

Demolition of Building 811
Maxwell AFB, Gunter Annex

JUBJ123446
Montgomery, Alabama

DEMOLITION OF BUILDING 811

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**STATEMENT OF WORK
DEMO COMMISSARY
BLDG 811
Project # JUBJ123446 W/O # 30215**

1.0 Introduction:

The work included in the scope of this project includes abatement and demolition of a portion of Building 811 at Maxwell AFB, Gunter Annex AL. Construction work associated with the closing in of the remaining portion of Building 811 is also included in the scope.

- 1.1 Furnish all necessary equipment, labor, supervision and materials specified in this Statement of Work. All work is to be performed in accordance with these specifications and is subject to the terms and conditions of this contract.
- 1.2 Furnish and provide the quality and quantity of service per Section 4 of this Statement of Work.

2.0 Acronyms/Definitions:

CPG – Comprehensive Procurement Guide
SOW- Statement of Work
STM- Subcontract Technical Monitor
ADEM – Alabama Department of Environment Management
BAS- Building Automation System
BTUH- BTU per Hour
GPM-Gallons Per Minute

HWS- Hot Water Supply
KW- Kilowatts
TAB – Test, Adjust and Balance
42 CES/CEC- Maxwell Support Group/ Civil Engineering
USDA - United States Department of Agriculture
PM – Project Manager

HWR- Hot Water Return

Recovered Materials - Waste materials and by-products recovered or diverted from solid waste, not including those materials and by-products generated from, and commonly reused within an original manufacturing process. [Executive Order 13101]

Recycled Material - Material utilized in place of raw or virgin material in product manufacturing consisting of materials derived from post-consumer waste, industrial scrap, agricultural wastes, and other items, all of which can be used in new product manufacture. [OFPP Policy Letter 92-4]

Virgin Material - A mined or harvested raw material to be used in manufacturing.

3.0 Applicable Specifications/Standards/Related Studies:

APPLICABLE PUBLICATIONS, LAWS, REGULATIONS, ETC.: All mechanical and electrical work accomplished under this contract shall conform to latest International Mechanical Code, and the National Electric Code guidelines. Refrigerant handling work will comply with EPA Regulation, Clean Air Act Title VI 1990, Section 608 “Refrigerant Recycling Rule.” The contractor will comply with NFPA and Unified Facilities Criteria (UFC) 3-600-01, 17 Apr 03, ASHRAE guidelines and all State and local ADEM codes.

- 3.1 Executive Order (EO) 13101, 14 Sep 98, outlines the federal government’s special responsibility to lead the way in building markets for recycled goods. Affirmative Procurement (AP) is the name given to this buy-recycled purchasing program. The intent of

the program is to stimulate recycling by providing a market for new products manufactured with recycled materials.

3.2 **Resource Conservation Recovery Act (RCRA):** The legal authority for the APP comes from the Resource Conservation Recovery Act (RCRA) Section 6002. It requires federal agencies to give preference in their purchasing programs to products and practices conserving and protecting natural resources and the environment.

3.3 **Public Law 107-171: Farm Security and Rural Investment Act of 2002, 13 May 02.** <http://www.usda-biobasedproducts.net/public/index.cfm>. Also known as the "Farm Bill."

4.0 Task Description:

4.1 **LOCATION:** This work is to be performed in Building 811, Maxwell AFB, Gunter Annex, Alabama.

4.2 **DESCRIPTION OF SERVICES:** Demolish the front (shopping) section of building 811 at Maxwell AFB, Gunter Annex as indicated in the drawings and specifications.

4.3 **DESCRIPTION OF WORK:**

4.3.1 The Contractor will be responsible for removing debris from the jobsite on a daily basis. The Contractor must ensure that the workplace is safe from hazards so that daily operations can be maintained. The Contractor must verify all quantities of materials.

4.3.2 Contractor shall furnish all equipment, material and labor necessary to demolish building 811 and restore to grade the demolition area. See drawings and specifications for full requirements. The existing plans are for informational purposes only (1-65 sheets). Contractor will verify existing conditions at the site.

4.3.3 Demolition is to include but not limited to partial removal of the building from the foundation up to the extents of the structure. The contractor will build a wall to the remaining structure as specified in the drawings. The work includes restoration of the site. Restore the grade to continue, and facilitate, and further prevailing surface drainage. Install grass sod site cover at disturbed areas. The project shall include but is not limited to complete removal of the building utilities, plumbing, and electrical, mechanical system. Cap end of abandon site utilities. Demolition products, anything within the confines of the buildings and all materials become the property of the contractor. All store equipment shall be removed by the government prior to demolition. The contractor is to take the necessary precautions to prevent siltation of pavements or sidewalks, movement of surface earth onto other surfaces. Environmental monitoring or testing is the responsibility of the contractor. All demolition debris shall be hauled to an ADEM permitted/certified landfill.

4.4 **ASBESTOS:** See attached Required Asbestos Abatement and Management Procedures, Asbestos Specification Section 13280 and 13000 Environmental Report

4.5 **STORM WATER:** See existing Utility Plan, C-2
If the site exceeds ONE (1) Acre (44,000 Square Feet) the contractor shall file a Notice of Registration (NOR) with the Alabama Department of Environmental

Management (ADEM) in accordance with ADEM Administrative Code Chapter 335-6-12. A copy of the ADEM's Letter of response shall be submitted to 42CES/CEV prior to commencing any site work.

4.6 **BASE COMMUNICATIONS DEMO:** Prior to the building being demolished and after all alarm systems are no longer required, notify base communications planner 42CS/SCXP **Earl Campbell at 953-9407** to schedule 42CS/SCM personnel to remove all required communications cabling and equipment.

4.7 **PERFORMANCE OF WORK:** Services shall be conducted in conformity with applicable regulations to contribute maximum satisfaction to responsible base offices. Services shall be made with minimum divergence from schedules once established. All services shall be made with minimum disturbance and maximum protection of property. The STM shall be notified 72 hrs prior to work starting.

4.7.1 The contractor must within 24 hours of notice that a delay will be incurred notify the Government in writing. This letter must identify why there will be a delay, and how long. Also the contractor shall take any actions in his control to prevent delay from occurring.

4.8 **SUPERVISION:** Contractor shall provide competent supervision at all times when work is in progress. Contractor is responsible for scheduling and coordinating various trade activities. Contractor is also responsible for assuring that all work accomplished and materials used are in accordance with industry standards

4.9 **ACCESS:** The Government shall have access at any and all times to the contractor's equipment, materials, supplies, assigned areas and sites of operation for inspection purposes.

4.10 **PERFORMANCE TIME:** As indicated in approved schedule.

4.11 **RECYCLED CONTENT AND BIOBASED PRODUCTS:**

4.11.1 "To comply with the affirmative procurement requirements of Section 6002 of RCRA, Section 9002 of the Farm Security and Rural Investment Act of 2002, and Executive Order 13101, the Government strongly promotes the use of recycled-content and bio-based products. Recycled-content products are identified in the EPA's comprehensive procurement guidelines <http://www.epa.gov/cpg/products.htm> (the USDA designates bio-based products).

4.11.2 EPA Guideline Items (and USDA designated bio-based products) are seen as the minimum, which should be considered when evaluating environmentally preferable materials. Other environmentally preferable materials and products not listed, but commonly used in industry outside the Government, should also be considered.

4.11.3 The subcontractor will provide to the Government a certification that EPA – Designated Products will or will not be used in the performance of this subcontract. If an EPA Designated Product is applicable but will not be used the subcontractor will provide the reason it will not be used referencing one of the following exceptions: 1) is available at an unreasonable price, 2) will not meet the performance standards, 3) is unavailable within a reasonable timeframe or at a sufficient level of competition.

4.11.4 If applicable, material and product submittals for all recycled-content items should list the recycled and recovered materials used and the percentage content (by weight). Submittals for bio-based products should describe the bio-based materials used and the percentage content (by weight)." These data is required to be submitted by the subcontractor on an AF Form 3000 (Material Approval Submittal) to the Government upon completion of performance (construction) or on an annual basis (recurring services) for contracts exceeding \$100,000 single purchase or annually.

4.11.5 When a hazardous product is required in performance of this subcontract the subcontractor is required to submit a Material Safety and Data Sheet (MSDS) to the Government on each type of hazardous material. In addition, the subcontractor will complete an AF Form 3952, Chemical/Hazardous Material Request Authorization. The hazardous material must be approved prior to being delivered to Maxwell AFB or Gunter Annex. The approval process may take up to two weeks, which should be considered in the performance period of this subcontract.

4.12 GREEN PROCUREMENT. In order to comply with federally mandated environmental preference programs and Department of Defense (DOD) "Green Procurement Program" (GPP) policy, Maxwell-Gunter AFB requires the use of environmentally preferable products and services. These program elements include: recovered material products, energy and water efficient products, alternative fuels and fuel efficiency, bio-based products, non-ozone depleting substances, priority chemicals, and environmentally preferable products. These program elements are described on the Office of the Federal Environmental Executive (OFEE) website (<http://www.ofee.gov> <<http://www.ofee.gov>>).

4.13 PRODUCTS AND MATERIALS: Provide custodial cleaning products in the performance of this PWS that meet as a minimum, Green Seal Product Standards (<http://www.greenseal.org/certproducts.htm>). If it is determined that a product does not meet Government performance requirements, submit a proposed alternative that would meet the performance requirements with the lowest environmental impact for evaluation and acceptance. For products that fall under the Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines (CPG) (<http://www.epa.gov/cpg>), meet the minimum recovered (recycled) content. Use bio-based products upon issuance of the bio-based product listing from the United States Department of Agriculture (USDA) (<http://usda.gov> <<http://usda.gov>>). Purchase and use Energy Star or other energy-efficient items listed on the Department of Energy's Federal Energy Management Program (FEMP) Product Efficiency Recommendations product list.

4.14 GROUND FAULT CIRCUIT INTERRUPTERS: Whenever contractor uses portable electrical tools or equipment in an outside location where operator will be in contact with a grounded surface, or in an interior wet location where floor is conductive such as concrete, contractor shall provide and use a portable ground fault circuit interrupter (GFCI). This shall apply wherever electric power is supplied through government-owned facilities. Contractor shall be responsible for maintaining the GFCI in operating condition and testing it before each use.

4.15 PASS AND IDENTIFICATION ITEMS: The contractor shall ensure the following pass and identification items required for contract performance are obtained for employees and non-government owned vehicles:

- 4.15.1 DD Form 1172, Application for Uniformed Services Identification Card (AFI-36-3026, Identification Cards For Members of The Uniformed Services, Their Family Members and Other Eligible Personnel, and AETC Instruction 36-3001, Issue and Control of AETC Civilian Identification (ID) Cards).
- 4.15.2 AETC Form 58, Civilian Identification Card (AETCI 36-3001).
- 4.15.3 AF Form 1199, USAF Restricted Area Badge, or locally developed badge.
- 4.15.4 AF Form 75, *Visitor/Vehicle Pass* (AFI 31-204).

4.16 **RETRIEVING IDENTIFICATION MEDIA:** The contractor shall retrieve all identification media, including vehicle decals from employees who depart for any reason before the contract expires; e.g., terminated for cause, retirement.

4.17 **FREEDOM OF INFORMATION ACT PROGRAM (FOU):** The contractor shall comply with AFI 37-131, *Freedom of Information Act Program (FOIA)*, and requirements. The regulation sets policy and procedures for the disclosure of records to the public and for marking, handling, transmitting, and safeguarding *For Official Use only (FOUO)* material.

4.18 **REPORTING REQUIREMENTS:** The contractor shall comply with AFI 71-101, Volume 1, *Criminal Investigations* and Volume-2, *Protective Service Matters*, requirements. Contractor personnel shall report to an appropriate authority, any information or circumstances of which they are aware may pose a threat to the security of DOD personnel, contractor personnel, resources, and classified or unclassified defense information. Contractor employees shall be briefed by their immediate supervisor upon initial on-base assignment and as required thereafter.

4.19 **PHYSICAL SECURITY:** Areas controlled by contractor employees shall comply with Base Operations Plans/instructions for THREATCON procedures, Random Antiterrorism Measures (RAMS) and local search/identification requirements. The contractor shall safeguard all government property, including controlled forms, provided for contractor use. At the close of each work period, government training equipment, ground aerospace vehicles, facilities, support equipment, and other valuable materials shall be secured.

4.20 **TRAFFIC LAWS:** The contractor and its employees shall comply with base traffic laws and regulations.

4.21 Inspection and acceptance of Services will be performed at Maxwell AFB, AL by a Subcontract Technical Monitor (STM). Inspection and acceptance will be conducted in accordance with this SOW and the Maintenance Service and Repair Agreement provided by the Subcontractor in their proposal.

4.22 Contractor shall protect all communications cabling while working and if damaged is caused by the contractor than the contractor shall replace the damaged communications cabling with same or for internal cable base standard CAT6 cable. All CAT6 cable must be home run to communications room. Copper tie cables must be replaced with same. Fiber optic cables must be a continuous strand with no splices. All communications cabling must be wired to the T568B standard.

5.0 Travel Requirements: Reserved

6.0 Data/Reporting Requirements:

6.1 Contractor will furnish manufacturer warranties as needed for any component incorporated into this project such as equipment; any component installed in or made a part of the existing structure and any exterior or interior finishes, etc. The service provider shall provide as-built drawings for any deviation from the original design. If the service provider provides the original design plans, they will submit those plans (whether changes made or not) at the end of the contract marked and signed as 'As-Built'

7.0 Deliverables:

7.1 A 1-Year Warranty on material and labor.

8.0 Government Furnished Property/Facilities/Equipment: Reserved

9.0 Subcontract Technical Monitor: Reserved

--End of Section--

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES (Not Applicable)

1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1 Government Approved (GA)

Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.2 Information Only (FIO)

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.4 APPROVED SUBMITTALS

The approval of submittals by the Contracting Officer (CO) shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor is responsible for dimensions, the design of adequate connections and details and the satisfactory construction of all work. After submittals have been approved by the CO, no resubmittal for the purpose of substituting materials or equipment will be given consideration unless accompanied by an explanation as of why a substitution is necessary.

1.5 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the CO and promptly furnish a corrected submittal in the form and number of copies as specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause entitled "Changes" shall be given promptly to the Contracting Officer.

1.6 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall submit all items listed on the Submittal Register (AF Form 66, Schedule of Material Submittals, or equivalent) or specified in the other sections of these specifications. The CO may request submittals in addition to those listed when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same used in the contract drawings. Submittals shall be made in three (3) copies unless otherwise noted on the Submittal Register to the CO. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved and each respective transmittal form or material approval submittal (AF Form 3000, Material Approval Submittal) shall be signed and dated by the Contractor certifying that the accompanying submittal complies with the contract requirements. Submittals shall include line number of item from government prepared Submittal Register. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals including parts list; certifications; warranties and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby.

3.2 SUBMITTAL REGISTER (AF Form 66)

The Contracting Officer shall provide a Submittal Register on AF Form 66 to the Contractor with the Bid Package. Upon issuance of Notice to Proceed, the Contractor shall meet with the CO to jointly review the government prepared Submittal Register. The Contractor shall be responsible for providing all items listed on the Submittal Register in accordance with the scheduled submittal dates.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. The Contractor shall take special care to timely schedule the submittal date required for long lead-time items and shall allow 10 days for Government review action on all submittals. No delays, damages or time extensions will be allowed for time lost in late submittals. Submittals received from the Contractor shall be complete and include all submittal information required on the Submittal Register for that item.

3.4 TRANSMITTAL FORM (AF Form 3000)

AF Form 3000 shall be used for submitting both Government Approved and Information Only submittals in accordance with the instructions on the reverse side of the form. The forms will be furnished to the Contractor by the Government. The form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. All submittals will be made on AF Form 3000 as specified below and will include the Line Number from the Submittal Register. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.5 DEVIATIONS

For submittals which include proposed deviations requested by the Contractor, the deviations shall be properly noted on the AF Form 3000. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so noted on AF Form 3000. Such submittals shall be made in accordance with the Construction Contract Clause entitled "Specifications and Drawings for Construction" and the following: unless otherwise noted on the Submittal Register, three (3) prints of all drawings; or, if catalog cuts, printed specifications or similar publications are used as submittals, three (3) original copies shall be submitted. One corrected copy shall be returned to the Contractor. In cases where "trade names or equal" specifications are used, any equal substitution by the Contractor will be considered a deviation and will require approval. Any submittal requesting a deviation shall be considered as one requiring "approval" action. Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so noted on AF Form 3000.

3.8 INFORMATION ONLY SUBMITTALS

All other submittals are considered to be "Information Only" submittals and may be subject to review action by the CO or may be simply receipt acknowledged. Any submittal "For Information Only" shall be clearly marked "FIO". Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. It shall be the Contractor's responsibility of assuring that the materials and/or equipment covered by that submittal meets the contract requirements. Any such "Information Only" submittal found to contain errors or omissions shall be resubmitted as one requiring "approval" action. All "Information Only" submittals shall be made in accordance with other submittals.

--End of Section--

SECTION 02050

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES (Not Applicable)

1.2 GENERAL REQUIREMENTS

The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer's Representative. In the interest of conservation salvage shall be pursued to the maximum extent possible; salvaged items and materials shall be disposed of as specified.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01305 SUBMITTAL PROCEDURES:

SD-18 Records

Work Plan; FIO.

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations.

1.4 DUST CONTROL

The amount of dust resulting from demolition shall be controlled to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding and pollution.

1.5 PROTECTION

1.5.1 Protection of Existing Property

Before beginning any demolition work, the Contractor shall carefully survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take all necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government, and any damaged items shall be repaired or replaced as approved by the Contracting Officer's Representative at no additional cost to the Government. The Contractor shall carefully coordinate the work of this section with all other work and shall construct and maintain shoring, bracing and supports, as required. The Contractor shall ensure that

structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.5.2 Protection From the Weather

The interior of buildings to remain and salvageable materials and equipment shall be protected from the weather at all times.

1.5.3 Protection of Trees and Shrubs

Trees and shrubs within the project site which might be damaged during demolition and which are indicated to be left in place or relocated shall be protected as required to maintain the good health of the plant. Any tree or shrub designated to remain or be relocated that is damaged during the work under this contract shall be replaced in kind or as approved by the Contracting Officer's Representative.

1.6 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.7 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.8 AVAILABILITY OF WORK AREAS

Areas in which the work is to be accomplished will be coordinated with the Contracting Officer's representative for availability.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 UTILITIES

Existing utilities shall be disconnected and/or capped as indicated in the drawings. The contractor shall remove the utilities from the building to the cap location. This work shall be coordinated with the Contracting Officer's Representative.

3.2 DISPOSITION OF MATERIAL

Title to materials and equipment to be demolished, excepting Government salvage and historical items, is vested in the Contractor upon receipt of notice to proceed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.2.1 Salvageable Items and Materials

Contractor shall salvage items and materials to the maximum extent possible.

3.2.1.1 Material Salvaged for the Contractor

Material salvaged for the Contractor shall be stored as approved by the Contracting Officer's Representative and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

3.2.1.2 Items Salvaged for the Government

Salvaged items to remain the property of the Government shall be removed in a manner to prevent damage and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during

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removal or storage shall be repaired or replaced to match existing items. Containers shall be properly identified as to contents.

3.4.2 Unsalvageable Materials

Concrete and masonry materials shall be disposed of in the disposal area designated by the Contracting Officer's Representative. All other materials shall be disposed of in a legal landfill.

3.5 CLEAN-UP

Debris and rubbish shall be removed from the existing site. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

END OF SECTION

SECTION 02315
EXCAVATION, FILLING, AND BACKFILLING FOR BUILDINGS

GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 DEGREE OF COMPACTION

Degree of compaction is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557, abbreviated as percent laboratory maximum density.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01000 GENERAL REQUIREMENTS:

Compaction

Within 24 hours of conclusion of physical tests, 3 copies of test results, including calibration curves and results of calibration tests.

