

# Construction Document

## MICROBIAL REMEDIATION SCOPE OF WORK

FOR

**Marion VA Medical Center  
Building 2 / South End – Second Floor  
2401 West Main Street  
Marion, Illinois 62959**

Prepared For:

**Mak Architects, Inc.  
8328-R Olive Boulevard  
St. Louis, Missouri 63132**

Prepared by:

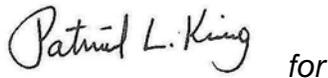


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Matt G. Honerkamp  
Project Manager

12/29/15

Date



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ATC – Albany, New York

12/29/15

Date

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**ATC PROJECT NUMBER 30.27653.0003, Task 2**

**December 29, 2015**

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## **1.0 INTRODUCTION**

ATC Associates Inc. (ATC) was retained by Mak Architects, Inc. (MAK) to prepare this Microbial Remediation Scope of Work (MRSOW) that describes the recommended procedures that should be employed for remediation of building materials damaged by water and contaminated by microbial growth in Building 2 / South End – Second Floor at the Marion VA Medical Center located at 2401 West Main Street in Marion, Illinois.

A limited microbial evaluation was conducted by ATC from April 16, 2010 through April 30, 2010, June 8, 2011 and June 9, 2011 to identify water damage and microbial contamination of building materials and to recommend corrective actions. The investigation included a limited intrusive and visual inspection of the impacted areas.

ATC has provided a separate report which includes the results of the limited microbial evaluation. The 75% submittal report is documented as ATC Project No. 30.27653.0003, Task 1, and is dated June 24, 2011.

A floor plan drawings indicating the location of observed microbial growth is presented in Appendix A.

During the microbial evaluation, ATC collected a surface sample of suspect microbial growth in the kitchen (Room 207). The surface sample result can be found in Appendix C.

This MRSOW describes the general specifications that shall be followed for the remediation of microbial contamination of water-damaged building materials and general cleaning within the designated area. In addition to the specifications set forth in this MRSOW, the Contractor is expected to abide by all applicable local, state, and federal laws and regulations.

No changes to this Work Plan will be allowed during this project without prior written approval from the Marion VA Medical Center (Owner). ATC does not have the authority to approve change orders in the project scope or the project costs. The contractor shall submit all change orders in writing to the Owner and receive authorization in writing for any and all change orders.

### **1.1 General Project Information**

Site: Marion VA Medical Center (Owner)  
Buildings 13 and 37  
2401 West Main Street  
Marion, Illinois 62959

Contact: Mr. Jeremiah Benoit  
Contracting Officer's Technical Representative (COTR)  
General Engineer  
VA Medical Center  
Marion, IL 62959  
(618) 997-5311 Ext. 54490 (Office #)  
(618) 998-5699 (Fax #)

## **1.2 Microbial Remediation Scope of Work**

The contractor shall furnish labor, materials, services, permits, insurance, and equipment that is specified, shown, or reasonably implied for remediation activities specified in the MRSOW or applicable industrial standards. A breakdown of the microbial remediation work area is shown in Section 4.0 – Abatement/Remediation, 4.2 – Microbial Remediation/Abatement Protocols, B. Specific. The MRSOW includes, but is not limited to the following tasks (refer to the drawings in Appendix A):

- A.** Prior to commencement of remediation activities, the contractor shall verify with the Owner that all water intrusion issues have been rectified.
- B.** Prepare a drawing and/or take photographs of the room configuration to aid in the put back of furniture, fixtures, and movable objects.
- C.** Isolate each work area using barrier materials, tape, and warning signs. The HVAC equipment serving each work area shall be shut down prior to installation of critical barriers. Install critical barriers consisting of one layer of 6-mil, fire retardant polyethylene sheeting at entrances and openings to each designated work area including HVAC ducts. Install decontamination area and HEPA filtered negative pressure ventilation.
- D.** Construct a decontamination chamber at the entrance to each work area consisting of one (1) chamber as identified. Any exception to this shall be agreed upon in advance by the Consultant.
- E.** Relative humidity in all work areas shall not exceed 60%.
- F.** Establish a negative pressure differential in each noted work area. Due to the limited time of installation, the small size of the containments and the need for expeditious turnover of work areas, the negative pressure established within the containments shall be demonstrable with smoke tubes and will be checked on a daily basis by the Consultant. A reading of 0.02 inches of water shall be maintained unless approved by Consultant.
- G.** Clean with a HEPA vacuum and disinfect with a microbial disinfectant solution all identified materials and/or surfaces. (All HEPA filters shall be 99.97% efficient for

