ASBESTOS
OPERATIONS & MAINTENANCE PLAN

Effective Date: May 21, 2018 DRAFT
Applies To: Faculty, Staff, Student employees, Others
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I. Purpose and Scope

This plan has been developed to protect the health and safety of the Clemson University employees, building occupants and visitors in facilities owned by Clemson University from potential exposure to asbestos and is in accordance with applicable USEPA, OSHA and State of South Carolina asbestos regulations.

Accordingly, the purpose of this plan is to establish a pro-active, in-place management program for recognizing, controlling and mitigating potential asbestos hazards at Clemson University.

Clemson University has a regulatory requirement to implement and follow an Asbestos Operations & Maintenance Plan (O&M Plan) that sets forth the procedures for the entire University system. All Clemson University employees, building occupants must follow the requirements outlined in the O&M Plan for all projects of any size in facilities owned by Clemson University. This includes projects or tasks that disturb any existing building structure, or any other material which may contain asbestos. As defined by the South Carolina Department of Health and Environmental Control, even small projects which require removal, cutting, sanding, drilling or other disturbances of building materials which may contain asbestos are subject to this requirement.

II. Policy Statement

Clemson University is committed to providing a healthful and safe environment for all activities under its jurisdiction and complying with federal and state health and safety standards. As such, to minimize exposures to asbestos and to comply with asbestos regulations, this Asbestos Operations and Maintenance Plan (O&M Plan) will be implemented and enforced. Individuals who do not comply with the O & M plan may be subject to discipline up to and including termination from the university.

III. Enforcement

All University staff are charged with ensuring compliance with this policy. University Facilities (Environmental Safety) will enact procedures to routinely audit for compliance. Violations of this plan may result in appropriate disciplinary measures in accordance with University Laws policies and procedures. All violations found will be referred to the appropriate Supervisor, Division Head and the Office of Human Resources. Notification will also be made to the Director of University Compliance and the Chief Facilities Officer.

IV. Background

Asbestos-containing materials (ACM), when not properly managed, may release asbestos fibers into the air and pose a health risk to faculty, staff, students, contractors and visitors. Compliance with all Environmental Protection Agency (EPA), South Carolina Department of Health and Environmental Control (SCDHEC) and Occupational Safety and Health Administration (OSHA)
regulations pertaining to the management, removal and disposal of ACM is a Clemson University policy.

V. Introduction

Asbestos is a generic name for a family of naturally occurring fibrous silicate minerals. They differ from other minerals because the crystals form long, thin fibers. Presently there are six recognized minerals that fall under this category: chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite. They represent two groups of mineral structure; serpentine and amphiboles. Chrysotile is the only member of the serpentine group. It accounts for 95% of the asbestos found in building materials.

Attempts have been made to ban asbestos containing materials from production or importation in the U.S. Due to an unchallenged 1970s era series of bans, sprayed-on fireproofing, thermal system insulation (TSI), acoustical plasters, and consumer patching compounds made with asbestos no longer are manufactured, imported or installed in buildings legally in the USA. In addition, in 1989, the Environmental Protection Agency (EPA) moved to ban all asbestos. In 1991, though, the ban was vacated by Appellate Court and remanded by Congress. Those materials that were no longer being made with asbestos (those listed above as well as corrugated paper, rollboard, commercial paper, specialty paper, flooring felt) and any new uses of asbestos remained banned. Anything else was and is still allowed. Thus, gaskets, roofing materials, brakes and clutches, flooring materials, non-roof coatings, etc., can still be produced with asbestos today.

As a result, purchasing, procurement and acquisition of materials and installation by outside contractors of presumed asbestos containing materials require vigilance to make certain materials for use or installation at the University do not have any asbestos in them.

Work that could impact ACM at the University is regulated by EPA, the South Carolina Department of Health and Environmental Control (SCDHEC), and the Occupational Safety and Health Administration (OSHA). The elements of this management plan take into consideration all of these various regulations.

EPA classifies ACM into 3 broad categories: (1) Thermal system insulation (TSI) which includes pipe and boiler insulation, HVAC components, and other similar material that inhibits heat transfer and prevents condensation.; (2) Surfacing Materials, those that are sprayed-on or troweled on which include fireproofing, decorative or acoustical plasters and textured acoustical materials (‘popcorn’ ceilings); and (3) Miscellaneous materials which incorporates any other material that is not TSI or surfacing materials and includes materials like floor and ceiling tiles, mastics, gaskets, electrical wire, Transite® materials, etc.

In EPA’s guide Managing Asbestos in Place – A Building Owner’s Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (July 1990), it published five facts about asbestos containing materials, in an effort to put the risk into proper perspective:

- Fact One: Although asbestos is hazardous, the risk of asbestos-related disease depends upon exposure to airborne asbestos
• Fact Two: Based on available data, the average airborne asbestos levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low.

