SPECIFICATIONS FOR CONSTRUCTION OF

REPLACE ROOFS & REPAIR EXTERIOR WALLS
BUILDINGS 90 & 90D, FORT RUGER
STATE OF HAWAI`I
DEPARTMENT OF DEFENSE
JOB NO. CA-1326-C

FOR THE: STATE OF HAWAI`I, DEPARTMENT OF DEFENSE
ENGINEERING OFFICE

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BID FINAL
April 14, 2014

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SECTION 01100 - PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Replace Roofs & Repair Exterior Walls, Buildings 90 & 90D, Fort Ruger, Hawaii.

B. The Work includes
   a. Selective demolition.
   b. Abatement of asbestos containing materials.
   c. Lead-based paint control measures.
   d. Fluid-applied roofing system.
   e. Metal roofing and siding.
   f. Sheet metal flashing and trim.
   g. Sealants.
   h. Painting.

C. Perform operations and furnish equipment, fixtures, appliances, tools, materials, related items and labor necessary to execute, complete and deliver the Work as required by the Contract Documents.

D. The Division and Sections into which these specifications are divided shall not be considered an accurate or complete segregation of work by trades. This also applies to work specified within each section.

E. Contractor shall not alter the Drawings and Specification. If an error or discrepancy is found, notify the Project Manager.

F. Specifying of interface and coordination in the various specification sections is provided for information and convenience only. These requirements in the various sections shall complement the requirements of this Section.

1.02 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated and include incomplete sentences. Omission of words or phrases such as “the Contractor shall”, “as shown on the drawings”, “a”, “an”, and “the” are intentional. Omitted words and phrases shall be provided by inference to form complete sentences. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates. Where devices, or items, or parts thereof are referred to in the singular, it is intended that such

reference shall apply to as many such devices, items or parts as are required to properly complete the Work.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
   a. The words “shall”, “shall be”, or “shall comply with”, depending on the context, are implied where a colon (:) is used within a sentence or phrase.

3. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research’s “Encyclopedia of Associations” or in Columbia Books’ “National Trade & Professional Associations of the U.S.”.

B. Terms
   1. Directed: Terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, and “permitted” mean directed by Project Manager, requested by Project Manager, and similar phrases.

   2. Indicated: The term “indicated” refers to graphic representations, notes, or schedules on drawings or to other paragraphs or schedules in specifications and similar requirements in the Contract Documents. Terms such as “shown”, “noted”, “scheduled”, and “specified” are used to help the user locate the reference.

   3. Furnish: The term “furnish” means to supply and deliver to project site, ready for unloading, unpacking, assembly, and similar operations.

   4. Install: The term “install” describes operations at project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

   5. Provide: The terms “provide” or “provides” means to furnish and install, complete and ready for the intended use.

   6. Installer: An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-Subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

   7. Submit: Terms such as “submit”, “furnish”, “provide”, and “prepare” and similar phrases in the context of a submittal, means to submit to the Project Manager.

C. Industry Standards
   1. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the

same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

2. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

3. Conflicting Requirements: If compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Project Manager for a decision before proceeding.

D. All make, model, manufacturer, and products called for are assumed to be followed by “or approved equal or better”, unless otherwise stated.

1.03 WORK SEQUENCE

A. The Work shall be conducted in two (2) phases.
   1. Phase 1: Perform all work for Building 90.

   2. Phase 2: Perform all work for Building 90D. Do not start Phase 2 work until Phase 1 has been substantial completed and approved by the Project Manager.

1.04 USE OF PREMISES AND WORK RESTRICTIONS

A. Contractor’s use of premises is restricted as follows:
   1. Sanitation:
      a. Contractor shall provide Sani Toi Chemi Toi for all construction personnel.

   2. Noise and Dust Control:
      a. In adjacent locations surrounding the project site, noise, dust and other disrupting activities, resulting from construction operations, are detrimental to the conduct of the Facility activities. Therefore, Contractor shall monitor its construction activities. Exercise precaution when using equipment and machinery to keep the noise and dust levels to a minimum.

      b. To reduce loud disruptive noise levels, ensure mufflers and other devices are provided on equipment, internal combustion engines and compressors.

      c. Schedule construction activities that create excessive noise and dust problems, such as concrete coring, drilling, hammering, trenching, and demolition, for the weekends, holidays or non-business hours. Overtime costs for the Contractor’s employees and work force are the Contractor’s responsibility.

      d. The Project Manager will require any construction activity that produces excessiveness of noise and dust to be performed during non-business hours. The Project Manager shall make the final determination.

Overtime costs for the Contractor's employees and work force are the Contractor's responsibility.

3. Other Conditions:
   a. Contractor shall supply a trash bin or bins as required for construction debris. Contractor to ensure bin(s) are emptied no less than once per week.

   b. Operate machinery and equipment with discretion and with minimum interference to driveways and walkways. Do not leave machinery and equipment unattended on roads and driveways.

   c. A storage area for materials, supplies, equipment will be designated during the Pre-Construction meeting. The State of Hawaii, Department of Defense will not be held responsible for damaged or missing items held on site.

   d. Keep access roads to the project site free of dirt and debris. Provide, erect and maintain lights, barriers, signs, etc. when working on facility roads, driveways and walkways to protect pedestrians and moped/bicycle riders. Obey facility traffic and safety regulations.

1.05 WORK UNDER OTHER CONTRACTS

A. Separate Contracts: The State may have other ongoing projects on site.

B. Cooperate fully with separate Contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

1.06 FUTURE WORK

A. It is not anticipated the State will award a future contract that depends on the Work under this contract.

1.07 SOLID WASTE REPORTS

A. Submit solid waste reports for the duration of the project. The reports shall address:
   1. Diverted Waste (i.e. waste that does not go into the landfill)

   2. Recycled Waste

   3. Landfill Waste

   4. Recovered Waste (i.e. freon from AC equipment and refrigerator).

B. Submit legible copies of dump ticket receipt from vendor, showing the tonnage of waste. If waste products are combined together with other projects, the contractor shall provide a breakdown per project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01230 - ALTERNATES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

B. The description of alternates is not intended to give a detailed description of all additional or deductive work required by the alternate item(s), as only the principal features of such additional or deductive work are listed.

C. Should any one or all of the alternates become a part of the contract, the cost of all additional or deductive work required by the alternate item(s), even though not specifically mentioned herein, are included in the lump sum bid price.

1.02 DEFINITIONS

A. Alternate: An amount proposed by Bidders (Offerors) and stated on the Bid Form for certain work defined herein that may be added to or deducted from the Total Lump Sum Bid Price amount if State decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Total Lump Sum Bid Price.

1.03 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into the Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

A. Additive Alternate No. 1: Reroof Building 90D with metal roofing and all related work.

B. Additive Alternate No. 2:
   1. Patch and repair up to 20 damaged spots of metal wall panel at building 90 with matching metal wall panel.

   2. Repaint building 90 exterior wall metal and wood sidings, flashings, trims, doors, window and security screen frame and all related work.

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. General project coordination procedures.

   2. Project meetings.

1.02 PERFORMANCE AND COORDINATION

A. Contractor is in charge of the Work within the Project Contract Limits, and shall direct and schedule the Work. Include general supervision, management and control of the Work of this project, in addition to other areas more specifically noted throughout the Specifications. Final responsibility for performance, interface, and completion of the Work and the Project is the Contractor's.

B. The Contractor is responsible for jobsite Administration. Provide a competent superintendent on the job and provide an adequate staff to execute the Work. In addition, all workers shall dress appropriately and conduct themselves properly at all times. Loud abusive behavior, sexual harassment and misconduct will not be tolerated. Workers found in violation of the above shall be removed from the job site as directed by the Project Manager.

C. The State will hold the Contractor liable for all the acts of Subcontractors and shall deal only with the Prime Contractor in matters pertaining to other trades employed on the job.

D. Coordination: Provide project interface and coordination to properly and accurately bring together the several parts, components, systems, and assemblies as required to complete the Work pursuant to the GENERAL CONDITIONS and SPECIAL CONDITIONS.
   1. Provide interface and coordination of all trades, crafts and subcontracts. Ensure and make correct and accurate connections of abutting, adjoining, overlapping, and related work. Provide anchors, fasteners, accessories, appurtenances, and incidental items needed to complete the Work, fully, and correctly in accordance with the Contract Documents.

   2. Provide additional structural components, bracing, blocking, miscellaneous metal, backing, anchors, fasteners, and installation accessories required to properly anchor, fasten, or attach material, equipment, hardware, systems and assemblies to the structure.

   3. Provide excavation, backfilling, trenching and drilling for trades to install their work.

4. Provide concrete foundations, pads, supports, bases, and grouting for trades as needed to install their work.

5. Provide caulking, sealing, and flashing as required to waterproof the building complete and as required to insulate the building thermally and acoustically. Include sealing, flashing, and related work as required to prevent moisture intrusion, air infiltration, and light leakage.

6. Equipment, appliances, fixtures, and systems requiring plumbing and mechanical services, rough-in, and connections, or other utilities and services shall be provided with such services, rough-in, and final connections.

7. Equipment, appliances, fixtures, hardware, and systems requiring electrical services shall be provided with such electrical services, including outlets, switches, overload protection, interlocks, panelboard space, disconnects, circuit breakers, and connections.

8. Materials, equipment, component parts, accessories, incidental items, connections, and services required to complete the Work which are not provided by Subcontractors shall be provided by the Contractor.

9. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1.03 COOPERATION WITH OTHER CONTRACTORS

A. The State reserves the right at any time to contract for or otherwise perform other or additional work within the Project Contract Limits. The Contractor of this project shall to the extent ordered by the Project Manager, conduct its work so as not to interfere with or hinder the progress or completion of the work performed by the State or other Contractors.

1.04 COORDINATION WITH OTHER PRIME CONTRACTORS

A. Multiple prime Contractors performing work under separate agreements with the State may be present near the project location, adjacent to and abutting the Project Contract Limits. This Contractor shall coordinate activities, sequence of work, protective barriers and any and all areas of work interfacing with other Prime Contractor's work. Contractor shall provide a continuity of finishes, walks, landscape, etc. at abutting Contract Limits so no additional work will be required. Any damage to other Prime Contractor's Work committed by this Contractor (or its Subcontractor) shall be repaired promptly at no additional cost to the State.

B. Coordinate Subcontractors and keep them informed of any work from the other Projects that may affect the site or the Subcontractor's work. If the Contractor has any questions regarding its coordination responsibilities or needs clarification as to the impact in scheduling of its work and the work of other projects, this Contractor shall notify the Project Manager in writing.

C. Subject to approval by the Project Manager, this Contractor shall amend and schedule its work and operations to minimize disruptions to the work and operations of other projects.
   1. Relocate or remove and replace temporary barriers, fencing supports or bracing to allow work by others to proceed unimpeded. Do not remove required barriers supporting work until specified time or as approved by the Project Manager. This does not relieve the Contractor of the responsibility of proper coordination of the work. If directed by the Project Manager, leave in place any temporary barriers.

   2. Coordinate work that abuts or overlaps work of the other projects with the Project Manager and other Prime Contractors to mutual agreement so that work is 100 percent complete with continuity of all materials, systems and finishes.

   3. When directed by the Project Manager, provide access into the construction zone to allow the other project's Contractor(s) to perform their Work and work that must be interfaced.

   4. Contractor shall adjust and coordinate its Work and operations as required by the other projects as part of the Work of this contract without additional cost or delay to the State.

   5. When directed by the Project Manager provide a combined Contractor's construction schedule.

D. Other Contracts: If known, they are listed in SECTION 01100 - PROJECT REQUIREMENTS.

1.05 COORDINATION WITH USER

A. Contractor shall coordinate roof work that will impact the maintenance shop operations with the Maintenance Supervisor.

1.06 SUBMITTALS

A. Photo Documentation: Prior to the start of jobsite work, the Contractor shall photo document the existing conditions at the site and file with the Project Manager one complete set of documents.

1.07 PROJECT MEETINGS AND TRAINING

A. General: Schedule and conduct meetings and conferences as directed by the Project Manager at the **Contractor's** field office, unless otherwise indicated.
   1. Attendees: Inform participants and others involved, Contracting Officer, Project Manager and individuals whose presence is required, of date and time of each meeting. Notify Project Manager of scheduled meeting dates and times.

   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Contractor record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Project Manager, within 7 days of the meeting.

B. Preconstruction Conference: Project Manager shall schedule a preconstruction conference before the start of construction, at a time convenient to the Project Manager, a Project start date will be established in the conference. Conference will be held at the Project site or another convenient location. The Project Manager shall conduct the meeting to review responsibilities and personnel assignments.
   1. Attendees: Project Manager, Contracting Officer Representative, and design consultants; Facility Users; Contractor and its superintendent; major Subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.

      b. Phasing.

      c. Critical work sequencing and coordination.

      d. Designation of responsible personnel.

      e. Use of the premises.

      f. Responsibility for temporary facilities and controls.

      g. Parking availability.

      h. Office, work, and storage areas.

      i. Equipment deliveries and priorities.

      j. First aid.

      k. Security.

      l. Progress cleaning.

      m. Working hours.

C. Progress Meetings: Conduct progress meetings at monthly or other intervals as determined by the Project Manager. Coordinate dates of meetings with preparation of payment requests.
   1. Attendees: In addition to Project Manager, each Contractor, Subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be

represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

   b. Review present and future needs of each entity present, including the following:
      1) Outstanding Requests for information (clarification).
      2) Interface requirements.
      3) Sequence of operations.
      4) Status of outstanding submittals.
      5) Deliveries.
      6) Off-site fabrication.
      7) Access.
      8) Site utilization.
      9) Temporary facilities and controls.
      10) Work hours.
      11) Hazards and risks.
      12) Progress cleaning.
      13) Quality and work standards.
      14) Force Account work.
      15) Change Orders and Change Proposals.
      16) Documentation of information for payment requests.

   c. Corrective Action Plan: Contractor shall provide a plan of corrective action for any item which is delayed or expected to be delayed, then that item impacts the contractual dates.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
    a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Schedule of Prices.
   4. Payment request.

B. Related Sections include the following:
   1. SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION for preparing a combined Contractor's Construction Schedule.
   2. SECTION 01330 - SUBMITTAL PROCEDURES for submitting schedules and reports.

1.02 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path and control the total length of the project. They must start and finish on the planned early start and finish times.
   2. Predecessor activity is an activity that must be completed before a given activity can be started.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of project.

C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either the Department or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Schedule of Prices: A statement furnished by Contractor allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Payment requests.

1.03 SUBMITTALS

A. Required Submittals: Submit 8 sets of the list of the required submittals, by Specification Section, within 15 days after award of the contract or upon earlier written instructions from the Project Manager. A general listing is provided under SECTION 01330 - SUBMITTAL PROCEDURES.
   1. The listing shall indicate and include the following:
      a. The number of copies required for submittal.
      b. Planned submittal date.
      c. Approval date required by the Contractor.
      d. A space where the "date of submittal" can be inserted.
      e. A space where the "date of approval" can be inserted.
      f. A space where an "action code" can be inserted.

B. Construction Schedule: Submit 7 sets of the Construction Schedule for review within 15 days after the award of the contract or upon earlier written instructions from the Project Manager.

C. Schedule of Prices: Submit 3 sets of the Schedule of Prices integrated with the Construction Schedule for review within 15 days after the award of the contract or upon earlier written instructions from the Project Manager.
   1. Use the Department's forms for Payment requests.

D. Payment request: Submit the payment request at earliest possible date and no sooner than the last day of the month after all payroll affidavits, updated submittal registers, and schedules have been submitted.

1.04 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate Contractors.

B. Construction Schedule: Coordinate Contractor's Construction Schedule with the Schedule of Prices, Submittals Schedule, loaded monthly event activity, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.

   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

C. Schedule of Prices: Coordinate preparation of the schedule with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Prices with other required administrative forms and schedules, including the following:
   a. The payment request and the Construction Progress Report continuation sheet for the event cost estimate per time period.
   b. Submittals Schedule.

PART 2 - PRODUCTS

2.01 SUBMITTALS SCHEDULE

A. Comply with the GENERAL CONDITIONS "SHOP DRAWINGS AND OTHER SUBMITTALS" Article. Furnish required submittals specified in this Section and in the Technical Sections. Submittals include one or more of the following: shop drawings, color samples, material samples, technical data, material safety data information, schedules of materials, schedules of operations, guarantees, certifications, operating and maintenance manuals, and field posted as-built drawings.

B. Preparation: Furnish a schedule of submittals per Project Manager.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Prices, and Contractor's Construction Schedule.

   2. The schedule shall accommodate a minimum of 21 calendar days for the State's review, as applicable for the Island the project is located.

   3. Prepare and submit an updated list to the Project Manager at monthly intervals or as directed by the Project Manager. The listing shall reflect all approvals received since the last update.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE - PERT CHART CRITICAL PATH METHOD (CPM)

A. The construction schedule shall address the entire project, to the extent required by the Contract Documents, and shall show an expedient and practical execution of work. If requested by the Project Manager, the Contractor shall participate in a preliminary meeting to discuss the proposed schedule and requirements prior to submitting the schedule.

B. The Construction Schedule shall indicate the following:
   1. Elements of the Project in detail time scaled by month or by week, and a project summary.

   2. The order and interdependence of activities and the sequence in which the work is to be accomplished.

   3. How the start of a given activity is dependent upon the completion of preceding activities and how its completion restricts the start of following activities.

   4. The submittal and approval of shop drawings, samples, procurement of critical materials and equipment, receipt of materials with estimated costs of major items for which payment will be requested in advance of installation,

fabrication of special materials and equipment, and their installation and testing.

5. Activities of the State that have an effect on the progress schedule, such as the required delivery dates for State furnished materials and equipment and other similar items.

6. Provide a separate report with the following:
   a. The description of the activity.
   b. The duration of time in calendar days.
   c. For each activity indicate the early start date.
   d. For each activity indicate the early finish date.
   e. For each activity indicate the late start date.
   f. For each activity indicate the late finish date.
   g. Total float time.
   h. Cost of event.
   i. Contract-required dates for completion of all or parts of the Work.
   j. Events are to be used on “Monthly Progress Report” for monthly payment request.

C. Upon completion of the Project Manager’s review, the Contractor shall amend the schedule to reflect the comments. If necessary, the Contractor shall participate in a meeting with the Project Manager to discuss the proposed schedule and changes required. Submit the revised schedule for review within 7 calendar days after receipt of the comments.

D. Use the reviewed schedule for planning, organizing and directing the work, for reporting progress, and for requesting payment for the work completed. Unless providing an update, do not make changes to the reviewed schedule without the Project Manager’s approval.

E. Should changes to the schedule be desired, submit a request in writing to the Project Manager and indicate the reasons for the proposed change. If the changes are major, the Project Manager may require the Contractor to revise and resubmit the schedule at no additional cost to the State. Contractor shall mitigate the impact of all changes by readjusting the sequence of activities, duration of time, or resources utilizing available float.
   1. A change is major if, in the opinion of the Project Manager, the change affects the substantial completion date or other contractual and milestone dates.

   2. Minor changes are those that only affect activities with adequate float time.

F. Once the schedule is reviewed by the Project Manager, the Contractor shall submit 6 sets of the revised schedule within 14 calendar days.

G. Throughout the duration of the project, the Project Manager may require more detailed breakdowns of activities, logic, and schedule submittals from the Contractor.

H. Updated Schedules: Submit at monthly intervals or as directed by the Project Manager. The schedule shall reflect all changes occurring since the last update including the following:
   1. Activities started and completed during the previous period.

   2. The estimated duration to complete each activity that was started but not completed.

   3. Percentage of cost payable for each activity.

   4. Modifications and pending proposed changes.

   5. Narrative report describing current and anticipated problem areas or delaying factors with their impact together with an explanation of corrective actions taken or proposed.

I. Failure on the part of the Contractor to submit updated schedules may be grounds for the Project Manager to withhold progress payments for items noted on the schedule.

J. Contractor shall prosecute the work according to the CPM Schedule. The Project Manager shall rely on the reviewed Contractor's CPM Schedule and regular updates for planning and coordination. The Project Manager's review of the Contractor's CPM Construction Schedule does not relieve the Contractor of its obligation to complete the work within the allotted contract time. Nor does the review grant, reject or in any other way act on the Contractor's request for adjustments to complete remaining contract work, or for claims of additional compensation. These requests shall be processed in accordance with other relevant provisions of the contract.

K. If the Project Manager issues a field order or change order or other directive that affects the sequence or duration of work activities noted on the construction progress schedule, the Contractor shall promptly update the schedule. To accomplish this update, add, delete or revise the work activities noted or change the logic in the schedule to show the Contractor's plan to incorporate the change into the flow of work. All change orders and time extension requests that affect the construction schedule shall be evaluated based on their impact on the approved Construction Schedule.

L. If the current work is behind schedule or projected to be behind schedule, such as negative float on a critical activity or inability to meet the Contract Completion Date, the Project Manager may require the Contractor, at the Contractor's cost, to take remedial measures to get the project back on schedule. This may require increasing the work force, working overtime and weekends, air freighting materials, or other similar actions.

M. If at any time the Project Manager determines that any critical activity has fallen behind the CPM schedule by 15 calendar days or more, the Contractor shall submit a remedial plan to recapture the lost scheduled time. Include a revised schedule. Furnish the remedial plan no later than 7 calendar days from Project Manager's notification.

N. If an accelerated schedule is proposed, refer to GENERAL CONDITIONS Section 7.22 “CONSTRUCTION SCHEDULE”.

2.03 SCHEDULE OF PRICES

A. Furnish a schedule of prices per Project Manager.

B. Provide a breakdown of the Contract Sum in enough detail to facilitate developing and the continued evaluation of Payment requests. Provide several line items for principal subcontract amounts, or for materials or equipment purchased or fabricated and stored, but not yet installed, where appropriate. Round amounts to nearest whole dollar; total shall equal the Contract Price.

C. Each item in the Schedule of Prices and Payment request shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

2.04 PAYMENT REQUEST

A. Use the Schedule of Prices as the Monthly Construction Progress Report. Each Payment Request shall be consistent with previous requests and payments. The Project Manager shall determine the appropriateness of each payment request item.

B. Payment Request Times: The date for each progress request is the last day of each month. The period covered by each Payment Request starts on the first day of the month or following the end of the preceding period and ends on the last day of the month.

C. Updating: Update the schedule of prices listed in the Payment request when Change Orders or Contract Modifications result in a change in the Contract Price.

D. Provide a separate line item for each part of the Work where Payment request may include materials or equipment purchased or fabricated and stored, but not yet installed.

E. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.

F. Provide separate line items for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

G. No payment will be made until the following are submitted each month:
   1. Monthly Estimate, 7 copies.
   2. Monthly Progress Report, 7 copies.
   3. Statement of Contract Time, 7 copies.
   4. Updated Submittal Register, 1 copy.
   5. Updated Progress Schedule, 1 copy.
   6. All Daily Reports, 1 copy.
   7. All Payroll Affidavits for work done, 1 copy.

H. Retainage: The Department will withhold retainage in compliance with the GENERAL CONDITIONS.

I. Transmittal: Submit the signed original and 6 copies of each Payment request for processing.

2.05 CONTRACTOR DAILY PROGRESS REPORTS

A. The General Contractor and all Subcontractors shall keep a daily report of report events.

B. The form of the Contractor Daily Progress Report shall be as directed by the Project Manager.

C. Submit copies of the previous week's reports on Monday morning at 10:00 a.m.

D. Submit copies of the reports with the monthly payment request for the whole period since the last payment request submittal.

E. Deliver the reports in hard copy, by e-mail, or web based construction management as directed by the Project Manager.

PART 3 - EXECUTION (Not Used)

END OF SECTION

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.

