Summary of Changes (v198.0822)

Comprehensive updates necessary for TG 13281 Technical Guide (last update was done in May 2003). TG 13280 and Attachments A, B, and C has been deleted and incorporated into this TG.

Removal and Disposal of Asbestos Containing Building Materials (ACBM) TECHNICAL GUIDE — TG 13281

1. COORDINATION ISSUES:

1.1 Renovation work requires more asbestos survey information and design requirements than what was previously considered adequate (project specific). Where painting, electrical rewiring, wall modifications, etc. are specified for a project, sampling and testing in addition to reviewing previous the normal asbestos surveys must be done prior to the design.

1.2 Reason for this Technical Guide:

1.2.1 Previous asbestos surveys that were conducted in schools, kindergarten through the twelfth grade (K-12), are based on the testing procedures of the Asbestos Hazard Emergency Response Act (AHERA). The rules enforced by this act are targeted at protecting children. In Hawaii, the equivalent regulation is Hawaii Administrative Rules Title 11, Chapter 502 (HAR 11-502). Other surveys that also involve schools k-12 are based on the Hawaii Department of Health (HDOH) HAR Title 11, Chapter 501, 503 and 504. However, from an occupational exposure and enforcement point of view the Hawaii Occupational Safety and Health (HIOSH) can extend similar rules to construction locations that are covered when workers are involved. A significant number of our building renovation sites may be regulated by HIOSH even when they are not regulated by the HDOH. Whatever available survey reports for (K-12) schools can be found at the Department of Education (DOE), System Planning and Improvement Branch and for Department of Accounting and General Services (DAGS), Technical Services Office.

1.2.2 It is important to realize that the trigger point for OSHA is fundamentally different than that used by the Hawaii Department of Health (HDOH). HDOH (HAR 11-501, HAR 11-502) requires samples of building materials to define an amount of asbestos in the material. This defined amount may also be a composite when testing drywall/joint compound/taping compounds (HAR 11-501). On the other hand, OSHA does not allow compositing samples and at times, regulates asbestos-containing materials at a lower threshold than HDOH. OSHA also samples the air quality at the breathing zone of employees during the work process.

1.2.3 Asbestos related regulations and engineering controls shall include the maintenance and warranty period following construction completion or acceptance.

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1.2.4 Gypsum Wallboard Joint Compound:

A. If the project is going to disturb joint compounds, supplemental survey information must specifically address asbestos levels in the joint compounds only, not just as a composite with the wallboard.

B. If the joint compound contains any detectable (even if it is below the EPA's 1% threshold) asbestos you must use Section 01715 – EXISTING CONDITIONS – ASBESTOS/LEAD/HAZARDOUS MATERIAL SURVEY to inform the contractor where the asbestos containing joint compounds were located. (This is the same procedure used for other asbestos building materials.)

C. Asbestos containing joint compounds not normally identified by the HAR 11-501 and HAR 11-502 (AHERA) sampling procedures have been found to cause HIOSH defined

occupational exposures when sanded, drilled, or sawed. When this happens most of the AHERA mandated containment (e.g. negative air, etc.) and work practice (e.g. disposal, cleanup, etc.) procedures are required of the contractor by HIOSH Rules under Hawaii Statutes.

1.2.5 Roofing Materials:

A. Present practice for roofing projects involving asbestos containing materials (ACM) is to execute a ~~two~~ contract which includes~~, one to~~ an asbestos abatement contractor for removal, and ~~the other to~~ a roofing contractor to install the new roofing.

B. EPA provided guidance which clarified the requirements for roof removal work. OSHA also issued regulations which increased the requirements for protecting the health and safety of roofing workers. Both ~~of these~~ are summarized in the following attachments:

1. Attachment A: Discussion of Thresholds and Work Practices in EPA Regulations for Roof Removal Work.

2. Attachment B: Summary of EPA Interpretative Rule for Roofing Projects (40 CFR 61 Appendix A to Subpart M of Part 61).

3. Attachment C: Requirements for Roof Removal Work Contained in the OSHA Standard for Asbestos Construction (29 CFR 1926.1101).