Borrow Material

Proposed source of borrow material and physical tests for qualification

PRODUCTS

2.1 MATERIALS

2.1.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC, CL, ML, CL-ML, CH, MH.

2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Unsatisfactory material also includes material classified as satisfactory which contains root and other organic matter. The Government Project Manager shall be notified of any contaminated materials.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM, GP-GM, GW-GM, SW-SM, SP-SM, and SM shall be identified as cohesionless only when the fines are nonplastic.

2.2 CAPILLARY WATER BARRIER

Capillary Water Barrier shall consist of clean, crushed, nonporous rock, crushed gravel, or uncrushed gravel. The maximum particle size shall be 1-1/2 inches and no more than 2 percent by weight shall pass the No. 4 size sieve.

EXECUTION

3.1 CLEARING AND GRUBBING

Clearing and grubbing is specified in Section 02230 CLEARING AND GRUBBING. The areas within lines 5 feet outside of each building and structure line shall be cleared and grubbed of trees, stumps, roots, brush and other vegetation, debris, existing foundations, pavements, utility lines, structures, fences, and other items that would interfere with construction operations. Stumps, logs, roots, and other organic matter shall be completely removed and the resulting depressions shall be filled with satisfactory material, placed and compacted in accordance with paragraph FILLING AND BACKFILLING. Materials removed shall be disposed of outside the limits of Government-controlled property at the Contractor's responsibility.

3.2 TOPSOIL

Topsoil shall be stripped to a depth of 4 inches below existing grade within the designated excavations and grading lines and deposited in storage piles for later use. Excess topsoil shall be disposed as specified for excess excavated material.

3.3 EXCAVATION

Excavation shall conform to the dimensions and elevations indicated for each building, structure, and footing except as specified, and shall include trenching for utility and foundation drainage systems to a point 5 feet beyond the building line of each building and structure, excavation for all work incidental thereof. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be replaced with satisfactory material. Satisfactory material removed below the depths indicated, without specific direction of the Government Project Manager, shall be replaced, at no additional cost to the Government, with satisfactory materials to the indicated excavation grade; except that concrete footings shall be increased in thickness to the bottom of the overdepth excavations and over-break in rock excavation. Satisfactory material shall be placed and compacted as specified in paragraph FILLING AND BACKFILLING. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Government Project Manager.

3.4 DRAINAGE AND DEWATERING

3.4.1 Drainage

Surface water shall be directed away from excavation and construction sites to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site, the area immediately surrounding the site, and the area affecting operations at the site shall be continually and effectively drained.

3.4.2 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material.

3.5 CLASSIFICATION OF EXCAVATION

Excavation will be unclassified regardless of the nature of material encountered. Hard and compact materials such as cemented gravel, glacial till, and relatively soft or disintegrated rock that can be removed without continuous and systematic drilling and blasting will not be considered as rock excavation. Rock excavation will not be considered as such because of intermittent drilling and blasting that is performed merely to increase production. Excavation of the material claimed as rock shall not be performed until the material has been cross sectioned by the Contractor and approved by the Government Project Manager. Common excavation shall consist of all excavation not classified as rock excavation.

3.6 BLASTING

Blasting will not be permitted.

3.7 UTILITY AND DRAIN TRENCHES

Trenches for underground utilities systems and drain lines shall be excavated to the required alignments and depths. The bottoms of trenches shall be graded to secure the required slope and shall be tamped if necessary to provide a firm pipe bed. Recesses shall be excavated to accommodate bells and joints so that pipe will be uniformly supported for the entire length. Rock, where encountered, shall be excavated to a depth of at least 6 inches below the bottom of the pipe, and the overdepth shall be backfilled with satisfactory material placed and compacted in conformance with paragraph FILLING AND BACKFILLING.

3.8 BORROW

Where satisfactory materials are not available in sufficient quantity from required excavations, approved materials shall be obtained as specified in Section 02300 EARTHWORK.

3.9 EXCAVATED MATERIALS

Satisfactory excavated material required for fill or backfill shall be placed in the proper section of the permanent work required under this section or shall be separately stockpiled if it cannot be readily placed. Satisfactory material in excess of that required for the permanent work and all unsatisfactory material shall be disposed of as specified in Section 02300 EARTHWORK.

3.10 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before concrete is to be placed. Approximately level surfaces shall be roughened, and sloped surfaces shall be cut as indicated into rough steps or benches to provide a satisfactory bond.

3.11 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Government Project Manager. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary. Minimum subgrade density shall be as specified in paragraph FILLING AND BACKFILLING.

3.12 FILLING AND BACKFILLING

Satisfactory materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsatisfactory materials. Satisfactory materials shall be placed in horizontal layers not exceeding 8 inches in loose thickness, or 6 inches when hand-operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Backfill shall not be placed in wet or frozen areas. Where pipe is coated or wrapped for protection against corrosion, the backfill material up to an elevation 2 feet above sewer lines and 1 foot above other utility lines shall be free from stones larger than 1 inch in any dimension. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes to avoid damage to coatings or wrappings. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall. Each layer of fill and backfill shall be compacted to not less than the percentage of maximum density specified below:

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
Fill, embankment, and backfill		
Under structures, building slabs, steps, paved areas, around footings, and in trenches	90	95

Under sidewalks and grassed areas	85	90
Nonfrost susceptible materials		95
Under building slabs, steps, and paved areas, top 12 inches	90	95
Under sidewalks, top 6 inches	85	90

Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein before to the required density prior to further construction thereon. Recompaction over underground utilities and heating lines shall be by hand tamping.

3.13 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or may be performed by the Contractor subject to approval. Field in-place density shall be determined in accordance with ASTM D 1556.

3.13.1 Moisture Content

In the stockpile, excavation or borrow areas, a minimum of two tests per day per type of material or source of materials being placed is required during stable weather conditions. During unstable weather, tests shall be made as dictated by local conditions and approved moisture content shall be tested in accordance with ASTM D 2216.

3.13.2 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material, including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 100 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density will be made.

3.14 CAPILLARY WATER BARRIER

Capillary water barrier under concrete floor and area-way slabs on grade shall be placed directly on the subgrade and shall be compacted with a minimum of two passes of a hand-operated plate-type vibratory compactor.

3.15 GRADING

Areas within 5 feet outside of each building and structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

3.16 SPREADING TOPSOIL

Areas outside the building lines from which topsoil has been removed shall be topsoiled. The surface shall be free of materials that would hinder planting or maintenance operations. The subgrade shall be pulverized to a depth of 2 inches by disking or plowing for the bonding of topsoil with the subsoil. Topsoil shall then be uniformly spread, graded, and compacted to the thickness, elevations, slopes shown, and left free of surface irregularities. Topsoil shall be compacted by one pass of a cultipacker, roller, or other approved equipment weighing 100 to 160 pounds per linear foot of roller. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to seeding, planting, or proper grading.

3.17 PROTECTION

Demolition of Building 811
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Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work, shall be repaired and grades reestablished to the required elevations and slopes.

-- End Of Section --

SECTION 02922

SODDING
05/01

PART 1 GENERAL

1.1 REFERENCES

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 602(1995a) Agricultural Liming Materials

ASTM D 4972(1995a) pH of Soils

ASTM D 5268(1992; R 1996) Topsoil Used for Landscaping Purposes

ASTM D 5883(1996e1) Use of Rotary Kiln Produced Expanded Shale, Clay or Slate (ESCS) as a Mineral Amendment in Topsoil Used for Landscaping and Related Purposes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Pesticide treatment plan with sequence of treatment work with dates and times. The pesticide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area treated, amount applied; and the name and state license number of the state certified applicator shall be included.

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

- a. Sod. Classification, botanical name, common name, mixture percentage of species, percent purity, quality grade, field location and state certification.
- b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.
- c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.
- d. Fertilizer. Chemical analysis and composition percent.
- e. Organic Material: Composition and source.
- f. Soil Conditioner: Composition and source.

- g. Pesticide. EPA registration number and registered uses.

1.3 SOURCE INSPECTION

The sources of sod material and delivered topsoil shall be subject to inspection.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

1.4.1.1 Sod

Sod shall be protected during delivery to prevent desiccation, internal heat buildup, or contamination.

1.4.1.2 Delivered Topsoil

Prior to the delivery of any topsoil, its availability shall be verified in paragraph TOPSOIL. A soil test shall be provided for topsoil delivered to the site.

1.4.1.3 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

1.4.1.4 Pesticides

Pesticide material shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

1.4.2 Inspection

Sod shall be inspected upon arrival at the job site for conformity to species. Sod shall be checked for visible broadleaf weeds, and a visible consistency with no obvious patches of foreign grasses that exceed 2 percent of the canopy. Sod that is heating up, dry, moldy, yellow, irregularly shaped, torn, or of uneven thickness shall be rejected. Other materials shall be inspected for compliance with specified requirements. Open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts, shall be rejected. Unacceptable materials shall be removed from the job site.

1.4.3 Storage

1.4.3.1 Sod

Sod shall be stored in designated areas and kept in a moist condition by watering with a fine mist, and covered with moist burlap, straw, or other covering. Covering shall allow air to circulate, preventing

internal heat from building up. Sod shall be protected from exposure to wind and direct sunlight until installed.

1.4.3.2 Other Material Storage

Materials shall be stored in designated areas. Lime and fertilizer shall be stored in cool, dry locations, away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with sod operation materials.

1.4.4 Handling

Sod shall not be damaged during handling. Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.4.5 Time Limitation

Time limitation between harvesting and installing sod shall be a maximum 36 hours.

PART 2 PRODUCTS

2.1 SOD

2.1.1 Sod Classification

Nursery-grown sod shall be provided as classified by applicable state laws. Sod section shall be sized to permit rolling and lifting without breaking.

2.1.2 Grass Species

Grass species shall be proportioned as follows:

Common Name Tifton Bermuda.

Botanical Name	Common Name	Mixture Percent
_____	_____	_____
[_____]	[Tifton 419 Bermudea]	[_____]

2.1.3 Quality

Sod shall be relatively free of thatch, diseases, nematodes, soil-borne insects, weeds or undesirable plants, stones larger than 1 inch in diameter, woody plant roots, and other materials detrimental to a healthy stand of grass plants. Broad leaf weeds and patches of foreign grasses shall be a maximum 2 percent of the sod section.

2.1.4 Thickness

Sod shall be machine cut to a minimum 1-3/8 inch thickness. Measurement for thickness shall exclude top growth and thatch.

2.1.5 Anchors

Sod anchors shall be as recommended by the sod supplier.

2.1.6 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil shall be the existing surface soil stripped and stockpiled on site in accordance with Section 02300 EARTHWORK. When additional topsoil is required beyond the available topsoil from stripping operation, topsoil shall be delivered and amended as recommended by the soil test for the sod species specified. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash, or other material over a maximum 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material, and soil conditioners meeting the following requirements. Vermiculite shall not be used.

2.3.1 pH Adjuster

The pH adjuster shall be an agricultural liming material in accordance with ASTM C 602. These materials may be burnt lime, hydrated lime, ground limestone, or shells. The pH adjuster shall be used to create a favorable soil pH for the plant material specified.

2.3.1.1 Limestone

Limestone material shall contain a minimum calcium carbonate equivalent of 80 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 55 percent shall pass through a No. 60 sieve. To raise soil pH, ground limestone shall be used.

2.3.1.2 Hydrated Lime

Hydrated lime shall contain a minimum calcium carbonate equivalent of 110 percent. Gradation: A minimum 100 percent shall pass through a No. 8 sieve and a minimum 97 percent shall pass through a No. 60 sieve.

2.3.1.3 Burnt Lime

Burnt lime shall contain a minimum calcium carbonate equivalent of 140 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 35 percent shall pass through a No. 60 sieve.

2.3.2 Fertilizer

Fertilizer shall be controlled release commercial grade, free flowing, uniform in composition, and consist of a nitrogen-phosphorus-potassium ratio. The fertilizer shall be derived from sulphur-coated urea, urea formaldehyde, plastic or polymer coated pills, or isobutylenediurea (IBDU). Fertilizer shall be balanced with the inclusion of trace minerals and micro-nutrients.

2.3.3 Organic Material

Organic material shall consist of either bone meal, rotted manure, and decomposed wood derivatives, recycled compost, or worm castings.

2.3.3.1 Bone meal

Bone meal shall be finely ground, steamed bone product containing from 2 to 4 percent nitrogen and 16 to 40 percent phosphoric acid.

2.3.3.2 Rotted Manure

Rotted manure shall be unleached horse; chicken or cattle manure containing a maximum 25 percent by volume straw, sawdust, or other bedding materials. Manure shall contain no chemicals or ingredients harmful to plants. The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

2.3.3.3 Decomposed Wood Derivatives

Decomposed wood derivatives shall be ground bark, sawdust, yard trimmings, or other wood waste material free of stones, sticks, soil, and toxic substances harmful to plants, fully composted or stabilized with nitrogen.

2.3.3.4 Recycled Compost

Compost shall be a well-decomposed, stable, weed free organic matter source. Compost shall be derived from food; agricultural or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. The material shall not contain substances toxic to plants. Gradation: The compost material shall pass through a 3/8-inch screen, possess a pH of 5.5 to 8.0, and have moisture content between 35-55 percent by weight. The material shall not contain more than 1 percent or less by weight of man-made foreign matter. Compost shall be cleaned of plastic materials larger than 2 inches in length.

2.3.3.5 Worm Castings

Worm castings shall be screened from worms and food source, and shall be commercially packaged.

2.3.4 Soil Conditioner

Soil conditioner shall be sand, super absorbent polymers, calcined clay, or gypsum for use singly or in combination to meet the requirements for topsoil.

2.3.4.1 Sand

Sand shall be clean and free of toxic materials. Gradation: A minimum 95 percent by weight shall pass a No. 10 sieve and a minimum 10 percent by weight shall pass a No. 16 sieve. Greensand shall be balanced with the inclusion of trace minerals and nutrients.

2.3.4.2 Super Absorbent Polymers

To improve water retention in soils, super absorbent polymers shall be sized and applied according to the manufacturer's recommendations. Polymers shall be added as a soil amendment and be cross-linked polyacrylamide with an absorption capacity of 250-400 times its weight.

2.3.4.3 Calcined Clay

Calcined clay shall be granular particles produced from montmorillonite clay calcined to minimum temperature of 1200 degrees F. Gradation: A minimum 90 percent passing No. 8 sieve; a minimum 99 percent shall be retained on a No. 60 sieve; and a maximum 2 percent shall pass a No. 100 sieve. Bulk density: A maximum 40 pounds per cubic foot.

2.3.4.4 Gypsum

Gypsum shall be commercially packaged, free flowing, and a minimum 95 percent calcium sulfate by volume.

2.3.4.5 Expanded Shale, Clay, or Slate (ESCS)

Rotary kiln produced ESCS material shall be in conformance with ASTM D 5883.

2.4 WATER

Water shall be the responsibility of the Contractor unless otherwise noted. Water shall not contain elements toxic to plant life.

2.5 PESTICIDE

Pesticide shall be insecticide, herbicide, fungicide, nematocide, rodenticide or miticide. For the purpose of this specification, a soil fumigant shall have the same requirements as a pesticide. The pesticide material shall be EPA registered and approved.

PART 3 EXECUTION

3.1 INSTALLING SOD TIME AND CONDITIONS

3.1.1 Sodding Conditions

Sodding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the sodding operations, proposed alternate times shall be submitted for approval.

3.1.2 Equipment Calibration

Immediately prior to the commencement of sodding operations, calibration tests shall be conducted on the equipment to be used. These tests shall confirm that the equipment is operating within the manufacturer's specifications and will meet the specified criteria. The equipment shall be calibrated a minimum of once every day during the operation. Provide calibration test results within one week of testing.

3.1.3 Soil Test

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, and mechanical analysis. Sample collection on site shall be random over the entire site. Sample collection for stockpiled topsoil shall be at different levels in the stockpile. The soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. The test shall determine the quantities and type of soil amendments required to meet local growing conditions for the sod species specified.

3.2 SITE PREPARATION

3.2.1 Finished Grade and Topsoil

Prior to the commencement of the sodding operation, the Contractor shall verify that finished grades are as indicated on drawings; the placing of topsoil, smooth grading, and compaction requirements have been completed in accordance with Section 02300 EARTHWORK.

3.2.2 Application of Soil Amendments

3.2.2.1 Applying pH Adjuster

The pH adjuster shall be applied at the rate recommended by the soil test.

3.2.2.2 Applying Fertilizer

The fertilizer shall be applied at the rate recommended by the soil test.

3.2.2.3 Applying Soil Conditioner

The soil conditioner shall be as recommended by the soil test.

3.2.2.4 Applying Super Absorbent Polymers

Polymers shall be spread uniformly over the soil as recommended by the manufacturer and thoroughly incorporated by tillage into the soil to a maximum 2 inches deep prior to placement of sod.

3.2.3 Tillage

Soil on slopes up to a maximum 3-horizontal-to-1-vertical shall be tilled to a minimum 4 inches deep. On slopes between 3-horizontal-to-1-vertical and 1-horizontal-to-1 vertical, the soil shall be tilled to a minimum 2 inches deep by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1-horizontal-to-1 vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on drawings. Areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of surface erosion

or grade deficiencies shall conform to topsoil requirements. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure.

3.2.4 Prepared Surface

3.2.4.1 Preparation

The prepared surface shall be a maximum 1-inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be rolled and completed with a light raking to remove from the surface debris and stones over a minimum 5/8 inch in any dimension.

3.2.4.2 Protection

Areas within the prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

3.3 INSTALLATION

Prior to installing sod, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Areas shall be sodded as indicated. Adequate soil moisture shall be ensured prior to sodding by spraying water on the area to be sodded and wetting the soil to a maximum 1-inch depth.

3.3.1 Installing Sod

Rows of sod sections shall be placed parallel to and tightly against each other. Joints shall be staggered laterally. The sod sections shall not be stretched or overlapped. All joints shall be butted tight. Voids and air-drying of roots shall be prevented. Sod sections shall be laid across the slope on long slopes. Sod sections shall be laid at right angles to the flow of water in ditches. Sod sections shall be anchored on slopes steeper than 3-horizontal-to-1-vertical. Anchoring may be required when surface weight or pressure upon placed sod sections is anticipated to cause lateral movement. Sod anchors shall be placed a minimum 2 feet on center with a minimum 2 anchors per sod section.

3.3.2 Finishing

Displacement of the sod shall be prevented by tamping or rolling the sod in place and knitting the sod to the soil. Air pockets shall be eliminated and a true and even surface shall be provided. Frayed edges shall be trimmed, and holes or missing corners shall be patched with sod.

3.3.3 Rolling

The entire area shall be firmed with a roller not exceeding 90 pounds per foot roller width. Slopes over a maximum 3-horizontal-to-1 vertical shall not be rolled.

3.3.4 Watering Sod

Watering shall be started immediately after completing each day of installing sod. Water shall be applied at least 3 times per week to supplement rainfall, at a rate sufficient to ensure moist soil conditions to a minimum depth of 1 inch. Run-off, puddling, and wilting shall be prevented. Unless otherwise directed,

watering trucks shall not be driven over turf areas. Watering of other adjacent areas or plant material shall be prevented.

3.4 RESTORATION AND CLEAN UP

3.4.1 Restoration

Existing turf areas, pavements, and facilities that have been damaged from the sodding operation shall be restored to original condition at Contractor's expense.

3.4.2 Clean Up

Excess and waste material shall be removed from the sodded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.5 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the sodding operation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed. Signage shall be in accordance with Section 10430 EXTERIOR SIGNAGE.