C. Related Sections include the following:
   1. SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION for submitting schedules and reports, including Contractor’s Construction Schedule and the Submittals Schedule.

   2. SECTION 01770 - CLOSEOUT PROCEDURES for submitting warranties, project record documents and operation and maintenance manuals.

1.02 SUBMITTAL PROCEDURES

A. Coordinate Work and Submittals: Contractor shall certify the submittals were reviewed and coordinated.

B. Submittal Certification: Provide in MS Word when submitting electronically. Project Manager will provide an electronic copy of the Submittal Certification. Provide a reproduction (or stamp) of the “Submittal Certification” and furnish the required information with all submittals. Include the certification on:
   1. The title sheet of each shop drawing, or on

   2. The cover sheet of submittals in 8-1/2 inch x 11-inch format, or on

   3. One face of a cardstock tag (minimum size 3-inch x 6-inch) tied to each sample. On the sample tag, identify the sample to ensure sample can be matched to the tag if accidentally separated. The opposite face of the tag will be used by the Project Manager to receive, review, log stamp and include comments.

C. Variances: The Contractor shall request approval for a variance. Clearly note any proposed deviations or variances from the Specifications, Drawings, and other Contract Documents on the submittal and also in a separately written letter accompanying the submittal.

D. Submittal Certification Form (stamp or digital)

CONTRACTOR'S NAME: _____

PROJECT: _____

JOB NO: _____

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

SUBMITTAL NUMBER _____ DATE RECEIVED _____

REVISION NUMBER _____ DATE RECEIVED _____

SPECIFICATION SECTION NUMBER /PARAGRAPH NUMBER _____

DRAWING NUMBER _____

SUBCONTRACTOR'S NAME _____

SUPPLIER'S NAME _____

MANUFACTURER'S NAME _____

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

_____

_____

_____

_____

CERTIFIED BY	

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	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)
01310 – Project Management and Coordination											■			■		
01320 – Construction Progress Documenta-tion											■			■		
01330 – Submittal Procedures			■											■		
01450 – Moisture Vapor and Alkalinity Testing							■							■		
01500 – Temporary Facilities and Controls							■							■		
01575 – Temporary Controls – Air Quality Requirements			■		■											
01700 – Execution Requirements														■		

Section No. – Title	Shop Drawings & Diagrams	Samples	Certificates (Material, Treatment, Applicator, etc.)	Product Data, Manufacturer's Technical Literature	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)
01770 – Closeout Procedures	■								■				■	■	■	
02070 – Selective Demolition											■			■		
07560 – Fluid-Applied Roofing System	■		■	■										■		2
07610 – Metal Roofing and Siding	■	■		■												10
07620 – Sheet Metal Flashing and Trim	■			■											2	
07720 – Roof Accessories	■			■												
07920 – Sealants		■		■	■										2	
09901 – Painting		■	■	■	■						■			■	2	
13281 – Asbestos Removal	■	■	■	■						■	■			■		
13282 – Lead-Containing Paint Control Measures														■		

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. Temporary utilities include but are not limited to, the following:
   1. Water service and distribution.
   2. Sanitary facilities, including toilets, wash facilities, and drinking water facilities.
   3. Ventilation.
   4. Electric power service.
   5. Lighting.
   6. Telephone service.

C. Support facilities include, but are not limited to, the following:
   1. Storage and fabrication sheds.
   2. Trash, refuse disposal.
   3. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities and measures include, but are not limited to, the following:
   1. Environmental protection.
   2. Warning signs, and lights.
   3. Pest control.
   4. Security enclosure and lockup.
   5. Temporary enclosures.

E. Related Sections: Refer to Divisions 2 through 16 for other temporary requirements including ventilation, humidity requirements and products in those Sections.

1.02 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to the State and shall be included in the Contract Price. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
   1. Other Contractors with agreements with the State working within the contract limits.
   2. Occupants of Project.
   3. Testing agencies.
   4. Project Manager and personnel of authorities having jurisdiction.

1.03 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Landfill Disposal Receipts: Submit copies of receipts issued by a landfill facility. Include receipts with Contractor Daily Progress Report

1.04 QUALITY ASSURANCE

A. Standards: Comply with UBC Chapter 33, “Site Work, Demolition and Construction”, ANSI A10.6, NECA’s “Temporary Electrical Facilities”, and NFPA 241, "Construction, Alteration, and Demolition Operations".
   1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
   2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70, “National Electrical Code”.
      a. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
   1. Keep temporary services and facilities clean and neat.
   2. Relocate temporary services and facilities as required by progress of the Work.

1.06 PREPARATION AND PROTECTION

A. Protection of Property: Continually maintain adequate protection of the Work from damage and protect all property, including but not limited to buildings, equipment, furniture, grounds, vegetation, material, utility systems located at and adjoining the job site. Repair, replace or pay the expense to repair damages resulting from Contractor’s fault or negligence.

B. Before starting work to be applied to previously erected constructions, make a thorough and complete investigation of the recipient surfaces and determine their suitability to receive required additional construction and finishes. Make any repair that is required to properly prepare surfaces, and coordinate the Work to provide a suitable surface to receive following Work.

C. Commencing work by any trade implies acceptance of existing conditions and surfaces as satisfactory for the application of subsequent work, and full responsibility for finished results and assumption of warranty obligations under the Contract.

D. Protect existing (including interiors) work to prevent damage by vandals or the elements. Provide temporary protection. Use curtains, barricades, or other appropriate methods. Take positive measures to prevent breakage of glass and damage to plastic, aluminum and other finishes.

E. Repairs and Replacements: Promptly replace and repair damages to the approval of the Project Manager. Additional time required to secure replacements and to make repairs does not justify a time extension.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Project Manager. Provide materials suitable for use intended.

B. Tarpaulins: Fire resistive labeled with flame spread rating of 15 or less.

C. Water: Potable.

2.02 EQUIPMENT

A. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA recommended classes for exposures. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

B. Self Contained Combination Toilet and Urinal Units: Single occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. One quarter of, or at least one unit(s) shall contain a handwash sink with potable water storage.

C. Drinking Water Fixtures: Drinking water fountains or containerized, tap dispenser, bottled water drinking water units, or water cooler dispensing water at 45 - 55 degree F available at project site including paper cup supply.

D. Electrical Outlets: Properly configured, NEMA polarized outlets to prevent insertion of 110 to 120 V plugs into higher voltage outlets; equipped with ground fault circuit interrupters, reset button, and pilot light.

E. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125 V ac, 20 A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage appropriate local utility company to install temporary service or connect to existing service where directed by the Project Manager. Where utility

company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Arrange with utility company, the Department, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked in services.

B. Water Service: Make arrangements with the utility company for temporary use of water, and pay for all expenses. However, at the option of the Contractor, a temporary tap into the facility's existing water system is allowed, subject to the following conditions:

1. Comply with the Department of Health's and County water provider's requirements when tapping into the existing water system.
2. Reasonable amounts of water will be available without charge.
3. Meter the tapped line and prior to water use, notify the Project Manager to observe an initial meter reading.
4. Contractor to take monthly readings and report usage amount to Project Manager. If the Project Manager determines that the water usage is beyond a "reasonable" amount, the State will bill the Contractor for excess usage at the current NAVFAC water and associated sewer rates.
5. Upon completion of the project and just prior to removal of the water meter, notify the Project Manager to observe a final meter reading.
6. Should the Contractor at any time fail to comply with any or all of the above conditions, the Department may terminate the use of water. The Contractor shall remove the hookup within 48 hours of notification of such termination.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Toilets: Install self contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
4. Locate toilets and drinking water fixtures so personnel need not walk more than 2 stories vertically or 200-feet horizontally to facilities.

D. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

E. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnecting means, automatic ground fault interrupters, and main distribution switchgear. Use of State facilities electrical power services will be permitted as long as equipment is maintained in a condition acceptable to the Project Manager.

F. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment. Protect wiring, in conduits or other, measures when exposed to possible damage or traffic areas.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Locate storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access or where shown on Contract Drawings or as directed by the Project Manager.
   2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion.

B. Project Sign and Temporary Sign(s):
   1. Provide and install signs as listed. Sign designs are attached to Part 3 of this Section:
      a. Warning Sign
   2. Install signs where directed by the Project Manager or where indicated to inform public and persons seeking entrance to the Project. Do not permit installation of unauthorized signs.
   3. Provide temporary signs to provide directional information to constructional personnel and visitors.
   4. Construct signs with durable materials, properly supported or mounted, and visible.

C. Trash, Refuse Disposal:
   1. Department of Health – Illegal Dumping Notice. See attachment to Part 3 of this section.
      a. This Notice to be printed out on 8.5x11” paper.
      b. This Notice to be posted at the job site field office and/or in locations visible to all contractors, subcontractors, suppliers, vendors, etc. throughout the duration of the project.
   2. Illegal Dumping of solid waste could subject the Contractor to fines and could lead to felony prosecution in accordance with Chapter 342H, HRS. For more information, see the following web site: http://www.hawaii.gov/health/environmental/waste/sw/pdf/Illdump.pdf
   3. Provide waste collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste.
   4. Do not burn debris or waste materials on the project site.

5. Do not bury debris or waste material on the project site unless specifically allowed elsewhere in these specifications as backfill material.
6. Haul unusable debris and waste material to an appropriate off site dump area.
    a. Water down debris and waste materials during loading operations or provide other measures to prevent dust or other airborne contaminants.
    b. Vacuum, wet mop, or damp sweep when cleaning rubbish and fines which can become airborne from floors or other paved areas. Do not dry sweep.
    c. Use enclosed chutes or containers to conveying debris from above the ground floor level.
7. Clean up shall include the collection of all waste paper and wrapping materials, cans, bottles, construction waste materials and other objectionable materials, and removal as required. Frequency of clean up shall coincide with rubbish producing events.

D. Janitorial Services: Provide janitorial services on a weekly basis for the first aid stations, toilets, wash facilities, lunchrooms, and similar areas.

3.04 ENVIRONMENTAL CONTROLS

A. General: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Dust Control:
1. Prevent dust from becoming airborne at all times including non working hours, weekends and holidays in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 60.1 Air Pollution Control.
2. Contractor is responsible for and shall determine the method of dust control. Subject to the Contractor's choice, the use of water or environmentally friendly chemicals may be used over surfaces that create airborne dust.
3. Contractor is responsible for all damage claims due to their negligence to control dust.

C. Noise Control
1. Keep noise within acceptable levels at all times in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 46 Community Noise Control. Obtain and pay for the Community Noise Permit when construction equipment or other devices emit noise at levels exceeding the allowable limits.
2. Ensure mufflers and other devises are provided on equipment, internal combustion engines and compressors to reduce loud disruptive noise levels and maintain equipment to reduce noise to acceptable levels.
3. Unless specified elsewhere, do not start construction equipment that meet allowable noise limits prior to 6:45 A.M. or equipment exceeding allowable noise levels prior to 7:00 A.M.

D. Pest Control: Before demolition and excavation work begins, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest control service to perform extermination and control procedures at regular intervals so Project will be free

of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

3.05 VIOLATION OF ENVIRONMENTAL PROVISIONS

A. Violations of any of the above environmental control requirements or any other pollution control requirements; which may also be specified in the other Specifications sections, shall be resolved under the SUSPENSION and CORRECTIVE WORK Section of the GENERAL CONDITIONS.

3.06 ENCLOSURES

A. Security Enclosure and Lockup:
   1. Install substantial temporary enclosure around partially completed areas of construction.
   2. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

B. Temporary Enclosures:
   1. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   2. Where cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

C. Opening Protection
   1. Vertical Openings: Close openings with plywood or similar materials.
   2. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load bearing, wood framed construction.
   3. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire retardant treated material for framing and main sheathing.

3.07 TEMPORARY FIRE PROTECTION

A. Install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
   1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
      a. Class ABC dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes for exposures.
      b. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
   2. Store combustible materials in containers in fire safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire exposure areas.
   4. Supervise welding operations, combustion type temporary heating units, and similar sources of fire ignition.
   5. Develop and supervise an overall fire prevention and first aid fire protection program for personnel at Project site. Review needs with local fire department

and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.08 OPERATION, TERMINATION, AND REMOVAL

A. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by heat temperatures and similar elements.

B. Termination and Removal: Remove each temporary facility when need for its service has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of Contractor. The Department reserves the right to take possession of Project identification signs.

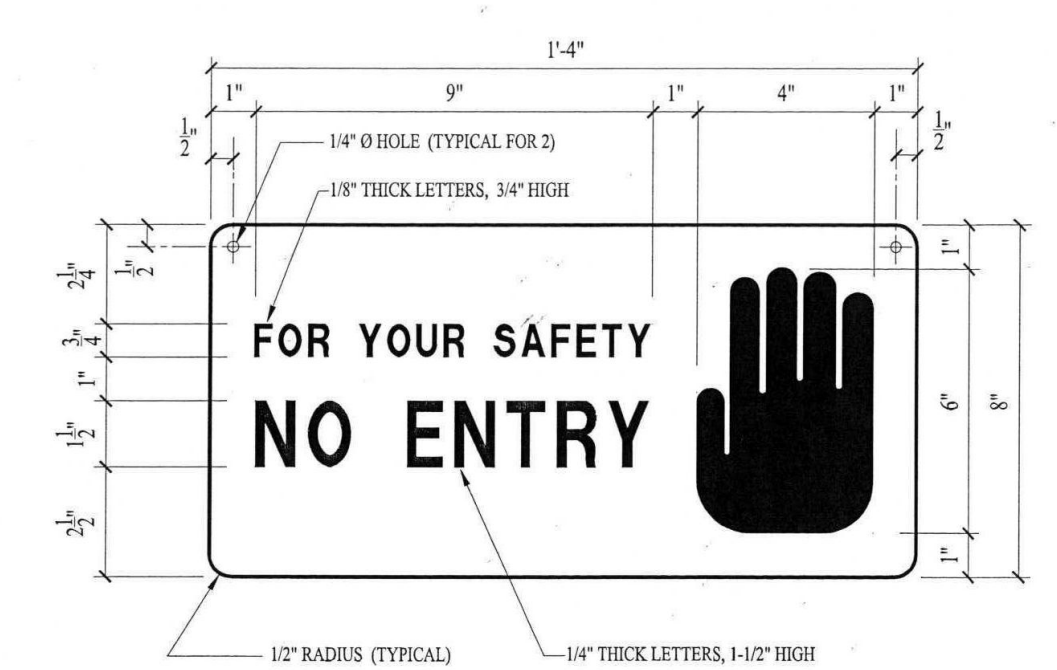
3.09 ATTACHMENTS

A. Warning Sign: Requirements for Warning Sign.

B. Department of Health – Illegal Dumping Notice

END OF SECTION

REQUIREMENTS FOR WARNING SIGN



1. General Requirements: Furnish all labor, materials and equipments necessary to construct and install warning signs as specified hereinafter.
2. Materials
    a. Backing: Backing shall be 6061-T6 aluminum 0.032-inch minimum thickness.
    b. Paint: Paint shall be satin finish, exterior grade or factory baked enamel or a combination thereof.
3. Colors: Signs shall have white background. Remaining items shall be similar to Rust-Oleum Federal Safety Red.
4. Requirements for Warning Sign: Message configuration and dimensions shall be in accordance with the attached illustration.
5. Installation
    a. Signs shall be located at 50-foot intervals around roped off work area or at all entrances in the case of interior work.
    b. Signs shall be attached to the rope barrier, rope barrier supports, individual sign supports or buildings. Do not use nails to attach signs to building(s).
6. Clean-up: Remove all signs upon completion of project. Repair any damages caused by sign mounting and removal.

DEPARTMENT OF HEALTH
ILLEGAL DUMPING NOTICE

The law requires you to dispose solid waste only at recycling or disposal facilities permitted by the Department of Health.

"Solid waste" includes municipal refuse, construction and demolition waste, household waste, tires, car batteries, derelict vehicles, green wastes, furniture, and appliances.

Illegal dumping of solid waste or allowing illegal disposal of solid waste on your property even if contractual or other arrangements are made could subject you to fines from $10,000 to $25,000 per occurrence and could lead to felony prosecution in accordance with Chapter 342H, HRS.

Contact the Department of Health, Solid Waste Section at 586-4226 to report illegal dumping activities or if you have further questions.

SECTION 01575 - TEMPORARY CONTROLS - AIR QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY OF WORK

This section describes the steps that the CONTRACTOR shall perform to control odors or dusts generated by the equipment, materials, or actions of the construction process that may affect the quality of air to non-contractor personnel.

1.02 RELATED SECTIONS

A. Section 07920 – SEALANTS.

B. Section 09901 – PAINTING.

1.03 REFERENCES

A. “Indoor Air Quality” published by the Sheetmetal and Air Conditioning Contractor's National Association (SMACNA).

B. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) standards as follows: 62-1989; 55-1981; 52-76; and 1-1989

C. “Indoor Air Quality in Public Buildings”, Volumes I and II, by Sheldon L, Handy RW, Hartwell TD, et al:, 1988 (Public Access Buildings Study)

1.04 DEFINITIONS

A. “A/C” (Air Cond.) means any or all of the equipment used to air condition a building or space.

B. “Air changes per hour” shall mean a number calculated by the maximum work area length in feet times the maximum work area width in feet times the maximum work area height in feet divided by 60 times the cubic feet per minute of air movement (L x W x H)/(60 x CFM).

C. “Odor” means something that can be detected by a person's sense of smell whether objectionable or not to the person.

D. “Perceivable” means able to attain an awareness solely through the use of the human senses such as smell, sight, hearing, etc.

E. “VOC”means volatile organic compound, a compound containing a chemical constituent with a boiling point of less than 100 Deg C (volatile) and that contains carbon (organic).

F. “VOC emission rate” means the total amount of hydrocarbons emitted per area and unit of time as determined from the product and test method data supplied by the manufacturer or from data in the EPA Public Access Buildings Study, 1988.

1.05 SUBMITTALS

Submit a certification, which may be a copy of the product label or Material Safety Data Sheets (MSDS), of the VOC emission rate for all VOC containing products. (Note: MSDS sheets and labels are acceptable only if the VOC data is available and highlighted.)

PART 2 - MATERIALS

2.01 MATERIAL RESTRICTIONS

A. If used, materials that exceed the standards established by the National Particleboard Association (NPA) Standard for Formaldehyde Emission for Particleboard (NPA 6-84) shall only be used in conformance with the requirements of Section 3.01. All materials that use particleboard for any part of their construction shall be considered to exceed NPA 6-84 standard unless clearly labeled with an NPA certification that the standard is met.

B. Materials that exceed a VOC emission rate of 100 Fg/m²h shall only be used in conformance with the requirements of Section 3.01.

C. Materials that do not have a submitted VOC emission rate shall be considered to exceed 100 Fg/m²h.

D. If ALL of the project's materials comply with the above restrictions, the requirements of Part 3 - Execution are not required.

2.02 OTHER MATERIALS

Provide the temporary equipment such as fans, blowers, etc. and/or products such as tape, ducts, temporary wall materials, etc. necessary to complete the requirements of this section.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Keep a copy of the certifications submitted under Sec. 1.05 readily available in an easy to modify format, such as a three ring binder, at the job site.

B. Ensure the all work areas are isolated from those areas in which persons not employed by the contractor will be present during construction, including adjacent buildings, and public areas.

1. Install isolation barriers so that odor(s) and dust(s) from the work areas are not perceivable in any surrounding occupied area, then remove the barriers before the final acceptance of the project; or

2. Provide local fresh and exhaust air that will be adequate to ensure odor(s) and dust(s) from the work areas are not perceivable in any surrounding occupied area. Meet the following minimum criteria:
   a. At least four air changes per hour continued from the start of any emission producing work until four hours after the conclusion of any emission producing work; and

b. Exhaust the ventilating air to the outside of the building, at least 25 feet downwind of any opening to the building, surrounding buildings, or similar occupied areas, and at least 100 feet downwind of any building air supply intakes.

C. Immediately stop all odor and dust producing tasks, then execute the requirements of subparagraph 3.01.B.2 within four hours after notification by the Project Manager that occupants have complained of any perceivable odor or dust.
   1. Compliance with paragraph 3.01.B.1 shall not be considered to have provided sufficient isolation in this instance.

   2. If the items in paragraph 3.01.B.2 have been previously implemented without satisfactory results, increase the air changes to eight (8) per hour.

   3. The requirements in paragraph 3.01.D may be performed in lieu of the requirements stated in 3.01.C with prior permission from the Project Manager or shall be performed if requested by the Project Manager.

D. When the conditions described in paragraphs 3.01.B.1, 3.01.B.2, or 3.01.C are unable to maintain an air quality acceptable to 80% of the surrounding occupants, perform the following at no extra cost to the STATE:
   1. Immediately discontinue the use of the offending product(s) upon notification by the Project Manager;

   2. Perform the odor or dust generating task(s) during a non-occupied time such as evenings, weekends holidays, etc.;

   3. Thoroughly clean any odor or dust affected area and equipment prior to occupancy; and

   4. Complete the odor or dust generating task(s) at least 16 hours prior to occupancy.

3.02 VENTILATION AFTER CONSTRUCTION

A. In all work areas in an existing building the CONTRACTOR shall perform a ventilation activity after construction has been completed but prior to occupancy according to the following:
   1. Notify the Project Manager prior to starting the work involved with these steps or immediately if any step cannot be successfully completed;

   2. Inspect area adjacent to portable fans for the existence of air containing odors and eliminate the cause of any odor(s) before proceeding;

   3. Open windows and doors (interior and exterior) for maximum ventilation of the work area using caution regarding security, infiltration of dirt, debris, or dust, and impact on surrounding occupied areas. This requirement shall not relieve the CONTRACTOR of its responsibility for security, protection from the elements of weather, or site cleanliness;

   4. Turn on all of the available lights and heat producing equipment;

5. Ventilate the work area using portable supply and exhaust fans capable of providing one complete work area air change per hour for 72 hours;

6. Be prepared to continue the ventilation procedure beyond the 72 hours and to add additional fans if the Project Manager considers it necessary. Ventilation beyond 72 hours will be compensated as extra work if all of the above steps have been followed; and

7. When the Project Manager determines that the ventilation has been sufficient, remove the portable equipment.

END OF SECTION

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including the following:
   1. Construction layout. Field engineering and surveying.
   2. General installation of products.
   3. Progress cleaning.
   4. Starting and adjusting.
   5. Protection of installed construction.
   6. Correction of the Work.

B. Related Sections
   1. SECTION 01770 - CLOSEOUT PROCEDURES.

1.02 SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.03 NOTIFICATION

A. Contact the Project Manager and the Project Manager at least 3 working days prior to starting any onsite work.

1.04 PROJECT AND SITE CONDITIONS

A. Project Contract Limits (Contract Zone Limits) indicate only in general the limits of the work involved. Perform necessary and incidental work, which may fall outside of these demarcation lines. Confine construction activities within the Project Contract Limits and do not spread equipment and materials indiscriminately about the area.

B. Disruption of Utility Services: Prearrange work related to the temporary disconnection of electrical and other utility systems with the Project Manager and the Project Manager. Unless a longer notification period is required elsewhere in the Contract Documents, notify the Project Manager at least 15 days in advance of any interruption of existing utility service. Time and duration of interruptions are subject to the Project Manager's approval. Keep the utility interruptions and duration to a minimum so as not to cause inconvenience or hardship to the facility. If temporary electrical or other utility systems hook-up is required, provide the necessary services. Pay for temporary services as part of the contract, unless specifically noted otherwise.

C. Contractor's Operations - Provide means and methods to execute the Work and minimize interruption or interference to the facility's operations. Rearrange the

construction schedule when construction activities result in interruptions that hamper the operations of the facilities.