• Fact Three: Removal is often not a building owner’s best course of action to reduce asbestos exposure. In fact, an improper removal can create a dangerous situation where none previously existed.

• Fact Four: EPA only requires prior asbestos removal in order to prevent significant public exposure to airborne asbestos fibers during building demolitions or renovation projects.

• Fact Five: EPA and OSHA recommend a proactive, in-place management program whenever asbestos-containing material is discovered.

VI. Health Hazards
Asbestos is recognized and regulated as a health hazard by OSHA and EPA. Asbestos can break apart into very small fibers, which are not visible to the naked eye. Breathing asbestos fibers has been linked to a variety of diseases.

Asbestosis is a condition of the lung tissue which is caused by inhalation of asbestos fibers. High does or long term exposure to asbestos fibers can lead to interstitial formation of fibrotic tissue, which may lead to difficulty breathing and an increased chance of malignancies. Asbestosis is generally the result of high intensity or long term exposure to asbestos fibers. The latency period for Asbestosis is 20-30 years.

Lung Cancer is generally associated with high dose or long term exposure to asbestos fibers. The latency period for asbestos related lung cancer is 15-35 years.

Pleural mesothelioma is a rare form of cancer which affects the lungs’ protective membrane, called the mesothelium. There is not a clear dose relationship between asbestos exposure and onset of this form of cancer, and the latency period from exposure to disease onset is 20-50 years.

VII. Regulatory Summary
Clemson University is regulated to various extents under the following sets of asbestos regulations, depending upon the type of activity being conducted at their facility:

• SC DHEC Regulation 61-86.1, Standard of Performance for Asbestos Projects
• EPA Asbestos NESHAP (40 CFR Part 61 Subpart M)
  The EPA Asbestos NESHAP would be applicable to any demolition or renovation activity as well as waste disposal.
• EPA Asbestos Model Accreditation Plan (40 CFR Part 763 Subpart E, App. C)
The EPA Asbestos Model Accreditation Plan requires certain levels of training and accreditation for personnel working with asbestos at the facility, specifically for those personnel performing abatement and consulting activities.

- **OSHA Asbestos in Construction Standards (29 CFR 1926.1101)**
  The OSHA Asbestos Construction Standard would be applicable to any construction activity undertaken at the facility with the potential for asbestos exposure.

  The OSHA Asbestos General Industry Standard would be applicable to the facility by virtue of the confirmed presence of asbestos at the facility and possible occupational exposures of the employees to airborne asbestos fibers.

- **Hazardous Materials Regulations 49 CFR 171-185**
  The Hazardous Materials Regulations (HMR) govern the transportation of hazardous materials in all modes of transportation – air, highway, rail and water.

- **Asbestos Hazard Emergency Response Act (AHERA), 40 CFR 763 Subpart E**
  This rule mandates inspections, accreditations of persons involved with asbestos, and final air clearances following abatement in public and private schools.

The following reference documents are also available to assist in the implementation of the O&M Plan.

- EPA’s Recommended Interim Guidance for Maintenance of Asbestos-Containing Floor Coverings – 1990
- EPA’s A Guide to Performing Reinspections under the Asbestos Hazard Emergency Response Act (AHERA) – February 1992 (Yellow Book)

**VIII. Definitions**

**Abatement** - Procedures to control fiber release from regulated asbestos-containing materials. This includes removal, enclosure, encapsulation, repair, and any associated preparation, clean up and disposal activities having the potential to disturb regulated asbestos-containing material.

**Asbestos** - The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite.

**Asbestos containing material (ACM)** - Material containing asbestos of any type, either alone or mixed with other materials, in an amount greater than one percent (1%) as determined by using
the method specified in 40 CFR Part 763, Appendix A, Subpart F, Section 1, as amended, or an accepted equivalent. (NOTE: “Appendix A to Subpart F” has been redesignated as, and shall hereinafter be referred to as, “Appendix E to Subpart E” - 60 FR 31917, June 19, 1995.)

**Asbestos Project** - Any activity associated with abatement including inspection, design, air monitoring, in-place management, encapsulation, enclosure, renovation, repair, removal, any disturbance of regulated asbestos containing materials (RACM), and demolition of a facility.

**Category I nonfriable asbestos containing material (ACM)** - Nonfriable asbestos or nonfriable asbestos-containing packing, gaskets, and resilient floor covering; and asphalt roofing products containing greater than one percent (1%) asbestos as determined using the method specified in 40 CFR Part 763, Appendix E, Subpart E, or an accepted equivalent.

**Category II nonfriable ACM** - Any material that cannot, when dry, be crumbled, pulverized, or reduced to powder by the forces expected to act upon it in the course of demolition or renovation operations, excluding Category I nonfriable ACM and containing greater than one percent (1%) asbestos as determined using the methods specified in 40 CFR Part 763, Appendix E, Subpart E, or an accepted equivalent.