- 0.03-micron particles.) Including carpets, tables, desks and other furnishings remaining within the rooms.
- H.** Clean with a HEPA vacuum all identified materials and/or surfaces. (All HEPA filters shall be 99.97% efficient for 0.03-micron particles.) Then disinfect with a microbial disinfectant solution all accessible areas of plaster, ceramic, concrete, etc.
  - I.** Pre-clean and remove furniture, fixtures, and moveable objects from the designated work areas. The Owner shall remove all pre-cleaned computer equipment from each room. Store for reuse by the Owner.
  - J.** Items shall be relocated to a temporary storage area provided by either the Owner, or if sufficient space is not available, the contractor shall provide temporary storage. The location of this area has not yet been determined and may or may not be on-site.
  - K.** Non-moveable objects that will remain in the work area (e.g. light fixtures) shall be pre-cleaned and protected using 6-mil fire-retardant polyethylene sheeting.
  - L.** If applicable, remove and dispose of all window cove base/adhesive, all drywall and wall finishes, and fiberglass insulation in each designated work area. Seal any wall penetrations with drywall and caulk.
  - M.** Remove and dispose of all water-damaged suspended acoustical ceiling tiles from each work area requiring general cleaning. Remove and dispose of all suspended acoustical ceiling tiles within each designated work area requiring drywall and wall finishes removal.
  - N.** Encapsulate remaining floor, wall and ceiling surfaces after visual inspections, with the Owner's and ATC's approval.
  - O.** Bag all contaminated material in 6 mil plastic bags and seal tightly.
  - P.** Any dumpster location shall be approved by the Consultant and Owner.
  - Q.** Dispose of all removed materials in accordance with federal, state, and local requirements.
  - R.** Allow the work areas to remain under negative pressure for a 24-hour period following the microbial remediation. Any exception to this shall be agreed upon in advance by the Consultant and Owner.
  - S.** A post-remediation (efficacy) assessment will be performed by the Consultant.
  - T.** The Contractor is responsible for replacing all furniture, fixtures and moveable objects in each room.

- U. The microbial remediation work shall not include the replacement of all contaminated building materials removed during the abatement. The replacement of these materials shall be performed by the General Contractor or the Owner.
- V. If feasible, the negative air machine(s) exhaust should be vented outside the building or piggybacked to another machine inside the area.
- W. A rigid barrier consisting of plywood construction shall be erected by the Contractor around any negative air machine exhaust tubes.

**Note:** This MRSOW describes the minimum requirements that shall be followed for the satisfactory completion of this project. In addition to the requirements of this specification, the Contractor is expected to abide by all applicable local, state, and federal laws and regulations. This MSROW only includes those areas that were previously sampled by PSI and showed visible signs of water damage or microbial colonization at the time of ATC's site visit. A destructive or invasive inspection was not performed prior to the development of this MRSOW. As such, it is possible, if not likely, that additional damaged areas will be encountered during the microbial remediation work. Any additional areas encountered during the remediation work shall be evaluated by and ATC Certified Microbial Consultant (CMC) who is experienced in microbial remediation. The CMC should describe the appropriate remediation methods to be employed by the Contractor for any newly encountered damaged materials. The additional evaluation should describe appropriate remediation methods to be employed by the Contractor for recently discovered damaged materials.

**The quantities are estimates only, and conditions may change over time. The contractor is responsible for verifying quantities and conditions at the time of the project walk through and prior to performance. It is the contractor's responsibility to notify the owner of any changes or conditions that may warrant a change in project scope, additions or change orders.**

## 2.0 GENERAL PROVISIONS

### 2.1 Definitions

The following definitions are utilized in this Specification:

**Critical barrier:** An engineered barrier that is impervious to penetration by bioaerosols, vapors, and particulates. The barrier may be constructed of wood, metal, or plastic, as long as aerosols cannot diffuse or migrate past the barrier. Generally part of a containment area.