~~**1.1.1** If the project is going to disturb joint compounds, supplemental survey information must specifically address asbestos levels in the joint compounds only, not just as a composite with the wallboard.~~

~~**1.1.2** If the joint compound contains any detectable (even if it is below the EPA's 1% threshold) asbestos you must use Section 01100 Summary to inform the contractor where the asbestos containing joint compounds were located. (This is the same procedure used for other asbestos building materials.)~~

1.2~~1~~.6~~3~~ Asbestos type engineering controls (i.e. keeping debris wet, etc.) must be specified to try to keep the exposure below the Hawaii permissible exposure limit. A~~(Use a~~ Hawaii DOH certified asbestos project designer is required for all asbestos abatement projects.~~)~~

~~**1.2** Reason for this Technical Guide~~

~~**1.2.1** Current asbestos surveys that were conducted in schools kindergarten through the twelfth grade (k-12) are based on the testing procedures of the Asbestos Hazard Emergency Response Act (AHERA). The rules enforced by this act are targeted at protecting children. In Hawaii, the equivalent regulation is Hawaii Administrative Rules Title 11, Chapter 502 (HAR 11-502). Other surveys that also involve schools k-12 are based on the Hawaii Department of Health (HDOH) HAR Title 11, Chapter 501, 503 and 504. However, from an occupational exposure and enforcement point of view the Hawaii Occupational Safety and Health (HIOSH) can extend similar rules to construction locations that are covered when workers are involved. A significant number of our building renovation sites may be regulated by HIOSH even when they are not regulated by the HDOH.Current asbestos surveys are based on the testing procedures of the Asbestos Hazard Emergency Response Act (AHERA). The rules enforced by this act are targeted at protecting the environment. However, from an occupational exposure and enforcement point of view the Hawaii Occupational Safety and Health (HIOSH) can extend similar rules to construction locations that may not be covered under the EPA rules. A significant number of our building renovation sites may be regulated by HIOSH even when they are not regulated by the EPA.~~

~~**1.2.2** It is important to realize that the trigger point for HIOSH is fundamentally different than that used by the Hawaii Department of Health (HDOH). HDOH (HAR 11-501, HAR 11-502) requires samples of building materials to define an amount of asbestos in the material. This~~

~~defined amount may also be a composite when testing drywall/joint compound/taping compounds (HAR 11-501). On the other hand, HIOSH does not allow compositing samples and at times, regulates asbestos-containing materials at a lower threshold than HDOH. HIOSH also samples the air quality at the breathing zone of employees during the work process.It is important to realize that the trigger point for HIOSH is fundamentally different than that used by the Environmental Protection Agency (EPA). AHERA requires samples of building materials to define an amount of asbestos in the material which may be a composite such as wallboard system. On the other hand, HIOSH samples the environmental air quality breathed by the employees during the work process.~~

~~**1.2.3** Asbestos containing joint compounds not normally identified by the HAR 11-501 and HAR 11-502AHERA sampling procedures have been found to cause HIOSH defined occupational exposures when sanded, drilled, or sawed. When this happens most of the AHERA HAR 11-502 mandated containment (e.g. negative air, etc.) and work practice (e.g. disposal, cleanup, etc.) procedures are required of the contractor by HIOSH Rules under Hawaii Statutes.~~

~~**1.2.4** Asbestos related regulations and engineering controls shall include the maintenance and warranty period following construction completion or acceptance.~~

2. DESIGN ISSUES:: ~~(Not Used)~~

2.1 Project shall conform to all federal, state, and local regulations.

3. DRAWING NOTES:: ~~(Not Used)~~

3.1 Drawings shall~~ould~~ indicate the location, extent, and condition of asbestos containing materials to be removed or disturbed. Clearly indicate if asbestos containing materials are to be removed to the substrate.