**Class I Asbestos Work**: the removal of ACM or PACM thermal system insulation and/or surfacing material.

**Class II Asbestos Work**: the removal of any ACM which is not Class I. Examples include, but are not limited to, floor tile, ceiling tiles, glues/mastics, wallboard and joint compounds, gaskets, linoleum, etc.

**Class III Asbestos Work**: repair and maintenance operations where asbestos is likely to be disturbed (see the definition of “disturbance”).

**Class IV Asbestos Work**: Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM.

**Contractor** - Any individual, partnership, corporation or other business concern that performs asbestos abatement but is not a permanent employee of the facility owner.

**Demolition** - Wrecking or taking out any load-supporting structural member of a facility together with any related handling operations, the burning of any facility, or moving of a structure.

**Disturbance** - is defined by OSHA to mean activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, but can also include entering mechanical spaces including but not limited above suspended ceilings where spray-on fireproofing is present, attics, crawl spaces, mechanical rooms, and wall cavities/interstitial spaces.

**Excursion Limit (EL)** - A level of airborne fibers specified by OSHA as a short term excursion level. It is currently 1.0 fiber per centimeter (f/cc) of air, 30-minute time-weighted average, as measured by phase contrast microscopy.

**EPA** - United States Environmental Protection Agency.

**Friable asbestos containing material** - Any material that, when dry, can be or has been crumbled, pulverized, or reduced to powder and contains greater than one percent (1%) asbestos as...
determined using the method specified in 40 CFR Part 763, Appendix E, Subpart E, as amended, or an accepted equivalent.

**Glovebag** - means not more than a 60 x 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.

**HEPA vacuum** - means a vacuum cleaner which has been designed with a high-efficiency particulate air (HEPA) filter as the last stage of filtration. A HEPA filter is a filter that is capable of capturing particles of 0.3 microns with 99.97% efficiency. The vacuum cleaner must be designed so that all the air drawn into the machine is expelled through the HEPA filter with none of the air leaking past it.

**High Efficiency Particulate Air (HEPA)** - A type of filter which is 99.97% efficient at filtering particles of 0.3 microns in diameter.

**Intact** - means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix

**Negative Exposure Assessment (NEA)** – A demonstration that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limit (PEL). “NEA Tasks” are those that have been determined by the Clemson ES, via personal air sampling, not to pose a risk of exposure above the OSHA exposure threshold limits.

**Non-friable Asbestos Containing Material** - materials in which asbestos is bound in a matrix which cannot, when dry, be crumbled, pulverized or reduced to powder by hand pressure (such as floor tile and asphaltic building materials). When the bond fails, or is disturbed, the materials become regulated as friable.

**Operation and Maintenance (O&M) activity** - The disturbance of regulated asbestos-containing material only when required in the performance of an emergency or routine maintenance activity that is not intended solely as asbestos abatement

**OSHA** - Occupational Safety and Health Administration.

**Permissible Exposure Limit (PEL)** – The regulatory limit on the amount or concentration of a substance in the air. The OSHA PELs for asbestos are defined as 0.1 fibers per cubic centimeter (f/cc) as an 8-hour time weighted average (TWA) exposure, and 1.0 f/cc as a 30 minute excursion limit.

**Presumed Asbestos Containing Material (PACM)** – OSHA regulations define PACM as follows. Thermal system insulation and surfacing material found in buildings constructed no later than 1980 is presumed to contain asbestos until proven otherwise. Asphalt and vinyl flooring material installed no later than 1980 must also be considered as asbestos containing unless the employer determines that it is not asbestos-containing. Beyond this OSHA definition, most “best practices” refer to PACM as any material or product that has a history of being made with asbestos at some point in time and which in a particular application has not yet been sampled and analyzed for asbestos identification. If the employer/building owner has actual knowledge, or should have known through the exercise of due diligence, that other materials are asbestos containing, they too must be treated as such.
Regulated Area - means an area established by the employer to distinguish areas where airborne concentrations of asbestos exceed or there is a reasonable possibility that they may exceed the permissible exposure limits.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.

IX. University Personnel and Responsibilities

The following provides detail regarding the responsibilities of specific University Departments and individuals with regards to administering this O&M Plan.

Asbestos Compliance Work Group – The work group is comprised of the Asbestos Coordinators from each respective department as depicted on the enclosed Clemson University ACM Compliance Responsibility Chart (Appendix A) and the University Fire Chief or its designee. The work group shall meet no less than annually at the request of the Chief Facilities Officer and will participate in the review and implementation of the ACM O&M Plan.

Asbestos Coordinators - designated staff that serve as departmental asbestos contacts and abatement project coordinators and have been charged by their department and authorized to conduct the asbestos-related duties described below.