**Bioaerosol:** Airborne particles that are living organisms or fragments originating from living organisms.

**Abatement:** The physical removal of contaminated building materials or the cleaning and disinfection of contaminated building materials that could not be physically removed and replaced.

**Air Duct:** A passageway of defined dimensions for the distribution of air within a structure.

**Air Handling Unit:** Any one of several varieties of mechanical air moving, filtering, and conditioning systems. Commonly used to draw or force air through a duct system.

**Air Scrubber:** A free-standing, unducted, fan-driven apparatus used to filter ambient air within a defined area, usually a containment area.

**Containment Area:** An engineered space within a designated work area designed to control the migration of contaminants to adjacent, non-contaminated regions outside the work area during remediation

**HVAC System:** The entire air distribution system within a building, including, but not limited to the air handler, cooling unit, heating element, humidifier, filter device, ducts, vents, intakes, and exhausts.

**Negative Air Pressure:** Lower air pressure created in a defined area (containment space) by an exhaust fan or vacuum device. The pressure differential allows air movement from adjacent areas of higher pressure into the area of lower pressure. The function is to prevent contaminants from escaping the contained area.

**Moisture Content:** The percentage or weight of moisture (water) in materials, as compared to the weight of the material when “completely” dry.

**Anti-Microbial:** Term applied to chemicals or processes that inhibit microbial proliferation, such as drying or an antibiotic. The suffix *-cide* is applied to those known to kill living organisms.

**GFCI:** Ground fault circuit interrupter. An electrical device designed to break an electrical circuit when the device senses a leak to ground.

**Remediation:** The overall process of correcting problems related to water damage of building materials and related microbial contamination.

**Decontamination:** The process of cleaning surfaces and objects includes thorough cleaning with HEPA vacuums and/or detergents.

**HEPA Filter:** A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of all monodispersed particles equal to or greater than 0.3 microns in mass median aerodynamic equivalent diameter.

**HEPA Vacuum Equipment:** Vacuuming equipment with a HEPA filter system.

**Isolation:** The sealing of all openings into a work area with six-mil polyethylene sheeting and duct tape.

**Work Area:** Designated rooms, spaces, or areas of the subject site in which microbial remediation actions are to be undertaken. A contained work area is a work area, which has been isolated, equipped with controlled access portals and a decontamination unit, and is under a negative air pressure regime.

**Occupied Area:** Any area adjacent to the work area that is occupied or potentially accessible by unprotected employees or the public.

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

**PPE (Personal Protective Equipment):** Clothing or equipment worn to protect the worker(s) or other individual(s) from hazards or exposure to hazardous materials.

## 2.2 Health and Safety

Work for this project shall be performed in compliance with applicable regulatory standards, including but not limited to, OSHA 29 CFR 1910 Standards for General Industry and OSHA 29 CFR 1926 Standards for the Construction Industry. Provisions of this MRSOW relating to health and safety of workers, the public, and protection of the environment are considered to be minimum specifications. The remediation contractor is responsible for determining whether local, state, or federal regulations, ordinances, or guidelines require additional, and/or more stringent, protective measures. Failure on behalf of the remediation contractor to comply with applicable requirements does not relieve the contractor from liability and/or requirements for performance of the work.

The following standards, regulations, and reference documents are incorporated herein by reference and made a part of this specification.

### **Code of Federal Regulations (CFR) Publications:**

- 1) 29 CFR 1926.28 - Personal Protective Equipment.
- 2) 29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts and Mists.
- 3) 29 CFR 1926.57 - Ventilation.
- 4) 29 CFR 1926.59 - Hazard Communication.
- 5) 29 CFR 1926.95 - Criteria for personal protective equipment.
- 6) 29 CFR 1926.96 - Occupational foot protection.
- 7) 29 CFR 1926.100 - Head protection.
- 8) 29 CFR 1926.101 - Hearing protection.
- 9) 29 CFR 1926.102 - Eye and face protection.
- 10) 29 CFR 1926.103 - Respiratory protection.