4. STANDARD DRAWINGS: (Not Used)

5. SPECIFICATION NOTES:: ~~(Not Used)~~

5.1 See Section 01715 – EXISTING~~xisting~~ CONDITIONS~~onditions~~ – ASBESTOS/LEAD/~~sbestos / /~~ HAZARDOUS~~azardous~~ MATERIAL~~aterial~~ SURVEY~~urvey(s)~~ for location of asbestos-containing materials, lead-containing paint and other hazardous materials.

5.2 Coordination with other sections: ~~-~~See specification Section 13282 – LEAD~~ead-Containing~~ PAINT~~aint~~ CONTROL~~ontrol~~ MEASURES~~easures~~ (as applicable) and Section 13288 – ASBESTOS~~sbestos~~ TESTING AND ~~Abatement~~~~Testing and Air~~ MONITORING~~onitoring~~ and Section 13289 – LEAD TESTING AND MONITORING, as applicable.

5.3 Submittals:

5.3.1 Testing Laboratory Qualifications. ~~-~~Name, address, and telephone number of testing laboratory being used for HIOSH compliance monitoring. Use a laboratory accredited by the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Proficiency Analytical Testing (PAT) program to perform sample analysis.

~~5.3.2~~ Notices: ~~-~~Written 10 working day notice in accordance with 40 CFR Part 61.145.1 Subpart M, and HAR 11-501, of the proposed

5.3.2 ~~——~~asbestos abatement work with copies to the Contracting Officer and to the ~~following agencies:~~ State of Hawaii, Department of Health.~~,~~

~~" Notification of Demolition and Renovation" form.~~

~~5.3.3~~ Permits and licenses: Submit copies of all permits, licenses (C-19), State of Hawaii Asbestos Entity registration and arrangements
~~5.3.4~~ for removal, transportation, and disposal of asbestos-containing materials. Contractor shall have or obtain a Permanent or a
~~5.3.5~~ ~~Temporary~~ Temporary User Permit from the [Department of Environmental Services, City and County of Honolulu Wastewater Management,
~~5.3.6~~5.3.3 Water Quality Division] [[Hawaii] [Kauai] [Maui] County] before disposing of construction wastewater into the sanitary sewer.

~~5.3.7~~ Manufacturer's data: Submit copies of manufacturer's specifications, installation instructions, and field test procedures for each
~~5.3.8~~ m~~M~~aterial and all equipment related to asbestos handling and abatement and include other data as may be required to show
5.3.4
compliance with these specifications and proposed uses.

~~5.3.9~~5.3.5 Shop drawings: Submit to the Contracting Officer copies of shop drawings for the following items as a minimum:

- ~~•~~A. Security provisions in and around the project area.
- ~~•~~B. Location and construction of all airtight barriers.
- ~~•~~C. Staging and sequence of the work.
- ~~•~~D. Outline of work procedures to be employed.
- ~~•~~E. Location, size, and number of negative air fan units.
- ~~•~~F. Entrances and exits to the work place.
- ~~•~~G. Location and construction of worker and equipment decontamination units.
- ~~•~~H. Water filtration system for all contaminated water.
- ~~•~~I. Proposed method of patching and repairing all damage to existing finishes from the attachment of polyethylene sheeting.
- J. Location and quantity of asbestos to be removed and disposed.
- K. Location of warning signs.
- ~~•~~L. Location of transparent viewing port.