- Obtain/maintain Class IV ACM Awareness training.
- Complete Work Orders or Project Request Forms as needed for work in respective departments.
- Provide notification of impending asbestos abatement to the affected Building Security Coordinator requesting they forward the notice to all building occupants.
- Asbestos Coordinators shall not oversee any asbestos related work or employees performing asbestos work.

Asbestos Program Manager – The designated staff that is responsible for the Asbestos O&M Program. Asbestos related work shall take place only with the Asbestos Program Manager’s knowledge. Emergency situations will be brought to his/her attention as soon as possible. The designated staff also maintains historical files of all inspections, bulk sampling and abatement projects for all University buildings and integrates this data into the University’s asbestos inspection report database. Obtain/maintains Class IV ACM Awareness training at a minimum.

Chief Facilities Officer – The Chief Facilities Officer serves as the chairman of the Asbestos Compliance Work Group and has the authority to enforce overall compliance with the ACM O&M Plan. The Chief Facilities Officer can initiate possible disciplinary action in the event of a violation of the O&M plan by notifying Human Resources.

Project Manager – The individual who is assigned responsibility for the management of a renovation, demolition or maintenance project. The Project Manager may be an employee of
Facilities, Housing, Athletics, or any other department of the University who is sponsoring and/or overseeing the construction or renovation. The Project Manager is responsible for ensuring that all requirements of this document are followed. Obtain/maintain Class IV ACM Awareness training.

**Facility Project Manager**—Reviews project request forms and proposed scope of work with the requestor. Requests asbestos inspection for proposed projects. Provides cost estimate including abatement for proposed projects. Obtain/maintain Class IV ACM Awareness training.

**University Facilities Department of Environmental Safety**—Environmental Safety department’s role is to ensure that students, employees and visitors are protected from harmful substances and potential dangers stemming from a number of sources. With regards to Asbestos ES shall:
- Provide information to the University administration to support decisions on the asbestos management program.
- Provide expertise and guidance to departments to maintain compliance with regulatory requirements and university policy.
- Recommend appropriate response actions to control or eliminate potential hazards.
- Initiates asbestos abatement projects arising from health and safety hazards and emergencies.
- Audit asbestos abatement projects and consultant activities, as necessary.
- Communicate with regulatory agencies, as needed, as well as with University community at large.
- Schedule and maintain Asbestos Awareness (Class IV) and O&M (Class III) training for employees, as necessary.
- Audit project requests, renovation/demolition projects to ensure asbestos containing materials are being handled correctly.
- Maintain the University’s Asbestos O&M Plan.
- Send an annual notice to Deans, Directors, Department heads, and Administrative Assistants informing them of the presence of asbestos at Clemson and the procedures that must be followed when renovations are planned.

**Maintenance and Custodial Employees**
- Obtain/maintain Class III or IV ACM Awareness training as appropriate for job duties.
- Examine work area for building materials that may be disturbed prior to start of job and contact supervisor to conduct a review of the asbestos database if needed.
- Shall not perform any work that may contact or disturb ACM. The performance of maintenance and custodial construction activities contacting ACM shall be performed by outside contractors.

**X. Owned/Leased Buildings**
Clemson University has a responsibility to ensure compliance with the asbestos regulations and this O&M in all buildings owned by Clemson University, including spaces leased to third parties.
Clemson University is also responsible for work safety in buildings occupied by the University that are owned and operated by entities other than the University. In such instances, the University will endeavor to comply with any applicable O&M Plan maintained by such building owners.

XI. General Policies

1. Current Clemson University policy states that Departments shall not have University employees perform any tasks that involve the disturbance of ACM/PACM. The performance of maintenance and custodial activities contacting ACM shall be performed by outside contractors who have a minimum of 2 hours of Asbestos Hazard Awareness.

2. University Employees shall not perform Class I, II or III asbestos activities. Clemson University Employees with proper training may perform Class IV maintenance activities only. O&M 16 hour (Class III) training is required by maintenance staff to enter and perform any O&M activities in any building space where damaged friable ACM may be present including but not limited to above suspended ceilings where spray-on fireproofing is present, attics, crawl spaces, mechanical rooms, and wall cavities/interstitial spaces. The 16 hour O&M (Class III) worker training is required for Clemson University maintenance staff such that they are properly trained to recognize when to “stop work” and to call in a Class III trained ACM contractor.

3. For any renovation or demolition project within the University system which has the potential disturb asbestos, responsibility for asbestos management and compliance rests with the Project Manager.

4. Before beginning any renovation or demolition work, a Project Request Form (See Appendix B) must be completed by a Dept. Project Manager or Asbestos Coordinator, digitally signed by the Building Security Coordinator and submitted to fmojobreq@clemson.edu as outlined in the instructions. A Facilities Project Manager will then schedule a meeting and review the scope of work with the requestor. Any project where asbestos is present must be managed by University Facilities personnel.