3.6 SOD ESTABLISHMENT PERIOD

3.6.1 Commencement

The sod establishment period to obtain a healthy stand of grass plants shall begin on the first day of work under this contract and shall end 3 months after the last day of sodding operation. Written calendar time period shall be furnished for the sod establishment period. When there is more than 1 sod establishment period, the boundaries of the sodded area covered for each period shall be described. The sod establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

3.6.2 Satisfactory Stand of Grass Plants

Grass plants shall be evaluated for species and health. A satisfactory stand of grass plants from the sodding operation shall be living sod uniform in color and leaf texture. Bare spots shall be a maximum 2-inch square. Joints between sod pieces shall be tight and free from weeds and other undesirable growth.

3.6.3 Maintenance During Establishment Period

Maintenance of the sodded areas shall include eradicating weeds, insects and diseases; protecting embankments and ditches from surface erosion; maintaining erosion control materials and mulch; protecting installed areas from traffic; mowing; watering; and post-fertilization.

3.6.3.1 Mowing

Sodded areas shall be mowed to a minimum 3-inch height when the turf is a maximum 4-inch height. Clippings shall be removed when the amount cut prevents sunlight from reaching the ground surface.

3.6.3.2 Repair

Unsatisfactory stand of grass plants shall be repaired or reinstalled, and eroded areas shall be repaired in accordance with paragraph SITE PREPARATION.

3.6.3.3 Maintenance Record

A record of each site visit shall be furnished which describes the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

End of Section

SECTION 03307

CONCRETE FOR MINOR STRUCTURES

1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 308	(1992; R 1997) Standard Practice for Curing Concrete
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary
ACI 347R	(1994) Guide to Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31/C 31M	(1998) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1999ael) Concrete Aggregates
ASTM C 39/C 39M	(1999) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94/C 94M	(2000) Ready-Mixed Concrete
ASTM C 143/C 143M	(1998) Slump of Hydraulic Cement Concrete
ASTM C 150	(1999a) Portland Cement
ASTM C 171	(1997a) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(1997el) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1998) Air-Entraining Admixtures for Concrete
ASTM C 309	(1998a) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494/C 494M	(1999a) Chemical Admixtures for Concrete
ASTM C 618	(1999) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 685	(1998a) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM D 75	(1987; R 1997) Sampling Aggregates

CORPS OF ENGINEERS (COE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Water-Reducing or Retarding Admixture; G
Curing Materials; G
Reinforcing Steel; G

Manufacturer's literature is available from suppliers which demonstrates compliance with applicable specifications for the above materials.

1.3 DESIGN AND PERFORMANCE REQUIREMENTS

The Government will maintain the option to sample and test joint sealer, joint filler material, aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M. Samples for strength tests will be taken not less than once each shift in which concrete is produced. A minimum of three specimens will be made from each sample; two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

1.3.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'_c , and no individual acceptance test result falls below f'_c by more than 500 psi.

1.3.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347R.

1.3.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'_c shall be 3,000 psi at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall be 3/4 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.50.

PART 2 PRODUCTS

1.4 MATERIALS

1.4.1 Cementitious Materials

Cementitious materials shall conform to the appropriate specifications listed:

1.4.1.1 Portland Cement

ASTM C 150, Type II.

1.4.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

1.4.2 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4M or better.

1.4.3 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

1.4.3.1 Air-Entraining Admixture

Air-entraining admixture shall meet the requirements of ASTM C 260.

1.4.3.2 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixture shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D.

1.4.4 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

1.4.5 Formwork

The design and engineering of the formwork as well as its construction, shall be the responsibility of the Contractor.

1.4.6 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

1.4.7 Curing Materials

Curing materials shall conform to the following requirements.

1.4.7.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

1.4.7.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

2 EXECUTION

2.1 PREPARATION

2.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

2.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

2.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, level and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

2.1.4 Production of Concrete

2.1.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M except as otherwise specified.

2.1.4.2 Concrete Made by Volumetric Batching and Continuous Mixing

Concrete made by volumetric batching and continuous mixing shall conform to ASTM C 685.

2.1.4.3 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient batching and mixing equipment capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review.

2.2 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

2.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the

mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

2.2.2 Consolidation

Each layer of concrete shall be consolidated by rodding, spading, or internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

2.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

2.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

2.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

2.4 FINISHING

2.4.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

2.4.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

2.4.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

2.4.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbyed or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

2.4.3.2 Broom Finish

A broom finish shall be applied to all exterior surfaces. The concrete shall be screeded and floated to required finish plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed with a broom or fiber bristle brush in a direction transverse to that of the main traffic or as directed.

2.5 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.
- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material conforming to ASTM C 171.
- e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

2.6 TESTS AND INSPECTIONS

2.6.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

2.6.2 Inspection Details and Frequency of Testing

2.6.2.1 Slump

Slump shall be checked once during each shift that concrete is produced. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143/C 143M.

2.6.2.2 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

2.6.3 Action Required

2.6.3.1 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

2.6.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period.

-- End of Section --

SECTION 13000

42 CES/CEV

Project Review – Proposed for Demolition

Bldg. 811 Gunter (Commissary) – Environmental Summary

Asbestos, Lead-Based Paint, Chlordane and Universal Waste

Revised May 21, 2010

CEV has reviewed the database survey information performed by others in 1992. We also visited the site on February 2, 2010, and April 11, 2010, to locate and assess the asbestos-containing materials noted in the survey as well as to identify any additional suspect materials. CEV collected some random confirmation samples of selected materials during the site visit. The following is a list of materials that are assumed positive or have been analyzed as positive.

Black Duct Joint Mastic (throughout facility – all ducting in original bldg) Approx. 700 linear feet	20% Chrysotile
12” floor tile (white with gray mottles) (throughout front half of facility – main store area) Black mastic Approx. 20,000 ft ²	5% Chrysotile 10% Chrysotile
12” floor tile and mastic (office and bathroom areas – original warehouse area) Approx. 380 ft ²	3% Chrysotile
12” floor tile (white with brown streaks) (throughout main office areas – some under carpet and some under another 12” light gray floor tile) Black Mastic Approx. 1,300 ft ²	8% Chrysotile 5% Chrysotile
Cementitious Boards/Panels (located along storage room walls between the old and new warehouses) Approx. 575 ft ²	15% Chrysotile
Cementitious “Transite” Siding (located along the wall that divides the old and new warehouses) Approx. 315 ft ² Note: Some siding may be located behind storage room wall that could not be observed. See site plan that has been attached.	Assumed Positive
Cementitious “Transite” Board/Panels (located in outside electrical control room) Approx. 60ft ²	Assumed Positive
Window Glazing/caulking Windows were replaced in 1990s	Non-Asbestos
Roof Decking (built-up flat roof) Original Warehouse	Non-Asbestos

SECTION 13000

The following asbestos materials were listed in the previous survey, but were not observed during the site visit. It appears that these materials may have been removed since the 1992 survey during replacement or upgrading activities.

Vibration Dampers
Pipe Wrap Mastic

Friability is used to categorize asbestos-containing materials within NESHAPS regulations. A friable material is one that when dry may be crumbled, pulverized or reduced to powder by hand pressure. Under NESHAPS, a friable asbestos containing material must always be abated prior to demolition activities. The materials identified in the confirmation site visits are considered Category I non-friable or Category II non-friable.

The Category I non-friable materials summarized in this report are the vinyl floor tiles, and mastics. These materials if in good condition can be left in the building during demolition activities and can be disposed of as general construction waste. The demolition contractor needs to use wet demolition methods at all times, while these materials are being impacted. The waste haulers and landfills need to be checked if they can receive such waste.

The cementitious “transite” boards and siding are considered Category II, non-friable materials. These materials have a high probability of becoming crumbled, pulverized or reduced to a powder during demolition activities. These materials must be removed prior to any demolition activities and disposed of separately from the demolition waste.

We recommend that the A/E firm for this project perform some “value engineering” to determine if removing all the Category I, non-friable asbestos materials prior to demolition, can be beneficial to the project. It must be noted that any concrete that contains positive black mastic will have to be disposed in a landfill and not recycled, if left in place. The black mastic on the duct joints can be easily removed by an abatement contractor in order to access all available steel components (sheet metals) for recycling. The approximate quantities given in this report may be used for estimates and removal costs, but not for final bidding purposes. A site plan has been attached showing the locations of the asbestos-containing materials, for reference.

Lead-Based Paint

We are assuming that lead-based paint may be on the outside and/or inside the facility. However, lead-based paint typically is not a major issue as part of a major demolition project, when it comes to disposal issues. CEV has not performed any additional testing addressing this issue. The contractor must maintain wet demolition activities at all times during demolition and waste hauling activities.

Universal Waste

Subject: Fluorescent, High Intensity Discharge (HID), Mercury Vapor Lamps, and Compact Fluorescent Lamps (CFL's), Ballasts.

SECTION 13000

1. All used fluorescent, high intensity discharge, mercury vapor lamps, and compact fluorescent lamps **MUST NOT** be discarded into the municipal trash containers and/or construction waste dumpsters. The lamps will be managed using the following procedures for collection and disposal. All lamps shall be properly containerized and marked. CEV can help provide information on where boxes for the lamps can be purchased.

- A. Under Alabama law, it is **MANDATORY** that you write the **DATE** and the words **“UNIVERSAL WASTE, USED LAMPS”** on the box when you put the **FIRST USED LAMP** in the box. During the collection of used lamps, the box must be sealed when not in use. When collecting Used Lamps the period of time from the date the first bulb was put into the box until the current date should not exceed **NINE MONTHS**. At that time, the sealed box is to be handled in a manner as to prevent breakage and turned in to the base hazardous waste manager at Maxwell Bldg. 1060. Prior to delivering the used lamps, call Base Environmental at extension 953-3954 or 953-1109 to arrange delivery.
- B. The law also requires that broken lamps must be cleaned up immediately and placed in a box. The box must be closed once the broken lamps are placed inside. The moment the lamp is broken it becomes a Hazardous Waste. Immediately notify CES/CEV.
- C. All ballasts shall be checked for PCB labeling before disposal. Ballasts must be clearly marked with labels that state No PCBs before disposing as a solid waste. If a ballast is not labeled or states it contains PCBs, then these ballasts shall be collected and CES/CEV must be contacted for pick up and disposal.

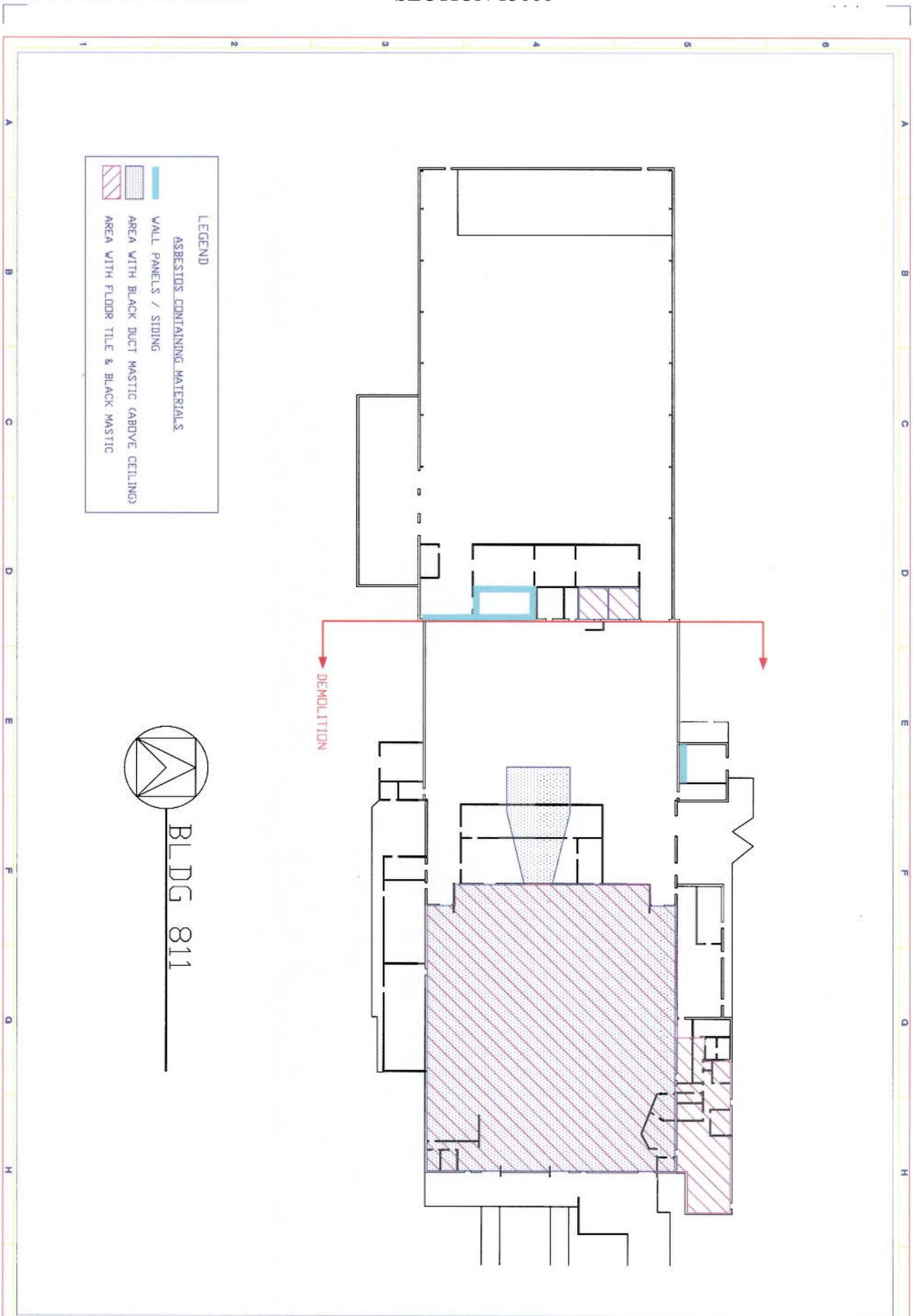
Chlordane

CEV has performed a preliminary investigation for the presence of chlordane at the Gunter Commissary. We collected a total of eleven soil samples at six test locations. The samples were primarily collected along the perimeter wall with one sample being sampled under the slab from inside the facility. The samples along the perimeter indicated readings that range from undetected to 3100 ppb. The one sample soil sample collected from under the slab was undetected. It is the responsibility of the contractor to perform any additional assessments and/or required sampling to delineate the contaminated area and to provide a proposed plan that addresses soil excavation activities, slab removal and waste disposal. All work must follow State and Federal Regulations for chlordane contaminated soils. We have attached a field report which contains a site sketch for reference. The laboratory test results have also been attached.

Please feel free to contact this office if you have any questions concerning this report.

Trent Hill – Asbestos, Lead-Based Paint, Chlordane POC	953-3954
Jared Kennington – Hazardous Waste, Universal Waste, Chlordane POC	953-1109
Jeff Jones – Environmental, Safety and Health Department (ESH) Manager	953-5757

SECTION 13000



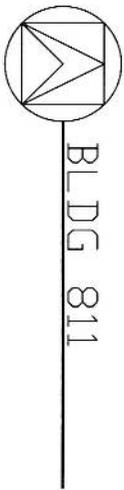
LEGEND

ASBESTOS CONTAINING MATERIALS

WALL PANELS / SIDING

AREA WITH BLACK DUCT MASTIC (ABOVE CEILING)

AREA WITH FLOOR TILE & BLACK MASTIC



<p>Sheet Number</p> <p>811 OF 81</p>	<p>CONST STORAGE BLDG MAXWELL, AL</p>	<p>MAXWELL AFB/ GUNTER ANNEX COMBINARY RENOVATION MAXWELL AFB, ALABAMA 36112</p>	<p>Designed By: _____ Date: 21 MAY 2010</p> <p>Drawn By: _____ Scale: _____</p> <p>Checked By: _____ Drawing Sheet File: _____</p> <p>Reviewed By: _____ Drawing Folder # XXXX</p>	<table border="1"> <thead> <tr> <th>Number</th> <th>Description</th> <th>Date</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Number	Description	Date	Approved																
	Number	Description	Date	Approved																				
<p>PHOB 10-XXXX</p>																								

SECTION 13000
42 CES/CEV
Maxwell/Gunter AFB
Daily Field Report

Project/Site Name: Building 811 - Gunter Commissary

ITT Representative: Trent Hill & Jared Kennington

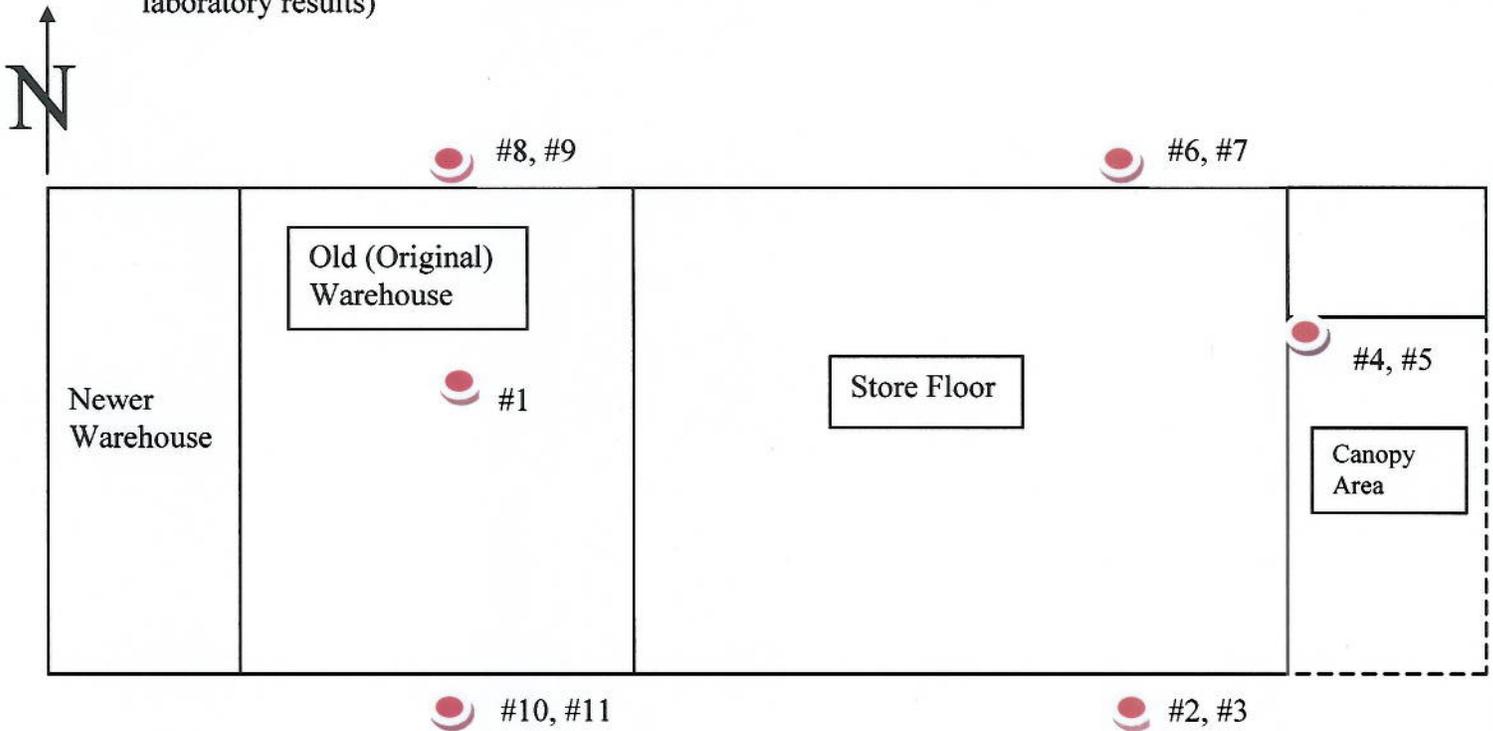
Scope of Work: Soil Sampling – Chlordane Analysis

Date: May 11, 2010

Notes:

8:00 am

CEV was on site to collect representative soil samples for chlordane analysis. This sampling activity was performed to address environmental issues associated with the proposed demolition of the existing commissary. CEV collected (1) sample from under the slab inside the warehouse floor area (non-detect) and (10) samples (elevated amounts) at five locations along the perimeter of the bldg. See below diagram. The samples were preserved on ice and forwarded to EMSL for analysis. (See attached laboratory results)



Grab Sample Depths:

Samples #1, #2, #4, #6, #8, #10

Samples #3, #5, #7, #9, #11

0" – 6"

6" – 12"

Drawing not to Scale for Reference Only.