~~5.3.10~~ Training: ~~-~~Any individual who may be exposed to airborne asbestos fibers, responsible for any aspects of abatement activities,
~~5.3.11~~ allowed or permitted to enter areas where such exposure may occur has currently attended and passed the Abatement Worker
~~5.3.12~~ and/or Abatement Contractor/Supervisor course whichever is relevant to that worker's responsibilities as specified in ~~40 CFR Part~~
~~5.3.13~~ ~~763, "Asbestos Materials in Schools",~~ HAR 11-501~~-~~, HAR, 11-502, HAR 11-503, and HAR 11-504. These courses shall be approved by
~~5.3.14~~ the State of Hawaii Asbestos Program. No worker shall be allowed on site if they have an expired State of Hawaii ~~Asbestos~~
~~5.3.15~~ ~~Certification I.D. card,~~ Asbestos Certification I.D. card, does not have the valid certification I.D. card on site, or does not comply with the requirements set forth in
~~5.3.16~~ HAR 11-504 on training.
5.3.6

~~5.3.17~~
~~5.3.18~~ Medical Clearances: Submit currently completed and signed "Acknowledgement of Instruction and Release" form for all employees
~~5.3.19~~ or agents who may be exposed to airborne asbestos fibers. The form shall indicate that the individual has received OSHA medical

~~5.3.20~~5.3.7 monitoring or had such monitoring made available to them as required in 29 CFR 1926. 1101~~, and HIOSH 12-145.1~~.

~~5.3.21~~ Rental Equipment: A written notification concerning the intended use of the rental equipment must be provided to the rental agency
~~5.3.22~~5.3.8 and a copy submitted to the Contracting Officer.

~~5.3.23~~ Emergency planning procedures: Submit to the Contracting Officer a written emergency plan agreed to by the Contractor and the
~~5.3.24~~5.3.9 Contracting Officer prior to abatement initiation.

5.3.10 Daily personal air monitoring strategy: Describe in detail the strategy that shall be followed. Provide contingencies when the PEL is exceeded. ~~Provide laboratory results daily.~~Lab results of personal air monitoring shall be completed daily, filed for personnel records and submitted to the Contracting Officer and Project Monitor.

~~5.3.11~~ Waste disposal forms: Submit a sample of transport manifest forms to be used when disposing of all asbestos waste prior to start of
~~5.3.12~~ abatement work~~. Submit copies of all transport manifests, trip tickets, and disposal receipts for all asbestos waste materials no~~
~~5.3.13~~5.3.11 ~~later than [ ]( ) working days from the date the waste is removed from the work area during the abatement process~~.

5.3.12 Visitor/Worker entry log: Maintain a daily log of ALL personnel who enter the work area while asbestos abatement operations are in progress, until final clearance is received.

5.3.13 Completion of removal work: Submit to the Contracting Officer no later than 30 calendar~~[ ] ( )~~ days from the date of the final clearance the following:

- A. Project plans with the designated project designer's name and State of Hawaii Asbestos Certification number.
- B. Completed daily visitor/worker entry logs.
- C. State of Hawaii Asbestos Certification of the Abatement Contractor's employees.
- D. All Contractor's personal air monitoring results, including pump calibrations, date of sampling, pump's on and off times, name of personnel sampled, work activity being done at the time of sampling, 8hr TWA (Time Weighted Average) if applicable, other information as pertinent.
- E. Contractor's notification form to ~~EPA Region IX and~~ the Hawaii Department of Health.
- F. All asbestos disposal form(s).

5.4 Product Handling: ~~Delivery and Storage of Materials:~~ Deliver materials to the site in original packages, containers, or bags fully identified with the 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 the abatement is completed.

5.5 Protection:

~~**Protection**~~

5.5.1 Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of Subcontractors, the Contracting Officer and his representatives, state and local inspectors, and any other designated individual. A list of authorized personnel shall be established prior to job start.

5.5.2 Site Protection and Safety: At a minimum, follow the requirements of EPA, HIOSH, OSHA, and NIOSH. Take all necessary precautions to ensure there is no asbestos contamination to those areas not included in the work schedule. Cleanup from the work area daily all asbestos removal work debris.

5.5.3 Protective Covering: Provide and install protective covering on an "as required" or "upon request" by the Contracting Officer ~~basis~~ at no additional cost to the State. Protective covering shall be clean plastic sheets with a minimum thickness of 6-mil.