5. Review previous sampling data for the proposed renovation/demolition area. An asbestos inspection shall have been performed no earlier than three years prior to the renovation or demolition, or, if more than three years have elapsed since the most recent inspection, the previous inspection shall be confirmed and verified by a person licensed by DHEC as a building inspector.

6. If asbestos abatement is required, the abatement cost will be rolled into the overall total project cost. There are some exceptions to relatively small projects where partial funding for abatement may be available from Facilities if the cost of abatement exceeds 25% of the estimated construction costs.
7. Any person that will conduct work not considered a renovation, demolition or alteration (i.e. operations and maintenance tasks), is responsible for ensuring that no ACM is disturbed while performing work. Contact the Department Asbestos Coordinator to determine if previous sampling data exists or testing is required.

8. Individuals who do not comply with the policies and procedures outlined in this O&M Plan may be subject to disciplinary action up to and including termination from the University.

XII. Regulatory Requirements involving ACM removal/repair/maintenance

According to federal regulations, removal or maintenance of ACM falls under one (1) of four (4) categories:

- **Class I & II** – Removal of TSI or Surfacing materials (Class I) and Miscellaneous materials (Class II), greater than 3 square or linear feet. Class I and II are considered activities that require licensed asbestos abatement workers.

- **Class III** – Repair and maintenance that could disturb a small amount of ACM (less than 3 square or linear feet) – examples are: splicing asbestos electrical wire, removing an old gasket from a flange, removing less than 3 feet of tile, removing or repairing less than 3 feet of pipe insulation, taking asbestos samples

- **Class IV** – Maintenance and custodial activities that contact but do not disturb ACM or PACM. Employees conducting Class IV asbestos work must have attended an asbestos awareness training program.

University Employees shall not perform Class I, II or III activities. Clemson University Employees with proper training may perform Class IV maintenance activities only.

XIII. Notification

Building Occupant Notifications

1. In accordance with OSHA regulations, signs shall be posted at the entrance to all mechanical spaces with ACM/PACM. The Asbestos Program Manager will be in charge of maintaining these postings. An example of a typical mechanical space posting is found in Appendix D.

2. Prior to any scheduled asbestos abatement work, building occupants will be notified ten days prior to the start of work. See Appendix E for an Asbestos Notification Memo sample.

3. The Asbestos Program Manager will send an annual notice to Deans, Directors, Department Heads and Building and Emergency Contacts informing them of the presence of asbestos at Clemson University and the procedures that must be followed when renovations are planned.
Contractor Notifications

1. Prior to arriving on campus to work, contractors will have been notified about the presence of asbestos containing materials through their contract documents which will give notice of the possibility of encountering asbestos containing materials. Contractors will ensure that all employees and subcontractors know of the possibility of encountering asbestos containing materials.

2. It is expected that all contractors and their sub-contractors doing work for the University are in compliance with all applicable federal and state regulations.

XIV. Newly Installed Materials

All replacement building materials should be asbestos-free. It is up to the Project Manager or requisitioner of the project to request written documentation that replacement materials do not contain asbestos. The Asbestos Certification Form (Appendix F) shall be used for this purpose and maintained in the project management files. Alternatively, newly installed materials can be sampled by a SCDHEC-licensed building inspector for asbestos content. Copies of inspection results must be forward to the Asbestos Program Manager.

XV. Asbestos Inspections

Per SCDHEC R. 61-86.1, Section VI, A.1., prior to beginning any renovation (of any size) and/or demolition operation at a Clemson University owned or operated facility, an asbestos inspection must be performed. The purpose of the asbestos inspection is to identify the presence, location, quantity and condition of any ACM that will or may be disturbed or otherwise impacted during the course of the project. To request an asbestos inspection for renovation or demolition purposes, contact the Asbestos Coordinator in your department or submit a work order/project request form.

Asbestos inspections must be performed for all operations and maintenance work as well as other activities that disturb building materials such as, but not limited to, drilling, cutting, sanding, inserting and/or removing screws/nails.

All asbestos inspections must be performed in accordance with Section VI of SCDHEC Regulation 61-86.1. The inspector will conduct the asbestos inspection based on the scope of work provided.

Prior to any repair, renovation or demolition of building materials, EPA, OSHA, and the State of South Carolina require that an asbestos inspection occur for ACM. Written documentation of inspection results must be maintained on the jobsite of a repair, renovation, or demolition. If ACM will be disturbed in the course of the repair, renovation or demolition activity, it must be removed prior to the commencement of the job. If it is not intended to be disturbed, it must be accounted for and protected from accidental or incidental disturbance by all the construction trades and University employees.
Inspection and removal is required regardless of the size of the job or the age of the building. While many manufacturers stopped or reduced the use of asbestos, most applications and asbestos products are still not banned and are available for use today. Until such time that asbestos is banned, even new buildings must be included in the inspection process unless data exists that proves asbestos products were not utilized. Uncontrolled releases of asbestos during any type of repair or renovation are forbidden by University policy and are violations of federal and state environmental laws.