D. Maintain safe passageway to and from the facility's occupied buildings, rooms and other occupied spaces for the using agency personnel and the public at all times.

E. Contractor, Subcontractor(s) and their employees will not be allowed to park in zones assigned to Users or facility personnel. Subject to availability, the Project Manager may designate areas outside of the Contract Zone Limits to be used by the Contractor. Restore any lawn area damaged by construction activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINING THE SITE

A. Contractor and Subcontractors are expected to visit the site and make due allowances for difficulties and contingencies to be encountered. Compare contract documents with work in place. Become familiar, with existing conditions, the conditions to be encountered in performing the Work, and the requirements of the drawings and specifications.

B. Verify construction lines, grades, dimensions and elevations indicated on the drawings before any clearing, excavation or construction begins. Bring any discrepancy to the attention of the Project Manager, and make any change in accordance with the Project Manager instruction.

C. Obtain all field measurements required for the accurate fabrication and installation of the Work included in this Contract. Verify governing dimensions and examine adjoining work on which the Contractor or Subcontractor's work is in any way dependent. Submit differences discovered during the verification work to the Project Manager for interpretations before proceeding with the associated work. Exact measurements are the Contractor's responsibility.

D. Furnish or obtain templates, patterns, and setting instructions as required for the installation of all Work. Verify dimensions in the field.

E. Contractor shall accept the site and the existing building(s) in the condition that exists at the time access is granted to begin the Work. Verify existing conditions and dimensions shown and other dimensions not indicated but necessary to accomplish the Work.

F. Locate all general reference points and take action to prevent their destruction. Lay out work and be responsible for lines, elevations and measurements and the work executed. Exercise precautions to verify figures and conditions shown on drawings before layout of work.

3.02 SITE UTILITIES AND TONING

A. Cooperate, coordinate and schedule work to maintain construction progress, and accommodate the operations and work of the owners of underground or overhead utility lines or other property in removing or altering the lines or providing new services.

B. Contact all the various utility companies before the start of the work to ascertain any existing utilities and to develop a full understanding of the utility requirements with respect to this Project. Furnish the Project Manager with evidence that the utility companies were contacted.

C. Should the Contractor discover the existence and location of utilities in the contract drawings are not correct, do not disturb the utilities and immediately notify the Project Manager.

D. Do not disturb or modify any utilities encountered, whether shown or not on the Contract Drawings, unless otherwise instructed in the drawings and specifications or as directed by the Project Manager. Repair and restore to pre-damaged condition any utilities or any other property damaged by construction activities.

E. Transfer to “Field Posted As-Built” drawings the location(s) and depth(s) of new and existing utilities that differ from the Contract Drawings. Locate by azimuth and distance and depth(s) from fixed referenced points.

F. Toning: Prior to the start of grading, or excavation or trenching work verify and confirm the presence, location and depth of existing underground utility lines in the area affected by the project, by “toning” or by other appropriate means acceptable to the Project Manager. The intent of this advanced toning is to afford the Project Manager an opportunity to identify utility lines that may or may not be shown on the drawings and issue a directive to address the existing conditions.
   1. Perform toning using instruments specifically developed and designed for the detection of underground pipes and cable utilities.

   2. Notify the Project Manager 48 hours in advance before toning operations. Provide information on the proposed toning method and other pertinent information.

G. Recording Toning Information: Upon completion of the toning operation, submit drawings that show the location and approximate depth of the existing and newly discovered utility lines. Identify the type of utility lines. Also, identify where utility lines indicated on the drawings are not shown in their approximate location or where new utility lines are found or pointed out in the field.

H. After ascertaining the exact location and depth of utilities within the project area, mark and protect the locations.
   1. Acquaint personnel working near utilities with the type, size, location, depth of the utilities, and the consequences that might result from disturbances.

2. Do not start trenching or start similar operations until reasonable and appropriate precautions to protect the utilities are taken.

I. For newly identified utility lines, if directed by the Project Manager, manually excavate within 2-feet of the utility line to avoid damage. Under this directive, manual excavation is considered additional work.

J. Existing Irrigation Systems: Where work is located in areas with existing irrigation systems, Contractor shall test the existing systems and document all deficiencies prior to any work that may damage the existing systems.

3.03 FIELD MEASUREMENTS

A. Take field measurements to fit and install the Work properly. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Submit a Request For Information (RFI) immediately upon discovery of the need for clarification of the Contract Documents. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.04 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to existing conditions. If discrepancies are discovered, notify the Project Manager promptly.

3.05 FIELD ENGINEERING

A. Reference Points: Locate existing permanent or temporary benchmarks, control points and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
   1. Do not change or relocate existing benchmarks or control points without the Project Manager's approval. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Project Manager before proceeding.

   2. Replace lost or destroyed permanent benchmarks and control points promptly. Base all replacements on the original survey control points.

3.06 INSTALLATION

A. Install materials, items, fixtures required by the various Divisions and Sections of the Specifications in accordance with Contract Documents, by workers specially trained and skilled in performance of the particular type of work, to meet guarantee and regulatory agency requirements. Should the drawings or specifications be void of installation requirements, install the materials, items, and fixtures in accordance with the manufacturer's current specifications, recommendations, instructions and directions.

3.07 CUTTING AND PATCHING

A. Oversee cutting and patching of concrete, masonry, structural members and other materials where indicated on drawings and as required by job conditions. Unless noted elsewhere in the contract documents, do not cut or patch existing or new structural members without previously notifying the Project Manager.

B. Provide patch materials and workmanship of equal quality to that indicated on the drawings or specified for new work.

3.08 CLEANING

A. General: Clean the Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

   2. Do not hold waste more than 7 days unless approved otherwise by the Project Manager.

   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use only cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.09 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions to provide proper temperature and relative humidity conditions.

3.11 CORRECTION OF THE WORK

A. Repair or replace defective construction. Restore damaged substrates and finishes. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair defective components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

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.

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 survey report is included in this Section.
   1. The report is included, even when no ACBM was found, for the Contractor's information. Review the attached report for the basis on which the negative ACBM finding was made. If the Contractor encounters unforeseen suspect ACM during the course of work, the Contractor shall immediately notify the State for further instruction. The Contractor shall not conduct its own testing. Any additional testing will be conducted by the State.

   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 ones designated within this project scope, request copies of the asbestos survey report(s) for such building(s) from the Contracting Officer. 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 buildings 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

A. Limited Inspection Report for Asbestos and Lead, attached 25 pages, dated February 2014. Prepared by EnviroQuest, Inc.

END OF SECTION

LIMITED INSPECTION REPORT FOR ASBESTOS AND LEAD

Fort Ruger
Buildings 90 and 90D
Replace Roofs and Repair Exterior Walls

Prepared for:

Lou Chan & Associates, Inc.
725 Kapiolani Boulevard, Suite C-207
Honolulu, Hawaii 96813

Prepared by:

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea, Hawaii 96701
808.486.5881
eqi@enviroquestinc.com

February 2014

ENVIROQUEST Project 7694

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EXECUTIVE SUMMARY

ENVIROQUEST, INC. (EQI) was retained by Lou Chan and Associates, Inc. to conduct a limited hazardous material inspection of Buildings 90 and 90D located at Fort Ruger, Honolulu, Hawaii. The inspection was conducted on February 18, 2014.

The objective of the inspection was to determine the location of asbestos-containing materials (ACMs) and lead-based paints (LBPs), which may be disturbed during the replacement of the roofs and the repairs of the exterior walls at Building 90D and roof ventilation replacement at Building 90.

Asbestos-Containing Material

The listed materials were identified as asbestos-containing materials.

Material	Location	Condition
Black tar (roof)	Building 90D, maintenance equipment roof insulation	Damaged
Black tar (wall)	Building 90D, office area wall insulation	Damaged
Black tar sealant	Building 90, roof ventilation sealant	Good

The damaged materials should be removed as part of the renovation work. All removal must be completed by a certified asbestos abatement contractor under controlled conditions in accordance with Environmental Protection Agency (EPA) and Hawaii Department of Health (HDOH) regulations. Work should also be monitored by an independent industrial hygiene professional.

Lead-based Paint

The listed building components were painted or coated with LBP or lead coatings.

Color	Location	Condition
Cream	Building 90D, maintenance equipment carport metal post and roof frame	Intact

The EPA defines lead-based paint as paint or other coatings containing lead equal to, or in excess of, 1.0 mg/cm^2. Lead at various concentrations below the EPA guideline was also detected in various coatings (see Table 2). The contractor's employees removing or disturbing the painted material also must be informed that it contains lead and must have received training under Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 *Lead* and Hawaii Division of Occupational Safety and Health (HIOSH) 12-148.1 *Lead*. If any other untested paints are disturbed, they should be assumed to contain lead.

1.0 INTRODUCTION

This report presents the results of the limited hazardous material inspection of Buildings 90 and 90D at Fort Ruger. The inspection was conducted on February 18, 2014.

The objective of the inspection was to determine the location of ACMs and LBPs, which may be disturbed during the replacement of the roofs and the repairs of the exterior walls at Building 90D and roof ventilation replacement at Building 90.

2.0 ASBESTOS

Eighteen samples were collected from suspect asbestos-containing materials.

2.1 Methodology

Prior to sampling, EQI visually surveyed the affected areas for suspect asbestos-containing materials and homogeneous areas (areas that have uniform color, texture, and appearance.) Suspect materials were divided into friable and non-friable materials and placed in one of the following EPA categories:

- Surfacing Materials (sprayed or troweled-on materials)
- Thermal Systems Insulations (materials generally applied to various mechanical systems)
- Miscellaneous Materials (any materials which do not fit in the above categories)

Sampling methodology followed the general guidelines for bulk asbestos sampling as presented in Section 40, Part 763 (AHERA) of the Code of Federal Regulations (CFR) and Hawaii Administrative Rules (HAR) 11-501 and 11-502.

2.2 Results

Samples were submitted to Forensic Analytical in Rancho Dominguez, California. The samples were analyzed by polarized-light microscopy (PLM), using EPA Method 600/R-93-116, Visual Area Estimation.

Forensic Analytical is accredited for bulk asbestos analysis through successful participation in the US Department of Commerce, National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP). The laboratory is currently registered to provide asbestos laboratory services in the State of Hawaii under Title 11 of the Hawaii Administrative Rules (HAR), Chapter 504.

Based on the laboratory analytical report, three of the 18 samples collected were identified as ACM. The National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR 61 Part M, defines asbestos containing materials as those which contain greater than 1% asbestos.

A summary of the homogeneous materials is presented in Table 1. The laboratory analytical report, chain of custody forms, and sample location drawings are included in Appendix 1

TABLE 1
Homogeneous Material Summary
Buildings 90 and 90D, Fort Ruger

Homogenous Material	ACM[1] (Y/N)	Location	Sample ID	Friable (Y/N)	Est Qty (ACM) (ft^2)	Condition[2]	Photo No.
Black tar	N	Building 90D, Roof joint, connection sealant	7694021801 7694021802 7694021803	N	-	D	2, 3, 4
Black tar on foam insulation	N	Building 90D, maintenance equipment roof area, patched areas	7694021804 7694021805 7694021806	N	-	D	5, 6, 7
Roofing insulation with tar	Y	Building 90D, maintenance equipment roof area	7694021807 7694021808 7694021809	N	3000	D	8, 9, 10
Beige painted wall insulation with tar	Y	Building 90D, office area	7694021810 7694021811 7694021812	N	900	D	11, 12, 13
Black tar sealant	Y	Building 90, roof ventilation tar sealant	7694021813 7694021814 7694021815	Y	30	D	14, 15, 16
Black tar	N	Building 90, corrugated roof surfaces, under roof ventilation flashing	7694021816 7694021817 7694021818	N	-	G	17, 18, 19

1. ACM=>1% asbestos content
2. Good (G); Damaged (D) <10% distributed or 25% localized; Significant Damage (SD), >10% distributed or 25% localized

3.0 LEAD

Seventeen surface measurements, including instrument calibration checks, were collected from painted or coated materials that may be disturbed by the renovation work.

3.1 Methodology

Prior to sampling, EQI visually surveyed the affected areas for painted building components. Our sampling methodology generally followed the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing" published by the Department of Housing and Urban Development (HUD) in 1995.

The inspection was completed using a portable X-ray fluorescence (XRF) spectrum analyzer. The XRF uses a cadmium 109 (Cd^{109}) radioactive source that, when exposed to painted building components, causes lead to emit X-rays with a characteristic frequency or energy. The intensity of the radiation is then measured by the instrument and reported as lead in milligrams per square centimeter (mg/cm^2).

3.2 Results

Two lead-in paint measurements exceeded EPA guidelines for lead in paint. EPA defines lead-based paint as paint or other coatings containing lead in equal to, or in excess of, 1.0 milligram per square centimeter (mg/cm^2) by XRF. A homogeneous paint summary is presented in Table 2. The XRF Field Log and XRF results are included in Appendix 2.

TABLE 2
Homogeneous Paint Summary
Buildings 90 and 90D, Fort Ruger

Paint Color	Int/Ext	LBP_1 (Y/N)	Paint Location	Sample ID (XRF #)	$Condition_{2,3}$	Photo No.
Cream	Ext	N	• Building 90D, maintenance equipment carport metal wall and roof • Building 90D, Office Area insulation • Building 90, Roof and roof vent	29, 30, 33, 34, 35, 37, 38	Intact	21, 23, 24
Cream	Ext	Y	• Building 90D, maintenance equipment carport metal post and roof frame	31, 32	Intact	22
Light Gray	Ext.	N	• Building 90D, insulation	36	Intact	21

1. LBP = >1.0 mg/cm^2
2. Exterior: Intact – Entire surface is intact; Fair - ≤ 10ft^2; Poor - >10 ft^2
3. Interior: Intact – Entire surface is intact; Fair - ≤ 2ft^2 or ≤ 10%; Poor - >2 ft^2 or >10%

4.0 CONCLUSION

4.1 Asbestos-Containing Materials

The listed materials were identified as asbestos-containing materials.

Material	Location	Condition
Black tar (roof)	Building 90D, maintenance equipment roof insulation	Damaged
Black tar (wall)	Building 90D, office area wall insulation	Damaged
Black tar sealant	Building 90, roof ventilation sealant	Good

The damaged materials should be removed as part of the renovation work. All removal must be completed by a certified asbestos abatement contractor under controlled conditions in accordance with EPA and HDOH regulations. Work should also be monitored by an independent industrial hygiene professional.

4.2 Lead-Based Paint

The listed building components were painted or coated with LBP or lead coatings.

Color	Location	Condition
Cream	Building 90D, maintenance equipment carport metal post and roof frame	Intact

The EPA defines lead-based paint as paint or other coatings containing lead equal to, or in excess of, 1.0 mg/cm^2. Lead at various concentrations below the EPA guideline was also detected in various coatings (see Table 2). The contractor's employees removing or disturbing the painted material also must be informed that it contains lead and must have received training under OSHA 29 CFR 1926.62 *Lead* and HIOSH 12-148.1 *Lead*. If any other untested paints are disturbed, they should be assumed to contain lead.

5.0 LIMITATIONS

The information set forth is based solely on the agreed upon scope of services, on personal observation, laboratory data, and information provided by Lou Chan and Associates, Inc.

Although this inspection provides information on the relative presence or absence of asbestos-containing materials and lead-based paint, it should not be construed as a final statement that all hazardous materials have been identified.

Given the often obscure and elusive nature of hazardous materials, it is never possible to absolutely dismiss the possibility of additional hazardous materials. EnviroQuest, Inc. expressly disclaims any and all liability, representations, expressed or implied, contained in, or for omission from this report, or any other written or oral communication which might be interpreted as establishing the total extent of all liability present at the subject property.

Our services have been performed with usual thoroughness and competence of the consulting profession, in accordance with the standard of professional services at this time. No other warranty or representation, either expressed or implied is included or intended.

Any question regarding our work and this report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned. EQI greatly appreciates this opportunity to assist you with your industrial hygiene needs. We look forward to working with you again in the future.

Anthony Aguilar
Industrial Hygiene Technician
HIASB – 3772

Jesus Sacramento
Industrial Hygienist
HIASB – 0173

Asbestos
Laboratory Analytical Report

Appendix 1

EnviroQuest, Inc.

Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

EnviroQuest, Inc.
Steve Tanaka
98-029 Hekaha Street
Suite 21
Aiea, HI 96701

Client ID: 7104
Report Number: B187611
Date Received: 02/19/14
Date Analyzed: 02/19/14
Date Printed: 02/19/14
First Reported: 02/19/14

Job ID/Site: 7694; Fort Ruger Guard

Date(s) Collected: 02/18/2014

FALI Job ID: 7104
Total Samples Submitted: 18
Total Samples Analyzed: 12

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
7694021801	50847577						
Layer: Black Semi-Fibrous Tar			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (10 %)		**Asbestos (ND)**					
7694021802	50847578						
Layer: Black Semi-Fibrous Tar			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (10 %)		**Asbestos (ND)**					
7694021803	50847579						
Layer: Black Semi-Fibrous Tar			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (10 %)		**Asbestos (ND)**					
7694021804	50847580						
Layer: Black Tar			**ND**				
Layer: Yellow Foam			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (ND)**					
7694021805	50847581						
Layer: Black Tar			**ND**				
Layer: Yellow Foam			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (ND)**					
7694021806	50847582						
Layer: Black Tar			**ND**				
Layer: Yellow Foam			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (ND)**					

2959 Pacific Commerce Drive, Rancho Dominguez, CA 90221 / Telephone: (310) 763-2374 (888) 813-9417 / Fax: (310) 763-8684

Report Number: B187611

Client Name: EnviroQuest, Inc. **Date Printed:** 02/19/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
7694021807	50847583						
Layer: Black Semi-Fibrous Tar		Chrysotile	**3 %**				
Layer: Yellow Foams			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (Trace)**					
7694021808	50847584						
Comment: Sample not analyzed due to prior positive result in series.							
7694021809	50847585						
Comment: Sample not analyzed due to prior positive result in series.							
7694021810	50847586						
Layer: Black Semi-Fibrous Tar		Chrysotile	**3 %**				
Layer: Yellow Foams			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (Trace)**					
7694021811	50847587						
Comment: Sample not analyzed due to prior positive result in series.							
7694021812	50847588						
Comment: Sample not analyzed due to prior positive result in series.							
7694021813	50847589						
Layer: Black Semi-Fibrous Tar		Chrysotile	**3 %**				
Layer: Black Tar			**ND**				
Layer: Paints			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (2%)**					
7694021814	50847590						
Comment: Sample not analyzed due to prior positive result in series.							
7694021815	50847591						
Comment: Sample not analyzed due to prior positive result in series.							
7694021816	50847592						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace) Fibrous Glass (10 %)		**Asbestos (ND)**					
7694021817	50847593						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace) Fibrous Glass (10 %)		**Asbestos (ND)**					
7694021818	50847594						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace) Fibrous Glass (10 %)		**Asbestos (ND)**					

2959 Pacific Commerce Drive, Rancho Dominguez, CA 90221 / Telephone: (310) 763-2374 (888) 813-9417 / Fax: (310) 763-8684

Client Name: EnviroQuest, Inc.

Report Number: B187611
Date Printed: 02/19/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer

Steven Takahashi, Laboratory Supervisor, Rancho Dominguez Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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EnviroQuest

PLM DATA SHEET

Project No.: 7694 Project Name: Fort Ruger Guard Date: 02/18/14

Page: 1 of 3

Material Description: Black tar — Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694 0218 01	Bldg 90D / Roof / joint / connection + Sealant		
02			
03			
	(garage roof, Northside)		

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☑ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☑ Low	
Vibration Potential	☐ High	☐ Moderate	☑ Low	
Air Erosion	☐ High	☐ Moderate	☑ Low	
OVERALL POTENTIAL RATING	☐ Significant Damage	☑ Damage	☐ Minimal Damage	

Material Description: Black tar / foam insulation — Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694 0219 04	Bldg 90D / Corrugated roof middle part		
05			
06			
	(maintenance equip. roof area) Note: 4 spot location only		

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☑ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☑ Low	
Vibration Potential	☐ High	☐ Moderate	☑ Low	
Air Erosion	☐ High	☐ Moderate	☑ Low	
OVERALL POTENTIAL RATING	☐ Significant Damage	☑ Damage	☐ Minimal Damage	

Sampled By: Daniel Lewis Jr. DOH Cert No: 0724

Delivered to Lab By: Fed-Ex

Relinquished By/Date/Time:

Received By/Date/Time: 11:24 am 2/19/14 FE

Relinquished By/Date/Time:

Received By/Date/Time:

TURNAROUND TIME: ☐ < 12 Hours ☐ 24 Hours ☐ 3 Days ☐ 5 Days ☒ Same day

Surfacing	<1,000 ft² = 3 Samples	1,000 – 5,000 ft² = 5 Samples	>5,000 ft² = 7 Samples
TSI	Minimum of 3 Samples (Run) UNLESS	<6 In. or ft² = 1 Sample	Minimum of 3 Samples (Elbow & 'T')
Misc.	Minimum of 3 Samples (*Hawaii*)		

Surfacing	Sig. Damage = > *10% Dist. or 25% Local*	Damaged = < *10% Dist. or 25% Local*	*Good = Very Limited Damage*
TSI	Sig. Damage = *10% Missing Jacket OR > 10% Dist. or 25% Local*	Damaged = < *10% Missing Jacket OR < 10% Dist. or 25% Local*	Good = *Very Limited Damage*
Misc	Sig. Damage = > *10% Dist. or 25% Local*	Damaged = < *10% Dist. or 25% Local*	*Good = Very Limited Damage*

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EnviroQuest

PLM DATA SHEET

Project No.: 7694 Project Name: Fort Ruger Guard Date: 02/18/14

Page: 2 of 3

Material Description: ~~Blue~~ Foam insulation (Beige painted) Friable / ~~Non-friable~~

Sample No.	Location	% Asb.	Asb. Type
7694 02/8 07	/ Bldg 90D / Corrugated roof middle part		
08			
09			
	(Maintenance equip roof Area)		

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material		TSI		Misc.
☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -	☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Gouge/Punct - % Crushed - % H_2O Stains -	☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☒ Damage	☐ Minimal Damage

Material Description: Beige painted siding insulation Friable / ~~Non-friable~~

Sample No.	Location	% Asb.	Asb. Type
7694 02/8/10	/ Bldg D / Office area		
11			
12			
	NOTE: Black tar in between		

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material		TSI		Misc.
☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -	☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Gouge/Punct - % Crushed - % H_2O Stains -	☐ Sig. Damage ☒ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☒ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Material Description: Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694			

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material		TSI		Misc.
☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -	☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Gouge/Punct - % Crushed - % H_2O Stains -	☐ Sig. Damage ☐ Damaged ☐ Good Cond.	% Crumbling - % Delaminating - % H_2O/Gouges -

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

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EnviroQuest

PLM DATA SHEET

Project No.: 7694 Project Name: Fort Ruger Guard Date: 02/18/14

Page: 3 of 3

Material Description: Black tar sealant — Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694 02 18 13	Bldg 90 / Corrugated roof for identification from sealant (only one side needs roof edge) no walking around		
14			
15			

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -	TSI	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Gouge/Punct - % Crushed - % H2O Stains -	Misc.	☐ Sig. Damage ☑ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -
Contact Potential		☐ High	☐ Moderate	☑ Low
Vibration Potential		☐ High	☐ Moderate	☑ Low
Air Erosion		☐ High	☐ Moderate	☑ Low
OVERALL POTENTIAL RATING		☐ Significant Damage	☑ Damage	☐ Minimal Damage

Material Description: Black tar — Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694 02 18 16	Bldg 90 / Roof / on the corrugated roof surface (below roof ventilation flashing)		
17			
18			

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -	TSI	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Gouge/Punct - % Crushed - % H2O Stains -	Misc.	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -
Contact Potential		☐ High	☐ Moderate	☑ Low
Vibration Potential		☐ High	☐ Moderate	☐ Low
Air Erosion		☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING		☐ Significant Damage	☐ Damage	☑ Minimal Damage

Material Description: — Friable / Non-friable

Sample No.	Location	% Asb.	Asb. Type
7694			

CONDITION:	% Damaged:	% Localized:	% Distributed:	Total Material Quantity:
Surfacing Material	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -	TSI	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Gouge/Punct - % Crushed - % H2O Stains -	Misc.	☐ Sig. Damage ☐ Damaged ☐ Good Cond. — % Crumbling - % Delaminating - % H2O/Gouges -
Contact Potential		☐ High	☐ Moderate	☐ Low
Vibration Potential		☐ High	☐ Moderate	☐ Low
Air Erosion		☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING		☐ Significant Damage	☐ Damage	☐ Minimal Damage

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Lead
XRF Field Log
XRF Measurement Reading

Appendix 2

EnviroQuest, Inc.