Asbestos • Lead • Environmental • Materials & Indoor Air Analysis

EMSL Analytical, Inc.<http://www.emsl.com>

3 Cooper St.
Westmont, NJ 08108
Phone: (856) 858-4800
Fax: (856) 858-4571

EMSL

SM

Attn: **Trent Hill**
ITT Corporation
400 Cannon Street Bldg 1060
Maxwell AFB
Montgomery, AL 36112

5/20/2010

Phone: (334) 953-3954
Fax: (334) 953-4333

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 5/13/2010. The results are tabulated on the attached data pages for the following client designated project:

The reference number for these samples is EMSL Order #011002071. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 858-4800.

Reviewed and Approved By:



Julie Smith - Laboratory Director or other approved
signatory




The test results contained within this report meet the requirements of NELAC and/or the specific certification program that is applicable, unless otherwise noted.
NJ-NELAP Accredited: 04653

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	01
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0001	Sample Matrix:	Soils
Lab File ID:	D15676.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 10:37:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.08 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	9	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8		U
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8		U
5103-74-2	gamma-Chlordane	1.8		U
5103-71-9	alpha-Chlordane	1.8		U
72-55-9	4,4'-DDE	1.8	2.1	P
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8		U
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	1.8		U
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	37		UD1
7421-36-3	Endrin Aldehyde	1.8	4.5	P
72-43-5	Methoxychlor	37		UD1
2385-85-5	Mirex	1.8		U
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	18		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#:		01		
Lab Name:	EMSL Analytical	Project:		
EMSL Sample ID:	011002071-0001	Sample Matrix:	Soils	
Lab File ID:	D15676.D	Sampling Date:	5/11/10	
Instrument ID:	D	Date Extracted:	5/18/10	
Analyst:	TL	Analysis Date:	5/19/10 10:37:00 PM	
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.08 G	
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1	
% Moisture:	9	Concentrated Extract Vol:	10 (mL)	
PH:	1	Injection Volume:	1 (ul)	
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N	
Extraction Type:	3550B			
Method:	SW846 8081/8082			

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17442.D (Analysis Time: 05/19/10 08:47:00 , Dil. Factor= 20) Confirm Column: G17442.D (Analysis Time: 05/19/10 08:47:00				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	02
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0002	Sample Matrix:	Soils
Lab File ID:	D15677.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 10:57:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.12 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	12	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.9		U
58-89-9	gamma-BHC	1.9		U
319-85-7	beta-BHC	1.9		U
319-86-8	delta-BHC	1.9		U
76-44-8	Heptachlor	1.9		U
309-00-2	Aldrin	1.9		U
465-73-6	Isodrin	1.9		U
1024-57-3	Heptachlor Epoxide	1.9		U
5103-74-2	gamma-Chlordane	1.9	2.8	
5103-71-9	alpha-Chlordane	1.9	2.8	P
72-55-9	4,4'-DDE	1.9	2.7	P
959-98-8	Endosulfan I	1.9		U
60-57-1	Dieldrin	1.9	5.9	
72-20-8	Endrin	1.9		U
72-54-8	4,4'-DDD	1.9	5.6	B
33213-65-9	Endosulfan II	1.9		U
50-29-3	4,4'-DDT	38		UD1
7421-36-3	Endrin Aldehyde	1.9		U
72-43-5	Methoxychlor	38		UD1
2385-85-5	Mirex	1.9		U
1031-07-8	Endosulfan Sulfate	1.9		U
53494-70-5	Endrin Ketone	1.9		U
8001-35-2	Toxaphene	19		U
57-74-9	Chlordane (n.o.s.)	19		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#:		02		
Lab Name:	EMSL Analytical	Project:		
EMSL Sample ID:	011002071-0002	Sample Matrix:	Soils	
Lab File ID:	D15677.D	Sampling Date:	5/11/10	
Instrument ID:	D	Date Extracted:	5/18/10	
Analyst:	TL	Analysis Date:	5/19/10 10:57:00 PM	
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.12 G	
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1	
% Moisture:	12	Concentrated Extract Vol:	10 (mL)	
PH:	1	Injection Volume:	1 (ul)	
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N	
Extraction Type:	3550B			
Method:	SW846 8081/8082			
CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17443.D (Analysis Time: 05/19/10 09:06:00 , Dil. Factor= 20) Confirm Column: G17443.D (Analysis Time: 05/19/10 09:06:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	03
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0003	Sample Matrix:	Soils
Lab File ID:	D15678.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 11:17:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.05 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	11	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.9		U
58-89-9	gamma-BHC	1.9		U
319-85-7	beta-BHC	1.9		U
319-86-8	delta-BHC	1.9		U
76-44-8	Heptachlor	1.9		U
309-00-2	Aldrin	1.9		U
465-73-6	Isodrin	1.9		U
1024-57-3	Heptachlor Epoxide	1.9		U
5103-74-2	gamma-Chlordane	1.9	4.6	
5103-71-9	alpha-Chlordane	1.9	4.1	P
72-55-9	4,4'-DDE	1.9	7.1	
959-98-8	Endosulfan I	1.9		U
60-57-1	Dieldrin	1.9	4.8	
72-20-8	Endrin	1.9		U
72-54-8	4,4'-DDD	1.9	11	B
33213-65-9	Endosulfan II	1.9		U
50-29-3	4,4'-DDT	37		UD1
7421-36-3	Endrin Aldehyde	1.9		U
72-43-5	Methoxychlor	37		UD1
2385-85-5	Mirex	1.9		U
1031-07-8	Endosulfan Sulfate	1.9		U
53494-70-5	Endrin Ketone	1.9		U
8001-35-2	Toxaphene	19		U
57-74-9	Chlordane (n.o.s.)	19		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	03
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0003	Sample Matrix:	Soils
Lab File ID:	D15678.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 11:17:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.05 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	11	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17444.D (Analysis Time: 05/19/10 09:25:00 , Dil. Factor= 20) Confirm Column: G17444.D (Analysis Time: 05/19/10 09:25:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	04
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0004	Sample Matrix:	Soils
Lab File ID:	D15679.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 11:36:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.01 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	4	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.7		U
58-89-9	gamma-BHC	1.7		U
319-85-7	beta-BHC	1.7		U
319-86-8	delta-BHC	1.7		U
76-44-8	Heptachlor	1.7		U
309-00-2	Aldrin	1.7		U
465-73-6	Isodrin	1.7		U
1024-57-3	Heptachlor Epoxide	1.7		U
5103-74-2	gamma-Chlordane	1.7	3.7	
5103-71-9	alpha-Chlordane	1.7	5.2	P
72-55-9	4,4'-DDE	1.7		U
959-98-8	Endosulfan I	1.7		U
60-57-1	Dieldrin	1.7	19	
72-20-8	Endrin	1.7		U
72-54-8	4,4'-DDD	1.7	5.8	B
33213-65-9	Endosulfan II	1.7		U
50-29-3	4,4'-DDT	35		UD1
7421-36-3	Endrin Aldehyde	1.7		U
72-43-5	Methoxychlor	35		UD1
2385-85-5	Mirex	1.7		U
1031-07-8	Endosulfan Sulfate	1.7		U
53494-70-5	Endrin Ketone	1.7		U
8001-35-2	Toxaphene	17		U
57-74-9	Chlordane (n.o.s.)	17		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#: 04	
Lab Name: EMSL Analytical	Project:
EMSL Sample ID: 011002071-0004	Sample Matrix: Soils
Lab File ID: D15679.D	Sampling Date: 5/11/10
Instrument ID: D	Date Extracted: 5/18/10
Analyst: TL	Analysis Date: 5/19/10 11:36:00 PM
GC Column: CLPest I (0.32 mm)	Sample wt/vol: 30.01 G
GC Column 2: CLPest II (0.32 mm)	Dilution Factor: 1
% Moisture: 4	Concentrated Extract Vol: 10 (mL)
PH: 1	Injection Volume: 1 (ul)
GPC Cleanup(Y/N): N	Sulfur Cleanup: N
Extraction Type: 3550B	
Method: SW846 8081/8082	

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: D15670.D (Analysis Time: 05/19/10 20:37:00 , Dil. Factor= 5) Confirm Column: D15670.D (Analysis Time: 05/19/10 20:37:00 D2= Primary Column: G17445.D (Analysis Time: 05/19/10 09:45:00 , Dil. Factor= 20) Confirm Column: G17445.D (Analysis Time: 05/19/10 09:45:00				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	05
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0005	Sample Matrix:	Soils
Lab File ID:	D15680.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/19/10 11:56:00 PM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.12 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	4	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.7		U
58-89-9	gamma-BHC	1.7		U
319-85-7	beta-BHC	1.7		U
319-86-8	delta-BHC	1.7		U
76-44-8	Heptachlor	1.7		U
309-00-2	Aldrin	1.7		U
465-73-6	Isodrin	1.7		U
1024-57-3	Heptachlor Epoxide	1.7		U
5103-74-2	gamma-Chlordane	1.7	15	
5103-71-9	alpha-Chlordane	1.7	17	P
72-55-9	4,4'-DDE	1.7	1.8	P
959-98-8	Endosulfan I	1.7		U
60-57-1	Dieldrin	1.7	58	
72-20-8	Endrin	1.7		U
72-54-8	4,4'-DDD	1.7	16	B
33213-65-9	Endosulfan II	1.7		U
50-29-3	4,4'-DDT	35		UD1
7421-36-3	Endrin Aldehyde	1.7		U
72-43-5	Methoxychlor	35		UD1
2385-85-5	Mirex	1.7		U
1031-07-8	Endosulfan Sulfate	1.7	7.8	
53494-70-5	Endrin Ketone	1.7		U
8001-35-2	Toxaphene	17		U
57-74-9	Chlordane (n.o.s.)	17		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#: 05	
Lab Name: EMSL Analytical	Project:
EMSL Sample ID: 011002071-0005	Sample Matrix: Soils
Lab File ID: D15680.D	Sampling Date: 5/11/10
Instrument ID: D	Date Extracted: 5/18/10
Analyst: TL	Analysis Date: 5/19/10 11:56:00 PM
GC Column: CLPest I (0.32 mm)	Sample wt/vol: 30.12 G
GC Column 2: CLPest II (0.32 mm)	Dilution Factor: 1
% Moisture: 4	Concentrated Extract Vol: 10 (mL)
PH: 1	Injection Volume: 1 (ul)
GPC Cleanup(Y/N): N	Sulfur Cleanup: N
Extraction Type: 3550B	
Method: SW846 8081/8082	

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: D15671.D (Analysis Time: 05/19/10 20:58:00 , Dil. Factor= 5) Confirm Column: D15671.D (Analysis Time: 05/19/10 20:58:00) D2= Primary Column: G17446.D (Analysis Time: 05/19/10 10:04:00 , Dil. Factor= 20) Confirm Column: G17446.D (Analysis Time: 05/19/10 10:04:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	06
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0006	Sample Matrix:	Soils
Lab File ID:	D15681.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/20/10 12:16:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.12 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	9	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8		U
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8		U
5103-74-2	gamma-Chlordane	1.8		U
5103-71-9	alpha-Chlordane	1.8		U
72-55-9	4,4'-DDE	1.8		U
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8		U
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	1.8		U
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	36		UD1
7421-36-3	Endrin Aldehyde	1.8		U
72-43-5	Methoxychlor	36		UD1
2385-85-5	Mirex	1.8		U
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	18		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#: 06	
Lab Name: EMSL Analytical	
EMSL Sample ID: 011002071-0006	Project:
Lab File ID: D15681.D	Sample Matrix: Soils
Instrument ID: D	Sampling Date: 5/11/10
Analyst: TL	Date Extracted: 5/18/10
GC Column: CLPest I (0.32 mm)	Analysis Date: 5/20/10 12:16:00 AM
GC Column 2: CLPest II (0.32 mm)	Sample wt/vol: 30.12 G
% Moisture: 9	Dilution Factor: 1
PH: 1	Concentrated Extract Vol: 10 (mL)
GPC Cleanup(Y/N): N	Injection Volume: 1 (ul)
Extraction Type: 3550B	Sulfur Cleanup: N
Method: SW846 8081/8082	

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17447.D (Analysis Time: 05/19/10 10:23:00 , Dil. Factor= 20) Confirm Column: G17447.D (Analysis Time: 05/19/10 10:23:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	07
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0007	Sample Matrix:	Soils
Lab File ID:	D15682.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/20/10 12:35:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.04 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	10	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8		U
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8		U
5103-74-2	gamma-Chlordane	1.8	2.1	
5103-71-9	alpha-Chlordane	1.8	2.3	P
72-55-9	4,4'-DDE	1.8	14	
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8	6.3	
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	1.8		U
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	37		UD1
7421-36-3	Endrin Aldehyde	1.8		U
72-43-5	Methoxychlor	37		UD1
2385-85-5	Mirex	1.8	2.0	P
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	18		U

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	07
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0007	Sample Matrix:	Soils
Lab File ID:	D15682.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/20/10 12:35:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.04 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	10	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17448.D (Analysis Time: 05/19/10 10:42:00 , Dil. Factor= 20) Confirm Column: G17448.D (Analysis Time: 05/19/10 10:42:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	08
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0008	Sample Matrix:	Soils
Lab File ID:	D15683.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/20/10 12:55:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.06 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	8	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8	20	
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8	22	P
5103-74-2	gamma-Chlordane	36	440	D2
5103-71-9	alpha-Chlordane	36	430	D2
72-55-9	4,4'-DDE	1.8	26	P
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8	9.8	P
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	36	170	D2
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	36		UD1
7421-36-3	Endrin Aldehyde	1.8		U
72-43-5	Methoxychlor	36		UD1
2385-85-5	Mirex	1.8		U
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	360	3100	D2

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#: 08	
Lab Name: EMSL Analytical	Project:
EMSL Sample ID: 011002071-0008	Sample Matrix: Soils
Lab File ID: D15683.D	Sampling Date: 5/11/10
Instrument ID: D	Date Extracted: 5/18/10
Analyst: TL	Analysis Date: 5/20/10 12:55:00 AM
GC Column: CLPest I (0.32 mm)	Sample wt/vol: 30.06 G
GC Column 2: CLPest II (0.32 mm)	Dilution Factor: 1
% Moisture: 8	Concentrated Extract Vol: 10 (mL)
PH: 1	Injection Volume: 1 (ul)
GPC Cleanup(Y/N): N	Sulfur Cleanup: N
Extraction Type: 3550B	
Method: SW846 8081/8082	

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: G17449.D (Analysis Time: 05/19/10 11:01:00 , Dil. Factor= 20) Confirm Column: G17449.D (Analysis Time: 05/19/10 11:01:00) D2= Primary Column: D15672.D (Analysis Time: 05/19/10 21:18:00 , Dil. Factor= 20) Confirm Column: D15672.D (Analysis Time: 05/19/10 21:18:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	09
Lab Name:	EMSL Analytical		
EMSL Sample ID:	011002071-0009	Project:	
Lab File ID:	D15684.D	Sample Matrix:	Soils
Instrument ID:	D	Sampling Date:	5/11/10
Analyst:	TL	Date Extracted:	5/18/10
GC Column:	CLPest I (0.32 mm)	Analysis Date:	5/20/10 01:15:00 AM
GC Column 2:	CLPest II (0.32 mm)	Sample wt/vol:	30.08 G
% Moisture:	8	Dilution Factor:	1
PH:	1	Concentrated Extract Vol:	10 (mL)
GPC Cleanup(Y/N):	N	Injection Volume:	1 (ul)
Extraction Type:	3550B	Sulfur Cleanup:	N
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8	1.9	
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8	6.7	
5103-74-2	gamma-Chlordane	1.8	63	
5103-71-9	alpha-Chlordane	1.8	72	P
72-55-9	4,4'-DDE	1.8	4.0	P
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8	2.2	
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	1.8	20	B
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	36		UD1
7421-36-3	Endrin Aldehyde	1.8	2.9	
72-43-5	Methoxychlor	36		UD1
2385-85-5	Mirex	1.8		U
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	18	520	

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#: 09	
Lab Name: EMSL Analytical	Project:
EMSL Sample ID: 011002071-0009	Sample Matrix: Soils
Lab File ID: D15684.D	Sampling Date: 5/11/10
Instrument ID: D	Date Extracted: 5/18/10
Analyst: TL	Analysis Date: 5/20/10 01:15:00 AM
GC Column: CLPest I (0.32 mm)	Sample wt/vol: 30.08 G
GC Column 2: CLPest II (0.32 mm)	Dilution Factor: 1
% Moisture: 8	Concentrated Extract Vol: 10 (mL)
PH: 1	Injection Volume: 1 (ul)
GPC Cleanup(Y/N): N	Sulfur Cleanup: N
Extraction Type: 3550B	
Method: SW846 8081/8082	

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: D15673.D (Analysis Time: 05/19/10 21:38:00 , Dil. Factor= 10) Confirm Column: D15673.D (Analysis Time: 05/19/10 21:38:00) D2= Primary Column: G17450.D (Analysis Time: 05/19/10 11:20:00 , Dil. Factor= 20) Confirm Column: G17450.D (Analysis Time: 05/19/10 11:20:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#:		10	
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0010	Sample Matrix:	Soils
Lab File ID:	D15685.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date:	5/20/10 01:35:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.13 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	9	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8		U
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8		U
5103-74-2	gamma-Chlordane	18	120	D1
5103-71-9	alpha-Chlordane	18	200	D1
72-55-9	4,4'-DDE	1.8	39	
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8	7.7	
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	18	190	D1
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	1.8	31	PB
7421-36-3	Endrin Aldehyde	1.8	3.5	P
72-43-5	Methoxychlor	1.8		U
2385-85-5	Mirex	1.8	3.0	P
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	180	2000	D1

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Customer Sample#:		10		
Lab Name:	EMSL Analytical	Project:		
EMSL Sample ID:	011002071-0010	Sample Matrix:	Soils	
Lab File ID:	D15685.D	Sampling Date:	5/11/10	
Instrument ID:	D	Date Extracted:	5/18/10	
Analyst:	TL	Analysis Date:	5/20/10 01:35:00 AM	
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.13 G	
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1	
% Moisture:	9	Concentrated Extract Vol:	10 (mL)	
PH:	1	Injection Volume:	1 (ul)	
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N	
Extraction Type:	3550B			
Method:	SW846 8081/8082			
CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: D15674.D (Analysis Time: 05/19/10 21:58:00 , Dil. Factor= 10) Confirm Column: D15674.D (Analysis Time: 05/19/10 21:58:00)				

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

		Customer Sample#:	11
Lab Name:	EMSL Analytical	Project:	
EMSL Sample ID:	011002071-0011	Sample Matrix:	Soils
Lab File ID:	D15686.D	Sampling Date:	5/11/10
Instrument ID:	D	Date Extracted:	5/18/10
Analyst:	TL	Analysis Date	5/20/10 01:54:00 AM
GC Column:	CLPest I (0.32 mm)	Sample wt/vol:	30.09 G
GC Column 2:	CLPest II (0.32 mm)	Dilution Factor:	1
% Moisture:	9	Concentrated Extract Vol:	10 (mL)
PH:	1	Injection Volume:	1 (ul)
GPC Cleanup(Y/N):	N	Sulfur Cleanup:	N
Extraction Type:	3550B		
Method:	SW846 8081/8082		

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
319-84-6	alpha-BHC	1.8		U
58-89-9	gamma-BHC	1.8		U
319-85-7	beta-BHC	1.8		U
319-86-8	delta-BHC	1.8		U
76-44-8	Heptachlor	1.8		U
309-00-2	Aldrin	1.8		U
465-73-6	Isodrin	1.8		U
1024-57-3	Heptachlor Epoxide	1.8		U
5103-74-2	gamma-Chlordane	1.8	55	
5103-71-9	alpha-Chlordane	9.1	86	D1
72-55-9	4,4'-DDE	1.8	8.2	
959-98-8	Endosulfan I	1.8		U
60-57-1	Dieldrin	1.8	3.5	
72-20-8	Endrin	1.8		U
72-54-8	4,4'-DDD	9.1	87	D1
33213-65-9	Endosulfan II	1.8		U
50-29-3	4,4'-DDT	1.8	5.9	PB
7421-36-3	Endrin Aldehyde	1.8	4.7	P
72-43-5	Methoxychlor	1.8		U
2385-85-5	Mirex	1.8	3.4	
1031-07-8	Endosulfan Sulfate	1.8		U
53494-70-5	Endrin Ketone	1.8		U
8001-35-2	Toxaphene	18		U
57-74-9	Chlordane (n.o.s.)	91	930	D1

SECTION 13000

EMSL Analytical Inc.

PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

Lab Name: EMSL Analytical		Customer Sample#: 11		
EMSL Sample ID: 011002071-0011	Project:			
Lab File ID: D15686.D	Sample Matrix: Soils			
Instrument ID: D	Sampling Date: 5/11/10			
Analyst: TL	Date Extracted: 5/18/10			
GC Column: CLPest I (0.32 mm)	Analysis Date: 5/20/10 01:54:00 AM			
GC Column 2: CLPest II (0.32 mm)	Sample wt/vol: 30.09 G			
% Moisture: 9	Dilution Factor: 1			
PH: 1	Concentrated Extract Vol: 10 (mL)			
GPC Cleanup(Y/N): N	Injection Volume: 1 (ul)			
Extraction Type: 3550B	Sulfur Cleanup: N			
Method: SW846 8081/8082				

CAS NO	COMPOUND	Report Limit (µg/Kg)	CONC. (µg/Kg)	Q
Qualifier Definitions U = Undetected B = Compound detected in method blank E = Estimated value D = Dilution P = Results between the two columns differ >40% D1= Primary Column: D15675.D (Analysis Time: 05/19/10 22:17:00 , Dil. Factor= 5) Confirm Column: D15675.D (Analysis Time: 05/19/10 22:17:00)				

Required Asbestos Abatement and Management Procedures

These steps are in accordance with Air Force Instruction, EPA, ADEM and Safe State. OSHA governs all worker safety and must be complied with by contractors and subcontractors. These requirements are summarized in the Maxwell Air Force Base Asbestos Management and Operations Plan. Please reference Plan.

These steps are required by **all personnel or contractors** doing work on Maxwell Air Force Base.

A. If the personnel or contractor encounters what they think may be asbestos, they are required to **stop** and call the MAFB Asbestos Point of Contact which is the Maxwell Environmental Section. The section can be reached at 334-953-5260 during duty hours and 334-953-3333 during off hours.

Mr. Trent Hill is the Asbestos POC for the base and can be reached at 953-3954.

B. Once it is determined by the Asbestos POC that asbestos is present, the following actions are required (Only the APOC and Bioenvironmental are certified to make that determination).

NO ABATEMENT WORK IS TO BEGIN WITHOUT APPROVAL FROM THE APOC.

An Alabama Safe State certified asbestos abatement contractor must be used to conduct the abatement. Please note that non-friable asbestos can easily be made friable and become regulated.

The following documents must be submitted to the Asbestos POC and approved in writing before abatement can begin:

1. 10 Working Day ADEM notification for Regulated Asbestos Materials
2. Courtesy ADEM Notification for Non-Regulated Abatement Activities.
3. Asbestos Work Plan (scope of work, removal procedures, worker protection, air monitoring, disposal location, containment procedures)
4. ADEM Asbestos Abatement Certification for the Company
5. Supervisors qualifications and safe state Certification
6. CURRENT Safe State Certifications (applications will not be accepted) for all individuals working on site
7. Certificates of Worker Release for all individuals
8. Physicals for all individuals

42CES/CEV reserves the right to require an Asbestos Hazard Abatement Plan be submitted (as part of the contract documents) by the contractor that has been certified by a Certified Industrial Hygienist (CIH), for some proposed asbestos abatement projects.

Once the submittals are approved, the following actions are required.

Section 13279

1. The contractor is required to set up their containment areas, negative air machine, and critical barriers and obtain approval from our Asbestos POC to begin work.
2. The Asbestos POC routinely checks the abatement work to ensure that the containment area and critical barriers are secure, that the workers are wearing the appropriate personal protective equipment, that the asbestos containing material is being bagged appropriately, and that air monitoring is being conducted on the workers and outside the abatement area. This also includes reviewing the daily log maintained on site to assure that no uncertified individuals are performing abatement work.
3. Upon completion of the abatement work, the contractor contacts the Asbestos POC and Bioenvironmental (when required) to conduct a walk through of the area and approve that all abatement has been completed and that the area has been cleaned of asbestos materials as per the contract scope of work. This will require at least a 24-hour period. Please reference cleaning procedures in the Asbestos Management and Operations Plan.
4. Air sampling results are required to be taken and submitted for approval by APOC and Bioenvironmental before the containment area, negative air machine, and critical barriers can be removed.
5. All asbestos waste must be handled and disposed of in accordance with State law. The APOC must review the waste prior to leaving the base.

After the abatement has been complete, and approved by the APOC, the contractor shall submit the following items in a post-job submittal to be maintained in the Asbestos Abatement Files.

- a. Air sampling results
- b. Daily report logs
- c. Daily worker sign in/out sheets
- d. Waste manifest

The APOC and Environmental Section are available at any time to provide asbestos awareness training and consultation to project managers, contractors and subcontractors **prior** to beginning the project.

42 CES/CEV
Maxwell Environmental Division
953-5260

Updated 05 Nov. 09 – T Hill

Required Asbestos Abatement and Management Procedures

These steps are in accordance with Air Force Instruction, EPA, ADEM and Safe State. OSHA governs all worker safety and must be complied with by contractors and subcontractors. These requirements are summarized in the Maxwell Air Force Base Asbestos Management and Operations Plan. Please reference Plan.

These steps are required by **all personnel or contractors** doing work on Maxwell Air Force Base.

A. If the personnel or contractor encounters what they think may be asbestos, they are required to **stop** and call the MAFB Asbestos Point of Contact which is the Maxwell Environmental Section. The section can be reached at 334-953-5260 during duty hours and 334-953-3333 during off hours.

Mr. Trent Hill is the Asbestos POC for the base and can be reached at 953-3954.

B. Once it is determined by the Asbestos POC that asbestos is present, the following actions are required (Only the APOC and Bioenvironmental are certified to make that determination).

NO ABATEMENT WORK IS TO BEGIN WITHOUT APPROVAL FROM THE APOC.

An Alabama Safe State certified asbestos abatement contractor must be used to conduct the abatement. Please note that non-friable asbestos can easily be made friable and become regulated.

The following documents must be submitted to the Asbestos POC and approved in writing before abatement can begin:

1. 10 Working Day ADEM notification for Regulated Asbestos Materials
2. Courtesy ADEM Notification for Non-Regulated Abatement Activities.
3. Asbestos Work Plan (scope of work, removal procedures, worker protection, air monitoring, disposal location, containment procedures)
4. ADEM Asbestos Abatement Certification for the Company
5. Supervisors qualifications and safe state Certification
6. CURRENT Safe State Certifications (applications will not be accepted) for all individuals working on site
7. Certificates of Worker Release for all individuals
8. Physicals for all individuals

42CES/CEV reserves the right to require an Asbestos Hazard Abatement Plan be submitted (as part of the contract documents) by the contractor that has been certified by a Certified Industrial Hygienist (CIH), for some proposed asbestos abatement projects. This will be discussed prior to start of any project if warranted.

Once the submittals are approved, the following actions are required.

1. The contractor is required to set up their containment areas, negative air machine, and critical barriers and obtain approval from our Asbestos POC to begin work.
2. The Asbestos POC routinely checks the abatement work to ensure that the containment area and critical barriers are secure, that the workers are wearing the appropriate personal protective equipment, that the asbestos containing material is being bagged appropriately, and that air monitoring is being conducted on the workers and outside the abatement area. This also includes reviewing the daily log maintained on site to assure that no uncertified individuals are performing abatement work.
3. Upon completion of the abatement work, the contractor contacts the Asbestos POC and Bioenvironmental (when required) to conduct a walk through of the area and approve that all abatement has been completed and that the area has been cleaned of asbestos materials as per the contract scope of work. This will require at least a 24-hour period. Please reference cleaning procedures in the Asbestos Management and Operations Plan.
4. Air sampling results are required to be taken and submitted for approval by APOC and Bioenvironmental before the containment area, negative air machine, and critical barriers can be removed.
5. All asbestos waste must be handled and disposed of in accordance with State law. The APOC must review the waste prior to leaving the base.

After the abatement has been complete, and approved by the APOC, the contractor shall submit the following items in a post-job submittal to be maintained in the Asbestos Abatement Files.

- a. Air sampling results
- b. Daily report logs
- c. Daily worker sign in/out sheets
- d. Waste manifest

The APOC and Environmental Section are available at any time to provide asbestos awareness training and consultation to project managers, contractors and subcontractors **prior** to beginning the project.

42 CES/CEV
Maxwell Environmental Division
953-5260

Updated 05 Nov. 09 – T Hill

SECTION 13280
ASBESTOS ABATEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	(1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z87.1	(1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection
ANSI Z88.2	(1992) Respiratory Protection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 732	(1995) Aging Effects of Artificial Weathering on Latex Sealants
ASTM D 522	(1993a) Mandrel Bend Test of Attached Organic Coatings
ASTM D 1331	(1989; R 1995) Surface and Interfacial Tension of Solutions of Surface-Active Agents
ASTM D 2794	(1993; R 1999e1) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 4397	(1996) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
ASTM E 84	(2000a) Surface Burning Characteristics of Building Materials
ASTM E 96	(2000) Water Vapor Transmission of Materials
ASTM E 119	(2000) Fire Tests of Building Construction and Materials
ASTM E 736	(1992) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
ASTM E 1368	(2000) Visual Inspection of Asbestos Abatement Projects

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emissions Standards for Hazardous Air Pollutants
40 CFR 763	Asbestos
42 CFR 84	Approval of Respiratory Protective Devices
49 CFR 107	Hazardous Materials Program Procedures
49 CFR 171	General Information, Regulations and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packagings

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7	(1990) Compressed Air for Human Respiration
CGA G-7.1	(1997) Commodity Specification for Air

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
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ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90-018	(1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance
EPA 340/1-90-019	(1990) Asbestos/NESHAP Adequately Wet Guidance
EPA 560/5-85-024	(1985) Guidance for Controlling Asbestos-Containing Materials in Buildings

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(1999) Methods of Fire Tests for Flame-Resistant Textiles and Films
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NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100	(1984; Supple 1985, 1987, 1988 & 1990) NIOSH Manual of Analytical Methods
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UNDERWRITERS LABORATORIES (UL)

UL 586	(1996; Rev thru Aug 1999) High-Efficiency, Particulate, Air Filter Units
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1.2 DEFINITIONS

- a. Adequately Wet: A term defined in 40 CFR 61, Subpart M, and EPA 340/1-90-019 meaning to sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
- b. Aggressive Method: Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact asbestos-containing material (ACM).
- c. Amended Water: Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.
- d. Asbestos: Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
- e. Asbestos-Containing Material (ACM): Any materials containing more than one percent asbestos.
- f. Asbestos Fiber: A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.
- g. Authorized Person: Any person authorized by the Contractor and required by work duties to be present in the regulated areas.
- h. Building Inspector: Individual who inspects buildings for asbestos and has EPA Model Accreditation Plan (MAP) "Building Inspector" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- i. Certified Industrial Hygienist (CIH): An Industrial Hygienist certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.
- j. Class I Asbestos Work: Activities defined by OSHA involving the removal of thermal system insulation (TSI) and surfacing ACM.
- k. Class II Asbestos Work: Activities defined by OSHA involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos - containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Certain "incidental" roofing materials such as mastic, flashing and cements when they are still intact are excluded from Class II asbestos work. Removal of small amounts of these materials which would fit into a glovebag may be classified as a Class III job.
- l. Class III Asbestos Work: Activities defined by OSHA that involve repair and maintenance operations, where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.
- m. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean-up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.

- n. Clean room: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- o. Competent Person: In addition to the definition in 29 CFR 1926, Section .32(f), a person who is capable of identifying existing asbestos hazards as defined in 29 CFR 1926, Section .1101, selecting the appropriate control strategy, has the authority to take prompt corrective measures to eliminate them and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- p. Contractor/Supervisor: Individual who supervises asbestos abatement work and has EPA Model Accreditation Plan "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- q. Critical Barrier: One or more layers of plastic sealed over all openings into a regulated area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a regulated area from migrating to an adjacent area.
- r. Decontamination Area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- s. Demolition: The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
- t. Disposal Bag: A 6 mil thick, leak-tight plastic bag, pre-labeled in accordance with 29 CFR 1926, Section .1101, used for transporting asbestos waste from containment to disposal site.
- u. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in 1 standard sized glovebag or waste bag, not larger than 60 inches in length and width in order to access a building component.
- v. Equipment Room or Area: An area adjacent to the regulated area used for the decontamination of employees and their equipment.
- w. Employee Exposure: That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- x. Fiber: A fibrous particulate, 5 micrometers or longer, with a length to width ratio of at least 3 to 1.
- y. Friable ACM: A term defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 meaning any material which contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent, as determined by a method other than point counting by PLM, the asbestos content is verified by point counting using PLM.
- z. Glovebag: Not more than a 60 by 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

- aa. High-Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
- bb. Homogeneous Area: An area of surfacing material or thermal system insulation that is uniform in color and texture.
- cc. Industrial Hygienist: A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
- dd. Intact: ACM which has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Removal of "intact" asphaltic, resinous, cementitious products does not render the ACM non-intact simply by being separated into smaller pieces.
- ee. Model Accreditation Plan (MAP): USEPA training accreditation requirements for persons who work with asbestos as specified in 40 CFR 763, Subpart E, Appendix C.
- ff. Modification: A changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system.
- gg. Negative Exposure Assessment: A demonstration by the Contractor to show that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limits (PELs).
- hh. NESHAP: National Emission Standards for Hazardous Air Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61, Subpart M.
- ii. Nonfriable ACM: A NESHAP term defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 meaning any material containing more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
- jj. Nonfriable ACM (Category I): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90-018 meaning asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.
- kk. Nonfriable ACM (Category II): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90-018 meaning any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos, as determined using the methods specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- ll. Permissible Exposure Limits (PELs):
- (1) PEL-Time weighted average(TWA): Concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8 hour time weighted average (TWA), as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH Pub No. 84-100 analytical method 7400.
 - (2) PEL-Excursion Limit: An airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH Pub No. 84-100 analytical method 7400.

mm. Regulated Area: An OSHA term defined in 29 CFR 1926, Section .1101 meaning an area established by the Contractor to demarcate areas where Class I, II, and III asbestos work is conducted; also any adjoining area where debris and waste from such asbestos work accumulate; and an area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.

nn. Removal: All operations where ACM is taken out or stripped from structures or substrates, and includes demolition operations.

oo. Repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM attached to structures or substrates. If the amount of asbestos so "disturbed" cannot be contained in 1 standard glovebag or waste bag, Class I precautions are required.

pp. Spills/Emergency Cleanups: Cleanup of sizable amounts of asbestos waste and debris which has occurred, for example, when water damage occurs in a building, and sizable amounts of ACM are dislodged. A Competent Person evaluates the site and ACM to be handled, and based on the type, condition and extent of the dislodged material, classifies the cleanup as Class I, II, or III. Only if the material was intact and the cleanup involves mere contact of ACM, rather than disturbance, could there be a Class IV classification.

qq. Surfacing ACM: Asbestos-containing material which contains more than 1% asbestos and is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

rr. Thermal system insulation (TSI) ACM: ACM which contains more than 1% asbestos and is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.

ss. Transit: A generic name for asbestos cement wallboard and pipe.

tt. Worker: Individual (not designated as the Competent Person or a supervisor) who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926, Section .1101, to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation required by 40 CFR 763, Subpart E, Appendix C, if required by the OSHA Class of work to be performed or by the state where the work is to be performed.

1.3 DESCRIPTION OF WORK

The work covered by this section includes the removal of asbestos-containing materials (ACM) which are encountered during demolition and renovation activities associated with this project and describes procedures and equipment required to protect workers and occupants of the regulated area from contact with airborne asbestos fibers and ACM dust and debris. Activities include OSHA Class III work operations involving ACM. The work also includes containment, storage, transportation and disposal of the generated ACM wastes. More specific operational procedures shall be detailed in the required Accident Prevention Plan and its subcomponents, the Asbestos Hazard Abatement Plan and Activity Hazard Analyses required in paragraph SAFETY AND HEALTH PROGRAM AND PLANS.

1.3.1 Abatement Work Tasks

The specific ACM to be abated is identified on the drawings or in the SOW.

1.3.2 Unexpected Discovery of Asbestos

For any previously untested building components suspected to contain asbestos and located in areas impacted by the work, the Contractor shall notify the Contracting Officer (CO) who will have the option of ordering up to three (3) bulk samples to be obtained at the Contractor's expense and delivered to a laboratory accredited under the National Institute of Standards and Technology (NIST) "National Voluntary Laboratory Accreditation Program (NVLAP)" and analyzed by PLM at no additional cost to the Government. Any additional components identified as ACM that have been approved by the Contracting Officer for removal shall be removed by the Contractor and will be paid for by an equitable adjustment to the contract price under the CONTRACT CLAUSE titled "changes". Sampling activities undertaken to determine the presence of additional ACM shall be conducted by personnel who have successfully completed the EPA Model Accreditation Plan (MAP) "Building Inspector" training course required by 40 CFR 763, Subpart E, Appendix C.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Respiratory Protection Program ; G.

Records of the respirator program.

Cleanup and Disposal ; G.

Waste shipment records. Weigh bills and delivery tickets shall be furnished for information only.

Detailed Drawings ; G.

Descriptions, detail project drawings, and site layout to include worksite containment area techniques, local exhaust ventilation system locations, decontamination units and load-out units, other temporary waste storage facility, access tunnels, location of temporary utilities (electrical, water, sewer) and boundaries of each regulated area.

Materials and Equipment ; G.

Material Safety Data Sheets for all chemicals to be used onsite in the same format as implemented in the Contractor's HAZARD COMMUNICATION PROGRAM.

Qualifications ; G.

A written report providing evidence of qualifications for personnel, facilities and equipment assigned to the work.

Training Program ; G.

A copy of the written project site-specific training material as indicated in 29 CFR 1926, Section .1101 that will be used to train onsite employees. The training document shall be signed by the Contractor's Designated IH and Competent Person.

Medical Requirements ; G.

Physician's written opinion.

Encapsulants ; G.

Certificates stating that encapsulants meet the applicable specified performance requirements.

SD-06 Test Reports

Exposure Assessment and Air Monitoring ; G.

Initial exposure assessments, negative exposure assessments, air-monitoring results and documentation.

Local Exhaust Ventilation ; G.

Pressure differential recordings.

Licenses, Permits and Notifications ; G.

Licenses, permits, and notifications.

SD-07 Certificates

Vacuum, Filtration and Ventilation Equipment ; G.

Manufacturer's certifications showing compliance with ANSI Z9.2 for:

- a. Vacuums.
- b. Water filtration equipment.
- c. Ventilation equipment.
- d. Other equipment required to contain airborne asbestos fibers.