The original electronic copies of the inspection reports (with sampling and laboratory data) are filed with the Asbestos Program Manager. Data from historical inspections will be compiled in a directory of shared files that serves as the University’s asbestos inspection database. Access to the directory is by authorized personnel only, as identified by the Asbestos Program Manager.

A documented review of the information in this directory of shared files is the first step in the inspection process. Printing copies of the necessary information from this directory can serve as a written documentation of the inspection. If the material that will be disturbed is not listed in this directory, the Asbestos Program Manager should be contacted to request further sampling. According to state and federal regulations asbestos inspections can only be conducted by accredited and licensed asbestos inspectors. The University uses appropriately trained and licensed consultants to conduct asbestos inspections.

It is important to realize that some asbestos-containing materials could exist that have not been identified or sampled. Examples of materials that may not have been sampled include but are not limited to:

- Thermal system insulation within wall cavities
- Construction mastics for weatherproofing or vapor barriers interior to walls or on foundations, especially below grade.
- Leveling compounds
- Multiple layers of flooring or wall or ceiling systems
- Adhesives behind chalkboards and whiteboards
- Ceramic tile setting compound and grout
- Joint expansion sealants
- Fire door and door frame insulation
- Gaskets, elevator brakes, and parts of other electrical and mechanical and HVACR systems

If a material will be impacted that is not found in previous sampling reports, it must be considered a presumed asbestos containing material (PACM) and must undergo the proper testing prior to commencing work.
XVI. Training of Employees

Awareness Training (Class IV)
This is the most basic level of asbestos training, and is required for all custodial, maintenance, and telecommunications employees, at least annually.

Any Clemson University employee who performs work in University buildings must attend a yearly Asbestos Awareness class. This includes maintenance, custodial, and telecommunications personnel.

O&M 16 hour Training (Class III)
Although not currently a University Policy for in-house staff to perform this type of work, Training is required for specific personnel who may encounter asbestos in the course of their work and with this training have the knowledge to recognize a potential asbestos hazard and respond appropriately.

O&M 16 hour training is required for Clemson University staff to enter and perform work in any building space where damaged friable ACM may be present including but not limited to above suspended ceilings where spray-on fireproofing is present, attics, crawl spaces, mechanical rooms, and wall cavities/interstitial spaces.

XVII. Medical Surveillance and Employee Exposure Monitoring
Currently Clemson University does not have employees that meet the criteria requiring Medical Surveillance or Employee Exposure Monitoring as Clemson University policy states, employees are not allowed to engage in Class, I, II or III activities.

XVIII. Administrative Procedures
Prior to scheduling Asbestos Abatement the following procedures should be implemented.

See Section XIII Notification for Building Occupant and Contractor Notification requirements.

Submit a Notice of Construction Disruption Form
All projects must include a Notice of Construction Disruption, which should be filled out for each specific project. The notice must be sent to affected Building Security Coordinators (BSCs), requesting that they forward the notice to all building occupants while copying you for the record. The Asbestos Notification must be included with the Notice of Construction Distribution to the BSC. The notice is a one-time per-project notification that the project manager prepares and sends to the BSC for distribution to building occupants well in advance.
of a project’s start date. A listing of BSC’s can be found on the BSC website at: https://cufacilities.sites.clemson.edu/services/bsc

Construction Notification Sign(s)
Print out and post construction notification signs, one for each entry to a building; laminate the sign to protect the posting throughout the project duration. Signage can be found in Appendix E.

Post Outage Notifications to University Calendar
Outage notifications related to your project should be posted on the University Calendar available on the Clemson University homepage. This calendar should be for temporary utility, parking, and other disruptions associated with your project, not for posting the project itself.

Asbestos Abatement Sign – Fill out for specific project (see included sample) and post appropriately throughout the duration of the abatement. Remove upon completion of abatement.

Project Close-Out Documentation
Within 30 days of completing site asbestos activities, the Asbestos Program Manager must obtain project reports from the contractor and consultant, including but not limited to waste manifests, daily site logs, daily sign-in sheets, and air sampling data.