NITON Corporation
900 Middlesex Turnpike
Billerica, MA 01821

NITON

Index	Reading No	Time	Duration	Type	Units	Sequence	Results	Depth Index	Action Level	Pb C	Pb L	Pb K
1	25	2014-02-18 16:54	265.90	SHUTTER_CAL	cps	Final				1.08 ± 0.00	0.20 ± 0.00	0.00 ± 0.00
2	26	2014-02-18 17:02	6.11	PAINT	mg/cm^2	Final	Positive	1.18	1.00	1.10 ± 0.10	1.10 ± 0.10	0.30 ± 0.50
3	27	2014-02-18 17:05	7.66	PAINT	mg/cm^2	Final	Negative	1.10	1.00	0.90 ± 0.10	0.90 ± 0.10	0.60 ± 0.50
4	28	2014-02-18 17:08	6.63	PAINT	mg/cm^2	Final	Positive	1.16	1.00	1.10 ± 0.10	1.10 ± 0.10	0.60 ± 0.50
5	29	2014-02-18 17:10	1.04	PAINT	mg/cm^2	Final	Negative	1.00	1.00	0.00 ± 0.02	0.00 ± 0.02	-0.25 ± 2.14
6	30	2014-02-18 17:11	1.03	PAINT	mg/cm^2	Final	Negative	2.22	1.00	0.02 ± 0.09	0.02 ± 0.09	-0.33 ± 2.21
7	31	2014-02-18 17:11	2.07	PAINT	mg/cm^2	Final	Positive	1.61	1.00	1.40 ± 0.40	1.40 ± 0.40	1.00 ± 2.10
8	32	2014-02-18 17:11	1.14	PAINT	mg/cm^2	Final	Positive	1.96	1.00	1.80 ± 0.60	1.80 ± 0.60	1.80 ± 3.10
9	33	2014-02-18 17:15	1.04	PAINT	mg/cm^2	Final	Negative	2.07	1.00	0.01 ± 0.05	0.01 ± 0.05	0.22 ± 0.89
10	34	2014-02-18 17:15	1.02	PAINT	mg/cm^2	Final	Negative	2.30	1.00	0.01 ± 0.06	0.01 ± 0.06	0.28 ± 0.92
11	35	2014-02-18 17:19	1.04	PAINT	mg/cm^2	Final	Negative	1.00	1.00	0.00 ± 0.02	0.00 ± 0.02	0.60 ± 1.90
12	36	2014-02-18 17:31	1.03	PAINT	mg/cm^2	Final	Negative	1.23	1.00	0.01 ± 0.05	0.01 ± 0.05	0.80 ± 1.60
13	37	2014-02-18 17:43	1.04	PAINT	mg/cm^2	Final	Negative	3.49	1.00	0.40 ± 0.60	0.40 ± 0.60	0.80 ± 2.30
14	38	2014-02-18 17:45	1.03	PAINT	mg/cm^2	Final	Negative	5.58	1.00	0.12 ± 0.44	0.12 ± 0.44	0.00 ± 1.72
15	39	2014-02-18 17:49	6.21	PAINT	mg/cm^2	Final	Positive	1.18	1.00	1.10 ± 0.10	1.10 ± 0.10	1.00 ± 0.40
16	40	2014-02-18 17:50	3.82	PAINT	mg/cm^2	Final	Positive	1.24	1.00	1.20 ± 0.10	1.20 ± 0.10	1.00 ± 0.60
17	41	2014-02-18 17:51	6.32	PAINT	mg/cm^2	Final	Positive	1.19	1.00	1.10 ± 0.10	1.10 ± 0.10	1.10 ± 0.40

02/18/14 15:49:51

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FIELD LOG
XRF MEASUREMENTS

Project: FORT RUGER GUARD

Building: 90D & 90

Project No:

Date: 02/18/2014

Page: 1/1

XRF #	Int/Ext	Flr.	Room	Component	Direction	Substrate	Color	mg/cm²	Comments
25	Calibration			Instrument					
26									
27	> Calibration Verification							1.10	
28								0.90	
29	EXT	-	-	wall	Carport	metal	cream	1.10	
30	EXT	-	-	wall	Carport	metal	cream	0.00	Building 90D
31	EXT	-	-	post	Carport	metal	cream	0.02	
32	EXT	-	-	post	Carport	metal	cream	1.43	-> Equipment/maintenance Area Carport.
33	EXT	-	-	wall	OFFICE	Insulation	cream	1.80	
34	EXT	-	-	wall	OFFICE	Insulation	Cream	0.01	-> OFFICE/area Painted insulation over corrugated metal
35	EXT	-	-	Roof	Carport	metal	cream	0.00	corrugated
36	EX	-	-	Roof	Carport	Insulation	light	gray 0.01	painted
Building 90									
37	EXT	-	-	ROOF	-	metal	cream	0.40	
38	EXT	-	-	ROOF Vent	-	metal	Cream	0.12	Ventalation Fan
39									
40	> Calibration Verification							1.10	
41								1.20	
								1.10	

Photographs

Appendix 3

EnviroQuest, Inc.

Photo 1: Building 90D.

Photo 2: Building 90D.
Non-asbestos containing black tar on the roof joint.

Photo 3: Building 90D.
Non-asbestos containing black tar on the roof joint.

Photo 4: Building 90D.
Non-asbestos containing black tar on the roof joint.

Photo 5: Building 90D.
Non-asbestos containing black tar over foam insulation.

Photo 6: Building 90D.
Non-asbestos containing black tar over foam insulation.

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PHOTOGRAPHIC LOG

Buildings 90 and 90D
Fort Ruger

Photo 7: Building 90D.
Non-asbestos containing black tar over foam insulation.

Photo 8: Building 90D.
Asbestos containing roofing insulation black tar on the maintenance equipment roof.

Photo 9: Building 90D.
Asbestos containing roofing insulation black tar on the maintenance equipment roof.

Photo 10: Building 90D.
Asbestos containing roofing insulation black tar on the maintenance equipment roof.

Photo 11: Building 90D.
Asbestos containing black tar on the beige painted wall insulation.

Photo 12: Building 90D.
Asbestos containing black tar on the beige painted wall insulation.

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PHOTOGRAPHIC LOG

Buildings 90 and 90D
Fort Ruger

Photo 13: Building 90D.
Asbestos containing black tar on the beige painted wall insulation.

Photo 14: Building 90.

Photo 15: Building 90.
Asbestos containing black tar sealant around the ventilator.

Photo 16: Building 90.
Asbestos containing black tar sealant around the ventilator.

Photo 17: Building 90.
Asbestos containing black tar sealant around the ventilator.

Photo 18: Building 90.
Non-asbestos containing black tar under the roof ventilation flashing.

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PHOTOGRAPHIC LOG

Buildings 90 and 90D
Fort Ruger

Photo 19: Building 90.
Non-asbestos containing black tar under the roof ventilation flashing.

Photo 20: Building 90.
Non-asbestos containing black tar under the roof ventilation flashing.

Photo 21: Building 90D.
Non-lead based painted cream wall siding insulation and gray corrugated roof.

Photo 22: Building 90D.
Lead-based painted cream metal carport post and roof frames.

Photo 23: Building 90D.
Non lead-based painted cream painted metal roof.

Photo 24: Building 90.
Non lead-based painted cream roof ventilation.

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PHOTOGRAPHIC LOG

Buildings 90 and 90D
Fort Ruger

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including the following:
   1. Project Record Documents.
   2. Warranties.
   3. Instruction for the State's personnel.

B. Related documents include the following:
   1. SECTION 01700 - EXECUTION REQUIREMENTS.

1.02 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting a Final Inspection to determine Substantial Completion, complete the following items in addition to requirements of Article 7 of the GENERAL CONDITIONS.
   1. Advise the Project Manager of pending insurance changeover requirements.
   2. Submit specific warranties, final certifications, and similar documents.
   3. Obtain and submit occupancy permits, operating certificates, and similar releases and access to services and utilities, unless waived by the Project Manager.
   4. Arrange to deliver tools, spare parts, extra materials, and similar items to a location designated by the Project Manager. Label with manufacturer's name and model number where applicable.
   5. Make final changeover of permanent locks and deliver keys to the Project Manager. Advise the State's personnel of changeover in security provisions.
   6. Complete startup testing of systems.
   7. Submit test, adjust, and balance records.
   8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   9. Advise the Project Manager of changeover in other utilities.
   10. Submit changeover information related to the State's occupancy, use, operation, and maintenance.
   11. Complete final cleaning requirements, including touch up painting.
   12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

1.03 FINAL COMPLETION

A. Preliminary Procedures: Within 10 days from the Project Acceptance Date, complete the following items in addition to requirements of GENERAL CONDITIONS Article 7 PROSECUTION AND PROGRESS:
   1. Instruct the State's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

1.04 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit 2 copies of any updated and action taken list. In addition to requirements of GENERAL CONDITIONS Article 7 PROSECUTION AND PROGRESS, include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

   3. Include the following information at the top of each page:
      a. Project Name and Title.
      b. DOD Job No.
      c. Date and page number.
      d. Name of Contractor.

1.05 PROJECT RECORD DOCUMENTS AND REQUIREMENTS

A. General:
   1. Definition: "Project Record Documents", including Record Drawings, shall fulfill the requirements of "Field-Posted As-Built Drawings" listed in the GENERAL CONDITIONS.

   2. Do not use Project Record Documents for daily construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Project Manager's reference during normal working hours. Maintain these documents as specified in paragraph entitled "Record Drawings" hereinafter.

   3. The Designer, under contract with the State, will update the drawings to show all addendum, PCD, and sketch changes. The Project Manager will transmit these drawings (mylar or vellum) to the Contractor who will make all "red-line" corrections to these drawings to record the changes depicted on the Contractor's Field Posted Record ("As-Builts") by accepted drafting practices as approved by the Project Manager.

   4. Where the recorded changes depicted on the Contractor's Field Posted Record ("As-Builts") are in the form of shop drawings, the Contractor shall provide those shop drawings on mylar or vellum sheets in the same material and size as the drawings transmitted to the Contractor. The new drawing

sheets shall be titled and numbered to conform to the construction drawings and clearly indicate what information they supercede in the actual construction drawings. For example a new drawing that replaces drawing M-3, could be numbered M3a.

5. The Contractor shall bring to the attention of the Project Manager any discrepancy between the changes made by the Designer and those depicted on addendum, PCD, and sketch changes. The Project Manager will resolve any conflicts.

6. Submit final Record Documents (Field Posted Record Drawings) within 10 days after the Final Inspection Date but no later than the Contract Completion Date, unless the GENERAL CONDITIONS require an earlier submittal date.

7. The Contractor shall guarantee the accuracy of its final Record Documents. The State will hold the Contractor liable for costs the State incurs as a result of inaccuracies in the Contractor's Record Documents.

8. Prepare and submit construction photographs and electronic files, damage or settlement surveys, property surveys, and similar final record information as required by the Project Manager.

9. Deliver tools, spare parts, extra materials, and similar items to a location designated by the Project Manager. Label with manufacturer's name and model number where applicable.

10. Submit pest-control final inspection report and warranty.

B. Record Drawings:
   1. Maintain a duplicate full-size set of Field Posted Record ("As-Builts") Drawings at the job site. Clearly and accurately record all deviations from alignments, elevations and dimensions, which are stipulated on the drawings and for changes directed by the Project Manager that deviate from the drawings.

   2. Record changes immediately after they are constructed in place and where applicable, refer to the authorizing document (Field Order, Change Order, or Contract Supplement). Use red pencil to record changes. Make Field Posted Record Drawings available to the Project Manager at any time so that its clarity and accuracy can be monitored.
      a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
      b. Accurately record information in an understandable drawing technique.
      c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
      d. Mark the contract drawings or the shop drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on contract drawings.
      e. Mark important additional information that was either shown schematically or omitted from original Drawings.

f. Locate concealed building utilities by dimension from bench marks or permanent structures. Locate site utilities by dimensions, azimuth and lengths from bench marks or permanent structures.
g. Note field order numbers, Change Order numbers, Contract Modification numbers, Alternate numbers, post-construction drawing numbers (PCD) and similar identification (RFI numbers) where applicable.
h. The Contractor shall initial each deviation and each revision marking.

3. Use the final updated Contract Drawing set plus applicable shop drawings for making the final Field Posted Record Drawings submittal.

4. Certify drawing accuracy and completeness. Label and sign the record drawings.

5. Label the title sheet and on all sheets in the margin space to the right of the sheet number, written from the bottom upward, with the title "FIELD POSTED RECORD DRAWINGS" and certification information as shown below. Provide a signature line and company name line for each subcontractor that will also certify the respective drawing. Adjust size to fit margin space.

   FIELD POSTED RECORD DRAWINGS Certified By: _____ Date: _____
   [Contractor's Company Name]

6. Revise the Drawing Index and label the set "FIELD POSTED RECORD DRAWINGS". Include the label "A COMPLETE SET CONTAINS [_____] SHEETS" in the margin at the bottom right corner of each sheet. Quantify the total number of sheets comprising the set.

7. If the Project Manager determines a drawing does not accurately record a deviation or omits relevant information, the State will correct any FIELD POSTED RECORD DRAWINGS sheet. Contractor will be charged for the State's cost to correct the error or omission.

8. Use the final Field Posted Record Drawings sheets to create one electronic version of the set. The set shall be recorded in Adobe Acrobat PDF (Portable Document Format). Create a single indexed, bookmarked PDF file of the entire set of drawings and record on the CD. Submit one set of the final Field Posted Record Drawings sheets and the complete electronic CD set(s).

1.06 WARRANTIES

A. Submittal Time: Submit written manufacturer's warranties at request of the Project Manager for designated portions of the Work where commencement of warranties other than Project Acceptance date is indicated.

B. Partial Occupancy: Submit properly executed manufacturer's warranties within 45 days of completion of designated portions of the Work that are completed and occupied or used by the State during construction period by separate agreement with Contractor.

C. Organize manufacturer's warranty documents into an orderly sequence based on the table of contents of the Specifications.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 inch x 11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer and prime contractor.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES", Project Name and Title, DOD Job Number, and name of Contractor.

4. Use the final submittal of the warranties to create an electronic Adobe Acrobat PDF (Portable Document Format) version of the bound warranty documents files. Each sheet shall be separately scanned, at 600 DPI or better into a PDF file, indexed and recorded on a recordable compact disc (CD).

D. Provide 2 sets of manufacturer's warranties that exceed one year and one CD as part of the closing document submittals.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.01 FINAL AND PROGRESSIVE CLEANING

A. General: Provide final and progressive cleaning for each phase of work prior to starting the next phase. In addition to requirements of Article 7 of the GENERAL CONDITIONS conduct cleaning and waste-removal operations to comply with local laws and ordinances and federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturers written instructions unless noted otherwise. Complete the following cleaning operations before requesting final inspection for entire Project or for a portion of Project:
   1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits resulting from construction activities.

3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

4. Remove tools, construction equipment, machinery, and surplus material from Project site.

5. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

6. Remove debris and surface dust from limited access spaces, including: roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

7. Sweep concrete floors broom clean in unoccupied spaces.

8. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass surfaces, taking care not to scratch surfaces.

9. Remove labels that are not permanent.

10. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    a. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.

11. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

12. Replace parts subject to unusual operating conditions.

13. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

14. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the State's property. Do not discharge volatile, harmful, or dangerous materials into drainage and sewer systems or onto State property. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

DIVISION 2 – SITE CONSTRUCTION

SECTION 02070 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Selective demolition includes, but is not limited to selective removal and subsequent disposal of all materials indicated to be removed.

B. The extent of selective demolition is indicated on Drawings.

C. Related Sections include the following:
   1. Section 13281 – ASBESTOS ABATEMENT, Section 13282 – LEAD-BASED PAINT CONTROL MEASURES, and Section 13288 – TESTING AND AIR MONITORING: Abatement of hazardous materials.

1.02 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain State's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.03 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTAL PROCEDURES.

B. Proposed Dust-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

C. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.

   2. Interruption of utility services.

   3. Coordination for shutoff, capping, and continuation of utility services.

D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

E. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.04 QUALITY ASSURANCE

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

B. Standards: Comply with ANSI Al0.6 and NFPA 241.

C. Predemolition Conference: Conduct conference at Project site. Review methods and procedures related to selective demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be selectively demolished.

   2. Review structural load limitations of existing structure.

   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.05 PROJECT CONDITIONS

A. Condition of Structure: The State assumes no responsibility for actual condition of items or portions of structure to be removed.

B. Hazardous Materials: Hazardous materials are present in building to be selectively demolished. A report on the presence of hazardous materials is included in this specification. Examine report to become aware of locations where hazardous materials are present and proceed as described in Section 01715.
   1. Hazardous material remediation is specified elsewhere in the Contract Documents.

   2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

C. Storage or sale of removed items or materials on-site will not be permitted.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Project Manager.

3.02 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against

damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by the State and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the State and to authorities having jurisdiction.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
   1. State will arrange to shut off indicated utilities when requested by Contractor.

   2. Arrange to shut off indicated utilities with utility companies.

   3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.

   4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.03 PREPARATION

A. Pest Control: Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from State and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

   2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

   3. Protect existing site improvements, appurtenances, and landscaping to remain.

   4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

   3. Protect walls, ceilings, floors, other existing finish work, equipment, tools,

furnishing, etc. that are to remain or that are exposed during selective demolition operations.

D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.05 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, as required by engineered shoring sequence.

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

   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

   5. Maintain adequate ventilation when using cutting torches.

   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

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

8. Dispose of demolished items and materials promptly.

9. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Project Manager, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

C. All materials resulting from removal work shall become the property of the Contractor and shall be removed from the limits of the State property. Noncombustible and combustible materials shall be disposed of outside the limits of State controlled land at the Contractor's expense at an acceptable solid waste disposal site. The Contractor is encouraged to recycle materials to maximum extent possible to avoid disposal at a landfill.

3.06 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Where damage has occurred to finished concrete or stucco finishes designated to remain, repair to paint ready.

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off State's property and legally dispose of them.

END OF SECTION

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07560 – FLUID APPLIED ROOFING SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Fluid applied flexible acrylic or siliconized waterproofing system over existing roofing. This work shall include the preparation/repairs as required, flashing system, and clean up.

1.02 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

A. The fluid applied waterproofing system must consist of a reinforced elastomeric system specifically designed for direct application to existing roofing systems. The system shall consist of a minimum 52 mil (minimum dry mil) acrylic and polyester fabric according to Standard 4470 for Class 1 Roof Constructions which includes Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage Resistance, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.03 SUBSTRATE APPROVAL

A. The substrate must be inspected and approved by the roof system's Technical Representative prior to job start up.

1.04 RELATED WORK

A. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the Contractor.

1.05 REFERENCES

A. ASTM B117 - Test Method of Salt Spray (Fog) Testing.

B. ASTM G-29 - Test Methods for Algae Resistance.

C. ASTM E-108 - Test Method for Fire Test of Roof Coverings.

D. ASTM D-1653 - Water Vapor Transmission of Materials.

E. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.

F. ASTM D-412 - Ultimate Tensile Strength at Break.

G. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer.

H. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers

I. FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications

1.06 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTAL PROCEDURES.

B. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details (as per project coordinator request).

C. Product Data: Provide Manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc.

D. Manufacturer's Installation Instructions: Submit all data sheets available from the Manufacturer on the installation of the roofing system applicable to the work.

E. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.07 QUALIFICATIONS

A. Applicator Qualifications: The applicators of the roofing material specified herein shall be approved applicators. The Contractor shall provide documentation from the Manufacturer of the roof system that the applicators have been trained by the Manufacturer. Proof of this qualification shall be provided in written form from the Manufacturer of the roofing system. The Contractor shall be responsible to provide only qualified applicators and personnel and the State reserves the right to remove any employee at anytime.

1.08 QUALITY CONTROL

A. Codes and Standards: The Contractor shall make himself/herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the Manufacturer's requirements and these specifications shall be brought to the attention of the Manufacturer and the Project Manager. The Contractor shall be solely be responsible for observance of safety compliance.

B. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the Project Manager. The request for deviation must have a letter from the roofing Manufacturer's technical department approving the details of the deviation.

C. All of the applicators employed by the Contractor to install the waterproofing system shall be listed (by the Manufacturer) by name as approved applicators. No work shall be performed by non-approved applicators that may pertain to the application of the waterproofing system's components. A roster of certified applicators to be used on the project shall be provided prior to start of project work to the Project Manager.

D. Manufacturer's Technical Representative: A Technical Representative for the roofing material Manufacturer shall be on site at least once every 7-work days

during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the Project Manager. The Manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the foundation coat & fabric components, and completed finish coat inspection.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in Manufacturer's unopened and undamaged containers bearing the following information:
   1. Name of Manufacturer.
   2. Name of contents and products code.
   3. Net volume of contents.
   4. Lot or batch number.
   5. VOC content.
   6. Storage temperature limits.
   7. Shelf life expiration date.
   8. Mixing instructions and proportions of contents.
   9. Safety information and instructions.

B. Store and protect materials from damage and weather in accordance with Manufacturer's instructions.

C. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.

D. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTIES AND GUARANTEES

A. The Contractor shall furnish to the following to the Project Manager:
   1. A written guaranty on the manufacturer approved Fluid Applied Roofing System for a 2 year period after Project Acceptance Date. This shall be a non-prorated, full-value, no-dollar-limit, material-and-labor guaranty for the roofing system and the following shall be provided at no additional cost to the State:
      a. Repair of roofing flashing, pitch pockets, drains, curbs, etc., as necessary to seal and repair all leaks, which are attributable to faulty materials and/or workmanship.

b. Repair or replacement of damage to the building and/or its finishes, equipment and/or furnishings occurring from water-damage from roof leakage.

c. Inspection of the roofing by the Contractor and the roofing Manufacturer's Technical Representative together with DOD representative, of the roofing and flashing, on or about the first and second anniversaries of the Project Acceptance Date, and repair or replacement of roofing as necessary to correct any deficiencies in workmanship or materials, such as by eliminating blisters exceeding 12" in any dimension or re-adhering open seams.

d. Such correction work shall be done in a manner that will preserve the integrity of the complete roofing system as water-tight.