1.5 QUALIFICATIONS

1.5.1 Written Qualifications and Organization Report

The Contractor shall furnish a written qualifications and organization report providing evidence of qualifications of the Contractor, Contractor's Project Supervisor, Designated Competent Person, supervisors and workers; Designated IH (person assigned to project and firm name); independent testing laboratory (including name of firm, principal, and analysts who will perform analyses); all subcontractors to be used including disposal transportation and disposal facility firms, subcontractor supervisors, subcontractor workers; and any others assigned to perform asbestos abatement and support activities. The report shall include an organization chart showing the Contractor's staff organization for this project by name and title, chain of command and reporting relationship with all subcontractors. The report shall be signed by the Contractor, the Contractor's onsite project manager, Designated Competent Person, Designated IH, designated testing laboratory and the principals of all subcontractors to be used. The Contractor shall include the following statement in the report: "By signing this report I certify that the personnel I am responsible for during the course of this project fully understand the contents of 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and the federal, state and local requirements specified in paragraph SAFETY AND HEALTH PROGRAM AND PLANS for those asbestos abatement activities that they will be involved in."

1.5.2 Specific Requirements

The Contractor shall designate in writing, personnel meeting the following qualifications:

a. Designated Competent Person: The name, address, telephone number, and resume of the Contractor's Designated Competent Person shall be provided. Evidence that the full-time Designated Competent Person is qualified in accordance with 29 CFR 1926, Sections .32 and .1101, has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and is experienced in the administration and supervision of asbestos abatement projects, including exposure assessment and monitoring, work practices, abatement methods, protective measures for personnel, setting up and inspecting asbestos abatement work areas, evaluating the integrity of containment barriers, placement and operation of local exhaust systems, ACM generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, site safety and health requirements, notification of other employees onsite, etc. The duties of the Competent Person shall include the following: controlling entry to and exit from the regulated area; supervising any employee exposure monitoring required by 29 CFR 1926, Section .1101; ensuring that all employees working within a regulated area wear the appropriate personal protective equipment (PPE), are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating conditions and are functioning properly. The Designated Competent Person shall be responsible for compliance with applicable federal, state and local requirements, the Contractor's Accident Prevention Plan and Asbestos Hazard Abatement Plan. The Designated Competent Person shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that this person has a minimum of 2 years of on-the-job asbestos abatement experience relevant to OSHA competent person requirements. The Designated Competent Person shall be onsite at all times during the conduct of this project.

b. Project and Other Supervisors: The Contractor shall provide the name, address, telephone number, and resume of the Project Supervisor and other supervisors who have responsibility to implement the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses, the authority to direct work performed under this contract and verify compliance, and have EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C. The Project Supervisor and other supervisors shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that the Project Supervisor has a minimum of 2 years of on-the-job asbestos abatement experience relevant to project supervisor responsibilities and the other supervisors have a minimum of 1 year on-the-job asbestos abatement experience commensurate with the responsibilities they will have on this project.

c. Designated Industrial Hygienist: The Contractor shall provide the name, address, telephone number, resume and other information specified below for the Industrial Hygienist (IH) selected to prepare the Contractor's Asbestos Hazard Abatement Plan, prepare and perform training, direct air monitoring and assist the Contractor's Competent Person in implementing and ensuring that safety and health requirements are complied with during the performance of all required work. The Designated IH shall be a person who is board certified in the practice of industrial hygiene as determined and documented by the American Board of Industrial Hygiene (ABIH), has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and has a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities. The Designated IH shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course

completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Designated IH shall be completely independent from the Contractor according to federal, state, or local regulations; that is, shall not be a Contractor's employee or be an employee or principal of a firm in a business relationship with the Contractor negating such independent status. A copy of the Designated IH's current valid ABIH certification shall be included. The Designated IH shall visit the site at least once per week for the duration of asbestos activities and shall be available for emergencies. In addition, the Designated IH shall prepare, and the Contractor shall submit, the name, address, telephone numbers and resumes of additional IH's and industrial hygiene technicians (IHT) who will be assisting the Designated IH in performing onsite tasks. IHs and IHTs supporting the Designated IH shall have a minimum of 2 years of practical onsite asbestos abatement experience. The formal reporting relationship between the Designated IH and the support IHs and IHTs, the Designated Competent Person, and the Contractor shall be indicated.

d. Asbestos Abatement Workers: Asbestos abatement workers shall meet the requirements contained in 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and other applicable federal, state and local requirements. Worker training documentation shall be provided as required on the "Certificate of Workers Acknowledgment" in this paragraph.

e. Worker Training and Certification of Worker Acknowledgment: Training documentation will be required for each employee who will perform OSHA Class I, Class II, Class III, or Class IV asbestos abatement operations. Such documentation shall be submitted on a Contractor generated form titled "Certificate of Workers Acknowledgment", to be completed for each employee in the same format and containing the same information as the example certificate at the end of this section. Training course completion certificates (initial and most recent update refresher) required by the information checked on the form shall be attached.

f. Physician: The Contractor shall provide the name, medical qualifications, address, telephone number and resume of the physician who will or has performed the medical examinations and evaluations of the persons who will conduct the asbestos abatement work tasks. The physician shall be currently licensed by the state where the workers will be or have been examined, have expertise in pneumoconiosis and shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1926, Section .1101 and paragraph MEDICAL REQUIREMENTS. The physician shall be familiar with the site's hazards and the scope of this project.

g. First Aid and CPR Trained Persons: The names of at least 2 persons who are currently trained in first aid and CPR by the American Red Cross or other approved agency shall be designated and shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030 and shall be included in the Contractor's Bloodborne Pathogen Program. These persons may perform other duties but shall be immediately available to render first aid when needed. A copy of each designated person's current valid First Aid and CPR certificate shall be provided.

h. Independent Testing Laboratory: The Contractor shall provide the name, address and telephone number of the independent testing laboratory selected to perform the sample analyses and report the results. The testing laboratory shall be completely independent from the Contractor as recognized by federal, state or local regulations. Written verification of the following criteria, signed by the testing laboratory principal and the Contractor, shall be submitted:

(1) Phase contrast microscopy (PCM): The laboratory is fully equipped and proficient in conducting PCM of airborne samples using the methods specified by

29 CFR 1926, Section .1101, OSHA method ID-160, the most current version of NIOSH Pub No. 84-100 Method 7400, and NIOSH Pub No. 84-100 Method 7402, transmission electron microscopy (TEM); the laboratory is currently judged proficient (classified as acceptable) in counting airborne asbestos samples by PCM by successful participation in each of the last 4 rounds in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program; the names of the selected microscopists who will analyze airborne samples by PCM with verified documentation of their proficiency to conduct PCM analyses by being judged proficient in counting samples as current participating analysts in the AIHA PAT Program, and having successfully completed the Asbestos Sampling and Analysis course (NIOSH 582 or equivalent) with a copy of course completion certificate provided; when the PCM analysis is to be conducted onsite, documentation shall be provided certifying that the onsite analyst meets the same requirements.

(2) Polarized light microscopy (PLM): The laboratory is fully equipped and proficient in conducting PLM analyses of suspect ACM bulk samples in accordance with 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for bulk asbestos analysis and will use analysts (names shall be provided) with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content.

(3) Transmission electron microscopy (TEM): The laboratory is fully equipped and proficient in conducting TEM analysis of airborne samples using the mandatory method specified by 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for airborne sample analysis of asbestos by TEM; the laboratory will use analysts (names shall be provided) that are currently evaluated as competent with demonstrated proficiency under the NIST NVLAP for airborne sample analysis of asbestos by TEM.

(4) PCM/TEM: The laboratory is fully equipped and each analyst (name shall be provided) possesses demonstrated proficiency in conducting PCM and TEM analysis of airborne samples using NIOSH Pub No. 84-100 Method 7400 PCM and NIOSH Pub No. 84-100 Method 7402 (TEM confirmation of asbestos content of PCM results) from the same filter.

i. Disposal Facility, Transporter: The Contractor shall provide written evidence that the landfill to be used is approved for asbestos disposal by the state regulatory agencies. Copies of signed agreements between the Contractor (including subcontractors and transporters) and the asbestos waste disposal facility to accept and dispose of all asbestos containing waste generated during the performance of this contract shall be provided. Qualifications shall be provided for each subcontractor or transporter to be used, indicating previous experience in transport and disposal of asbestos waste to include all required state and local waste hauler requirements for asbestos. The Contractor and transporters shall meet the DOT requirements of 49 CFR 171, 49 CFR 172, and 49 CFR 173 as well as registration requirements of 49 CFR 107 and other applicable state or local requirements. The disposal facility shall meet the requirements of 40 CFR 61, Sections .154 or .155, as required in 40 CFR 61, Section .150(b), and other applicable state or local requirements.

1.5.3 Federal, State or Local Citations on Previous Projects

The Contractor and all subcontractors shall submit a statement, signed by an officer of the company, containing a record of any citations issued by Federal, State or local regulatory agencies relating to asbestos activities (including projects, dates, and resolutions); a list of penalties incurred through non-compliance with asbestos project specifications, including liquidated damages, overruns in scheduled time limitations and resolutions; and situations in which an asbestos-related contract has been terminated (including projects, dates, and

reasons for terminations). If there are none, a negative declaration signed by an officer of the company shall be provided.

1.6 REGULATORY REQUIREMENTS

In addition to detailed requirements of this specification, work performed under this contract shall comply with EM 385-1-1, applicable federal, state, and local laws, ordinances, criteria, rules and regulations regarding handling, storing, transporting, and disposing of asbestos waste materials. This includes, but is not limited to, OSHA standards, 29 CFR 1926, especially Section .1101, 40 CFR 61, Subpart M and 40 CFR 763. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply. The applicable state and local laws, rules and regulations regarding demolition, removal, encapsulation, construction alteration, repair, maintenance, renovation, spill/emergency cleanup, housekeeping, handling, storing, transporting and disposing of asbestos material shall apply.

1.7 SAFETY AND HEALTH PROGRAM AND PLANS

The Contractor shall develop and submit a written comprehensive site-specific Accident Prevention Plan at least 30 days prior to the preconstruction conference. The Accident Prevention Plan shall address requirements of EM 385-1-1, Appendix A, covering onsite work to be performed by the Contractor and subcontractors. The Accident Prevention Plan shall incorporate an Asbestos Hazard Abatement Plan, and Activity Hazard Analyses as separate appendices into 1 site specific Accident Prevention Plan document. Any portions of the Contractor's overall Safety and Health Program that are referenced in the Accident Prevention Plan, e.g., respirator program, hazard communication program, confined space entry program, etc., shall be included as appendices to the Accident Prevention Plan. The plan shall take into consideration all the individual asbestos abatement work tasks identified in Table 1. The plan shall be prepared, signed (and sealed, including certification number if required), and dated by the Contractor's Designated IH, Competent Person, and Project Supervisor.

1.7.1 Asbestos Hazard Abatement Plan Appendix

The Asbestos Hazard Abatement Plan appendix to the Accident Prevention Plan shall include, but not be limited to, the following:

- a. The personal protective equipment to be used;
- b. The location and description of regulated areas including clean and dirty areas, access tunnels, and decontamination unit (clean room, shower room, equipment room, storage areas such as load-out unit);
- c. Initial exposure assessment in accordance with 29 CFR 1926, Section .1101;
- d. Level of supervision;
- e. Method of notification of other employers at the worksite;
- f. Abatement method to include containment and control procedures;
- g. Interface of trades involved in the construction;
- h. Sequencing of asbestos related work;
- i. Storage and disposal procedures and plan;
- j. Type of wetting agent and asbestos encapsulant to be used;
- k. Location of local exhaust equipment;

- l. Air monitoring methods (personal, environmental and clearance);
- m. Bulk sampling and analytical methods (if required);
- n. A detailed description of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations;
- o. Fire and medical emergency response procedures;
- p. The security procedures to be used for all regulated areas.

1.7.2 Activity Hazard Analyses Appendix

Activity Hazard Analyses, for each major phase of work, shall be submitted and updated during the project. The Activity Hazard Analyses format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analyses has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The Activity Hazard Analyses shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

1.8 PRECONSTRUCTION CONFERENCE AND ONSITE SAFETY

The Contractor and the Contractor's Designated Competent Person, Project Supervisor, and Designated IH shall meet with the Contracting Officer prior to beginning work at a safety preconstruction conference to discuss the details of the Contractor's submitted Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses appendices. Deficiencies in the Accident Prevention Plan will be discussed and the Accident Prevention Plan shall be revised to correct the deficiencies and resubmitted for acceptance. Any changes required in the specifications as a result of the Accident Prevention Plan shall be identified specifically in the plan to allow for free discussion and acceptance by the Contracting Officer prior to the start of work. Onsite work shall not begin until the Accident Prevention Plan has been accepted. A copy of the written Accident Prevention Plan shall be maintained onsite. Changes and modifications to the accepted Accident Prevention Plan shall be made with the knowledge and concurrence of the Designated IH, the Project Supervisor, Designated Competent Person, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Designated IH shall bring such hazard to the attention of the Project Supervisor, Designated Competent Person, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Once accepted by the Contracting Officer, the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses will be enforced as if an addition to the contract. Disregarding the provisions of this contract or the accepted Accident Prevention Plan will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

1.9 SECURITY

Color coded warning tape and plastic sheeting shall be provided for each regulated area. A log book shall be kept documenting entry into and out of the regulated area. Entry into regulated areas shall only be by personnel authorized by the Contractor and the Contracting Officer. Personnel authorized to enter regulated areas shall be trained, be medically evaluated, and wear the required personal protective equipment for the specific regulated area to be entered.

1.10 MEDICAL REQUIREMENTS

Medical requirements shall conform to 29 CFR 1926, Section .1101.

1.10.1 Medical Examinations

Before being exposed to airborne asbestos fibers, workers shall be provided with a medical examination as required by 29 CFR 1926, Section .1101 and other pertinent state or local requirements. This requirement shall have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. X-ray films of asbestos workers shall be identified to the consulting radiologist and medical record jackets shall be marked with the word "asbestos."

1.10.1.1 Information Provided to the Physician

The Contractor shall provide the following information in writing to the examining physician:

- a. A copy of 29 CFR 1926, Section .1101 and Appendices D, E, G, and I;
- b. A description of the affected employee's duties as they relate to the employee's exposure;
- c. The employee's representative exposure level or anticipated exposure level;
- d. A description of any personal protective and respiratory equipment used or to be used;
- e. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

1.10.1.2 Written Medical Opinion

For each worker, a written medical opinion prepared and signed by a licensed physician indicating the following:

- a. Summary of the results of the examination.
- b. The potential for an existing physiological condition that would place the employee at an increased risk of health impairment from exposure to asbestos.
- c. The ability of the individual to wear personal protective equipment, including respirators, while performing strenuous work tasks under cold and/or heat stress conditions.
- d. A statement that the employee has been informed of the results of the examination, provided with a copy of the results, informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure, and informed of any medical condition that may result from asbestos exposure.

1.10.2 Medical and Exposure Records

Complete and accurate records shall be maintained of each employee's medical examinations, medical records, and exposure data, as required by 29 CFR 1910, Section .1910.20 and 29 CFR 1926, Section .1101 for a period of 50 years after termination of employment. Records of the required medical examinations and exposure data shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health (OSHA) or authorized representatives of the employee and an employee's physician upon request of the employee or former employee. A copy of the required medical certification for each employee shall be maintained on file at the worksite for review, as requested by the Contracting Officer or the representatives.

1.11 TRAINING PROGRAM

1.11.1 General Training Requirements

The Contractor shall establish a training program as specified by EPA Model Accreditation Plan (MAP), training requirements at 40 CFR 763, Subpart E, Appendix C, OSHA requirements at 29 CFR 1926, Section .1101(k)(9), and this specification. Contractor employees shall complete the required training for the type of work they are to perform and such training shall be documented and provided to the Contracting Officer as specified in paragraph QUALIFICATIONS.

1.11.2 Project Specific Training

Prior to commencement of work, each worker shall be instructed by the Contractor's Designated IH and Competent Person in the following project specific training:

- a. The hazards and health effects of the specific types of ACM to be abated;
- b. The content and requirements of the Contractor's Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses and site-specific safety and health precautions;
- c. Hazard Communication Program;
- d. Hands-on training for each asbestos abatement technique to be employed;
- e. Heat and/or cold stress monitoring specific to this project;
- f. Air monitoring program and procedures;
- g. Medical surveillance to include medical and exposure record-keeping procedures;
- h. The association of cigarette smoke and asbestos-related disease;
- i. Security procedures;
- j. Specific work practice controls and engineering controls required for each Class of work in accordance with 29 CFR 1926, Section .1101.

1.12 RESPIRATORY PROTECTION PROGRAM

The Contractor's Designated IH shall establish in writing, and implement a respiratory protection program in accordance with 29 CFR 1926, Section .1101, 29 CFR 1910, Section .134, ANSI Z88.2, CGA G-7, and CGA G-7.1. The Contractor's Designated IH shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

- a. The company policy, used for the assignment of individual responsibility, accountability, and implementation of the respiratory protection program.
- b. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.
- c. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.
- d. Training in the proper use and limitations of respirators.
- e. Respirator fit-testing, i.e., quantitative, qualitative and individual functional fit checks.

- f. Regular cleaning and disinfection of respirators.
- g. Routine inspection of respirators during cleaning and after each use when designated for emergency use.
- h. Storage of respirators in convenient, clean, and sanitary locations.
- i. Surveillance of regulated area conditions and degree of employee exposure (e.g., through air monitoring).
- j. Regular evaluation of the continued effectiveness of the respiratory protection program.
- k. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eye wear usage; contact lenses usage; etc.).
- l. Proper training in putting on and removing respirators.

1.12.1 Respiratory Fit Testing

A qualitative or quantitative fit test conforming to 29 CFR 1926, Section 1101, Appendix C shall be conducted by the Contractor's Designated IH for each Contractor worker required to wear a respirator, and for the Contracting Officer and authorized visitors who enter a regulated area where respirators are required to be worn. A respirator fit test shall be performed for each worker wearing a negative-pressure respirator prior to initially wearing a respirator on this project and every 6 months thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. If physical changes develop that will affect the fit, a new fit test for the worker shall be performed. Functional fit checks shall be performed by employees each time a respirator is put on and in accordance with the manufacturer's recommendation.

1.12.2 Respirator Selection and Use Requirements

The Contractor shall provide respirators, and ensure that they are used as required by 29 CFR 1926, Section .1101 and in accordance with the manufacturer's recommendations. Respirators shall be jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (MSHA/NIOSH), or by NIOSH, under the provisions of 42 CFR 84, for use in environments containing airborne asbestos fibers. Personnel who handle ACM, enter regulated areas that require the wearing of a respirator, or who are otherwise carrying out abatement activities that require the wearing of a respirator, shall be provided with approved respirators that are fully protective of the worker at the measured or anticipated airborne asbestos concentration level to be encountered. For air-purifying respirators, the particulate filter portion of the cartridges or canister approved for use in airborne asbestos environments shall be high-efficiency particulate air (HEPA). The initial respirator selection and the decisions regarding the upgrading or downgrading of respirator type shall be made by the Contractor's Designated IH based on the measured or anticipated airborne asbestos fiber concentrations to be encountered. Recommendations made by the Contractor's Designated IH to downgrade respirator type shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade respiratory type when there is an immediate danger to the health and safety of the wearer. Respirators shall be used in the following circumstances:

- a. During all Class I asbestos jobs.
- b. During all Class II work where the ACM is not removed in a substantially intact state.