- 11) 29 CFR 1926.104 - Safety belts, lifelines, and lanyards.
- 12) 29 CFR 1926.200 - Signs, Signals and Barricades.
- 13) 29 CFR 1926.301 - Hand tools.
- 14) 29 CFR 1926.302 - Power operated hand tools.
- 15) 29 CFR 1926.451 - Scaffolding.
- 16) 29 CFR 1926.500 - Fall Protection.
- 17) 29 CFR 1926.501 - Duty to have fall protection.
- 18) 29 CFR 1926.502 - Fall protection systems criteria & practices.
- 19) 29 CFR 1926.503 - Fall Protection training requirements.
- 20) 29 CFR 1926.1101 – Asbestos
- 21) 29 CFR 1926.62 - Lead

**American National Standard Institute (ANSI) Publications:**

- Z9.2-1979 Fundamentals Governing The Design and Operation of Local Exhaust Systems  
Z88.2-1992 Practices for Respiratory Protection

**National Fire Protection Association (NFPA):**

Standard 90A Installation of Air Conditioning and Ventilation Systems.

**Underwriters Laboratories, Inc. (UL) Publications:**

- 586-77 Test Performance of High Efficiency Particulate, Air Filter Units

**ATC Reference Documents:**

- 1) *Bioaerosols, Their Assessment And Control.* American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, Ohio, 1999.
- 2) *Mold Remediation in Schools and Commercial Buildings.* U.S. Environmental Protection Agency. April, 2001.
- 3) *Guidelines on Assessment and Remediation of Fungi in Indoor Environments.* New York City Department of Health. Updated April, 2000.
- 4) *Carpet Cleaning Standard S001.* Institute of Inspection, Cleaning, and Restoration Certification (IICRC).
- 5) *Standard and Reference Guide for Professional Water Damage Restoration S500 (2d Edition).* Institute of Inspection, Cleaning, and Restoration Certification (IICRC).
- 6) *Standard and Reference Guide for Professional Mold Remediation S520 (1<sup>st</sup> Edition).* Institute of Inspection, Cleaning, and Restoration Certification (IICRC).
- 7) *Assessment, Cleaning, and Restoration of HVAC Systems ACR 2005.* National Air Duct Cleaners Association, © 2004.

## **V.A. Reference Documents:**

- 1) National Institute of Building Sciences. “Bugs, Mold, and Rot” 1992, 1994, 1999; at <http://www.nibs.org/pubsubetec.html>.
- 2) EPA. Building Air Quality: A Guide for Building Owners and Facility Managers – Appendix C: Moisture, Mold and Mildew, at <http://www.epa.gov/iaq/largebldgs/graphics/appenc.pdf>.
- 3) Environmental Protection Agency (EPA). Mold Remediation in Commercial Schools and Buildings. March 2001, at [http://www.epa.gov/iaq/molds/mold\\_remediation.html](http://www.epa.gov/iaq/molds/mold_remediation.html).
- 4) Department of Energy (ORNL) Moisture Control Handbook, at <http://www.ornl.gov/sci/roofs+walls/facts/moisture/Moisturehandbook.pdf>.
- 5) Institute of Medicine (IOM). Clearing the Air: Asthma and Indoor Exposures. National Academy Press, 2000.
- 6) Institute of Medicine (IOM). Damp Indoor Spaces and Health. National Academy Press, 2004.
- 7) New York City Department of Health. Bureau of Environmental and Occupational Disease Epidemiology; Guidelines on Assessment and Remediation of Fungi in Indoor Environments, at <http://www.nyc.gov/html/doh/html/epi/epil.shtml>.
- 8) Sampling and Characterization of Bioaerosols. NIOSH Manual of Analytical Methods (NMAM), Chapter J, at <http://www.cdc.gov/niosh/nmam/pdfs/chapter-j.pdf>.
- 9) Storey E, Dangman K, Schenck P, DiBernardo R, Hodgson MJ. Guidance for Clinicians on the Recognition and Management of Health Effects Related to Mold Exposure and Moisture Indoors at <http://oehc.uchc.edu.clinser/MOLD%20GUIDE.pdf>.
- 10) Concordia University, Montreal, CA. Building Envelope Research Institute (Moisture) at <http://alcor.concordia.ca/~raojw/crd/concept/concept000041.html>.
- 11) American Institute of Architects. Guidelines for Design and Construction of Hospital and Health Care Facilities, 2001. Washington, DC: American Institute of Architects Press, 2001.
- 12) American Conference of Governmental Industrial Hygienists. Bioaerosols Handbook. Cincinnati, OH 1999.