XIX. Maintenance of Asbestos Containing Materials

Prohibited Activities
The following work practices shall not be used for any work that disturbs ACM, PACM, or materials that contain >1% asbestos regardless of the measured exposure level to the employee:

- High-speed abrasive disc saws without point of cut ventilation to HEPA filtered vacuums or HEPA shrouded equipment
- Compressed air
- Dry sweeping, shoveling or other dry cleaning method of ACM or dust and debris containing ACM and PACM
- Employee rotation as a means to reduce employee exposure to asbestos

Routine Maintenance and Cleaning
If asbestos or a material suspected to be asbestos has been damaged, or dust/debris is present around the ACM/PACM, immediately stop work, leave the area, secure the area (close the door) and call the Asbestos Program Manager, Facilities or Clemson PD (after hours). University staff shall not perform any work that may contact or disturb ACM. The performance of maintenance, custodial, telecommunications, or construction activities contacting or disturbing ACM shall be performed by outside contractors.
Care of Asbestos-Containing Flooring Material

- Sanding of flooring material is prohibited
- Stripping of finishes shall be conducted using:
  - Low abrasion pads
  - Speeds lower than 300rpm
  - Utilizing wet methods
- Burnishing or dry buffing shall only be conducted on floors with a sufficient coat of floor finish, and only on floors where tiles and adhesives will remain intact throughout the process
- Floor care includes:
  - Regular sweeping and wet mopping to maintain tile in good condition
  - Regular applications of floor finish
  - Use of mats in high traffic areas

University personnel, in an effort to maintain floor tile in place have a few options: sealing of the floors with floor finish, void filling, and spot repair.

- Floor finishes can be applied to prevent damage to the raw tile and is often recommended in offices where chair casters are scratching flooring or where sand and salt in the winter months is abrading the tile. It is highly recommended that individual departments purchase mats to be placed underneath chairs with casters. Often, damage to tile can be prevented by the use of mats.
- Void filling is the application of a cement feathering compound in small ‘holes’ in the tiles, usually at edges where tiles meet. This stabilizes the tile and prevents further chipping.

Adherence to these procedures remains the most effective option for maintaining floor tile in place. Broken and loose tiles should be reported through a work order. The appropriate maintenance staff will assess the tile for necessary repairs.

XX. Emergencies

In the event of a suspected release/exposure to ACM or PACM employees shall:

- Stop what you are doing in the area of the suspected release/exposure
- Leave the area
- Secure the area by closing the door
- Contact the Asbestos Program Manager
- If the suspected release occurs between the hours of 8:00 am and 4:30 pm contact Facilities Department at (864) 656-2186 and identify that this is an asbestos emergency
- If the suspected fiber release occurs after hours, contact the Clemson Police Department (CUPD) at (864) 656-2222 and identify that this is an asbestos emergency
• Off campus personnel should contact their Asbestos Coordinator.

 Appropriately trained staff shall respond to the suspected release/exposure and conduct the following:
 • Isolate and secure the area
 • Post warning signs on doors or at the area
 • If possible, turn off fans, shut windows, seal the ventilation system, to prevent migration of fibers

 Only properly trained and qualified individuals are allowed to commence clean-up activities of fiber release emergencies. Clemson University has a designated Asbestos Consultant that will be called in immediately to document the spread of contamination, conduct area environmental air sampling and devise a response action suitable to correct the situation. A designated Asbestos Contractor shall be called in immediately for the abatement actions that are required.
Appendix A
CLEMSON UNIVERSITY
Asbestos Operations & Maintenance Plan
ACM Compliance Responsibility Chart

PROVOST & ACADEMIC SUPPORT
Phil Landreth
Director of Academic Facilities Planning and Operations

UNIVERSITY COMPLIANCE OFFICE
Erin Swann
Director

ASBESTOS PROGRAM MANAGER
Robin Newberry
Environmental Safety Director & Program Manager

BUILDING PERMITS
Channon Chambers
University Building Official

HOUSING & DINING
Kathy Hobgood
Asst. V.P. and Executive Director
Anthony Harvey
Director of Maintenance

ATHLETICS
Joe Simon
Director
Gary Wade
Assistant AD Facilities

TELECOMMUNICATIONS
Wallace Chase
Director
- Network (22 employees)
- Telecom (6 employees)
- Contractors (6 under contract)

UNIVERSITY FACILITIES
EDUCATION & GENERAL
(ESG) BUILDINGS
Michael Smith
Director of Maintenance

PUBLIC SERVICE
& AGRICULTURE/
RESEARCH &
EDUCATION CENTERS (RECs)
Chris Ray
(see list)

OFF - CAMPUS
Laura Stoner
(see list)