2. Fluid Applied Roofing System over existing metal roofing:
   a. The fluid applied roofing system Manufacturer shall submit to the State, via the Contractor, made out to the State, a 15-year complete roofing system warranty. This shall be a non-prorated, full-value, no-dollar-limit, material-and-labor guaranty for the entire roofing system. The surety shall not be held liable beyond two years from the Project Acceptance Date.

   b. The warranty shall cover both material and workmanship and shall provide that in the event of failure due to normal weathering and wind conditions during the remainder of the warranty period (the third through fifteenth years after project acceptance) the fluid applied roofing system Manufacturer will make repairs as necessary to maintain the roof in a watertight condition at no cost to the State.

   c. The warranty shall contain a certification by the Manufacturer that the complete roofing system has been installed in accordance with the Manufacturer's instructions and that the State has been provided maintenance instructions for the roof.

   d. The warranty shall contain no exclusions for materials furnished by the Manufacturer.

   e. The warranty shall include all waterproofing details incorporated on the parapet walls and other areas, flashings, and sealants.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. The Manufacturer of the roof system shall meet all of the requirements of Section 2.02 MEMBRANE COMPOUND MATERIAL (Cured Membrane Characteristics) that includes the requirement that the 52 (minimum) dry mil acrylic or silicone and polyester fabric roof system has been tested to provide a FM Class I-4470 roof system consisting of coating and polyester fabric.

2.02 MEMBRANE COMPOUND MATERIAL

A. Roofing Material: Multi-stage, fabric reinforced, flexible acrylic coating, system that is fluid applied in successive stages to form one continuous, seamless, watertight membrane; 52 mils (minimum dry mil thickness) composed of the following:

1. Foundation and Saturation Coats: highly flexible water based 100% pure acrylic polymer resin coatings or silicone consisting of a minimum of 90% solids.

2. Fabric: polyester, non-woven, stitch-bonded, and heat-set fabric.

3. Finish Coat: ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating or silicone consisting of a minimum of 90% solids; color as selected from Manufacturer's standard colors.

4. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following minimum characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)
Tensile Strength:	Warp 74 lbs. (33.60 kg) per ASTM D 5034 Fill 45 lbs. (20.43 kg)
Elongation @ Break:	Warp 21.3% per ASTM D 5034 Fill 51.3%
Ball Burst:	111 lbs. (50.39 kg) per ASTM D 3787
Trapezoid:	Warp 13.5 lbs. (6.13 kg) per ASTM D 117 Fill 24.2 lbs. (10.99 kg)
Thickness:	.018 inches (.457 mm) per ASTM D 1777

Cured Membrane Characteristics:

PROPERTY	TEST	RESULT
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPA)
Density:		12.1 lb/gal
Volume Solids:		> or = 53%
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours
Salt Spray Test	ASTM B117	No effect
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage
Windstorm Pressure	FM 4470	Meets Class 1-90
Windstorm Pull	FM 4470	Class 1-225 on

		Polyisocyanerate
"	"	Class 1-270 on Expanded Polystyrene
"	"	Class 1-375 on Lightweight Concrete
"	"	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking
Liquid Applied Acrylic	ASTM D6083	Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved
LEED SRI		Approved

2.03 ACCESSORIES

A. Acrylic modified bonding agent (used to produce cementitious primer for exposed concrete meeting NSF-61 approval).

B. Rust Primer water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.

B. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.

C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

D. Verify that substrate areas are adequately supported and firmly fastened in place.

E. Verify that roof substrate has positive slope and does not have ponding water areas.

F. Verify that all attached vertical walls are properly waterproofed (if applicable to project).

3.02 PREPARATION

A. Protection of all interior spaces and contents for duration of re-roofing work and restoration to original conditions pre-construction. Contractor shall be responsible

for all damages incurred by water-damages and/or damages resulting from project work.

B. Protect adjacent surfaces not designated to receive waterproofing.

C. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Contractor shall consult the Technical Sales Representative for additional advice on cleaning various roofing substrates.

D. Make all necessary repairs to existing substrate. Contact Technical Representative for assistance.

E. Seal cracks and joints with sealant materials using depth to width ratio as recommended by sealant manufacturer.

3.03 APPLICATION OF PRIMER AND ROOF SYSTEM

A. As required by manufacturer:

1. Exposed Concrete Surface Primer - Mix cement primer slurry (one gallon of acrylic bonding agent, one gallon of water, three gallons of Type I/II Portland Cement) and apply over masonry surface at a minimum coverage rate of 150 ft^2/gal (3.57 m^2/ liter).

2. Exposed Metal Surface Primer - Encapsulate all exposed metal with Stable Rust Primer at a rate of one gallon per 150 square feet.

3. Foundation Coat & Fabric Components - Consist of one coat of foundation coat applied to the substrate, polyester fabric (sizes vary) laid into the wet foundation coat, and finally a second coat of foundation coat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation coats are applied at a total rate of 25-40 ft^2/gal (.594 -.951 m^2/liter) depending on substrate. The dry mil thickness of the foundation coat and polyester fabric shall be a minimum of 28 mil. All field seams produced by over-lapping fabric a minimum of four inches. Foundation coat should only be applied with the use of manufacturer's approved roof brushes. Rolling and spraying of the foundation coat are absolutely forbidden.

4. Finish Coat Component - Apply a minimum of 2 separate coats of finish coat at a combined total rate of 35 ft^2/gal over entire roof area. Minimum mil thickness requirements are 11.5 mils wet and 6.1 mils (.0061 inches/155 millimeters) dry per coat. Allow to dry between coats. The first and second coat of Finish Coat shall be a different color from the foundation coat. The third, fourth and any other additional coats of finish coat shall be a color selected by the Project Manager (and shall be a different color than the first and second application of Finish Coat). The minimal dry mil thickness of the finish coat shall be 24 mils (dry).

5. Completed Waterproofinq System Mil Thickness - System must be installed to a minimum 52 mil total cured thickness.

6. Mandatory Quality Control Dry Mil Test: After 120 hours of curing time the manufacturer's technical representative shall remove three random samples of the roof system (each sample shall be 6" x 2"). Each sample shall be cut in half (3" x 2") and placed in an air tight "zip-lock" bag. The technical representative shall provide half of the samples to the Project Manager and the other samples shall be sent to the manufacturer's technical department to affirm that the finish coat mil thickness is correct. If dry mil thickness of the finish coat is not the required thickness the contractor shall reapply the finish coat until the mil thickness is achieved.

3.04 PROTECTION OF FINISHED WORK

A. Monitor finished system for 7 days, sweeping off birdbaths to allow for full cure.

3.05 CLEANING

A. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07610 – METAL ROOFING AND SIDING

PART 1 - GENERAL

1.01 SUMMARY

A. Extent of metal roofing and siding is indicated on the Drawings and by provisions of this Section. Metal roofing and siding is hereby defined to include panels which are structurally capable of spanning between supports spaced as indicated.

1.02 QUALITY ASSURANCE

A. Metal roofing and siding panels shall conform to the American Iron and Steel Institute "Light-Gage Cold-Formed Steel Design Manual" and requirements of the Steel Deck Institute.

1.03 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTAL PROCEDURES.

B. Shop Drawings and Catalog Cuts: Submit shop drawings for review prior to fabrication. Shop drawings shall indicate section to be furnished. Layout of sheets, and anchorage details.

C. Descriptive Literature: Submit descriptive literature and catalog cuts along with shop drawings for review.

D. Samples: Submit samples of all materials to Project Manager for review.

E. Information Card: For each roof project, furnish a typewritten information card for facility records and a card laminated in plastic, attached to the underside of the roof hatch, or as directed by the Project Manager. Cards shall be 8-1/2 inches x 11 inches. Information card shall identify facility name and/or facility designation (letter or number), contract number, type of roof system installed, including deck type, type of membrane, number of plies, method of application, manufacturer; manufacturer's representative contact information, insulation and cover board system and thickness; date of completion; installer's warranty expiration date; installing contractor and contact information; membrane manufacture's material warranty expiration date; warranty reference number, and warranty contact information. See Roofing Information Card on next page.

ROOFING INFORMATION CARD

FACILITY

Building Name _____ Bldg.desig/No. _____

Job. No. _____

ROOF

Type of Roof System _____ Type of Deck _____

MEMBRANE

Type of Membrane_____ No. of Plies _____

APPLICATON

Method of Application _____ (nailed, heat applied, self-adhered, etc.)

INSULATION

Type of Insulation_____Cover Board _____

Thickness_____ Thickness _____

INSTALLER (Roofing Contractor)

Company _____ Contact person _____

Contact No. _____

MANUFACTURER

Company_____ Representative_____

Contact No. _____

COMPLETION DATE _____

DATE INSTALLER'S WARRANTY EXPIRES _____

DATE MANUFACTURER'S WARRANTY EXPIRES _____

Warranty Reference No. _____ Warranty Contact person_____

Contact No. _____

1.04 WARRANTY

A. The warranty provisions and number of years for the warranties required by this article shall take precedence over the standard provisions in the GENERAL CONDITIONS.

B. Special Warranty on Finishes: On manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal roofing and siding that shows evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

   2. Finish Warranty Period: Twenty years from the Project Acceptance Date.

C. Project Warranty: Submit Contractor's warranty, signed jointly by Roofing Installer covering the work of this section, including all components of roof system without monetary limitation, in which roof installer and manufacturer(s) agree to repair or replace components of roofing and siding system that fail in materials or workmanship for the warranty period specified below.
   1. Failures include, but are not limited to, the following: Structural failures, loose parts, wrinkling or buckling, failure to remain weathertight, including uncontrolled water leakage, deterioration of metals, metal finishes, and other materials beyond normal weathering, including nonuniformity of color or finish, galvanic action between sheet metal roofing and siding and dissimilar materials.
      a. A structural failure is defined as a failure to withstand, without damage, basic wind speeds up to 105 MPH, Exposure D, and Importance Factor I as defined by the Building Code for the applicable building heights.

   2. Warranty Period: Five years from the Project Acceptance Date.

   3. Warranty shall cover repairs or replacement of damages to the building and its finishes due to leaks.

   4. Warranty shall state the Manufacturer's acceptance that the roof was installed in accordance with the contract requirements and that the State's personnel were properly instructed in the maintenance procedures.

   5. In the event of a failure State, Contractor, Roofing Installer and Manufacturer shall mutually agree and determine roof system failures and remedies.

D. The Surety shall not be liable for manufacturer's warranty beyond two (2) years fo the Project Acceptance Date.

1.05 DELIVERY AND HANDLING

A. Extreme care shall be taken in handling to insure that the material will not be damaged during shipping or at the jobsite. Damaged or deformed sheets will be just cause for rejection.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Roofing and Siding Panel profile shall be preformed deep corrugation by Macsteel Service Centers USA. Products of other manufacturers may be considered provided they meet the materials, construction and the standard of quality specified.

B. Provide 24-gauge, prepainted Zincalume, hot dipped Zinc-Aluminum alloy coated steel conforming to ASTM A 792, Grade 33, structural quality, comply with NRCA recommendations. Zincalume coating conforms to AZ 50, surface treated for maximum coating performance. Length of the panel shall be one continuous piece from ridge to eave.

2.02 METAL FINISH

A. The exterior surface of the roofing and siding shall be finished with a factory applied 70 percent fluoropolymer enamel (Kynar 500) paint system, the exterior surface shall be finished with minimum 0.8 mil in dry film thickness for prime coat and minimum 0.8 mil in dry film thickness for finish coat; and the interior surface shall be finished with polyester enamel 1.0 mil thick. Color to be Mauna Kea White.

2.03 MISCELLANEOUS MATERIALS

A. Fasteners for roofing and siding: Fasteners for attaching panels to structural supports and to adjoining panels shall be zinc aluminum alloy cast head (ZAC) type as approved and in accordance with the manufacturer's recommendations. Fasteners shall have neoprene washers. Fasteners having integral hexagonal washer heads shall have polychloroprene washers. Paint heads and washers to match metal roofing color.
   1. Screws: Self-drilling screws shall be min. #12 diameter. Self-tapping screws shall be min. #14 diameter.

   2. Blind Rivets: With 3/16 inch nominal diameter shank. Use threaded-stem type rivets for other than the fastening of the trim. Rivets with hollow stems shall be closed.

B. Accessories: Provide components required for a complete roofing and siding system, including trim, copings, flashings, closure strips, and similar items. Provide all necessary metal roof and siding components, flashing and accessories required for penetrations. Match materials/finishes of metal roofing and siding panels.

C. Zee and Cee Structural Framing: Fabricate form galvanized steel conforming to ASTM A 446 G90, Grade D (16 gauge and heavier), Grade A (18 gauge and lighter); or steel conforming to ASTM 36 and ASTM A 570. Size, shape,

thickness and capacity as required to meet the load, installation thickness and deflection criteria specified.

D. Bituminous Coating: Cold-applied asphalt mastic, SSPC paint 12, compounded for 15-mil dry film thickness per coat.

E. Waterproofing Roofing Underlayment Membrane: FelTex Synthetic Roof Underlayment or approved equal. High-strength, synthetic heavyweight fabric with skid-resistant polymer.
   1. Physical Properties
      a. Tensile Strength – ASTM D 828: MD 114 lbs/inch / CD 99 lbs/inch
      b. Tear Resistance – ASTM D 1922-00: MD > 3200 g / CD > 3200 g
      c. Rupture Resistance – ASTM D 3462-02 (No. 12 Gauge Roofing Nails): 87 lbf.
      d. Beach Puncture – ICC AC-08: Pass.
      e. Long Term Sag – ICC AC-08: Pass.
      f. Liquid Water Transmission – ASTM D 4869-02: Pass.
      g. Ultra Violet Aging – ICC AC 207: Pass.
      h. Accelerated Aging – ICC AC 207: Pass.

F. Pipe Flashing System: Dektite flexible, weather-resistant E.P.D.M. pipe flashing system.

G. Flashing Tape: Peel & Seal or approved equal. Self adhered laminate of reflective aluminum foil, rugged, cross-linked polymer films and a thick layer of rubberized asphalt.

2.04 PANEL FABRICATION; PERFORMANCES

A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, and as required to fulfill performance requirements, which have been demonstrated by factory testing. Comply with indicated profiles and dimensional requirements, and with structural requirements. Fabricate panels in full lengths from ridge to eaves to the greatest extent possible.

B. Required Performances: Fabricate panels and other components of roof and siding system for the following installed-as-indicated performances:
   1. Roof Loading: 20 PSF.

   2. Windloads: 105 mph, Exposure C.

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

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

   5. Roof panel system shall be tested in accordance with UL Standard 580 and have a Class 90 rating.

6. Roof panels shall withstand a 300 lb concentrated load applied to mid-pan between supports with no panel deformation, rib buckling, or panel side joint separation which will adversely affect the weather-tightness of the system.

C. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with mortar, concrete, wood or other substrate materials which are noncompatible (i.e. copper and aluminum) or could result in corrosion or deterioration of either material or finishes.

D. Prior to the installation of metal work over other dissimilar metal work, install UPC PVC pipe wrapping tape, 10 mil or approved equal along all contact area.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Comply with panel fabricator's and material manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with stainless steel concealed anchor clips and fasteners with provisions for thermal/structural movement as well as carrying the weight of the panels.

B. Waterproofing Roofing Underlayment Membrane: Beginning at the eaves, apply membrane from the low point to the high point of the roof. Running the roll horizontally shall be overlapped a minimum of 3-inches shingle fashion in the direction of the eave and a minimum of 6-inches for end laps. Installation shall conform to the manufacturer's instructions and recommendations.

C. Mounting methods to connect to structure, type of fasteners and spacings shall be strictly complied to the requirements of Factory Mutual (FM) CR Design Guide 128 and shall not less than 90 miles per hour wind uplift design requirements.

D. Arrange side laps to leeward of prevailing wind direction. All side laps at least one full corrugation, or as per manufacturer's recommendations. All end laps as per manufacturer's recommendations.

E. Roofing panels from ridge to roof fascia edge shall be single continuous sheets. No joints, laps, splice in any fashion shall be acceptable.

F. Roofing panels shall be applied parallel to the roof slope. Provide roof sheets in full lengths from ridge to eave, with no transverse joints except at the junction of ventilators, curbs, and similar openings or as indicated on drawings.

G. Use only mechanical or manual shears for cutting of metal roofing and siding; circular or reciprocating saw blades and nibblers are prohibited. Locate all field-cut ends in concealed locations (i.e. under flashings); no field-cut ends shall be installed in exposed conditions.

H. Insert closure at open ends of all panels and flashings.

I. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4-inch in 2'-0" on level/plumb/slope and location line as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

J. Joint Sealers: Install joint fillers and sealants where indicated and where required for weatherproof performance of panel system. Provide types of sealants/fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.

3.02 CLEAN UP

A. Keep premises during process of work reasonably free of all debris and waste materials resulting from work under this section. Remove all such debris and rubbish from site.

B. Clean residue from drilling immediately after holes are drilled in roofing and siding. Remove all metal shavings and other injurious material from roofing and siding surface.

END OF SECTION

SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide all labor, materials and equipment necessary to fabricate and install flashing, counterflashing, and other related work as shown on drawings and as specified herein.

B. Related Work Described Elsewhere:
   1. Prefinished metal trims associated with metal siding is provided under Section 07610 – METAL ROOFING AND SIDING.

   2. Sealant for surface mounted flashings and elsewhere required to ensure watertight joints is specified under Section 07920 - SEALANTS.

1.02 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTAL PROCEDURES.

B. Manufacturer's Data: Submit manufacturer's product data on all manufactured items.

C. Shop Drawings: Submit shop drawings with reference made to detail numbers on the contract drawings to the Project Manager for approval. Contract drawings are general in nature. Furnish additional details for all the similar and unusual conditions necessary to fabricate the flashing and sheet metal work. Shop drawings shall show all fasteners and relationship to adjacent work. No fabrication will be permitted before approval is secured. Tracing and reproducing drawing details is unacceptable.

1.03 QUALITY ASSURANCE

A. All sheet metal fabrications shall conform to State and local codes, SMACNA (latest edition) and industry standards.

B. All roof penetrations shall be installed weathertight in such a manner to maintain integrity of the roofing.

1.04 GUARANTEE

A. The Contractor shall furnish to the Project Manager a written guarantee on the sheet metal for a 2-year period after the Project Acceptance Date. The guarantee shall provide for the repair of all leaks as well as repair and replacement of damage to the building and/or its finishes at no cost to the State.

1.05 PRE-INSTALLATION MEETING

A. The General Contractor, the Sheet Metal Contractor and Roofing Installer shall attend a pre-installation meeting. Include other related trades, such as sheet metal contractor, as applicable. Confirm the required participants with the Project Manager. Notify participants at least five days prior to meeting. Intent of the meeting is to review the preparation and installation requirements for the roofing system and to coordinate and schedule the required work.

1.06 STORAGE AND HANDLING

A. All materials shall be stored in such a manner as to afford adequate protection. Damaged materials shall not be used and shall be removed from the site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Exposed flashing and counterflashing for metal roofing shall be of the same prefinished sheet metal material as the material of metal roofing as specified in Section 07610 – METAL ROOFING AND SIDING, 22 gauge and 24 gauge as specified.

B. Fasteners: shall be of 300 Series stainless steel.

C. Lead Sheet for Vent Pipe Flashing: ASTM B 749, Type L51121, copper-bearing sheet lead, minimum 2-1/2 pounds per square foot, unless indicated otherwise.

D. Solder shall be 50% virgin lead and 50% pure block tin, conforming to ASTM B 32.

E. Flux shall be ASTM B32, Type OA, non-corrosive resin type. Neutralize flux after soldering.

F. Bituminous Paint: Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wood, or absorptive materials subject to wetting, protect the surfaces with a coat of bituminous paint conforming to ASTM D 1187 to prevent galvanic or corrosive action. Coating shall be applied in two coats, 9 mils dry film thickness each coat.

G. Underlayment: ASTM D 226, Type I (No. 15), asbestos-free, asphalt saturated roofing felt.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Surface to which sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Report any unsatisfactory surfaces to the Project Manager. In the absence of such a report, the Contractor shall be held responsible for the finished product.

B. All accessories or other items essential for the completeness of the sheet metal installation, though not specifically indicated on the drawings or specified, shall be provided. All such items unless otherwise indicated on the drawings or specified, shall be of the same kind of materials as the item to be applied. Nails, screws, rivets, and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.

C. Except as otherwise indicated on the drawings or specified, the workmanship of sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc., shall conform to the standards details and recommendations of the Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual", and shall be subject to the approval of the Project Manager. Exposed edges shall be folded back neatly to form a minimum 1/2-inch hem on the concealed side. Fabricate for waterproofing and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work.

D. Seams: Straight and uniform in width and height with no sealants showing on the face.
   1. Flat-lock Seams: Finish not less than 3/4-inch wide.

   2. Lap Seams: Finish soldered seams not less than one-inch wide. Overlap seams not soldered, not less than 3-inches.

   3. Loose-lock Expansion Seams: Not less than 3-inches wide, and shall provide minimum one-inch movement within the joint. Joint shall be completely filled with exterior sealant, applied at not less than 1/8-inch thick bed.

   4. Flat Seams: Make seams in the direction of the flow.

E. All sheet metal work shall be watertight and wind-tight in compliance with the purpose intended for the items indicated on the drawings or specified herein. All galvanized sheet metal shall be primed with corrosive resistant paint and paint on all surfaces and all cut edges.

F. Cleating: Cleats for sheet metal work shall be provided where required, spaced approximately 12 inches on centers, unless otherwise indicated on the drawings. Cleats shall be not less than 2 inches wide by 3 inches long of the same material and weight as the metal being installed. Hook cleating with 3/4-inch minimum hem on concealed side of flashing.

G. Reglets: Type and size as indicated. Surface mounted reglets shall be provided with compatible flat bar as indicated.

H. Vents Thru Roof (VTR): Provide vent pipe flashing with flashing turned down into vent as indicated. Provide stainless steel screen with clamp over all vents.

I. Protection from Contact of Dissimilar Materials: Whenever metal surfaces in contact with dissimilar metal or where aluminum is in contact with concrete, masonry, wood, or absorptive materials subject to wetting, entire metal surface in contact shall be painted with a minimum of two coats of heavy-bodied bituminous paint (not less than 9 mils dry thickness each coat). In dry, weather-protected, indoor space, dissimilar metal surfaces may be separated by means of continous moisture-proof building felt in lieu of bituminous coatings.

3.02 PROTECTION

A. Protect all sheet metal work until final acceptance of the project.

3.03 CLEAN-UP

A. Clean all exposed sheet metal work at completion of installation. Grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris shall be removed, and the work scrubbed clean. All exposed metal surfaces shall be free of dents, creases, waves, scratch marks, and solder marks.

B. At completion of the work, clean up and remove all rubbish and debris from the premises which resulted from this work.

END OF SECTION

SECTION 07920 - SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Completely close with sealant all joints indicated or specified to be sealed to a watertight condition.

B. Related Work Described Elsewhere:
   1. Occupancy, air quality requirements are specified in Section 01575 - TEMPORARY CONTROLS - AIR QUALITY REQUIREMENTS.

1.02 SUBMITTALS

A. Submit in accordance with Section 01330 - SUBMITTAL PROCEDURES.

B. Manufacturer's Data: Submit copies of manufacturer's product data and specifications for type of sealant required, to the Project Manager for approval.

C. Material Safety Data Sheets (MSDS): Submit MSDS for each sealant product.

D. Color Samples: Submit sets of color finish samples of sealants.

1.03 JOB CONDITIONS

A. Examine joint surfaces and backing, and their anchorage to the structure, and conditions under which joint sealer work is to be performed, and notify Contractor in writing of conditions detrimental to proper completion of the work and performance of sealers. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions. Proceed with the work only when weather conditions are favorable for proper cure and development of high early bond strength.

1.04 PRODUCT HANDLING

A. Delivery: Deliver sealants to the jobsite in sealed containers labeled to show the designated name, formula, or specification number, lot number, color, date of manufacture, shelf life, curing time, manufacturer's directions, and name of manufacturer.