## **2.3 Utilities**

The Owner shall provide water and power supply (i.e., electricity) from existing sources where the Contractor's use is not excessive and does not interfere with the building's normal usage. Where existing utilities or facilities are not adequate or cannot be used, the Contractor is responsible for providing alternative sources of potable water and power. The Contractor shall supply additional circuit distribution panels as appropriate. The use of the Facility's utilities shall be coordinated through the Owner.

## 2.4 Licenses, Fees, & Permits

The Contractor shall pay licensing fees, royalties, and other costs necessary for the use of any intellectual property including, but not limited to, copyrighted or patented product, design, invention, or process in the performance of the work specified in this MRSOW. The Contractor shall be solely responsible for costs, damages, or losses resulting from infringement of these patent rights or copyrights. The Contractor shall hold the Owner and Consultant harmless from costs, damages, and losses resulting from infringement of these patent rights or copyrights, including reasonable attorney's fees. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing, patent, or royalty fee for use in the performance of the job, the Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such obligations.

## 2.5 Project Coordination

- A. Business Disruption:** The Owner or Tenants may not occupy any portions of the subject site or conduct certain business operations in or around the containment site during the remediation project. The remediation contractor shall coordinate work with the Owner or Owner's Representative and conduct activities so as to minimize disruption.
- B. Notification and Communication:** The Contractor shall place appropriate warning signs, approved by the Owner, per regulations, around the work area(s), during the remediation project, for the protection of building occupants, visitors and the general public. ATC has notified the Owner of the remediation/ renovation project and provided notice and instructions for alternative procedures in case of emergencies and when access to restrooms or other facilities are temporarily restricted.
- C. Authority to Stop Work:** The Owner and Owner's Representative have the authority to stop the remediation work at such time as they determine that work conditions are not within the specifications and applicable regulations. Work will not resume until corrective action has been taken to the satisfaction of the Owner or Owner's representative. ATC will advise the Owner on matters concerning problems with the work area(s) relating to potential health risks.
- D. Emergency Exits:** The Contractor shall establish visible emergency and fire exits from the work area in accordance with applicable regulations.
- E. Injuries:** If an injury occurs, the Contractor shall stop work until proper emergency response personnel have been contacted, the injured person has been removed from the work area, the cause of the injury has been determined and any problems corrected. Remediation work shall be temporarily halted in the case of injuries/accidents involving building occupants or visitors, when such injuries are related to remediation activities or the work area(s). The work area cannot be re-entered until deemed safe by a designated Project Supervisor.

**F. Decontamination for Workers:** When leaving the work area, all persons must go through the decontamination chamber and remove contaminated protective clothing and at a minimum use high efficiency particulate air (HEPA) vacuum on all outer garments. Decontamination may include HEPA-vacuuming PPE and then removing the PPE as appropriate within a decontamination chamber consisting of a shower, wash-down station or one chamber “dry” decontamination station. Injured workers shall be decontaminated as they are removed from the contained work area.

## **2.6 Pre-Job Submittals**

Two copies of the following submittals shall be provided to the Owner or Owner’s Representative prior to the commencement of microbial remediation operations. The Owner or Owner’s Representative shall approve submittals, in writing, prior to starting work at the Marion VA Medical Center.