5.5.4 Safeguarding of Property: Take whatever steps necessary to safeguard the property of the State and other individuals in and around ~~the vicinity of~~ the work area during the execution of this contract. Repair ~~air~~, pay for, and mitigate ~~any and~~ all damages incurred by the abatement work.

5.5.5 Completed work: Provide all necessary protection for surfaces and areas abated under this section.

~~5.4~~ **5.6**
General Requirements:

At the minimum the following regulations and guides shall ~~ould~~ be followed:

~~State of Hawaii: Occupational Safety and Health Standards; Tile 12, Subtitle 8, Chapter 145.1, Asbestos.~~

A. 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.

B. Title 29, Code of Federal Regulations, Section 1910.1001 – Asbestos, General Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

C. Title 29, Code of Federal Regulations, Section 1926.1101 – Asbestos, Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

D. Title 29, Code of Federal Regulations, Section 1910.20 – Access to Employee Exposure and Medical Records, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

E. Title 29, Code of Federal Regulations, Section 1910.1200 – Hazard Communication, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

F. Title 40, Code of Federal Regulations, Part 61, Subparts A and M (Revised Subpart B), National Emission Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA).

G. Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024 (Purple Book), U.S. Environmental Protection Agency (EPA).

H. 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).

I. 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.

J. ANSI Z88.2~~-80~~, Practice for Respiratory Protection.

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

L. Title 11, Hawaii Administrative Rules, Department of Health, Chapter 501, Asbestos Requirements.

M. Title 11, Hawaii Administrative Rules, Department of Health, Chapter 502, Asbestos-Containing Materials in Schools.

N. Title 11, Hawaii Administrative Rules, Department of Health, Chapter 503, Fees for Asbestos Removal and Certification.

O. Title 11, Hawaii Administrative Rules, Department of Health, Chapter 504, Asbestos Abatement Certification Program.

5.6.1 Comply with the above requirements and any applicable federal, state, and local regulations, laws, and ordinances that pertain to this contract. Where conflict or any inconsistency among requirements or with this specification exists, the more stringent requirements shall apply. Any question regarding conflict or inconsistency between specification and/or regulations should be directed to the Contracting Officer.

~~5.5~~

5.7 Products:

5.7.1 Materials:

A. Plastic Sheeting: Minimum thickness is 6-mil polyethylene film.
B. Plastic Bags: Minimum thickness is 6-mil polyethylene film labeled as specified herein.
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, Amo, 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 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.
E. Surfactant (Wetting Agent): Shall be 50% polyoxyethylene ester and 50% polyoxyethylene ether, or equivalent, and shall be mixed with water to provide a concentration of one ounce, or more as needed, of surfactant to five gallons of water. (An equivalent surfactant shall be understood to mean material with a surface tension of twenty-nine dynes/cm as tested in its properly mixed concentration, using ASTM Method D1331~~-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. 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 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.

5.7.2 Tools and Equipment:

A. General: Provide and fabricate suitable tools for the asbestos abatement procedures.
B. Water Sprayer: Airless or pressure sprayer for amended water application as applicable.
C. Air Purification Equipment: High Efficiency Particulate Air (HEPA) filtration systems.
D. Encapsulant Sprayer: Airless type.
E. Other tools and equipment as necessary.

5.7.3 Personnel Protection Requirements:

A.

TheHE ContractorONTRACTOR acknowledgesACKNOWLEDGES heHE aloneALONE isIS responsibleRESPONSIBLE forFOR instructionINSTRUCTION andAND forFOR enforcingENFORCING personnelPERSONNEL protectionPROTECTION requirementsREQUIREMENTS andAND thatTHAT theseTHESE specificationsSPECIFICATIONS providePROVIDE onlyONLY aA minimumMINIMUM acceptableACCEPTABLE standardSTANDARD. ComplyOMPLY withWITH more MORE stringentSTRINGENT requirementsREQUIREMENTS statedSTATED hereinHEREIN.

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 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.