B. Storage: Carefully handle and store all materials to prevent inclusion of foreign materials. Remove from project site all damaged and deteriorated materials and materials exceeding shelf life.

C. All sealant materials shall be installed prior to expiration of shelf life.

1.05 WARRANTY

A. Provide a 2-year written warranty against leaks, air infiltration, cracks, and other failures of the installation and materials.
   1. Repair of sealants to seal leaks caused by faulty materials or workmanship;

2. Repair or replace damage to the building or its finishes, equipment or furniture when occasioned by such leaks.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene-jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer to control the joint depth for sealant placement, to break bond of sealant at bottom of joint, to form optimum shape of sealant bead on back side, and to provide a highly compressible backer which will minimize the possibility of sealant extrusion when joint is compressed. Do not use oakum or other types of absorptive materials as backstops.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer.

C. Masking Tape: Non-staining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

D. Primer for Sealants: Non-staining, as recommended by the sealant manufacturer.

E. Sealants:
   1. At Exterior and Interior Vertical and Overhead Moving Joints: One-part polyurethane-based sealant, conforming to ASTM C 920, Type 5, Grade NS, Class 25, Use NT. Provide one of the following, or approved equal or better:
      a. Dymonic; Tremco, Inc.
      b. Chem-Calk 900; Bostik Construction Products Div.
      c. Sikaflex Ia; Sika Corp.
      d. Dynatrol I; Pecora Corp.
      e. NP-I; Sonneborn.

   2. At Interior Vertical and Overhead Non-Moving Joints: Non-Elastomeric Sealant; acrylic-emulsion type, conforming to ASTM C 834. Provide one of the following, or approved equal or better:
      a. AC-20 Acrylic Latex: Pecora Corp.
      b. Tremco Acrylic Latex 834; Tremco, Inc.
      c. Chem-Calk 600; Bostik Construction Products Div.
      d. Sonolac; Sonneborn.

   3. At Horizontal Traffic-Bearing Joints: Two-part polyurethane based sealant, conforming to ASTM C 920, Type M, Grade P, Class 25, Use T. Provide one of the following, or an approved equal or better:
      a. Sikaflex 2c SL; Sika Corp.
      b. THC-900; Tremco, Inc.
      c. Urexpan NR-300; Type HM; Pecora Corp.
      d. SL-2; Sonneborn.

4. Bedding Compound: For installation of items indicated to be bedded in sealant, use a preformed butyl-polyisobutylene sealant tape. Size of tape as required for the specific application. Provide one of the following, or approved equal or better:
    a. Extru-Seal; Pecora Corp.
    b. 440 Tape; Tremco, Inc.
    c. Chem-Tape 40; Bostik Construction Products Div.

F. Sealant color shall match the color of adjacent materials and surfaces.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

3.02 EXAMINATION

A. Examine joints indicated to receive joint sealers, with Installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.03 JOINT PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:
    1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellants; water; and surface dirt.

    2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

    3. Remove laitance and form release agents from concrete.

    4. Steel Surfaces in Contact with Sealant: Scrape and wirebrush to remove loose mill scale. Remove dirt, oil, or grease by solvent cleaning, and wipe surfaces with clean cloths.

    5. Clean metal, glass, glazed surfaces of ceramic tile, and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.04 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. Do not apply sealant on wet surfaces or when the surface temperature exceeds 130 degrees F.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications and conditions indicated.

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
   1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
      a. Do not leave gaps between ends of joint fillers.
      b. Do not stretch, twist, puncture, or tear joint fillers.
      c. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.

   2. Install bond breaker tape between sealants and joint fillers, compression seals, or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.

   3. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

D. Primer: Immediately prior to application of the sealant, clean out all loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete, masonry units, wood, and other porous surfaces in accordance with compound manufacturer's instructions. Do not apply primer to exposed finish surfaces.

E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
   1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

   2. Provide flush joint configuration per Figure 5B in ASTM C 1193, where indicated.

3.05 CLEAN UP

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.06 PROTECTION

A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

END OF SECTION

DIVISION 9 – FINISHES

SECTION 09901 – PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.
   1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Project Manager will select from standard colors and finishes available.
   1. All exposed new items and if part of the existing surfaces are renovated, scratched, damaged or exposed to view by the renovation work, then the entire existing surfaces shall be repainted and color shall be matched to adjoining existing surfaces.

   2. Repaint Building 90 exterior walls, doors and windows, complete.

   3. Non Ferrous metals, plated or factory finished items specifically noted to be painted or when such items occur as accessories and appurtenance to surfaces required to be painted.

   4. Pipes, conduit, ducts, support apparatus and other exposed mechanical and electrical items in areas to be painted. Exterior mechanical and electrical equipment and items on the roof.

   5. Existing galvanized steel at wall curbs and pipe flashings.

C. Surfaces not to be finished, unless otherwise indicated.
   1. Concrete floors.

   2. Lighting fixtures, and electrical device plates.

D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
   1. Prefinished items include the following factory-finished components:
      a) Finished mechanical and electrical equipment.
      b) Light fixtures.

   2. Finished metal surfaces include the following:
      a) Anodized aluminum.

   3. Operating parts include moving parts of operating equipment and the following:

a) Valve and damper operators.
b) Linkages.
c) Sensing devices.
d) Motor and fan shafts.

4. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.02 REFERENCES

A. ASTM D16 - Definition of terms relating to Paint, Varnish, Lacquer and Related Products.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

C MPI (Master Painter's Institute) - Approved Product List.

D. PCDA (Painting and Decorating Contractors of America - Painting - Architectural Specification Manual.

E. PCA (Portland Cement Association) - Painting Concrete.

F. SSPC (Steel Structures Painting Council - Steel Structures Painting Manual)

1.03 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1.04 SUBMITTALS

A. Product Data:
1. Materials List: Provide an inclusive list of required patching and coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
a. For products with premixed colors, provide manufacturer's standard color chips for selection by Project Manager.

2. Manufacturer's Information: Provide data on all listed materials, including:
a. Thinning and mixing instructions
b. Application instructions and required mil film thicknesses.
c. Manufacturer's Material Safety Data Sheets.

B. Certifications: Provide a letter certifying paints and coatings are free of asbestos, lead, zinc-chromate, strontium chromate, cadmium, and mercury and mercury compounds, . Provide a letter certifying the amounts of mildewcide added by both the paint manufacturer and paint supplier. Provide a letter certifying that abrasive blast media are free of crystalline silica.

C. Schedule of Finishes: Provide finish schedule including paint spread rates required to achieve final dry film thickness indicated in the schedule.

D. Schedule of Operations: Provide a work schedule showing sequence of operation and installation dates.

E. Samples:
   1. Submit paint finish samples, 8.5” x 11” in size illustrating selected colors and textures for each selection. Divide sample in horizontal strips showing prime and overlapping second and finish coats. Show coat tinting. Prepare transparent finish samples on same material as that on which coating will be applied. Identify each sample.

F. Manufacturer’s Instructions: Indicate special surface preparation procedures, and substrate conditions requiring special attention. Refer to Section 3.01.

G. Samples for Initial Selection: For each type of finish-coat material indicated.
   1. After color selection, Project Manager will furnish color chips for surfaces to be coated.

H. Provide a Comprehensive Spray Plan when airless spraying is proposed.

I. Qualification Data: For Applicator.

J. Delivery Receipts: Provide 3 copies of the delivery receipt, signed by the user’s representative, attesting to delivery of extra paint as required under 1.09

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.
   1. Exception: Alkali resistant primers if compatible with the intermediate coat paint products.

C. Provide a Comprehensive Spray Plan when airless spraying is proposed. to include:
   1. Documentation that the individual spray applicator(s) on the project have completed an approved “Spray Applicator Certification Program” conducted by the Painting Industry of Hawaii. The certification program shall include material and equipment selection, use and maintenance, hands-on application and safety training.

   2. Proposed overspray protection methods.

   3. Paint Manufacturer’s spray application instructions and recommendations for products to be used.

1.06 REGULATORY REQUIREMENTS

A. Comply with State OSHL (Occupational Safety and Health Law) and pollution control regulations of the State Department of Health and EPA.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
   1. Product name or title of material.
   2. Product description (generic classification or binder type).
   3. Manufacturer's brand name and lot number and date of manufacture.
   4. Contents by volume, for pigment and vehicle constituents.
   5. Thinning instructions.
   6. Application instructions and coverage.
   7. Color name and number.
   8. VOC content.

B. Storage
   1. Non-flammable Materials: Store materials not in use in tightly covered containers in a well-ventilated area. Maintain storage containers in a clean condition, free of foreign materials and residue.
   2. Flammable Materials:
      a. Store in such a manner as to prevent damage. No paint material, empty cans, paint brushes and rollers may be stored in the building(s). Store these items in separate storage facilities away from the building(s). Contractor may furnish a separate job site storage structure, if the structure complies with the requirements of the local Fire Department. Keep the storage area shall clean. Lock any storage structures when not in use or when no visual supervision is possible.
      b. All rejected materials shall be removed from the job site immediately.

1.08 PROJECT CONDITIONS

A. Do not apply materials when surfaces and ambient temperatures are outside the ranges required by the paint product manufacturer. Do not apply exterior coatings during rain or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

B. Protect public, pedestrians and tenants from injury. Provided, erect and maintain safety barricades around scaffolds, hoists and where constriction operations create hazardous conditions.

C. Completed Work: Provide necessary protection for wet paint surfaces.

D. Protective Covering and Enclosures: Provide and install clean sanitary drop cloth or plastic sheets to protect furniture, equipment, floor and other areas that are not

scheduled for treatment. Remove any paint applied to surfaces not scheduled for treatment.

E. Fire Safety: Contractor and its employees shall not to smoke in the vicinity of the paint storage area. Exercise precautions against fire at all times and remove waste rags, plastic (polyester sheets), empty cans, etc. from the site at the end of each day.

F. Where airless spraying is used, ensure that protective enclosures are erected to prevent the escape of overspray from the work area.

G. Safeguarding Property: Safeguard the work and also the property of the State and other individuals in the vicinity of Contractor's work. Make good on any damages and for losses to work or property caused by Contractor or its employee's negligence. Where damaged property cannot be cleaned and restored to its original condition (i.e. prior to being damaged) replace it with a new product of equal quality. No prorating or use of "used" products will be permitted.
   1. For painting and spray painting operation, assume that cars will not be temporarily relocated from parking areas during the painting operations.

   2. Paint overspray shall not carry more than 5 lineal feet beyond the building eave line nor within 10 lineal feet of pedestrians or property and surfaces not scheduled to be painted. Immediately cease spray painting when overspray carries beyond these specified limits. Do not continue until protective barriers are erected to properly contain the overspray and damages caused by the overspray have been corrected.

   3. The Contractor shall be assessed $300.00 for each incidence of property or personal damage caused by overspray until such time that a satisfactory settlement has been agreed upon by the damaged party and corrective action has been completed. All corrective action shall be settled within 24 hours from the time the damage is discovered. Should the Contractor fail to take corrective action in a timely and expeditious manner, the Project Manager shall contact the Contractor's Insurance company to seek resolution on the matter.

1.09 EXTRA MATERIALS

A. Provide extra paint in each of the different colors, types and surface textures of exterior and interior paint to the facility upon completion of the project. Paint shall be in unopened one gallon containers and labeled with color, type, texture, room locations, and date in addition to manufacturer's label.
   1. Provide 5 gallons of each color for paint used over large areas.

   2. Provide 1 gallon of each color for all other areas.

1.10 WARRANTY

A. Provide a two year guarantee that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Mildewcide: Except for metal primers, provide primer and finish coats with suitable chemical mildewcide to the maximum amount of mildewcide per gallon of paint permitted by the mildewcide manufacturer without adversely affecting the quality of the paint, but not less than one ounce per gallon.

C. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names in the Paint Systems Schedule in Part 3 below to designate colors or materials, is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed products to be used.

2. Equivalency: Equivalent products to the specified products are listed in the Master Painter's Institute's "Architectural Painting Specification Manual."

3. Substitution: Requests for substitution of a product or product if a manufacturer is not on the "Approved Product List" will be evaluated for equivalency based on product test results per the test criteria of the Master Painter's Institute.

D. Colors: To match adjoining surfaces and/or colors designated by the Project Manager.

E. Hazard Materials: Do not use paint or paint products containing asbestos, lead, mercury and mercury compounds, zinc chromates, strontium-chromate, and cadmium. Do not use abrasive blast media that contain crystalline silica.

2.02 MISCELLANEOUS MATERIALS

A. Provide patching and repair materials. Compatible with paint finishes and substrates. Use weather resistant materials for exterior surfaces and surfaces exposed to moisture.

B. Accessories

1. General: Provide other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2. Thinners: Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's

requirements. Do not use compound thinner, mineral oil, kerosene, refined linseed oil, or gasoline for thinning.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
   1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
      a. Ensure that concrete and masonry surfaces are cured and dried pt meet paint manufacturer's recommendations.

   2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify Project Manager about anticipated problems when using the materials specified over substrates primed by others.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove dust, oil and grease before cleaning.
   1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
   1. Provide barrier coats over incompatible primers or remove and reprime.

D. Surface Preparation, Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
   1. Use abrasive blast-cleaning methods if recommended by paint manufacturer.

2. Determine alkalinity and moisture content of surfaces by performing appropriate tests. Submit test results to Project Manager.
    a. Prior to painting, concrete and masonry surfaces shall be allowed to cure and dry in accordance with the paint manufacturer's instructions and recommendations.

    b. Efflorescence and laitance shall be removed from the surface.

    c. Prior to paint application, interior and exterior concrete and masonry (including grout joints) scheduled to receive paint shall be tested to determine the alkalinity level of the surface. Testing shall be performed in strict accordance with the test kit manufacturer's instructions. Submit test results to the Project Manager.

    d. Where the alkalinity level exceeds the pH level limit of the primer take one of the following three remedies at no additional cost to the State:
        1) If new concrete or masonry, wait until alkaline level has dropped below the limit.

        2) Substitute a primer that is able to resist the measured alkalinity and that is compatible with the paint finish. Alkyd based primers and top-coats or epoxy ester primers shall not be used. Submit the substitute primer to the Project Manager for review.

        3) Neutralize the surface in accordance with the primer manufacturer's instructions to reduce the alkaline level. However, acid washing is not permitted where the surface has been finished with a cementitious coating.

E. Surface Preparation, Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
    1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

    2. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.

    3. If transparent finish is required, backprime with spar varnish.

    4. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.

    5. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

F. Surface Preparation, Ferrous Metals: Clean surfaces. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare surfaces according to

SSPC specifications as follows:

1. SSPC-SP 2 "Hand Tool Cleaning."
2. SSPC-SP 3 "Power Tool Cleaning."
3. SSPC-SP 5 "White Metal Blast Cleaning."
4. SSPC-SP 6 "Commercial Blast Cleaning."
5. SSPC-SP 7 "Brush-Off Blast Cleaning."
6. SSPC-SP 8 "Pickling."
7. SSPC-SP 10 "Near-White Blast Cleaning."
8. SSPC-SP 11 "Power Tool Cleaning to Bare Metal."

Immediately after surface preparation, Apply a 1-coat, non-asphaltic primer complying with SSPC's "Painting System Guide No. 7" to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Application of primer is in additional to the painting system specified under the PAINT SCHEDULES specified below.

G. Surface Preparation, Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

H. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
   3. Use only thinners approved by paint manufacturer and only within recommended limits.

I. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
   1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.

4. The term “exposed surfaces” includes areas visible when permanent or built-in fixtures, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only unless otherwise noted.

6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.

7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.

9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.

10. Sand lightly between each succeeding enamel or varnish coat.

11. Ensure primers are top coated within the times required by the paint manufacturers. Top coats not applied within the recoating window may be rejected.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer’s written instructions, sand between applications.

   2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

   3. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not

deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

4. Be aware of the requirements for, and restrictions on, spray painting contained in PROJECT CONDITIONS Paragraph.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
   1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.

   2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.

   3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
   1. Provide satin finish for final coats.

I. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

J. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Project Manager.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
   1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 PAINT SCHEDULE

A. Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry): Provide the following finish systems over concrete, stucco, and brick masonry substrates:
   1. Acrylic Finish: Two finish coats over a primer.
      a. Primer: Exterior concrete and masonry alkali resistant primer: MPI 3; 2.0 mils DFT.

      b. Finish Coats: Exterior acrylic paint. MPI 11; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

B. Concrete Unit Masonry: Provide the following finish systems over concrete unit masonry:
   1. Acrylic Finish: Two finish coats over a block filler.
      a. Block Filler: Concrete unit masonry block filler: MPI 4; 2.0 mils DFT.

      b. Finish Coats: Exterior acrylic paint. MPI 11; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

C. Smooth Wood: Provide the following finish systems over smooth wood siding, wood trim, and other smooth wood surfaces:
   1. Acrylic Finish: Two finish coats over a primer.
      a. Primer: Exterior wood primer for acrylic enamels. MPI 6; 2.0 mils DFT.

      b. Finish Coats: Exterior acrylic paint. MPI 11; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

D. Plywood: Provide the following finish systems over plywood:
   1. Acrylic Finish: Two finish coats over a primer.
      a. Primer: Exterior wood primer for acrylic enamels. MPI 6; 2.0 mils DFT.

      b. Finish Coats: Exterior acrylic paint. MPI 119; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

E. Ferrous Metal: Provide the following finish systems over ferrous metal.
   1. Two finish coats over a rust-inhibitive primer (Corrosion Resistant Coating System).
      a. Primer: Amercoat 68HS.

      b. First Coat: Amerlock 400

      c. Finish Coat: Amercoat 220.

      d. Finish Coat Gloss Level: semi-gloss.

   2. Acrylic Finish: Two finish coats over a rust-inhibitive primer.
      a. Primer: Exterior ferrous-metal primer. MPI 79; 2.0 mils DFT.

      b. Finish Coat: Exterior acrylic paint. MPI 119; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

F. Zinc-Coated Metal: Provide the following finish systems over zinc-coated metal surfaces:
   1. Acrylic Finish: Two finish coats over a galvanized metal primer.
      a. Primer: Exterior galvanized metal primer. MPI 135; 2.0 mils DFT.

      b. Finish Coat: Exterior acrylic paint. MPI 119; 1.5 mils DFT per coat.

      c. Finish Coat Gloss Level: semi-gloss.

END OF SECTION

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13281 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 PRELIMINARY

In performing this project, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to asbestos particulates.

1.02 DESCRIPTION OF WORK

Furnish all labor, materials, equipment, and services, necessary to carry out the safe removal and disposal of asbestos-containing material in compliance with these specifications, EPA, OSHA, State of Hawaii regulations, and any other applicable Federal and State regulations. Whenever there is a conflict or overlap of the above references, the most stringent shall apply. The asbestos work at Fort Ruger, Buildings 90 and 90D shall generally include:

1. Building 90: Removal of the black tar sealant around the roof ventilator to allow for the safe renovation work as specified in the Inspection Report and the Architectural Drawings.

2. Building 90D: Removal of the roof insulation containing asbestos black tar sealant down to the bare substrate in the maintenance equipment area and the wall insulation in the office area to allow for the safe renovation work as specified in the Inspection Report and the Architectural Drawings.

A. Contractor shall coordinate the removal work schedule with the Motor Pool Supervisor; vacate the office and remove the equipment, vehicles, and personal items, and secure tools, etc.

B. In general, the principal items of the asbestos removal work shall be as follows:
   1. Worker Protection

   2. Decontamination Enclosure System

   3. Preparation of Work Area

   4. Removal of asbestos-containing materials

   5. Removal of protective sheeting

   6. Disposal

C. Cleaning shall include areas within and immediately around the work area affected by the abatement work and all areas contaminated by the Contractor's work.

D. The asbestos abatement work shall include removal of all asbestos-containing materials within the work area as specified herein and noted on the drawing.

E. Contractor shall comply with all regulations pertaining to asbestos removal. If there is a conflict with the specifications, the more stringent requirement shall apply.

1.03 COORDINATION WITH OTHER SECTIONS

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

1.04 SUBMITTALS PRIOR TO WORK:

Final payment will not be made until copies of all submittals have been furnished to and accepted by the Contracting Officer. Submit 4 copies of the submittal package, no later than 10 consecutive working days from award notice, which will include the items listed below.

A. Notices: As early as possible but prior to commencement of work, as regulated by each agency and before commencement of any on-site project activity, send a courtesy 10-day notice in accordance with 40 CFR Part 61.145 of Subpart M, of the proposed asbestos abatement work with copies to the Contracting Officer and to the following agencies:
   1. The Administrator of the Environmental Protection Agency (EPA) Regional Office having jurisdiction over the project.

   2. State of Hawaii, Department of Health, "Notification of Demolition and Renovation" form. Send to: Noise, Radiation and Indoor Air Quality Branch, Asbestos Abatement Office, State Department of Health, P.O. Box 3378, Honolulu, Hawaii 76801-9984.

B. Permits & Licenses: Copies of all permits, licenses (C-19) and arrangements for removal, transportation and disposal of asbestos-containing materials and waste water, no later than 20 consecutive working days from notice of award unless otherwise instructed in writing by the Contracting Officer.

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

D. Qualifications of the Qualified Consultant

E. Manufacturer's Data: Copies of manufacturer's specifications, installation instructions and field test procedures for each material and all equipment related to asbestos handling and abatement and include other data as may be required to show compliance with these specifications and proposed uses.

F. Samples: Samples of the following items for approval prior to ordering materials:
   1. Surfactant: copies of manufacturer's literature including all laboratory data, mixing and application instructions.

   2. Tapes and Adhesives: manufacturer's literature including all laboratory data.

   3. Warning Labels and Signs: examples of all required signage.

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

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

6. Asbestos Encapsulant(s): manufacturer's literature including all laboratory data, application instructions.

G. Work Plan: Submit a project Work Plan for the asbestos-containing material disturbance work written and signed by the Contractor's State of Hawaii, Department of Health certified Asbestos Project Designer. The Contractor shall also provide detailed information concerning:
   1. Preparation of the work area.

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

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

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

   5. Required air monitoring procedures and sampling protocols.

   6. Procedures for final cleanup.

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

   8. Emergency procedures.

   9. Fall protection.

H. Shop Drawings: Submit shop drawings for the following items as a minimum:
   1. Descriptions of any equipment to be employed not discussed in this section.

   2. Security provisions, if any, in and around the project area.

   3. Outline of work procedures to be employed.

   4. Location of waste dumpster.

   5. Staging of the work, the sequence

   6. Entrances and exits to the work place

   7. Location and construction of worker decontamination units

8. Proposed method of attaching plasticizing (polyethylene sheeting) shall be approved in advance to minimize damage to equipment and surfaces. Method of attachment may include any combination of duct tape or other approved waterproof tape, furring strips, spray glue, staples, nails screws or other effective procedures capable of sealing adjacent sheets of polyethylene sheeting and capable of sealing polyethylene to dissimilar finished or unfinished surfaces both under wet and dry conditions (including amended water).

9. Proposed method of patching and repairing all damage to existing finishes from the attachment of polyethylene sheeting (as applicable).

I. Documentation for Instruction: Submit documentation that each and every individual, including foremen, supervisors, and other company personnel or agents and any other individual who may be exposed to airborne asbestos fibers, who may be responsible for any aspect of abatement activities, or who is allowed or permitted to enter areas where such exposure may occur has currently attended and passed the Abatement Worker and/or Abatement Contractor/Supervisor course whichever is relevant to that workers responsibilities as specified in 40 CFR Part 763, “Asbestos Materials in Schools”. These courses shall be EPA-approved or approved by a State Accreditation Program in the most current listing of the Federal Register. No worker shall be allowed on site if they are found to have either an expired accreditation certificate or States not comply with the requirements set forth in 40 CFR Part 763 on training. All workers shall be certified for asbestos related work in accordance with Department of Health, Chapter 11-504, Hawaii Administrative Rules, *Asbestos Abatement Certification Program*.