### **A. Respirators**

1. The Contractor shall submit a written Respiratory Protection Program, including make, model and National Institute of Occupational Safety & Health (NIOSH) approval number of the respirators to be used, as required by OSHA standards.
2. Contractors must provide a written certification for all employees, who will wear respirators in the work area, stating that they are properly trained for respirator use in accordance with 29 CFR 1926.103. A sample form is provided in Appendix B.
3. The Contractor must also provide current fit test certificates for each employee who will wear a respirator at any time during the course of the project. A sample form is provided in Appendix B.

### **B. Medical Examinations**

The Contractor shall submit proof that individuals designated to wear air-purifying respirators have) medical examinations as per OSHA requirements. Proof shall consist of a physician's written opinion of said examinations stating that the worker is physically capable of wearing a negative pressure respirator while performing his or her duties. A sample form is provided in Appendix B.

### **C. Materials and Equipment Certification**

1. Submit certification that vacuums, negative air pressure equipment filters, and other local exhaust ventilation equipment conform to ANSI Z9.2-1979.

2. Provide product literature from the manufacturer for all materials, supplies, and chemical products to be used at the subject site.
3. Provide material safety data sheets (MSDS) and application instructions for all chemical products to be used at the subject site.

#### **D. Worker Training and Worker Release**

Submit a Statement of Training that Contractor employees who are on-site for this project have been trained in microbial remediation activities. Each employee shall complete the Certificate of Workers Release. Sample forms are provided in Appendix B. Copies of any training certificates shall also be included in the pre-job submittals.

#### **E. Licenses and Permits**

Submit copies of licenses and permits required for this project, such as state and local business licensure, contractors' license, etc.

In lieu of the above submittals and at the Owner's discretion the Contractor may submit an affidavit to the Owner's representative stating that the above conditions have been met and are available upon request.

#### **F. Project Schedule**

The Contractor shall prepare a schedule that will show the time involved from start to finish of operations, including preparation, removal/clean-up, general cleaning inspections/testing and de-mobilization portions of the job. A final schedule shall then be prepared and coordinated with the COTR, Owner's Representative, and the Contractor. The final schedule shall be submitted in writing prior to the commencement of work.

#### **G. Waste Transportation and Disposal**

If applicable, submit the method of transport of Waste, including the name, address, license number, EPA ID number, and telephone number of the Transporter(s) and the Disposal Facility(s) to be used.

#### **H. Notifications**

When required by regulations prior to work, contact appropriate government agencies in writing. If no notification is required, provide written notice to the Owner so stating. All notifications shall contain, but are not limited to, the following information:

1. Name, address and telephone number of the Owner, including a contact person.

2. Name, address, license number and telephone number of the Contractor, including the contact person.
3. Name, address and description of the buildings, including size, age and prior use of buildings.
4. The type and quantity of material involved and the description of the Work.
5. Scheduled start and completion dates for Abatement and Remediation Work.
6. Procedures that shall be employed to comply with the regulations.
7. The name, address, and telephone number of the Waste Transporter.
8. The name and address of the Waste Disposal Facility where the Waste shall be deposited.

#### **I. Pre-Work Submittal Checklist**

1. Work schedule
2. Copies of notifications
3. Copies of licenses (contractor/subcontractors)
4. Equipment and product data and MSDS
5. Registry of approved contractor and sub-contractor personnel
6. Worker training documentation/certificates
7. Worker medical records/certificates
8. Worker respirator fit test documentation
9. Certificates of Insurance (contractor/subcontractors)
10. List of subcontractors
11. Contractor's written OSHA respiratory protection plan
12. Contractor's written security/emergency plan

### **2.7 Post-Job Submittals**

Upon completion of work and prior to approval of final payment, Contractor must submit the following documentation as part of a post-job submittal package:

#### **A. Daily Logs**

Copies of daily logs describing the work performed each day, names of all workers and visitors' on-site, any unusual activities, etc. The daily logs shall be signed by the Contractor's project supervisor as well as the Owner or Owner's representative.

#### **B. Disposal Records**

Copies of waste manifests and receipts acknowledging disposal of waste material from the project, showing delivery date, quantity, and appropriate signature of landfill's authorized representative.