E. 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 boots or equal. The Contractor shall include in his bid the expense of a total of 4 changes of clothing (and Type "C" respirators if utilized) 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.

F. 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.

G. Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Z89.1-1981, eye protection meeting the requirements of ANSI Z87.1-1979, safety shoes meeting the requirements of ANSI Z41.1-1967, disposable polyvinyl chloride gloves), as necessary, shall be provided to all workers and authorized visitors.

H. Wear respirators at all times during the disturbance of asbestos-containing materials. Ensure that all personnel in the regulated work area are wearing the proper respirator and filter cartridge. Ensure that all personnel are properly wearing their respirator at all times inside the regulated work area.

5.6

5.7 Tools and Equipment

5.8 Personnel Protection Requirements

5.8 Testing and Air MonitoringExecution:

5.8.1 Testing and Air Monitoring: Refer to Section 13288 – TESTING ANDASBESTOS TESTING ANDABATEMENT AIR MONITORING for testing and monitoring requirements.

5.9

5.8.2 Commencement of work:

A. Under no circumstances shall asbestos be disturbed without the authorization of the Contracting Officer and the City and the City hired ConsultantProject MonitorProject Monitor.

B. Provide at least 10 working day notice when work is scheduled to start to the City and the City hired Project MonitorContracting Officer and ConsultantProject Monitor.

C. Contractor must notify and receive approval from the CityContracting Officer prior to conducting any work (i.e., mobilization, testing, etc.) at the project site.

5.10

5.8.3 Separation of work areas from non work areas:

oA. Barriers and Signs: Critically seal the work area with 6-mil plastic or equivalent. Post OSHA Danger signs at a sufficient distance from the regulated work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.

oB. Air Systems: Shut down and isolate all ventilation air systems to prevent contamination and fiber dispersal to other areas of the building. Critical seal all vents (intake and supply) with duct tape and two layers of 6-mil polyethylene sheeting. These temporary coverings shall be removed after the area is cleared by the Project Monitor.

oC. Penetrations: Prevent contamination to the interior of the building by installing critical barriers to all openings including, but not limited to, ducts, grilles, vents, roof penetrations, and any other penetrations of the work areas with 6-mil plastic sheeting sealed with duct tape.

oD. Emergency exits: Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. Post a diagram in each clean room and equipment room locating the emergency exits. In case of fire while doing work in the work areas, emergency exit procedures have priority over normal work exiting procedures.

E. Inspection: Inspect all barriers continuously throughout the day. Document the inspections and observations in a daily project log.

5.8.4 Decontamination Systems: Construct a decontamination station described in OSHA 29 CFR 1926.1101, HIOSH 12-145.1, approved work plan and elsewhere herein for Class 1 work. The minimum decontamination unit shall consist of a clean room, shower room, and equipment room attached to the work area. Access to the work area shall only be through the decontamination unit.

~~Decontamination Systems: Construct a decontamination station described in OSHA 29 CFR 1926.1101, HIOSH 12-145.1, approved and work plan and elsewhere herein for Class 1 work. The minimum decontamination unit shall consist of a clean room, shower room, and equipment room attached to the work area. Access to the work area shall only be through the decontamination unit.~~

5.8.5 Wastewater Filtering System:

A. Filter all wastewater that will be discharged into the sanitary sewer system using two in-line filter cartridges with two-inch inlets and outlets. The outlet of the first cartridge shall connect to the inlet of the second cartridge. The first cartridge shall contain six 100-micron pre-filters and a second cartridge shall contain six 0.5-micron filters or equal staging according to the type of filtering unit. No wastewater shall be released to the ground or in the storm drain system.
B. Maintain one spare set of 100-micron pre-filters at the site ~~at all times~~ to replace pre-filters during cleaning. Maintain at least one set of 0.5-micron or equal filters at the site ~~at all times~~ for replacement as necessary.
C. When pre-filters become clogged, replace with spares, and wash out the pre-filters in the shower room, allowing drainage from the cleanup operation to go through the filtering system.
D. When the final filters become clogged, remove filters, replace with new, and dispose of the clogged filters as contaminated waste.
E. Provide a holding tank for contaminated wastewater as required to prevent backup of water into the shower when the amount of water generated exceeds the flow rate of the filters.