   The Contractor shall be responsible for keeping the documentation up to date and subsequent submittals to the Contracting Officer before any additional employee or individual, not currently on the list, is allowed within the project site.

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

J. Documentation from Physician: Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that all individuals permitted within the project site have received medical monitoring or had such monitoring made available to them as required in OSHA 29 CFR 1926.1101, and HIOSH 12-145.1. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g. high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities. The Contractor shall keep and make available to all affected individuals a record and the results of such examinations.

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

L. Rental Equipment: When rental equipment is to be used in abatement areas or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the Contracting Officer.

M. Emergency Planning Procedures: Contractor shall submit for review and acceptance by the Contracting Officer, an emergency plan prior to abatement initiation.
   1. Emergency procedures shall be in written form and prominently posted adjacent to the Worker Protection Notices specified hereinafter. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt of emergency exits and emergency procedures.

   2. Emergency planning shall include notification of police, fire, and emergency medical personnel of planned abatement activities work schedule, and layout of the work area, particularly barriers that may affect response capabilities.

   3. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, and heat related injury. Written procedures shall be developed and employee training procedures shall be provided in Contractors plan.

1.05 SUBMITTAL AFTER WORK IS COMPLETED

At the completion of the work, a final report shall be prepared by the Contractor for acceptance by the Contracting Officer. 4 copies of the report shall be submitted and shall include the items listed below.

A. The project name, Abatement Contractor, Abatement Contractor license number, notification form to the Hawaii Department of Health and EPA, work duration, material removed, respiratory protection employed, asbestos waste manifest, total quantity of waste, employee exposure air sample results, and results of the most current PAT round results for the laboratory or laboratories conducting the employee exposure, ambient air sample analysis.

B. Certification of the Abatement Contractor's employees.

C. Visitor/Worker Entry Log: The daily log of all personnel including the Contractor's employees and agents who enter the work area while asbestos abatement operations are in progress, until final clearance is received that the work area is asbestos free. The log shall contain the listed information as a minimum and shall be certified by the Qualified Consultant.
   1. Date of visit/worker entry

   2. Visitor/Worker's name, employer, business address and telephone number

   3. Time of entry and exit from work area

   4. Purpose of visit

5. Type of protective clothing and respirator worn

6. Certificate of release signed and filed with the contractor

D. Clearance certifications received from the Qualified Consultant.

E. A statement signed by the Asbestos Abatement Contractor that all asbestos abatement and disposal was completed in compliance with this specification, Federal and State regulations, and the approved Work Plan

1.06 PRODUCT HANDLING

Delivery and Storage of Materials: Deliver materials to the site in original packages, containers or bags fully identified with manufacturer's name, brand and lot number. Store materials in a dry well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation as approved by the Contracting Officer. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations. Replacement materials shall be stored outside the contaminated work area until abatement is completed.

1.07 PROTECTION

A. Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employee's of subcontractors, the Contracting Officer and its representatives, State and local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start.

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

2. A Visitor/Worker Entry Log shall be maintained.

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

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

C. Protective Covering: The Contractor shall provide and install protective covering on an "as required" or "upon request" by the Qualified Consultant. Protective covering shall be clean plastic sheets minimum thickness of 6-mil.

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

E. Completed Work: The Contractor shall provide all necessary protection for surfaces encapsulated under this section.

1.08 ABBREVIATIONS

A. ANSI: American National Standards Institute, Inc.

B. CFR: Code of Federal Regulations

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

D. EPA: U.S. Environmental Protection Agency

E. NESHAP: National Emission Standards for Hazardous Air pollutants

F. NIOSH: National Institute for Occupation Safety and Health

G. OSHA: Occupational Safety and Health Administration

1.09 GENERAL REQUIREMENTS

A. Contractor shall examine and have at all times in his possession at his office (one copy) and in view at each job site office (one copy) a current issue of the following publications:

1. State of Hawaii: Occupational Safety and Health Standards; Title 12, Subtitle 8, Chapter 145.1, Asbestos

2. State of Hawaii, Department of Health, Title 11, Chapter 501-1, Asbestos Requirements

3. State of Hawaii, Department of Health, Title 11, Chapter 501-2, Asbestos Containing Materials in Schools

4. State of Hawaii, Department of Health, Title 11, Chapter 501-4, Asbestos Abatement Certification Program

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

6. Title 29, Code of Federal Regulations, Section 1926.1101 - Asbestos, Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

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

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

9. Title 40, Code of Federal Regulations, Part 61, Subparts A and M (Revised Subpart B), National Emission of Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA)

10. Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024 (Purple Book), U.S. Environmental Protection Agency (EPA)

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

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

13. ANSI Z88.2-80 Practice for Respiratory Protection

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

B. The Contractor shall comply with the above requirements and any applicable State and City & County regulations. Where conflict or any inconsistency among requirements or with this specification exists, the more stringent requirements shall apply. Ignorance of the above requirements and any applicable State and City & County regulations resulting in additional cost to the Contractor shall be solely the Contractor's responsibility.

C. All regulations shall govern over these specifications, except that any more stringent specification or specification providing greater protection against asbestos exposure, injury, loss or liability, shall control to the extent permitted by regulation. Any question regarding conflict or inconsistency between specification and/or regulations should be directed to the Contracting Officer.

D. Whenever approval of the Contracting Officer is required prior to proceeding with other work, the following shall be complied with:
   1. The Contractor shall allow the Contracting Officer 72 hours from notification to respond to the request for inspection.

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

   3. The designated person when requesting for inspection shall provide the following information:
      a. Name of caller.

      b. Building and rooms to be inspected (as applicable).

      c. Work phase of inspection, as specified.

1.10 DEFINITIONS

A. Abatement: Procedure to control fiber release from asbestos-containing building materials.
   1. Removal: All herein specified procedures necessary to remove asbestos-containing materials at an approved site in an acceptable manner.

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

B. Air Monitoring: The process of measuring the fiber content of a specific, known, volume of air in a stated period of time.

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

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

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

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

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

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

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

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

K. Post-Removal Encapsulation: A liquid material which can be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating in to the material and binding its components (penetrating encapsulant). Selected product shall be compatible with the existing finishes including wood, metal, and plastic.

L. Qualified Consultant: Consultant hired by the Contractor who will perform employee exposure air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant will be accredited as a State of Hawaii Department of Health accredited Asbestos Project Monitor.

PART 2 - PRODUCTS

2.01 MATERIALS

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

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

C. Tapes: Tape shall be capable of sealing joints of adjacent sheets of polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide; 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.

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

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

F. Warning Labels and Signs: As required by OSHA regulations 29 CFR 1926.1101 and HIOSH 12-145.1. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter. Signage shall be as approved by the Contracting Officer.

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

H. Post-Removal Encapsulation: The encapsulant shall be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating in to the material and binding its components (penetrating encapsulant) and shall be compatible with the existing finishes including wood, metal, and plastic.

I. Other Materials: Provide all other materials, such as, but not limited to lumber, plywood, nails, fasteners, metal studs, hardware, foam sealants, and caulking which may be required to properly prepare and complete this project.

2.02 TOOLS AND EQUIPMENT

A. General: Provide and fabricate suitable tools for the asbestos abatement procedures.

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

C. Air Purification Equipment: High Efficiency Particulate Absolute (HEPA) filtration systems.

D. Paint/Encapsulant Sprayer: Airless type.

E. Other tools and equipment as necessary.

2.03 PERSONNEL PROTECTION REQUIREMENTS

A. The contractor acknowledges he alone is responsible for instruction and for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard.

B. Provide workers with sufficient sets of disposable protective full body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear. Provide hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as asbestos contaminated waste. Protective clothing shall be worn by all personnel within the work area from the start of the removal and post-removal encapsulation work until the work area has received its final clearance.

C. Insulated non-skid rubber boots or an approved equal shall be required for all individuals entering the work area. Protective full body clothing without elastic at sleeves and legs shall require separate elastic or taped protection to seal the opening. Visitors shall be provided full body protective clothing.

D. No visitors shall be allowed in work areas, except as authorized by the Contracting Officer. Visitors must supply their own respiratory protection and show proof training in accordance with DOH 11-501-504.

   Provide authorized visitors with suitable disposable protective full body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear including hard hat when required and insulated rubber boots or equal. The Contractor shall include in his Bid the expense of a total of 4 changes of clothing per day for each day of asbestos abatement work for visitor's use. The quantity shall accumulate and may be used at any time during asbestos abatement work at the discretion of the Contracting Officer.

E. All electrical systems used for asbestos abatement operations shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes.

F. Additional safety equipment (e.g. hardhats meeting the requirements of ANSI Z-89.1-1981, eye protection meeting the requirements of ANSI Z87.1-1979, safety shoes meeting the requirements of ANSI Z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

PART 3 - EXECUTION

3.01 SEPARATION OF WORK AREAS FROM NON WORK AREAS

A. Penetrations: Roof penetrations, windows and doors, shall be sealed with two layers of 6-mil poly sheeting and secured with duct tape.

B. Emergency Exits: Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. . In case of fire while doing work in the work areas, emergency exit procedures have priority over normal work exiting procedures.

C. Inspection: The Contractor shall inspect all barriers at least twice a day (once prior to the start of each day's abatement operations and following the day's abatement operations). Document the inspections and observations in a daily project log.

3.02 DECONTAMINATION ENCLOSURE SYSTEMS

A. The Contractor shall construct the decontamination enclosure system or use a decontamination system as deemed acceptable to the Qualified Consultant and as approved in the Contractors Asbestos Abatement Work Plan.

3.03 WORK AREA PREPARATION

A. Work by the Asbestos Abatement Contractor:
   a. Step 1:
      a. Posting of Danger Signs: Post danger signs in and around the work area to comply with 29 CFR 1926.1101, HIOSH 12-145.1 and all other Federal, State and local requirements. Signs shall be posted at a distance sufficiently far enough away from the work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.

   2. Step 2:
      a. Provide Decontamination Area: Personnel Decontamination area specified hereinafter shall be required.

   3. Step 3:
      a. Plasticizing: Objects which may be contaminated during abatement or difficult to clean shall be taped and sealed in a minimum of 4-mil polyethylene plastic sheeting. A minimum of 2 layers of 6-mil polyethylene plastic sheeting shall be used for preparation of critical barriers.

      b. When sealing (plasticizing), plastic sheet shall be protected against damages by sharp edges, projections, etc. Provide 2" squares of duct

tape at all sharp projections prior to applying plastic sheet to prevent puncture and tearing.

c. Combining lower mil thickness sheets to total the minimum mil thickness is not acceptable.

d. Marking Exits: Maintain and mark both normal and emergency exits from the work areas.

4. Step 4: Temporary utility services:
   a. Temporary Water:
      1) Existing domestic water service to the building may be used for temporary water during construction.

   b. Temporary Fire Protection:
      1) Provide and maintain temporary fire protection equipment during the asbestos abatement operations.

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

      3) The Contractor shall clearly mark the location of all fire extinguishers.

5. Step 5: After the sealing and temporary facility work is completed, notify the Qualified Consultant and get his approval prior to proceeding with abatement.

3.04 REMOVAL OF ROOFING INSULATION, WALL INSULATION AND SEALANT/FLASHING

A. Prior to the start of the actual removal work, fall protection shall be utilized, as applicable, to prevent injury to roof removal workers in compliance with OSHA 29 CFR 1926.502 and OSHA 29 CFR 1926.503.

B. Thoroughly encapsulate and wet the affected areas before starting the removal.

C. Prevent contamination spreading to the surrounding public. No removal work shall be allowed during heavy rain or if wind conditions are at or above 20 mph or in the event of rain. Existing roofing material shall be removed toward the downwind direction. The asbestos-containing material shall be constantly sprayed with amended water containing a wetting agent (surfactant). A fine "mist" spray of the amended water shall be applied in small sections to reduce fiber release preceding the removal of the asbestos-containing material. Spray the asbestos-containing material repeatedly during the removal operations to maintain a wet condition and to minimize asbestos fiber dispersion.

D. The asbestos-containing material shall be removed in small sections. Before beginning the next section, the material shall be packed while still moist into sealable 6-mil double polyethylene bags and sealed airtight. No removed material, whether bagged or unbagged, shall be allowed to dry, fall to the ground, be crumbled into small pieces, pulverized, or made friable. The

Contractor shall provide an acceptable means of lowering the bagged asbestos debris to the ground or transporting the bagged material so as not to cause the bag to break or tear. Enclosed shoots or ramps are not allowed. Once on the ground, the double bagged material shall be stored in a holding bin. The surrounding ground area around the roof removal shall be cleaned of roofing debris found throughout the duration of the abatement.

E. It shall be the responsibility of the Contractor to verify the thickness of the material and satisfy himself as to the total work and/or effort to remove said material.

F. Contractor to coordinate all work with the Architect and/or General Contractor and Qualified Consultant.

G. Contractor is responsible for protecting all exposed surfaces from water damage and water intrusion.

H. The Contractor is prohibited from using methods of removal that create excessive amounts of dust and debris.

3.05 EQUIPMENT CLEANING

All contaminated equipment and tools used for removal work shall be washed and cleaned in the work area prior to removing them from the work area. No washing of contaminated equipment and tools will be allowed outside the work area.

3.06 ASBESTOS-CONTAINING WASTE HANDLING:

A. Collect and bag all asbestos debris and any other contaminated debris found in the work area. Clean the visible residual by HEPA vacuuming.

B. Clean fixed object within the work area, using HEPA vacuum equipment. Fixed objects shall include, but not be limited to pipes, wiring and all other permanently fixed items. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces.

C. Debris shall be bagged and sealed in 6-mil plastic bags immediately after removal. All gross debris created by the removal process shall be bagged and sealed at the end of each removal day.

D. The bags containing the asbestos waste material shall be checked for evidence of waste material attached to the outside of the bags. If dirty, the bags shall be washed down in the work area. The bags are then moved to the Holding bin. Bags and containers shall be marked with OSHA label prescribed by the Hawaii OSHA regulations referenced in these specification. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD." Additionally, label bags in accordance with OSHA 40 CFR 61.150; or EPA 40 CFR 763 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

E. Asbestos contaminated waste with sharp edges (e.g. nails, screws, metal lath, etc.) will tear the polyethylene bags and sheeting and therefore shall be placed in drums or enclosed with cardboard and double wrapped and sealed with plastic.

F. During the removal process, if plastic sheeting tears, or the duct tape loosens from the surface, the Abatement Contractor shall immediately stop work, cleanup loose asbestos–containing materials, and then reseal the surface by taping over the torn or loosened surface, before commencing again.

G. Protect the plastic sheeting against tearing caused by sharp projection, corners, edges, etc., of all equipment being used in the removal process. However, if the plastic sheeting tears, the Abatement Contractor shall follow repair procedure specified above.

H. Any housing or penetration concealing asbestos–containing materials shall be removed and protected to provide access to the materials. Replacement or reattachment of these shall be in a manner such that function and appearance is equal or exceeds the original condition.

3.07 CLEANING AND CLEARANCE OF THE WORK AREA

A. Should the contractor fail to commence work to clean-up and make the work area asbestos free within one working day after the clean-up thereof has been requested by the Contracting Officer, and thereafter to expeditiously complete the said clean-up, Contracting Officer may without further notice and without termination of contract, have the clean-up done and deduct the cost thereof from the contract.

B. Visual Clearance of Removal Work Areas: Remove all visible accumulation of asbestos-containing materials and debris by HEPA vacuums, sponging, and wet-wiping. The work areas shall be totally visibly clean and remaining material encapsulated. The Contractor, in the presence of the Qualified Consultant, shall make a complete visual inspection of the work area to ensure dust-free conditions.

3.08 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL

A. As the work progresses asbestos-containing waste is generated the Contractor shall transport all waste generated on a pre-scheduled day to the State of Hawaii, Department of Health's authorized disposal site, or as specifically approved by the Contracting Officer to delay a disposal operation. Transport all waste to the predesignated disposal site in accordance with EPA regulations and specific landfill requirements.

Contaminated material shall be double–bagged in bags with OSHA label prescribed by the HIOSH regulations referenced in these specifications. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD." Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101, HIOSH 12–145.1 or EPA 40 CFR 61.150 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

B. Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The marking

must be displayed in such a manner and location that a person can easily read the legend. Refer to 40 CFR Part 61.149 for lettering size, fonts and wording of sign requirements. For all loading and unloading activities, the sign referred to in 40 CFR Part 61.150 (b) (3) shall be displayed prominently.

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

D. At the landfill, upon delivery of the waste for disposal, the Contractor shall notify the Scale Attendant and Landfill Spotter that the waste to be disposed of is asbestos material.

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

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

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

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

H. Liquid waste for disposal shall be filtered as specified herein.

I. The Contractor shall pay the waste disposal charge and any special handling charges at the landfills. All expenses for landfills shall be the complete responsibility of the Contractor. The bagged material shall be loaded in drums except as noted previously and transported to a landfill authorized by the State Department of Health to accept material containing asbestos. In the event the bag is torn, the tear shall be immediately mended with duct tape and the bag placed into another bag and sealed, and the wrapped material covered with

another wrap and sealed. The Contractor shall make all prior arrangements with the landfill.

3.09 LOCK DOWN

After clean-up of gross contamination and final visual inspection, a compatible post removal (lockdown) encapsulant shall then be spray applied to all surfaces. The removal area shall include but not to be limited to constructed enclosures, barriers, polyethylene sheeting that covers any equipment articles to be discarded, critical barriers, air locks, load out units for bag removal, and on-site constructed decontamination unit.

3.10 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall be responsible for his employees' personnel protection, personal air monitoring and necessary records as required by OSHA (29 CFR 1926.1101), Hawaii State Law (12-145.1) and all other applicable laws and as required in these specifications. The Contractor shall provide all required documentation to the Contracting Officer. Contractor shall collect daily personal air samples on at least 25% of the personnel performing removal work with the most exposure for the duration of the project.

B. The Contractor shall procure legally required reports for air monitoring as part of the contract. All air monitoring reports shall include all field data, laboratory reports, test results and other pertinent information about the daily work activities.

C. Submit air sampling results to the Contracting Officer within 5 working days after the samples are collected, signed by the testing laboratory employee performing the analysis.

D. Air monitoring and testing which becomes necessary in order to follow up on work by the Abatement Contractor, rejected as not conforming to the requirements shall be the responsibility of the Abatement Contractor. The full cost of such additional monitoring shall be borne by the Abatement Contractor, and shall not be a part of the final contract payment.

E. Perform personal monitoring during the asbestos disturbance work. Sufficient monitoring shall be conducted to ensure unprotected personnel are not exposed above OSHA/HIOSH permissible exposure limit at all times.

END OF SECTION

TEN DAY NOTICE FORM
(sample)
page 1

This two page form is to be filled in and filed with both state and regional officials a minimum of ten (10) working days before start of the asbestos abatement contract.

State of Hawaii
DEPARTMENT OF HEALTH

For Office Use Only
Record No.

NOTIFICATION OF DEMOLITION AND RENOVATION

Ref: Title 40 CFR 61
National Emission Standards for Hazardous Air Pollutants
Asbestos NESHAP Revision; Final Rule, November 20, 1990

MAIL ORIGINAL #1 TO:
State Department of Health
Noise, Radiation &
Indoor Air Quality Branch
Asbestos Abatement Office
591 Ala Moana Boulevard
Honolulu, Hawaii 96813

COPY #2 TO:
Asbestos Notification EPA
NESHAP Region IX
75 Hawthorne St., A-3-3
San Francisco, CA 94105
Phone: (415) 744-1253

COPY #3:
Contractor's Copy

OFFICE USE ONLY: Operator Project # _____ Postmark Date _____ Date Received _____

Notification/Record # _____ Date Entered/Initials _____

I. **NOTIFICATION TYPE:** **O** - Original ***R** - Revised **C** - Cancelled: _____
*If **R** (Revision), please complete Sections III and V in full as shown on your original and make changes **only where applicable** on this form.

II. **OPERATIONS:** **D** - Demo **O** - Ordered Demo **R** - Renovation **E** - Emer. Renovation: _____

III. **FACILITY INFORMATION:** (Owner, Removal Contractor, Other Operator)

A. **OWNER NAME:** _____
Address _____ City _____
State _____ Zip _____ Contact _____ Telephone (____) _____

B. **REMOVAL CONTRACTOR:** _____
Address _____ City _____
State _____ Zip _____ Contact _____ Telephone (____) _____

C. **OTHER OPERATOR:** _____
Address _____ City _____
State _____ Zip _____ Contact _____ Telephone (____) _____

IV. **IS ASBESTOS PRESENT?** (YES/NO) _____

V. **FACILITY DESCRIPTION:** (Including building name, number, floor and/or room number)
Building Name: _____
Address _____
City _____ State _____ County _____
Site Location: _____
Building Size: (Sq. ft.) _____ (No. of Floors) _____ Age in Years: _____
Present Use: _____ Prior Use: _____

VI. **PROCEDURE, INCLUDING ANALYTICAL METHOD, IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:**

VII. **APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING:**
1. Regulated ACM to be removed
2. Category I ACM not removed
3. Category II ACM not removed

	RACM To Be Removed	Nonfriable Asbestos Material Not To Be Removed		Indicated Unit of Measurement Below	
		CAT I	CAT II	Unit	
Pipes				LnFt:	Ln m:
Surface Area				SqFt:	Sq m:
Vol RACM off Facility Component				CuFt:	Cu m:

Nature of materials: (e.g. VAT, roofing, etc.) _____

VIII. **SCHEDULED DATES ASBESTOS REMOVAL:** (MM/DD/YY) Start: ____/____/____ Complete ____/____/____

IX. **SCHEDULED DATES DEMO/RENOVATION:** (MM/DD/YY) Start: ____/____/____ Complete ____/____/____

PAGE 1 OF 2

IMPORTANT: continued on page 2

This form is to be filled in and filed with both state and regional officials a minimum of ten (10) working days before start of the asbestos abatement contract.

NOTIFICATION OF DEMOLITION AND RENOVATION, Continued

X. **DESCRIPTION OF PLANNED DEMOLITION/RENOVATION WORK & METHOD(S) TO BE USED:**

_____
_____
_____

XI. **DESCRIPTION OF WORK PRACTICE AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION/RENOVATION SITE:**

_____
_____
_____

XII. **PROJECT SUPERVISOR:** Name _____
Certification #: _____ Course Provider: _____

XIII. **WASTE TRANSPORTER: #1**
Name _____
Address _____ City _____ State _____ Zip _____
Contact Person: _____ Telephone (____) _____
WASTE TRANSPORTER: #2
Name _____
Address _____ City _____ State _____ Zip _____
Contact Person: _____ Telephone (____) _____

XIV. **WASTE DISPOSAL SITE:**
Name _____
Location _____ City _____ State _____ Zip _____
Telephone (____) _____

XV. **IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, IDENTIFY THE AGENCY BELOW:**
Name _____ Title _____
Authority: _____
Date of Order (MM/DD/YY): ____/____/____ Date Ordered to Begin (MM/DD/YY): ____/____/____

XVI. **DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND, OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER.**

_____
_____
_____

XVII. **I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISION OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS (required 1 year after promulgation).**

_____ _____
Signature of Owner/Operator *Date*

XVII. **I CERTIFY THAT ALL INFORMATION PROVIDED IS CORRECT.**

_____ _____
Signature of Owner/Operator *Date*

XIX. **FOR EMERGENCY RENOVATIONS:** Date & Hour of Emergency (MM/DD/YY): ____/____/____
Description of the sudden, unexpected event: _____
_____
_____
Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:
_____
_____
_____

OFFICIAL USE ONLY:

BY: _____ TITLE: _____ DATE APPROVED/DISAPPROVED: _____

PAGE 2 OF 2 ASB 10/92

VISITOR/WORKER ENTRY LOG
(Sample)

DATE

PROJECT

ALL PERSONNEL MUST SIGN-IN AND SIGN-OUT EVERY TIME THEY ENTER/EXIT THE WORK AREA. PLEASE PRINT CLEARLY. ATTACH EMPLOYEE RELEASE FORM FOR ALL VISITORS.