ACM ON-CALL SERVICES
Chuck Hunter
ACM inspections SMM

ACM Abatement
JBR

Facility Name | AREA | TITLE | Current Contact
--- | --- | --- | ---
Belle W. Baruch Institute of Coastal Ecology and Forest Science | REC | Director | Skip Van Bloem
Camp Bob Cooper-Youth Learning Institute (Summerton) | REC | Director | Toby Kirkland
Camp Long-Polach Learning Institute (Wood) | YLI | Chief of Staff, Youth Learning Institute | Toby Kirkland
Clemson Experimental Forest | PSA | Forest Manager | Toby Kirkland
Clemson University Environmental Center | REC | Director | Russ Hardee
CU Restoration Institute | Off Campus | Capital Projects and Facilities | Chris Ray
CReIS | Off Campus | Associate Director of Facilities | Jim Tubin
CU GIS | Off Campus | Associate Director of Facilities | Mike Davis
Edisto Research and Education Center | REC | Director | John McEwen
Meeting Street (Charleston) | Off Campus | Director of Commercialization | Karl Kelly
McMaster Aquaculture Facility [will be returned to Hampton Co.] | PSA | Director, Cooperative Extension Services | Mike Davis
Newman Research and Education Center | Off Campus | Land and Capital Asset Stewardship | Mike Davis/Laura Stoner
Newport Research and Education Center | REC | Assistant Academic Program Director | Norman McEwen
Research Farms | REC | Director | Matthew Smith
Sandhills Research and Education Center | PSA | Director | Garland Vassey
Sandhills Veterinary Diagnostic | Off Campus | Vice President Public Service & Agriculture | George Askew/Royd Parr
Simpson Research and Education Center | REC | Director | Kathy Coleman
Transfer Station in Pendleton (leased to Waste Management) | Off Campus | Chief Facilities Officer | Todd Barnette

Asbestos O&M Plan
5/23/2017
Appendix B

Project Request Form

The current Project Request Form is available at:

https://cufacilities.sites.clemson.edu/minor/
Appendix C

Asbestos Fact Sheet

The Asbestos Fact Sheet is available at:

**Appendix D**
Mechanical Space Posting

**DANGER**

CERTAIN MATERIALS WITHIN THIS MECHANICAL ROOM/AREA CONTAIN ASBESTOS FIBERS

AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD

AVOID BREATHING AIRBORNE ASBESTOS FIBERS

As required by the Occupational Safety and Health Administration (OSHA) for building constructed no later than 1980, this posting is to alert you to the presence of asbestos-containing materials (ACM) within this building area/space. Any questions may be directed to the Environmental Safety department 310 Klugh Avenue, Clemson, SC (864) 656-1806

**AREA:**

<table>
<thead>
<tr>
<th>ACM Material</th>
<th>General Location</th>
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The following forms of confirmed ACM are present within this space.

Any of the following suspect materials which are present within this space are presumed asbestos containing materials (PACM) in accordance with OSHA regulations until proven otherwise.

<table>
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<tr>
<th>PACM Material</th>
<th>General Location</th>
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Note that additional building materials yet to be identified may also contain asbestos fibers, but are not required to be labeled as PACM by OSHA. Do not disturb the ACM/PACM or use dry sweeping or non-HEPA vacuums to clean up ACM/PACM debris. Report ACM/PACM damage to the University ES Department at (864) 656-1806.

**DO NOT REMOVE THIS POSTING**
Appendix E

The Current Asbestos Notification Memo Sample and Signage can be found at:

https://cufacilities.sites.clemson.edu/documents/maintenance/Project%20Notification%20Signage.pdf
Appendix F

Asbestos Certification

All Contractors shall certify that all materials/equipment installed in any Clemson property shall be asbestos free. The owner may perform sampling to verify all suspect material/equipment is asbestos free. If any material/equipment is found to contain asbestos, the Contractor shall pay for the lawful and proper removal and disposal of product(s), and re-install acceptable material/equipment all at its sole expense.

For purposes of this requirement, materials include, but are not limited to the following:

**Surfacing Treatments:** Fireproofing Acoustical Plaster, Finish Plasters, Skim Coats of Joint Compound, Fibrous Type Paint Applications, Sprayed-on applications

**Thermal System Insulation:** Equipment Insulation, Gaskets, Valve Packings, Boiler, Breeching, Boiler Rope, Duct or Tank Insulation, Cement or Mortar used for boilers and refractory brick, Piping and Fitting Insulations including but not limited to Wrapped Paper, Millboard, Rope, Cork, Preformed Plaster, Job Molded Plaster and Coverings over Fibrous Glass Insulation.

**Roofing and Siding Materials:** Insulation Board, Vapor Barriers, Felts, Coatings & Adhesives, Flashing, Shingles, Cementitious Board (Transite), Non-Metallic or Non-Wood Roof Decking.

**Other Miscellaneous Materials:** Floor tile, Cove Base, Floor Leveling Compound, Ceiling Tiles, Vibration Isolators, Laboratory Tables and Hoods, Mastics, Adhesives, Coatings & Caulks, Wallboard & Joint Compounds, Friction Products, Gaskets, Fire Door Materials, Cementitious Products (Transite).

The Contractor certifies that all material/equipment installed in any Clemson property shall be asbestos free:

Company: 
Print Name:  
Contractor Signature:  
Date: 
Appendix G

The current Building Security Coordinator listing can be found at:

https://cufacilities.sites.clemson.edu/services/bsc