### **C. Manometer Records**

Strip charts from the recording manometer or data log entries of periodic manometer readings within the containment area indicating the measured pressure differential, date, and time. Hand-written logs are acceptable as an alternative to the strip charts.

### **D. Pre-Final Completion Submittals/Close-out Documentation:**

1. If required, copies of waste manifests and waste shipment records
2. HEPA equipment service/maintenance records
3. Water filtration equipment service/maintenance records
4. If required, pressure differential (manometer) records
5. Visitor's register/sign-in logs
6. Daily site and containment entry/exit logs
7. Environmental monitoring data
8. Copies of citations/violations
9. Copies of safety meeting attendance records
10. Copies of reports of accidents/first aid administration
11. Efficacy assessment from an independent environmental professional

## **2.8 Access Restrictions**

- A.** The work areas shall not be occupied during remediation operations.
- B.** All access to the Contractor's work area(s) will be authorized by the Owner, and ATC. The Contractor will limit access to the remediation areas of the building and will not engage in conversation with the occupants. Access to the contained work area(s) are restricted to authorized personnel of the Contractor and VA representative(s), with the requirement that anyone entering the contained work area(s) wear appropriate PPE and decontaminate on exiting the containment.
- C.** As remediation work progresses, it will be necessary to restrict access into the work area(s). The Contractor shall coordinate with ATC to notify the Owner of the restrictions and to implement the restrictions.

## **2.9 Scheduling**

- A.** All work shall be performed as directed by the COTR and the Owner's representative.
- B.** Remediation work shall be conducted during normal business hours (08:00 a.m. to 04:30 p.m.) Monday through Friday. Extended work hours and work on weekends and holidays will be coordinated between the Contractor, COTR and their representative(s). Extensions in work periods shall be in writing and approved by both parties.

- C. Coordinate with the COTR and Owner's appointed environmental consultant on work hours and availability of workspaces and storage areas.
- D. Obtain approval from the COTR and Owner's Representative prior to altering the work schedule.

## **2.10 Observations**

ATC has been contracted to observe the status and progress of the remediation work for completeness and general compliance with the requirements of the Contract Documents.

## **2.11 Sign-In / Out Log**

All Contractor personnel and Project Site visitors shall Sign-In/Out with the On-site Project Supervisor, on a daily basis for the duration of the project

## **2.12 HVAC and Electrical System**

Contractor will shut down and lock out, if appropriate, the HVAC system in the Work Area(s). The electrical distribution service within the work area shall not be used for power during remediation. Temporary electrical service shall be provided by the contractor from outside the work area. Main power distribution service to other areas can remain energized.

## **2.13 Owner-Directed Specifications**

The Contractor shall abide by applicable security rules and regulations established by the Owner and provided to the Contractor.

## **3.0 PRODUCTS**

### **3.1 Materials**

Materials and equipment proposed for use on this project shall be subject to review and acceptance by the Owner, or Owner's Representative, and shall be in compliance with local, state, and federal regulations and requirements.

The list of required materials shall include, but not necessarily be limited to, the following:

- A. Critical barriers:** For this project, it is most feasible for the barriers to be composed of six (6) mil polyethylene sheets in sizes to minimize the frequency of joints. All seams and interfaces of the barrier shall be sealed with tape or another appropriate material. Polyethylene shall be flame retardant.
- B. Duct Tape:** Duct Tape 2" or wider, or an equivalent, capable of sealing interfaces of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials, and capable of adhering under both dry and wet conditions.
- C. Protective Packaging/Disposal of debris:** Clear or opaque, six (6) mil sealable polyethylene bags. Bags should be doubled to prevent puncture and spillage of contaminated materials. Each bag should be twisted closed and sealed with tape to prevent escape of contaminants.
- D. Warning Signs and Barrier Tape:** Warning signs shall state that the work area is a "Restricted Area" and that "Personal Protective Equipment is required in the area." Barrier tape shall be marked with the word "Caution" or "Danger." "Danger" is typically reserved for higher hazards, life threatening situations
- E. Personal Protective Equipment (PPE):** The contractor shall provide PPE, per the Illinois Environmental Protection Agency (IEPA), Illinois Department of Public Health (IDPH) and OSHA guidelines, including National Institute of Occupational Safety and Health (NIOSH) approved respirators, goggles, and protective clothing, i.e., safety shoes, gloves, and head protectors. The contractor shall maintain a sufficient supply of protective clothing, respirators and cartridges to allow all supervisors and workers to change when needed.
- F. Cleaning Agents:** Only approved cleaners and detergents shall be used. These should be appropriate for the specific job and not be corrosive or leave toxic residue.
- G. Cardboard sheets:** (*Optional*) Minimum thickness of ¼ inch to prevent damage to floor surfaces.