NAME	EMPLOYER Name, *Address, *Phone	TIME IN	TIME OUT	*PURPOSE OF VISIT	**TYPE OF PPE ISSUED

*NOT required of Contractor's employees

** Type of PPE (Personal Protective Equipment) Issued to include list of protective clothing worn and type of respirator used (Type "C", half-face dual cartridge, etc.

EMPLOYEE ACKNOWLEDGMENT OF INSTRUCTION AND RELEASE FORM
(sample)

Employee Name:

Employee Address:

Employee Telephone No.:

DOH Asbestos Certification Number:

Classification of Worker:

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

Yes No

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

Yes No

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

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

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

Signed:
Employee

Date:

ASBESTOS DISPOSAL FORM
(sample)

Date: .

Owner or Operator of Landfill

Name

Address

City State Zip

Phone:

Name of Landfill

Name

Address

City State Zip

Phone:

Hauler

Approximate Volume of Asbestos Received

Type of Container Asbestos in

Asbestos Container Labeled? YES NO

I certify that the above statements are true and that the landfill has been approved for the disposal of asbestos. The delivered material will be covered within 6 inches (15 cm.) of non-asbestos material within 24 hours.

signed
Landfill Owner-Operator

END OF SECTION

SECTION 13282 - LEAD-CONTAINING PAINT CONTROL MEASURES

PART 1 - GENERAL

1.01 SUMMARY

A. In performing the handling of lead-containing paint, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to lead particulates.

1.02 DESCRIPTION OF WORK

Furnish all labor, materials and equipment necessary to carry out the safe removal, clean-up, proper handling, transportation and disposal of lead-containing paint and associated debris in compliance with all applicable laws and regulations concerning lead, including all incidental and pertinent operations. Whenever there is a conflict or overlap of the above references, the most stringent shall apply. The lead paint work at Fort Ruger, Buildings 90 and 90D shall generally include:

1. Removal and disposal of lead paint and materials with lead paint to allow for the safe renovation work as specified in the Inspection Report and the Architectural Drawings.

A. The Contractor shall coordinate the removal work schedule with the Motor Pool Supervisor; vacate the office and remove the equipment, vehicles, and personal items, and secure tools, etc.

B. The Contractor shall inform his employees, Subcontractors and all other persons performing work in this project, of the surfaces with lead paint. The Contractor, his employees, Subcontractors, etc. shall initiate and maintain all programs necessary to execute the work in accordance with the contract documents, federal, state and local laws, codes, rules and regulations.

C. The Contractor shall be responsible for ensuring that all work generating lead-containing paint containing debris conforms to the following applicable federal, state and local laws, codes, rules and regulations.

1. Occupational Safety and Health Administration (OSHA); Hawaii Occupational Safety and Health (HIOSH) standards and rules.

2. Environmental Protection Agency (EPA), Resource Conservation and Recovery Act (RCRA) of 1976, amended in 1980 and 1984.

D. The Contractor shall be responsible for initiating and maintaining all safety precautions and programs necessary to keep the work place safe for his employees and Subcontractors; and ready for safe reoccupancy of the work area and building by the buildings occupants.

E. For areas where paint is required to be removed from the substrate, the Contractor shall perform TCLP tests. The Contractor shall bid the project based on the assumption that disposal as hazardous waste is required.

F. The Contractor shall assume any untested paint to contain lead.

1.03 COORDINATION WITH OTHER SECTIONS

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

1.04 CONTRACTOR RESPONSIBILITIES

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. Contractor shall comply with all requirements of 29 CFR 1926.62 and HIOSH 12-148.1. The Contractor shall also be responsible for complying with all applicable EPA regulations in regards to lead-containing paint.

B. Respirators: Use appropriate respirators and filters which meet all requirements of OSHA 29 CFR 1926.62 and HIOSH 12-148.1.

C. Protective Clothing: Use appropriate personal protective clothing (disposable suits, eye protection, gloves, etc.) as required by OSHA 29 CFR 1926.62 and HIOSH 12-148.1.

1.05 GENERAL REQUIREMENTS

A. The work specified herein shall include the handling of lead-containing paint, transportation and disposal procedures as required of lead-containing paint by persons with at least OSHA/HIOSH Lead Training. This work must be performed in compliance with all applicable federal, state, and local regulations and be performed by workers who are capable of and willing to perform the work of this contract.

B. Applicable Standards and Guidelines: All work under this contract, and any other trade work conducted with the project, shall be done in strict accordance with all applicable federal, state and local regulations, standards and codes governing lead-containing paint demolition, transportation and disposal of lead containing paint.
   1. The most recent edition of any relevant regulation, standard, document or code shall be in effect.

C. Specific Statutory and Regulatory Requirements:
   1. Title 29, Code of Federal Regulations, section 1926.62, entitled "Lead Exposure in Construction; Interim Final Rule".

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

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

   4. 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.

5. Title 40 Code of Federal Regulations Part 61, National Emissions Standards for Hazardous Air Pollutants.

1.06 DEFINITIONS

A. 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 per cubic meter of air.

B. 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.

C. Authorized Visitor: The Contracting Officer, Contractor hired Qualified Consultant, their representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.

D. Contaminated Area: An area where unwanted toxic or harmful substances exist.

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

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

G. Monitoring Specialist: A person under the supervision of the Contractor’s hired Qualified Consultant who is trained in health and safety requirements for lead exposure and air-monitoring in accordance with 40 CFR 745, 29 CFR 1926.62 and HIOSH 12-148.1.

H. 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 per cubic meter.

I. Personal Monitoring: Contractor's sampling of lead in air 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.

J. Qualified Consultant: Person hired by the Contractor, who is educated and trained in recognizing and evaluating work place hazards and stress (in this instance, lead-containing paint demolition and related work in accordance with 40 CFR 745, 29 CFR 1926.62 and HIOSH 12-148.1) and providing guidance on the methods and means of removing or correcting such hazards and stresses within the work environment.

1.07 ABBREVIATIONS

A. CFR - Code of Federal Regulations

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

C. EPA - U.S. Environmental Protection Agency

D. NIOSH - National Institute for Occupational Safety and Health

E. OSHA - Occupational Safety and Health Administration

F. NESHAP - National Emissions Standards for Hazardous Air Pollutants

G. LCP - Lead-Containing Paint

H. TCLP - Toxicity Characteristic Leaching Procedure

1.08 SUBMITTALS PRIOR TO WORK

A. Final payment will not be made until copies of all submittals have been furnished to and accepted by the Contracting Officer. Submit 4 copies of the submittal package no later than 10 work days from the notice of award unless otherwise specified in this section. The submittal package will include the items listed below.

B. Detailed Work Plan: The Contractor shall submit a project work plan for the lead-containing paint disturbance work. The Contractor shall also provide detailed information concerning:

1. Preparation of the work area

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

3. Employees who will participate in the project: include documentation of experience, documented proof of lead removal training based on 29 CFR 1926.62, HIOSH 12-148.1 and/or the proposed EPA Model Accreditation for Lead-based Paint Removal Work Training, in addition to any current EPA regulatory requirements, and assigned responsibilities during the project.

4. Decontamination procedures for the personnel who may be exposed to lead-containing paint.

5. Lead-containing paint treatment, handling and disposal methods and procedures to be used.

6. Required air monitoring procedures and sampling protocols.

7. Procedures for final cleanup.

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

9. Emergency procedures.

C. Shop Drawings: Submit shop drawings for the following items as a minimum:

1. Descriptions of any equipment to be employed not discussed in this section.

2. Security provisions, if any, in and around the project area.

3. Outline of work procedures to be employed.

4. Location of the waste storage area.

5. Staging of the work, the sequence

6. Entrances and exits to the work place

7. Location and construction of worker decontamination units

8. Water filtration system for all contaminated water.

D. Notices: The Contractor shall obtain a Generator's EPA Identification number (if necessary) for the lead-containing waste material generated from the project that is determined to be hazardous.

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

F. Qualifications of the Qualified Consultant.

G. Manufacturer's Data: Copies of manufacturer's specifications, installation instructions and field test procedures for each material and all equipment related to lead handling and abatement and include other data as may be required to show compliance with these specifications and proposed uses.

H. Documentation for Instructions:
   1. Submit documentation satisfactory to the Contracting Officer that the Contractor's employees, including foremen, supervisors, and any other company personnel or agents who will be exposed to airborne lead dust or who shall be responsible for any aspects of the lead-containing paint removal work activities, have received training in accordance with this specification, 29 CFR 1926.62, HIOSH 12-148.1, (OSHA Lead Awareness or the EPA Model Accreditation for Lead-based Paint Removal Work Training) and any current EPA regulatory requirements.

   2. Submit 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 training, and documentation of respirator fit-testing for all Contractor employees and agents who will enter the work area wearing negative pressure respirators. The Contractor shall be solely responsible for his employee's personal protection.

I. Documentation From Physician: Before exposure to lead dust or fumes, the Contractor shall provide workers with a comprehensive medical examination as required by HIOSH 12-148.1 and 29 CFR 1926.62, or whichever is stricter. 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.

J. Respirators: Submit document NIOSH approvals for all respiratory protective devices used on site. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.

K. Emergency Planning Procedures:
   1. The Contractor shall submit an emergency evacuation plan for the Contracting Officer's acceptance prior to the commencement of work. This plan shall include consideration of fire explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. In non-life threatening situations, the injured or incapacitated employee shall decontaminate following normal procedures, with assistance from co-workers if necessary, before exiting the work area to obtain proper medical treatment. In life threatening situations, worker decontamination shall take least priority after measures to stabilize the injured worker, remove the injured worker from the work area, and secure proper medical treatment.

   2. Emergency Response and Evacuation: The Contractor shall provide and document training in emergency response and evacuation procedures to all workers entering the work area.

L. Waste Disposal and Landfill Requirements: Contractor shall separate lead-containing paint chips and debris from non-hazardous waste materials such as used plastics, disposable tools, etc. Contractor shall clean all bulk lead-containing debris and waste from non-hazardous plastic, tools, suits, etc. prior to disposal.
   1. If Toxic Characteristic Leaching Procedure (TCLP) test results of the containers of waste material are below the EPA limit the lead-containing waste materials (paint chips, contaminated materials, etc.) shall be disposed of at a landfill approved for such purposes. The Contractor shall submit to the Contracting Officer, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill Owner.

   2. If the TCLP test results are above the EPA limit or if materials are identified as hazardous waste, the lead-containing waste materials shall be disposed of at an EPA approved facility capable of accepting such hazardous waste.

   3. Submit documentation that disposal of the lead-containing waste material at the selected landfill is approved by the State of Hawaii, or the EPA approved mainland facility for hazardous lead-containing waste material.

1.09 SUBMITTAL AFTER WORK IS COMPLETED

A. At the completion of the work, a final report shall be prepared by the Contractor for acceptance by the Contracting Officer. The report shall be submitted and shall include the items listed below.

B. The project name, Abatement Contractor, Abatement Contractor license number, EPA waste generator number, work duration, material removed, respiratory protection employed, waste manifest signed by the Contractor, waste transporter, and landfill operator, and total quantity of waste, TCLP lead reports, employee exposure air sample results, and results of the most current PAT round results for the laboratory conducting the employee exposure air sample analysis.

C. Certification of the Abatement Contractor's employees.

D. Visitor/Worker Entry Log: The daily log of all personnel including the Contractor's employees and agents who enter the work area while lead abatement operations are in progress, until final clearance is received from the Qualified Consultant. The log shall contain the listed information as a minimum and shall be certified by the Qualified Consultant.
   1. Date of visit/worker entry
   2. Visitor/Worker's name, employer, business address and telephone number
   3. Time of entry and exit from work area
   4. Purpose of visit
   5. Type of protective clothing and respirator worn
   6. Certificate of release signed and filed with the contractor

E. Clearance certifications received from the Qualified Consultant.

F. A statement signed by the Lead Abatement Contractor that all lead-containing paint removal and disposal was completed in compliance with this specification, Federal and State regulations, and the approved Work Plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 POTENTIAL LEAD HAZARD:

A. The disturbance or dislocation of lead-containing paint may cause lead-containing dust to be released into the atmosphere, thereby creating a potential health hazard to the workers and the general public. Apprise all workers, supervisory personnel, subcontractors, consultants, authorized visitors, occupants and neighbors who will be at or near the job site of the seriousness of the hazard and of proper work and protective procedures which must be followed.

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

3.02 WORK AREA PREPARATION

A. Protect occupants, and surrounding area from possible contamination: Inform occupants of the removal work involving lead.

B. Treatment of Surfaces: During disturbance work, acceptable industry standard dust control methods shall be used to control dust (such as wetting items to be disturbed, by misting; provide dust screens; remove items in large, whole pieces; avoid crushing and pulverizing removal methods; encapsulate material prior to disturbance; use amended water; and containerize wet waste material). Prevent contamination spreading to the surrounding public and residential area.

C. Barriers: Standard barriers such as construction warning tape, fencing, etc. shall be used to prevent the general public access on to the work site. Seal any penetrations to the affected work area with 6 mil polyethylene plastic sheeting and duct tape.

D. NESHAP Compliance: Compliance with the requirements of EPA's NESHAP regulation is required for this project. Proper notification of the renovation of the building to the Department of Health shall be the Contractor's responsibility.

E. Ensure that all personnel working on site during the demolition work are properly trained and protected as required by law.

3.03 RENOVATION INCIDENTALLY INVOLVING LEAD-CONTAINING PAINT

A. Perform lead work as specified herein. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when renovation is performed in accordance with 29 CFR 1926.62 and as specified herein.

B. Disturbance of lead-containing paint as a result of renovation activities shall be kept to a minimum. Water spray, vacuuming and other engineering controls shall be used to minimize airborne lead dust. Care shall be taken to avoid pulverizing, scraping, or crumbling lead painted debris.

C. Contractor will remove the paint utilizing the methods and procedures as described in the Contractors approved work plan. In general, the Contractor will not utilize methods which will create a release of airborne lead dust.

3.04 CLEANUP AND TESTING

A. All non-hazardous waste shall be removed from the site by the completion of the project. The Contractor, in the presence of the Qualified Consultant, shall collect representative samples of the waste stream for TCLP lead analysis. All hazardous waste shall be removed from the site to an EPA approved disposal facility within 90 days of the removal work.

B. Clean Up and Testing: Wet clean and HEPA vacuum clean surfaces and surrounding ground within the lead control area daily. Do not allow lead painted/coated debris, paint chips, and dust to accumulate. Restrict the spread of dust and debris. Keep waste from being distributed over the general area. Do not dry sweep or use compressed air to clean the area. When the paint removal operation has been completed, the area will be cleaned of all visible lead paint contamination by vacuuming with a High Efficiency Particulate Absolute (HEPA) filtered vacuum cleaner followed by wet mopping where applicable. The Qualified Consultant will visually inspect the affected surfaces for residual lead paint chips and accumulated dust before the removal of the lead controlled area.

The Contractor shall reclean areas showing dust or residual paint chips or if he fails visual clearance. If recleaning is required, the process will be repeated until the visual clearance is given by the Qualified Consultant. Do not remove the lead control area or roped-off perimeter and warning signs prior to the receipt of the Qualified Consultant's lead clearance certification.

3.05 TRANSPORTATION AND DISPOSAL

A. Disposal of Hazardous Waste and Non-hazardous Waste: Contractor shall separate potentially non-hazardous waste material (i.e. plastic sheeting, disposable protective suits, etc.) from hazardous waste material prior to testing. All other debris, scraps, waste materials, rubbish and trash contaminated with lead-containing paint and contaminated dust from the immediate work area and place in UN approved (49 CFR 178) and appropriately labeled containers and store on site for TCLP lead testing. The Contractor shall be responsible for collecting and paying of all TCLP testing.
   1. Local waste landfill facilities do not accept any RCRA hazardous waste. All hazardous waste must be disposed of at an EPA approved mainland U.S. RCRA hazardous waste disposal facility. Hazardous waste must be disposed of within 90 days of the waste being created.

   2. Non-hazardous lead waste and debris may be disposed of at the local waste landfill facility that is State approved to accept such waste.
      a. Notify Non-hazardous Waste Landfill Operator: The Contractor shall advise the Non-hazardous Waste landfill operator, at least twenty-four (24) hours prior to transportation, of the material to be delivered.

      b. Provide the Non-hazardous Waste Landfill Operator with applicable TCLP results which indicate that the waste material is non-hazardous.

B. Disposal of Non-Hazardous Painted Construction Debris (TCLP for Lead Not Exceeding EPA Limits): Remove non-hazardous lead waste including, debris, scraps, waste materials, rubbish, and trash from the site and disposed of at a landfill approved for disposal.

C. The Contractor shall submit disposal manifest and receipts showing acceptance of all waste material by the approved waste disposal site to the Qualified Consultant. The shipping papers shall include a chain-of-custody form and include names and addresses of the Facility Owner, the Contractor, and the Landfill Operator and information on the type and number of waste containers.

3.06 CLEARANCE CRITERIA

A. Visual clearance of the work area will be performed by the Qualified Consultant. Any additional clearance inspection due to failure of the first set of clearance inspection shall be at the Contractor's expense.

3.07 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall be responsible for all TCLP lead testing and analysis.

B. The Contractor shall be responsible for his employees' personnel protection, personal air monitoring and necessary records as required by OSHA, Hawaii State Law and all other applicable laws and as required in these specifications. The Contractor shall provide all required documentation to the Contracting Officer. Contractor shall collect daily personal air samples on at least 25% of the personnel performing removal work with the most exposure for the duration of the project.

END OF SECTION

SECTION 13288 - TESTING AND AIR MONITORING

PART 1 - GENERAL

1.01 SUMMARY

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

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

B. Testing, daily area air monitoring and visual inspections shall be provided by the Qualified Consultant hired by the Contractor for the purpose of:
   1. verifying compliance with the specifications and the applicable regulations listed in SECTION 13281 and 13282;

   2. Ensuring that the State's legally required documentation is collected;

   3. Providing engineering control during the project.

1.02 DEFINITIONS

A. ACM: asbestos containing materials.

B. Building representative(s): The person or persons designated by the users of the building to act on their behalf.

C. Contractor: The construction firm engaged to remove, encapsulate and/or dispose of the hazardous materials.

D. Industrial Hygienist: A Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene who shall direct all air monitoring and project supervision.

E. Project Designer: The person of firm who prepared the plans and specifications to remove, encapsulate and dispose of the ACM.

F. Project Manager: The State employee responsible for administering the construction contract and ensuring that the work of the contractor is conducted according to the contract documents and in compliance with applicable laws, regulations, ordinance, etc.

G. Project Monitor: A member of the construction management team who enters the work area to set up the air monitoring device and then collects the various air samples to be sent to the laboratory for analysis.

H. Qualified Consultant: Consultant hired by the Contractor who will perform air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls.

1.03 COORDINATION WITH OTHER SECTIONS

A. Coordinate with the Contracting Officer for the testing/air monitoring requirements and all applicable Federal, State and local regulations.

PART 2 PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITIES

A. Testing, ambient air monitoring to be supplied by the Contractor.

B. The Contractor shall coordinate the removal work schedule with the Motor Pool Supervisor; vacate the office and remove the equipment, vehicles, and personal items, and secure tools, etc.

C. The Contractor shall be responsible for his employees' personnel protection, personal air monitoring and necessary records as required by OSHA, Hawaii State Law and all other applicable laws and as required in these specifications. The Contractor shall provide a final report with all required documentation to the State.

D. The Contractor shall procure legally required reports for air monitoring as part of the contract. All air monitoring reports shall include all field data, laboratory reports, test results and other pertinent information about the daily work activities.

E. Air monitoring and testing which becomes necessary in order to follow up on work by the Contractor or rejected as not conforming to the requirements shall be the responsibility of the State. 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.

3.02 TESTING AND AIR MONITORING

A. Duties of the Qualified Consultant.

1. Photographic Record of Project: Record the abatement project with representative photos. All photos shall become the property of the State and are to be accompanied by a detailed log.

2. Project Log: Maintain daily field reports detailing all key activities during abatement and make a summary of project activities to the Contracting Officer. Incorporate the contents of the daily field reports with other project data into a final project report.

3. Visual Inspection of all Containment Areas: Perform regular inspections of all containment areas. Conduct inspections during the actual work performance of the contractor to document the work practices employed and prior to air

testing in each area to verify that all materials scheduled for abatement were removed and the area was properly cleaned.

B. Air Monitoring: The Qualified Consultants on-site air monitoring specialists or industrial hygienists shall perform the following activities associated with this portion of the project:
   1. On-site environmental air monitoring as required by EPA, OSHA, and the project specifications.

   2. Laboratory analysis by PCM analysis using NIOSH 7400 Method.

   3. Laboratory analysis by FAAS (lead) analysis using NIOSH 7082 method.

   4. Monitoring of decontamination procedures at site entry/exit.

   5. Monitoring of containment maintenance by visual and instrumental inspection.

   6. Interface with project inspectors, building representatives, representatives of regulatory agencies, and project designers during site visits.

   7. Ensure that proper respiratory protection is utilized by all persons at the project site.

   8. Relay to the Contracting Officer any discrepancies in contractor's action with provisions of project specifications.

   9. Act quickly in case of emergencies with appropriate response.

3.03 SAMPLING DESIGN

A. The following is a typical sampling design per containment area during the actual abatement. The number of samples and volume quantities may vary, depending on each project's specifications.
   1. Background Samples: Background baseline samples shall be taken prior to abatement to establish pre-abatement airborne concentration levels. Two high volume continuous flow samples shall be taken per estimated containment area.

   2. Work Area Samples: Low volume samples of 480 liters each shall be taken in the work areas. Ambient air samples shall be taken in the work area for comparison to barrier samples in an effort to ensure that containment systems are secure and that the persons entering the work area are wearing proper respiratory protection. If monitoring inside and outside the abatement work area shows airborne concentrations have reached the predetermined specified TWA, the Qualified Consultant shall stop all work, notify the Contracting Officer immediately, have the Contractor correct the condition(s) causing the increase and ensure that the Contractor obtains the Contracting Officer's approval prior to restarting the removal work.

   3. Barrier Samples: Monitoring outside the temporary barriers determines if leakage is occurring outside the work area due to loss of negative pressure

or faulty seals. Two high volume samples shall be taken per eight-hour day per barrier. At minimum of one sample upwind of the work area and two samples downwind of the work area shall be collected.

4. Final Clearance Samples: Visual inspections will be conducted at the completion of the asbestos work. PCM air clearance samples will not be required for the exterior work.

3.04 LABORATORY ANALYSIS

The Qualified Consultant shall maintain testing facilities in the vicinity of the project site. An industrial hygiene monitoring setup with high-volume and low-volume pumps, calibrators and all filtering needs, in addition to a fully-equipped laboratory for rapid sample analyses to the field, shall be included in this facility.

3.05 DAILY TESTING RECORDS

At the conclusion of every day's testing, the Qualified Consultant shall have available copies of all air monitoring records of each containment area for the Contracting Officer.

END OF SECTION