5.8.6 ~~-~~Temporary Fire Protection:

A. Provide and maintain temporary fire protection equipment during the asbestos abatement operations.
B. Equipment shall be of the appropriate type to fight fires associated with the existing building materials and those materials used during the construction operations.
~~**5.11**~~C. Clearly mark the location of all existing extinguisher cabinets.

~~Temporary Fire Protection~~

~~5.12~~ **~~5.8.7~~** Removal of Asbestos-Containing Materials:

~~5.16.1~~ A. Do not commence work without valid State of Hawaii Asbestos Certification cards for all employees working on-site.

B. ~~5.16.2~~ For interior removal work, create a negative pressure enclosure in the work area by installing negative air devices with HEPA filters. This system shall maintain the air in the work area at a pressure differential of at least minus 0.05 inches of water with respect to the outside air and 8 air changes per hour.

~~5.16.3~~ C. Have on site ~~at all times~~ at the minimum, one operable backup negative air device during the asbestos removal.

~~5.16.4~~ Install a transparent viewing port to allow observation of the asbestos removal from outside the work area.

~~D.~~

~~5.16.5~~ Wet the asbestos-containing material with amended water~~surfactant~~ using a fine mist sprayer prior to start of abatement ensuring that it does not leak through the work area. Contractor shall be responsible for repairing all damages incurred.

~~E.~~

~~5.16.6~~ Use hand tools to conduct the removal work.

~~F.~~

~~5.16.7 Ensure that no~~ Minimize dust ~~is emitted~~ during the disturbance of the asbestos-containing material. Do not release dust and debris outside the work area.

~~G.~~

~~H. 5.16.8~~ Stop work immediately if visible dust and debris is emitted outside the work area. Immediately remedy the situation.

5.8.8 Asbestos-Containing Waste Debris Handling:

A. Double-bag and seal waste by gooseneck tying in 6-mil plastic bags immediately after removal. Do not allow removed asbestos and debris to accumulate in the work area. All gross debris created by the removal process shall be bagged and sealed “leak tight” at the end of each removal day.

B. During the removal process, if plastic sheeting tears, or the duct tape loosens from the surface, immediately stop work, clean up loose asbestos-containing materials, then reseal the surface by taping over the torn or loosened surface, before commencing again.

~~5.13~~

5.8.9 Equipment Cleaning: Wash all contaminated equipment and tools prior to removing them from the work area. Do not wash contaminated equipment and tools outside the work area.

5.8.10

Cleaning and Clearance of the Work Area:

A. ShouldHOULD theTHE ContractorONTRACTOR failFAIL toTO makeMAKE theTHE workWORK areaAREA asbestosASBESTOS freeFREE withinWITHIN oneONE workingWORKING dayDAY afterAFTER theTHE clean-CLEAN upUP thereofTHEREOF hasHAS beenBEEN requestedREQUESTED byBY theTHE ContractingONTRACTING OfficerFFICER, andAND thereafterTHEREAFTER toTO expeditiouslyEXPEDITIOUSLY completeCOMPLETE theTHE saidSAID clean-upCLEANUP, theTHE ContractingONTRACTING OfficerFFICER mayAMY withoutWITHOUT furtherFURTHER noticeNOTICE andAND withoutWITHOUT terminationTERMINATION ofOF contractCONTRACT, doDO theTHE clean-upCLEAN UP andAND deductDEDUCT theTHE costCOST thereofTHEREOF fromFROM theTHE contractCONTRACT.

