. Daily air monitoring and testing shall be supplied by the Engineer for the purpose of:

1. Verifying compliance with the specifications listed in Section 13283 – DISTURBANCE OF LEAD-BASED AND LEAD-CONTAINING MATERIAL;

2. Insuring that the owner'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 give, at a minimum, seven (7) working days notification to the Engineers' Designated Person (Air Monitoring Consultant) prior to the start of any Section 13283 related work.

B. The Contractor shall not begin, or perform, with any Section 13283 related work without the Engineers' Inspector / Air Monitoring Consultant present onsite.

C. 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.

D. The Contractor shall obtain the legally required reports for air monitoring as part of the contract.

E. Monitoring information developed by the Inspector's activities while under the contract with the State shall be for the use of the Engineer. 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.

F. 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 Engineer. 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.

G. 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.

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