- c. During all Class II and III work which is not performed using wet methods. Respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and ACM is removed in an intact state.
- d. During all Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment.
- e. During all Class III jobs where TSI or surfacing ACM is being disturbed.
- f. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
- g. During all work where employees are exposed above the PEL-TWA or PEL-Excursion Limit.
- h. In emergencies

1.12.3 Class I Work

The Contractor shall provide: (1) a tight-fitting, powered air purifying respirator equipped with high efficiency filters, or (2) a full-facepiece supplied air respirator operated in the pressure demand mode, equipped with HEPA egress cartridges, or (3) an auxiliary positive pressure self-contained breathing apparatus, for all employees within the regulated area where Class I work is being performed; provided that a negative exposure assessment has not been produced, and that the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full-facepiece supplied air respirator, operated in the pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

1.12.4 Sanitation

Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

1.13 HAZARD COMMUNICATION PROGRAM

A hazard communication program shall be established and implemented in accordance with 29 CFR 1926, Section .59. Material safety data sheets (MSDSs) shall be provided for all hazardous materials brought onto the worksite. One copy shall be provided to the Contracting Officer and 1 copy shall be included in the Contractor's Hazard Communication Program.

1.14 LICENSES, PERMITS AND NOTIFICATIONS

1.14.1 General Legal Requirements

Necessary licenses, permits and notifications shall be obtained in conjunction with the project's asbestos abatement, transportation and disposal actions and timely notification furnished of such actions as required by federal, state, regional, and local authorities. The Contractor shall notify the state's environmental protection agency responsible for asbestos air emissions and the Contracting Officer in writing, at least 10 days prior to the commencement of work, in accordance with 40 CFR 61, Subpart M, and state and local requirements to include the mandatory "Notification of Demolition and Renovation Record" form and other required notification documents. Notification shall be by Certified Mail, Return Receipt Requested. The Contractor shall furnish copies of the receipts to the Contracting Officer, in writing, prior to the commencement of work. A copy of the rental company's written acknowledgment and agreement shall be provided as required by paragraph RENTAL EQUIPMENT. For licenses, permits, and notifications that the

Contractor is responsible for obtaining, the Contractor shall pay any associated fees or other costs incurred.

1.14.2 Litigation and Notification

The Contractor shall notify the Contracting Officer if any of the following occur:

- a. The Contractor or any of the subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this contract;
- b. Proceedings are commenced which could lead to revocation of related permits or licenses; permits, licenses or other Government authorizations relating to this contract are revoked;
- c. Litigation is commenced which would affect this contract;
- d. The Contractor or any of the subcontractors become aware that their equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

1.15 PERSONAL PROTECTIVE EQUIPMENT

Three complete sets of personal protective equipment shall be made available to the Contracting Officer and authorized visitors for entry to the regulated area. Contracting Officer and authorized visitors shall be provided with training equivalent to that provided to Contractor employees in the selection, fitting, and use of the required personal protective equipment and the site safety and health requirements. Contractor workers shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Designated IH and Designated Competent Person shall select and approve all the required personal protective clothing and equipment to be used.

1.15.1 Respirators

Respirators shall be in accordance with paragraph RESPIRATORY PROTECTION PROGRAM.

1.15.2 Whole Body Protection

Personnel exposed to airborne concentrations of asbestos that exceed the PELs, or for all OSHA Classes of work for which a required negative exposure assessment is not produced, shall be provided with whole body protection and such protection shall be worn properly. The Contractor's Designated IH and Competent Person shall select and approve the whole body protection to be used. The Competent Person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the regulated area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the regulated area or be properly laundered in accordance with 29 CFR 1926, Section .1101. Whole body protection used for asbestos abatement shall not be removed from the worksite by a worker to be cleaned. Recommendations made by the Contractor's Designated IH to downgrade whole body protection shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person, in consultation with the Designated IH, has the authority to take immediate action to upgrade or downgrade whole body protection when there is an immediate danger to the health and safety of the wearer.

1.15.2.1 Coveralls

Disposable-impermeable coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles.

1.15.2.2 Underwear

Disposable underwear shall be provided. If reusable underwear are used, they shall be disposed of as asbestos contaminated waste or laundered in accordance with 29 CFR 1926, Section .1101. Asbestos abatement workers shall not remove contaminated reusable underwear worn during abatement of ACM from the site to be laundered.

1.15.2.3 Work Clothing

An additional coverall shall be provided when the abatement and control method employed does not provide for the exit from the regulated area directly into an attached decontamination unit. Cloth work clothes for wear under the protective coverall, and foot coverings, shall be provided when work is being conducted in low temperature conditions. Cloth work clothes shall be either disposed of as asbestos contaminated waste or properly laundered in accordance with 29 CFR 1926, Section .1101.

1.15.2.4 Gloves

Gloves shall be provided to protect the hands. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) a suitable glove shall be provided and used.

1.15.2.5 Foot Coverings

Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Rubber boots shall be used in moist or wet areas. Reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as ACM waste. Disposable protective foot covering shall be disposed of as ACM waste. If rubber boots are not used, disposable foot covering shall be provided.

1.15.2.6 Head Covering

Hood type disposable head covering shall be provided. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

1.15.2.7 Protective Eye Wear

Eye protection provided shall be in accordance with ANSI Z87.1.

1.16 HYGIENE FACILITIES AND PRACTICES

The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

1.16.1 Shower Facilities

Shower facilities, when provided, shall comply with 29 CFR 1910, Section .141(d)(3).

1.16.2 Three-Stage Decontamination Area

A temporary negative pressure decontamination unit that is adjacent and attached in a leak-tight manner to the regulated area shall be provided. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The decontamination unit shall have an equipment room and a clean room separated by a shower that complies with 29 CFR 1910,

Section .141 (unless the Contractor can demonstrate that such facilities are not feasible). Equipment and surfaces of containers filled with ACM shall be cleaned prior to removing them from the equipment room or area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste. Two separate lockers shall be provided for each asbestos worker, one in the equipment room and one in the clean room. Hot water service may be secured from the building hot water system provided backflow protection is installed by the Contractor at the point of connection. The Contractor shall provide a minimum of 1 shower at each unit. Instantaneous type in-line water heater may be incorporated at each shower head in lieu of hot water heater, upon approval by the Contracting Officer. Flow and temperature controls shall be located within the shower and shall be adjustable by the user. The wastewater pump shall be sized for 1.25 times the showerhead flow-rate at a pressure head sufficient to satisfy the filter head loss and discharge line losses. The pump shall supply a minimum 25 gpm flow with 35 ft. of pressure head. Used shower water shall be collected and filtered to remove asbestos contamination. Filters and residue shall be disposed of as asbestos contaminated material. Filtered water shall be discharged to the sanitary system. Wastewater filters shall be installed in series with the first stage pore size of 20 microns and the second stage pore size of 5 microns. The floor of the decontamination unit's clean room shall be kept dry and clean at all times. Water from the shower shall not be allowed to wet the floor in the clean room. Surfaces of the clean room and shower shall be wet-wiped 2 times after each shift change with a disinfectant solution. Proper housekeeping and hygiene requirements shall be maintained. Soap and towels shall be provided for showering, washing and drying. Any cloth towels provided shall be disposed of as ACM waste or shall be laundered in accordance with 29 CFR 1926, Section .1101.

1.16.3 Load-Out Unit

A temporary load-out unit that is adjacent and connected to the regulated area and access tunnel shall be provided. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The load-out unit shall be attached in a leak-tight manner to each regulated area. Surfaces of the load-out unit and access tunnel shall be adequately wet-wiped 2 times after each shift change. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.4 Single Stage Decontamination Area

A decontamination area (equipment room/area) shall be provided for Class I work involving less than 25 feet or 10 square feet of TSI or surfacing ACM, and for Class II and Class III asbestos work operations where exposures exceed the PELs or where there is no negative exposure assessment produced before the operation. The equipment room or area shall be adjacent to the regulated area for the decontamination of employees, material, and their equipment which is contaminated with asbestos. The equipment room or area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface. The area must be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.5 Decontamination Area Entry Procedures

The Contractor shall ensure that employees entering the decontamination area through the clean room or clean area:

- a. Remove street clothing in the clean room or clean area and deposit it in lockers.
- b. Put on protective clothing and respiratory protection before leaving the clean room or clean area.
- c. Pass through the equipment room to enter the regulated area.

1.16.6 Decontamination Area Exit Procedures

The Contractor shall ensure that the following procedures are followed:

- a. Before leaving the regulated area, respirators shall be worn while employees remove all gross contamination and debris from their work clothing using a HEPA vacuum.
- b. Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers for disposal and/or laundering.
- c. Employees shall not remove their respirators in the equipment room.
- d. Employees shall shower prior to entering the clean room. If a shower has not been located between the equipment room and the clean room or the work is performed outdoors, the Contractor shall ensure that employees engaged in Class I asbestos jobs:
 - a) Remove asbestos contamination from their work suits in the equipment room or decontamination area using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or
 - b) Remove their contaminated work suits in the equipment room, without cleaning worksuits, and proceed to a shower that is not adjacent to the work area.
- e. After showering, employees shall enter the clean room before changing into street clothes.

1.16.7 Lunch Areas

The Contractor shall provide lunch areas in which the airborne concentrations of asbestos are below 0.01 f/cc.

1.16.8 Smoking

Smoking, if allowed by the Contractor, shall only be permitted in designated areas approved by the Contracting Officer.

1.17 REGULATED AREAS

All Class I, II, and III asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they shall demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

1.18 WARNING SIGNS AND TAPE

Warning signs and tape printed in English and in pictographs and graphics shall be provided at the regulated boundaries and entrances to regulated areas. The Contractor shall ensure that all personnel working in areas contiguous to regulated areas comprehend the warning signs. Signs shall be located to allow personnel to read the signs and take the necessary protective steps required before entering the area. Warning signs shall be in vertical format conforming to 29 CFR 1910 and 29 CFR 1926, Section .1101, a minimum of 20 by 14 inches, and displaying the following legend in the lower panel:

DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape and decontamination unit signage shall be provided.

1.19 WARNING LABELS

Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements are acceptable. Warning labels shall conform to 29 CFR 1926, Section .1101 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

1.20 LOCAL EXHAUST VENTILATION

Local exhaust ventilation units shall conform to ANSI Z9.2 and 29 CFR 1926, Section .1101. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

1.21 TOOLS

Vacuums shall be leak proof to the filter, equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system, or has otherwise been approved for use by the Contracting Officer. Residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

1.22 RENTAL EQUIPMENT

If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

1.23 AIR MONITORING EQUIPMENT

The Contractor's Designated IH shall approve air monitoring equipment to be used to collect samples. The equipment shall include, but shall not be limited to:

- a. High-volume sampling pumps that can be calibrated and operated at a constant airflow up to 16 liters per minute when equipped with a sampling train of tubing and filter cassette.
- b. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit which shall maintain a constant flow, even as filter resistance increases due to accumulation of fiber and debris on the filter surface.
- c. Single use standard 25 mm diameter cassette, open face, 0.8 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive extension cowl, and shrink bands, to be used with low flow pumps in accordance with 29 CFR 1926, Section .1101 for personal air sampling.

- d. Single use standard 25 mm diameter cassette, open face, 0.45 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive cowl, and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH Pub No. 84-100 Methods 7400 and 7402, (and the transmission electric microscopy method specified at 40 CFR 763 if required).
- e. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette.
- f. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 to plus 140 degrees F and traceable to a NIST primary standard.

1.24 EXPENDABLE SUPPLIES

1.24.1 Glovebag

Glovebags shall be provided as described in 29 CFR 1926, Section .1101. The glovebag assembly shall be 6 mil thick plastic, prefabricated and seamless at the bottom with preprinted OSHA warning label.

1.24.2 Duct Tape

Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container shall be provided.

1.24.3 Disposal Containers

Leak-tight (defined as solids, liquids, or dust that cannot escape or spill out) disposal containers shall be provided for ACM wastes as required by 29 CFR 1926 Section .1101.

1.24.4 Disposal Bags

Leak-tight bags, 6 mil thick, shall be provided for placement of asbestos generated waste.

1.24.5 Sheet Plastic

Sheet plastic shall be polyethylene of 6 mil minimum thickness and shall be provided in the largest sheet size necessary to minimize seams ,as indicated on the project drawings. Film shall be clear or frosted and conform to ASTM D 4397, except as specified below:

1.24.5.1 Reinforced

Reinforced sheets shall be provided where high skin strength is required, such as where it constitutes the only barrier between the regulated area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between 2 layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

1.24.6 Amended Water

Amended water shall meet the requirements of ASTM D 1331.

1.24.7 Mastic Removing Solvent

Mastic removing solvent shall be nonflammable and shall not contain methylene chloride, glycol ether, or halogenated hydrocarbons. Solvents used onsite shall have a flash point greater than 140 degrees F.

1.24.8 Leak-tight Wrapping

Two layers of 6 mil minimum thick polyethylene sheet stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

1.24.9 Wetting Agents

Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM greater than or equal to that provided by amended water. Performance requirements for penetrating encapsulants are specified in paragraph ENCAPSULANTS.

1.24.10 Strippable Coating

Strippable coating in aerosol cans shall be used to adhere to surfaces and to be removed cleanly by stripping, at the completion of work. This work shall only be done in well ventilated areas.

1.25 MISCELLANEOUS ITEMS

A sufficient quantity of other items, such as, but not limited to: scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of containments, UL approved temporary electrical equipment, material and cords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc., shall be provided.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent and shall meet the following requirements:

ALL ENCAPSULANTS

<u>Requirement</u>	<u>Test Standard</u>
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	Univ. of Pittsburgh Protocol
Life Expectancy, 20 yrs Accelerated Aging Test	ASTM C 732
Permeability, Minimum 0.4 perms	ASTM E 96

Additional Requirements for Bridging Encapsulant

<u>Requirement</u>	<u>Test Standard</u>
Cohesion/Adhesion Test, 50 pounds of force/foot	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over	ASTM E 119

fibrous and cementitious sprayed fireproofing)	
Impact Resistance, Minimum 43 in-lb (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Penetrating Encapsulant

<u>Requirement</u>	<u>Test Standard</u>
Cohesion/Adhesion Test, 50 pounds of force/foot	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Minimum 43 in-lb (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Lockdown Encapsulant

<u>Requirement</u>	<u>Test Standard</u>
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Tested with fireproofing over encapsulant applied directly to steel member)	ASTM E 119
Bond Strength, 100 pounds of force/foot (Tests compatibility with cementitious and fibrous fireproofing)	ASTM E 736

2.2 RECYCLABLE MATERIALS

Recyclable materials shall conform to EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Asbestos abatement work tasks shall be performed as shown on the detailed plans and drawings, as summarized in paragraph DESCRIPTION OF WORK and including Table 1 and the Contractor's Accident Prevention Plan, Asbestos Hazard Abatement Plan, and the Activity Hazard Analyses. The Contractor shall use the engineering controls and work practices required in 29 CFR 1926, Section .1101(g) in all operations regardless of the levels of exposure. Personnel shall wear and utilize protective clothing and equipment as specified. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area. All hot work (burning, cutting, welding, etc.) shall be conducted under controlled conditions in conformance with 29 CFR 1926, Section .352, Fire Prevention. Personnel of other trades, not engaged in asbestos abatement activities, shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions of the Contractor's Accident Prevention Plan are complied with. Power to the regulated area shall be locked-out and tagged in accordance with 29 CFR 1910, and temporary electrical service with ground fault circuit interrupters shall be provided as needed. Temporary electrical service shall be disconnected when necessary for wet removal. The Contractor shall stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc, or the pre-abatement concentration, whichever is greater, outside the regulated area; or (2) equals or exceeds 1.0 f/cc inside the regulated area. The Contractor shall correct the condition to the satisfaction

of the Contracting Officer, including visual inspection and air sampling. Work shall resume only upon notification by the Contracting Officer. Corrective actions shall be documented.

3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

Asbestos abatement shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government, as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all effected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and air sampling analysis results are obtained and have been evaluated by the Contractor's Designated IH and the Contracting Officer, work shall proceed.

3.3 OBJECTS

3.3.1 Stationary Objects

Stationary objects and equipment to remain in place shall be covered with two layers of polyethylene and edges sealed with duct tape.

3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

Building ventilating systems supplying air into or returning air out of a regulated area shall be shut down and isolated by lockable switch or other positive means in accordance with 29 CFR 1910, Section .147. Air-tight critical barriers shall be installed on building ventilating openings located inside the regulated area that supply or return air from the building ventilation system or serve to exhaust air from the building. The critical barriers shall consist of 2 layers of polyethylene. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape.

3.5 PRECLEANING

Surfaces shall be cleaned by HEPA vacuum and adequately wet wiped prior to establishment of containment.

3.6 METHODS OF COMPLIANCE

3.6.1 Mandated Practices

The Contractor shall employ proper handling procedures in accordance with 29 CFR 1926 and 40 CFR 61, Subpart M, and the specified requirements. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including, but not limited to, details of construction materials, equipment, and handling procedures. The Contractor shall use the following engineering controls and work practices in all operations, regardless of the levels of exposure:

- a. Vacuum cleaners equipped with HEPA filters to collect debris and dust containing ACM.
- b. Wet methods or wetting agents to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup; except where it can be demonstrated that the use of wet methods is unfeasible due to, for example, the creation of electrical hazards, equipment malfunction, and in roofing.
- c. Prompt clean-up and disposal in leak-tight containers of wastes and debris contaminated with asbestos.
- d. Inspection and repair of polyethylene in work and high traffic areas.

- e. Cleaning of equipment and surfaces of containers filled with ACM prior to removing them from the equipment room or area.

3.6.2 Control Methods

The Contractor shall use the following control methods to comply with the PELs:

- a. Local exhaust ventilation equipped with HEPA filter dust collection systems;
- b. Enclosure or isolation of processes producing asbestos dust;
- c. Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;
- d. Use of other work practices and engineering controls;
- e. Where the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

3.6.3 Unacceptable Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

- a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- b. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- c. Dry sweeping, shoveling, or other dry clean-up of dust and debris containing ACM.
- d. Employee rotation as a means of reducing employee exposure to asbestos.

3.6.4 Class I Work Procedures

In addition to requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the installation and operation of the control system.
- b. For jobs involving the removal of more than 25 feet or 10 square feet of TSI or surfacing material, the Contractor shall place critical barriers over all openings to the regulated area.
- c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of plastic or air-tight rigid covers.
- d. Impermeable dropcloths (6 mil or greater thickness) shall be placed on surfaces beneath all removal activity.
- e. Objects within the regulated area shall be handled as specified in paragraph OBJECTS.

f. Where a negative exposure assessment has not been provided or where exposure monitoring shows the PEL was exceeded, the regulated area shall be ventilated to move contaminated air away from the employee's breathing zone toward a HEPA unit or collection device.

3.6.5 Specific Control Methods for Class I Work

In addition to requirements of paragraph Class I Work Procedures, Class I asbestos work shall be performed using the control methods identified in the subparagraphs below.

3.6.5.1 Negative Pressure Enclosure (NPE) System

The NPE system shall provide at least 4 air changes per hour inside the containment. The local exhaust unit equipment shall be operated 24 hours per day until the containment is removed, and shall be leak-proof to the filter and equipped with HEPA filters. Air movement shall be directed away from the employees and toward a HEPA filtration device. The NPE shall be smoke tested for leaks at the beginning of each shift. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Pressure differential shall be monitored continuously, 24 hours per day, with an automatic manometric recording instrument. Pressure differential recordings shall be provided daily on the same day collected. Readings shall be reviewed by the Contractor's Designated Competent Person and IH prior to submittal. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. The building ventilation system shall not be used as the local exhaust system for the regulated area. The local exhaust system shall terminate outdoors unless an alternate arrangement is allowed by the Contract Officer. All filters used shall be new at the beginning of the project and shall be periodically changed as necessary and disposed of as ACM waste.