B. Clearance of Removal Work Area: Remove all visible accumulation of asbestos-containing materials and debris by HEPA vacuuming, and wet mopping. Thoroughly clean the work area. The Contractor, in the presence of the Project Monitor, shall make a complete visual inspection of the work area to ensure all asbestos was removed and collected. Re-clean at Contractor's expense.

C. The work area shall remain a restricted area for entry only with respiratory protection and protective suits until the Project Monitor deems the area dust-free and cleared for occupation without respiratory protection in accordance with Section 13288 – TESTING AND AIRASBESTOS TESTING ANDABATEMENT MONITORING.

D. The Project Monitor will provide the Contracting Officer with a certified clearance letter.

E. Remove signage required by the asbestos removal and encapsulation work. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.

F. Completely remove all temporary materials and coverings when their use is no longer required. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore existing facilities to their original condition as approved by the Contracting Officer.

5.8.11 Lock Down: Prior to the removal of the plastic barriers and after clean up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall then be sprayed to all surfaces in the removal area. 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. Protect existing sensors and equipment from damage and plugging during the encapsulation process.

5.8.12 Disposal of Asbestos-Containing Material:

A. As the work progresses, asbestos-containing waste that is generated by the Contractor shall be transported 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. Transport all waste to the pre-designated disposal site in accordance with EPA and HDOH regulations and specific landfill requirements.

B. Contaminated material shall be leak tight and double-bagged with OSHA label prescribed by the most current OSHA regulations. Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101 or EPA 40 CFR 61.150 if more restrictive. Labnaeling shall include the name of the waste generator and the site where the waste was generated.

C. Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste with OSHA approved signage so that the signs are visible and can be clearly read. For all loading and unloading activities, the sign shall be displayed prominently.

D. Vehicles used for transporting waste to the disposal site shall have a completely enclosed, lockable storage compartment plasticized and sealed with a minimum of one layer of 6-mil polyethylene sheeting on the and sides and top, and two layers of 6-mil polyethylene sheeting on the floor (bed). Waste materials, except those with sharp

edges (metal lath, screws, nails, metal suspension system, ~~etc~~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 OSHA. The compartments shall be thoroughly wet-cleaned and 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 the 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.

E. At the landfill, upon delivery of waste for disposal, the Contractor shall notify the Scale Attendant and Landfill Spotter that the waste to be disposed of is asbestos material.

F. Workers unloading bags at the disposal sites shall be dressed in full body protective clothing and dual cartridge P-100 respirators.

G. 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 ~~no later than ten consecutive working days after each trip.~~.

H. ~~NOTE: I~~It is~~T IS~~ the~~THE~~ Contractor's~~ONTRACTOR'S~~ responsibility~~RESPONSIBILTY~~ to~~TO~~ assure~~ASSURE~~ that~~THAT~~ any~~ANY~~ landfill~~LANDFILL~~ used~~USED~~ for~~FOR~~ disposal~~DISPOSAL~~ of ~~OF~~ asbestos-containing~~ASBESTOS-CONTAINING~~ or~~OR~~ asbestos-contaminated~~ASBESTOS CONTAMINATED~~ waste~~WASTE~~ is~~IS~~ approved~~APPROVED~~ for~~FOR~~ that~~THAT~~ purpose~~PURPOSE~~.

I. 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.

J. Asbestos contaminated wastewater shall be filtered and disposed of in the sanitary sewer with proper permit from the [City and County of Honolulu, Wastewater Management, Water Quality Division] [[Hawaii] [Kauai] [Maui] County], as specified herein. No wastewater shall be allowed to be dumped on the ground or into the storm drain system.

K. 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, exc~~p~~epe~~p~~t 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.

~~5.14~~ **5.8.13** Payment: Final payment will not be made until copies of all submittals, waste manifest forms, and dump receipts have been furnished to the Contracting Officer.

~~Cleaning and Clearance of the Work Area~~
~~Lock Down~~
~~Disposal of Asbestos-Containing Material~~
~~Payment~~

6. GUIDE SPECIFICATION: (Not Used)

END OF SECTION 13281