3.6.5.2 Glovebag Systems

Glovebag systems shall be used to remove ACM from straight runs of piping and elbows and other connections. Glovebags shall be used without modification and shall be smoke-tested for leaks and any leaks sealed prior to use. Glovebags shall be installed to completely cover the circumference of pipe or other structures where the work is to be done. Glovebags shall be used only once and shall not be moved. Glovebags shall not be used on surfaces that have temperatures exceeding 150 degrees F. Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in 2 layers of plastic or otherwise rendered intact. At least 2 persons shall perform Class I glovebag removal. Asbestos regulated work areas shall be established as specified and shown on detailed drawings and plans for glovebag abatement. Designated boundary limits for the asbestos work shall be established with rope or other continuous barriers and all other requirements for asbestos control areas shall be maintained, including area signage and boundary warning tape.

- a. In addition to requirements for negative pressure glovebag systems above, the Contractor shall attach HEPA vacuum systems or other devices to the bag to prevent collapse during removal of ACM from straight runs of piping and elbows and other connections.
- b. The negative pressure glove boxes used to remove ACM from pipe runs shall be fitted with gloved apertures and a bagging outlet and constructed with rigid sides from metal or other material which can withstand the weight of the ACM and water used during removal. A negative pressure shall be created in the system using a HEPA filtration system. The box shall be smoke tested for leaks prior to each use.

3.6.5.3 Mini-Enclosures

Single bulkhead containment, double bulkhead containment or mini-containment (small walk-in enclosure) to accommodate no more than 2 persons, may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices. The mini-enclosure shall be inspected for leaks and smoke tested before each use. Air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

3.6.5.4 Wrap and Cut Operation

Prior to cutting pipe, the asbestos-containing insulation shall be wrapped with polyethylene and securely sealed with duct tape to prevent asbestos becoming airborne as a result of the cutting process. The following steps shall be taken: install glovebag, strip back sections to be cut 6 inches from point of cut, and cut pipe into manageable sections.

3.6.6 Cleaning After Asbestos Removal

After completion of all asbestos removal work, surfaces from which ACM has been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. Run-off water shall be collected and filtered through a dual filtration system. A first filter shall be provided to remove fibers 20 micrometers and larger, and a final filter provided that removes fibers 5 micrometers and larger. After the gross amounts of asbestos have been removed from every surface, remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the regulated area. When TSI and surfacing material has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Surfaces or locations which could harbor accumulations or residual asbestos dust shall be checked after vacuuming to verify that no asbestos-containing material remains; and shall be re-vacuumed as necessary to remove the ACM.

3.6.7 Sealing Contaminated Items Designated for Disposal

Contaminated architectural, mechanical, and electrical appurtenances such as Venetian blinds, full height partitions, carpeting, duct work, pipes and fittings, radiators, light fixtures, conduit panels, and other contaminated items designated for removal shall be coated with an asbestos lockdown encapsulant at the demolition site before being removed from the asbestos control area. These items shall be vacuumed prior to application of the lockdown encapsulant. The asbestos lockdown encapsulant shall be tinted a contrasting color and shall be spray applied by airless method. Thoroughness of sealing operation shall be visually gauged by the extent of colored coating on exposed surfaces.

3.7 FINAL CLEANING AND VISUAL INSPECTION

Upon completion of abatement, the regulated area shall be cleaned by collecting, packing, and storing all gross contamination. A final cleaning shall be performed using HEPA vacuum and wet cleaning of all exposed surfaces and objects in the regulated area. Upon completion of the cleaning, the Contractor shall conduct a visual pre-inspection of the cleaned area in preparation for a final inspection before final air clearance monitoring and recleaning, as necessary. Upon completion of the final cleaning, the Contractor and the Contracting Officer shall conduct a final visual inspection of the cleaned regulated area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection. If the Contracting Officer rejects the clean regulated area as not meeting final cleaning requirements, the Contractor shall reclean as necessary and have a follow-on inspection conducted with the Contracting Officer. Recleaning and follow-up reinspection shall be at the Contractor's expense.

3.8 LOCKDOWN

Prior to removal of plastic barriers and after clean-up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall be spray applied to ceiling, walls, floors, and other surfaces in the regulated area.

3.9 EXPOSURE ASSESSMENT AND AIR MONITORING

3.9.1 General Requirements For Exposure

Exposure assessment, air monitoring and analysis of airborne concentration of asbestos fibers shall be performed in accordance with 29 CFR 1926, Section .1101, the Contractor's air monitoring plan, and as specified. Personal exposure air monitoring (collected at the breathing zone) that is representative of the exposure of each employee who is assigned to work within a regulated area shall be performed by the Contractor's Designated IH. Breathing zone samples shall be taken for at least 25 percent of the workers in each shift, or a minimum of 2, whichever is greater. Air monitoring results at the 95 percent confidence level shall be calculated as shown in Table 2 at the end of this section. The Contractor shall provide an onsite independent testing laboratory with qualified analysts and appropriate equipment to conduct sample analyses of air samples using the methods prescribed in 29 CFR 1926, Section .1101, to include NIOSH Pub No. 84-100 Method 7400. Preabatement and abatement environmental air monitoring shall be performed by the Contractor's Designated IH. Final clearance environmental air monitoring, shall be performed by the Contractor's Designated IH. Environmental and final clearance air monitoring shall be performed using NIOSH Pub No. 84-100 Method 7400 (PCM) with optional confirmation of results by the EPA TEM Method specified in 40 CFR 763. For environmental and final clearance, air monitoring shall be conducted at a sufficient velocity and duration to establish the limit of detection of the method used at 0.005 f/cc. Confirmation of asbestos fiber concentrations (asbestos f/cc) from environmental and final clearance samples collected and analyzed by NIOSH Pub No. 84-100 Method 7400 (total f/cc) may be conducted using TEM in accordance with NIOSH Pub No. 84-100 Method 7402. When such confirmation is conducted, it shall be from the same sample filter used for the NIOSH Pub No. 84-100 Method 7400 PCM analysis. For all Contractor required environmental or final clearance air monitoring, confirmation of asbestos fiber concentrations, using NIOSH Pub No. 84-100 Method 7402, shall be at the Contractor's expense. Monitoring may be duplicated by the Government at the discretion of the Contracting Officer. Results of breathing zone samples shall be posted at the job site and made available to the Contracting Officer. The Contractor shall maintain a fiber concentration inside a regulated area less than or equal to 0.1 f/cc expressed as an 8 hour, time-weighted average (TWA) during the conduct of the asbestos abatement. If fiber concentration rises above 0.1 f/cc, work procedures shall be investigated with the Contracting Officer to determine the cause. At the discretion of the Contracting Officer, fiber concentration may exceed 0.1 f/cc but shall not exceed 1.0 f/cc expressed as an 8-hour TWA. The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 f/cc, as averaged over a sampling period of 30 minutes. Should either an environmental concentration of 1.0 f/cc expressed as an 8-hour TWA or a personal excursion concentration of 1.0 f/cc expressed as a 30-minute sample occur inside a regulated work area, the Contractor shall stop work immediately, notify the Contracting Officer, and implement additional engineering controls and work practice controls to reduce airborne fiber levels below prescribed limits in the work area. Work shall not restart until authorized by the Contracting Officer.

3.9.2 Initial Exposure Assessment

The Contractor's Designated IH shall conduct an exposure assessment immediately before or at the initiation of an asbestos abatement operation to ascertain expected exposures during that operation. The assessment shall be completed in time to comply with the requirements which are triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure that all control systems planned are appropriate for that operation. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the

operations of the Contractor which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of PELs, or otherwise makes a negative exposure assessment, the Contractor shall presume that employees are exposed in excess of the PEL-TWA and PEL-Excursion Limit.

3.9.3 Negative Exposure Assessment

The Contractor shall provide a negative exposure assessment for the specific asbestos job which will be performed. The negative exposure assessment shall be provided within ten days of the initiation of the project and conform to the following criteria:

- a. **Objective Data:** Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the PEL-TWA and PEL-Excursion Limit under those work conditions having the greatest potential for releasing asbestos.
- b. **Prior Asbestos Jobs:** Where the Contractor has monitored prior asbestos jobs for the PEL and the PEL-Excursion Limit within 12 months of the current job, the monitoring and analysis were performed in compliance with asbestos standard in effect; the data were obtained during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations; the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job; and these data show that under the conditions prevailing and which will prevail in the current workplace, there is a high degree of certainty that the monitoring covered exposure from employee exposures will not exceed the PEL-TWA and PEL-Excursion Limit.
- c. **Initial Exposure Monitoring:** The results of initial exposure monitoring of the current job, made from breathing zone air samples that are representative of the 8-hour PEL-TWA and 30-minute short-term exposures of each employee. The monitoring covered exposure from operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

3.9.4 Independent Environmental Monitoring

The contractor will retain an independent air monitoring firm to perform pre-abatement, during abatement and final clearance air monitoring. The abatement contractor will provide the air monitoring contractor with an up-to-date copy of the accepted Asbestos Hazard Abatement Plan, Accident Prevention Plan and pertinent detailed drawings. The air monitoring contractor is required to comply with the abatement contractor's safety and health requirements. The abatement contractor will coordinate all onsite activities with the air monitoring contractor, the COR, and other affected parties as directed by the COR. The abatement contractor will provide the air monitoring contractor with an up-to-date schedule of abatement contractor work activities. The air monitoring contractor will coordinate with the abatement contractor and the COR during the performance Government required air monitoring. The abatement contractor is responsible for performing exposure assessment and personal air monitoring of abatement contractor's work. The air monitoring contractor is responsible for performing these tasks for its employee.

3.9.5 Preabatement Environmental Air Monitoring

Preabatement environmental air monitoring shall be established 1 day prior to the masking and sealing operations for each regulated area to determine background concentrations before abatement work begins. As a minimum, preabatement air samples shall be collected using NIOSH Pub No. 84-100 Method 7400, PCM at these locations: outside the building; inside the building, but outside the regulated area perimeter; and inside each regulated work area. One sample shall be collected for every 2000 square feet of floor space. At least 2

samples shall be collected outside the building: at the exhaust of the HEPA unit; and downwind from the abatement site. The PCM samples shall be analyzed within 24 hours; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH Pub No. 84-100 Method 7402 (TEM).

3.9.6 Environmental Air Monitoring During Abatement

Until an exposure assessment is provided to the Contracting Officer, environmental air monitoring shall be conducted at locations and frequencies that will accurately characterize any evolving airborne asbestos fiber concentrations. The assessment shall demonstrate that the product or material containing asbestos minerals, or the abatement involving such product or material, cannot release airborne asbestos fibers in concentrations exceeding 0.01 f/cc as a TWA under those work conditions having the greatest potential for releasing asbestos. The monitoring shall be at least once per shift at locations including, but not limited to, close to the work inside a regulated area; preabatement sampling locations; outside entrances to a regulated area; close to glovebag operations; representative locations outside of the perimeter of a regulated area; inside clean room; and at the exhaust discharge point of local exhaust system ducted to the outside of a containment (if used). If the sampling outside regulated area shows airborne fiber levels have exceeded background or 0.01 f/cc, whichever is greater, work shall be stopped immediately, and the Contracting Officer notified. The condition causing the increase shall be corrected. Work shall not restart until authorized by the Contracting Officer.

3.9.7 Final Clearance Air Monitoring

Prior to conducting final clearance air monitoring, the Contractor and the Asbestos Point of Contact (POC) shall conduct a final visual inspection of the regulated area where asbestos abatement has been completed. Final clearance air monitoring shall not begin until acceptance of the Contractor's final cleaning by the Asbestos POC.

3.9.7.1 Final Clearance Requirements

The Environmental, Asbestos POC, will determine which clearance method will be allowed for each project and will notify the contractor prior to the start of each project.

A. NIOSH PCM Method

The contractor may use Phase Contrast Microscopy (PCM), in accordance with NIOSH 7400 method for final air clearances. However, analysis of air samples must be performed by an independent laboratory. Airborne fiber concentrations must be equal to or less than 0.01 fibers per cubic centimeter (f/cc). The contractor must notify the Asbestos (POC), who will be collecting the air samples and who will be analyzing the air samples prior to the start of the project. Representative air samples must be collected as approved by the POC.

B. EPA TEM Method

TEM sampling and analysis, Method specified in 40 CFR 763, Appendix A Subpart E. Each individual air sample must be less than or equal to 70 structures per square millimeter (70 S/mm). Representative air samples must be collected as approved by the POC.

C. EPA TEM Method (Schools and Child-Care Facilities) AHERA

For EPA TEM sampling and analysis, using the EPA Method specified in 40 CFR 763, abatement inside the regulated area is considered complete when the arithmetic mean asbestos concentration of the 5 inside samples is less than or equal to 70 structures per square millimeter (70 S/mm). When the arithmetic mean is greater than 70 S/mm, the 3 blank samples shall be analyzed. If the 3 blank samples are greater than 70 S/mm, resampling shall be done. If less than 70 S/mm, the 5 outside samples shall be analyzed and a Z-test analysis performed. When the Z-test results are less than 1.65, the

decontamination shall be considered complete. If the Z-test results are more than 1.65, the abatement is incomplete and cleaning shall be repeated. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done. See Table 3.

TABLE 3. EPA AHERA METHOD (for schools and child-care facilities):
TEM AIR SAMPLING PROTOCOL

Location Sampled	Minimum No. of Samples	Filter Pore Size	Min. Vol. (Liters)	Sampling Rate (liters/min.)
Inside Abatement Area	5	0.45 microns	1200-1800	2-15
Outside Abatement Area	5	0.45 microns	1200-1800	2-15
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

3.9.7.2 Air Clearance Failure

If clearance sampling results fail to meet the final clearance requirements, the Contractor shall pay all costs associated with the required recleaning, resampling, and analysis, until final clearance requirements are met.

3.9.8 Air-Monitoring Results and Documentation

Air sample fiber counting shall be completed and results provided within 24 hours (breathing zone samples), and 24 hours (environmental/clearance monitoring) after completion of a sampling period. The Contracting Officer shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be provided within 5 working days of the date of collection. The written results shall be signed by testing laboratory analyst, testing laboratory principal and the Contractor's Designated IH. The air sampling results shall be documented on a Contractor's daily air monitoring log. The daily air monitoring log shall contain the following information for each sample:

- a. Sampling and analytical method used;
- b. Date sample collected;
- c. Sample number;
- d. Sample type: BZ = Breathing Zone (Personal), P = Preabatement, E = Environmental, C = Abatement Clearance;
- e. Location/activity/name where sample collected;
- f. Sampling pump manufacturer, model and serial number, beginning flow rate, end flow rate, average flow rate (L/min);
- g. Calibration date, time, method, location, name of calibrator, signature;
- h. Sample period (start time, stop time, elapsed time (minutes));
- i. Total air volume sampled (liters);
- j. Sample results (f/cc and S/mm square) if EPA methods are required for final clearance;
- k. Laboratory name, location, analytical method, analyst, confidence level. In addition, the printed name and a signature and date block for the Industrial Hygienist who

conducted the sampling and for the Industrial Hygienist who reviewed the daily air monitoring log verifying the accuracy of the information.

3.10 CLEARANCE CERTIFICATION

When asbestos abatement is complete, ACM waste is removed from the regulated areas, and final clean-up is completed, the Contracting Officer will certify the areas as safe before allowing the warning signs and boundary warning tape to be removed. After final clean-up and acceptable airborne concentrations are attained, but before the HEPA unit is turned off and the containment removed, the Contractor shall remove all pre-filters on the building HVAC system and provide new pre-filters. The Contractor shall dispose of such filters as asbestos contaminated materials. HVAC, mechanical, and electrical systems shall be re-established in proper working order. The Contractor and the Contracting Officer shall visually inspect all surfaces within the containment for residual material or accumulated debris. The Contractor shall reclean all areas showing dust or residual materials. The Contracting Officer will certify in writing that the area is safe before unrestricted entry is permitted. The Government will have the option to perform monitoring to certify the areas are safe before entry is permitted.

3.11 CLEANUP AND DISPOSAL

3.11.1 Title to ACM Materials

ACM material resulting from abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified and in accordance with applicable federal, state and local regulations.

3.11.2 Collection and Disposal of Asbestos

All ACM waste shall be collected and including contaminated wastewater filters, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected and placed in leak-tight containers such as double plastic bags; sealed double wrapped polyethylene sheet; sealed fiberboard boxes; or other approved containers. Waste within the containers shall be wetted in case the container is breached. Asbestos-containing waste shall be disposed of off Government property at an EPA, state and local approved asbestos landfill. For temporary storage, sealed impermeable containers shall be stored in an asbestos waste load-out unit or in a storage/transportation conveyance (i.e., dumpster, roll-off waste boxes, etc.) in a manner acceptable to and in an area assigned by the Contracting Officer. Procedure for hauling and disposal shall comply with 40 CFR 61, Subpart M, state, regional, and local standards.

3.11.3 Weigh Bill and Delivery Tickets

Copies of weigh bills and delivery tickets shall be submitted to the Contracting Officer during the progress of the work. The Contractor shall furnish the Contracting Officer scale tickets for each load of ACM weighed and certified. These tickets shall include tare weight; identification mark for each vehicle weighed; and date, time and location of loading and unloading. Tickets shall be furnished at the point and time individual trucks arrive at the worksite. A master log of all vehicle loading shall be furnished for each day of loading operations. Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified weigh bills and/or certified tickets and manifests of all ACM actually disposed by the Contractor for this contract.

3.11.4 Asbestos Waste Shipment Record

The Contractor shall complete and provide the Contracting Officer final completed copies of the Waste Shipment Record for all shipments of waste material as specified in 40 CFR 61, Subpart M and other required state waste manifest shipment records, within 3 days of

delivery to the landfill. Each Waste Shipment Record shall be signed and dated by the Contractor, the waste transporter and disposal facility operator.

TRAINING VERIFICATION FORM

PROJECT NAME _____ CONTRACT NO. _____

PROJECT ADDRESS _____

CONTRACTOR FIRM NAME _____

EMPLOYEE'S NAME _____

(Print)

(Last)

(First)

(MI)

Social Security Number: _____ -- _____ -- _____

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

Your employer's contract for the above project requires that you be provided and you complete formal asbestos training specific to the type of work you will perform and project specific training; that you be supplied with proper personal protective equipment including a respirator, that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you. The Contractor's Designated Industrial Hygienist will check the block(s) for the type of formal training you have completed. Review the checked blocks prior to signing this certification.

FORMAL TRAINING:

a. For Competent Persons and Supervisors:

_____ I have completed EPA's Model Accreditation Program (MAP) training course, "Contractor/Supervisor", that meets this State's requirements.

b. For Workers:

_____ (1) For OSHA Class I work: I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (2) For OSHA Class II work (where there will be abatement of more than one type of Class II materials, i.e., roofing, siding, floor tile, etc.): I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

(3) For OSHA Class II work (there will only be abatement of one type of Class II material):

_____ (a) I have completed an 8-hour training class on the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls of 29 CFR 1926, Section .1101(g) and hands-on training.

_____ (b) I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (4) For OSHA Class III work: I have completed at least a 16-hour course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, Section .92(a)(2) and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101, and hands-on training.

_____ (5) For OSHA Class IV work: I have completed at least a 2-hr course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, (a)(1), and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101(g) and hands-on training.

c. For Workers, Supervisors and the Designated Competent Person:

_____ I have completed annual refresher training as required by EPA's MAP that meets this State's requirements.

PROJECT SPECIFIC TRAINING:

_____ I have been provided and have completed the project specific training required by this Contract. My employer's Designated Industrial Hygienist and Designated Competent Person conducted the training.

RESPIRATORY PROTECTION:

_____ I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair and contact lens use policy of my employer.

RESPIRATOR FIT-TEST TRAINING:

_____ I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION:

_____ I have had a medical examination within the last twelve months which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's Industrial Hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

_____ were no limitations to performing the required work tasks.

_____ were identified physical limitations to performing the required work tasks.

Date of the medical examination: _____

Employee Signature _____ Date _____

Contractor's
Signature _____ Date _____

Contractor's Industrial
Hygienist Signature _____ Date _____

-- End Of Section --