### **3.2 Tools and Equipment**

- A. Transportation Equipment:** Transportation equipment, as required, shall be suitable for loading, temporary storage, transporting, and unloading waste. All over-the-road transportation equipment must carry any required appropriate transport licenses, signage, placards, and insurance as necessary. (tailor the specification to the job site) Parking for the remediation workers and the placement of equipment shall be coordinated between the Owner, ATC and the Contractor.
- B. Vacuum Equipment:** All vacuum equipment utilized in the work area shall utilize HEPA filtration as per ANSI Z9.2-1979.

- C. Other Tools and Equipment:** The Contractor shall provide other suitable tools including, but not limited to: saws, lighting, hammers, drills, brooms, and carts.
- D. GFCI:** The Contractor shall provide ground fault circuit interrupters (GFCI) to protect all electrical cords and connections.
- E. Lighting:** Use approved lighting equipment in the work area.
- F. Scaffolding:** Scaffolding, as required to accomplish specified work, shall meet all applicable Federal, State and Local safety regulations and be used in accordance with manufacturer's specifications.
- G. Manometer:** If applicable, the Contractor shall provide manometers to measure the pressure differential in each contained work area relative to the non-contained occupied areas. The manometer(s) that provide a permanent record of the pressure differential that indicates the time, date, and measured pressure differential in inches of water (" of H<sub>2</sub>O) are preferred. Other manometers may be used as long as logs are maintained to document pressure readings upon start of work, mid-day and end of workday. Pressure measurement may be in Paschals (Pa).
- H. Sanitation:** The Contractor shall coordinate with the Owner, the VA representative, and ATC for specific use of building facilities or portable sanitation facilities for workers. Personal hygiene is important for worker safety and to prevent contamination release. The Contractor shall coordinate with the Owner and ATC on the provision of water sources for personal hygiene, decontamination and emergency uses.
- I. Disposal:** The Contractor for disposal of contaminated building materials and other construction wastes shall provide a commercial enclosed waste container with lock. The container shall be located so as to be least visible to the public and to be near the proposed access portal to the work area(s).

## **4.0 ABATEMENT / REMEDIATION**

### **4.1 General Requirements**

#### **A. Trained and Competent Personnel**

Personnel trained and experienced in the remediation of microbial contaminated materials shall perform work. The training shall include the following criteria at minimum:

1. Instruction on the potential hazards associated with microbial remediation.
2. Recognition of signs and symptoms of microbial exposure.

3. Personal protective equipment (PPE) options and usage instructions.
4. Proper work practices to minimize microbial exposure.
5. Installation, maintenance, and removal of critical barriers and containment equipment.
6. Techniques for the removal of contaminated building materials and treatment of contaminated building materials.
7. Techniques for decontamination.
8. Procedures for medical emergencies within the containment area.

A qualified instructor(s) with experience and prior training in microbial remediation work will provide the training. All Contractor personnel must communicate their understanding of the potential hazards by signing the Certificate of Worker Training form provided in Appendix B.

## **B. Work Area Isolation**

During the setup and removal stages, all microbial remediation work areas shall remain isolated from other non-contaminated portions of the building, utilizing critical barriers, and remain under negative pressure until remediation is completed. The remediation contractor shall monitor access to the microbial remediation work areas at all times.

## **C. Personal Protective Equipment**

The following are minimum worker protection items for workers performing microbial remediation:

1. **Respirators:** Air purifying respirators equipped with NIOSH approved filters and where required organic vapor cartridges in tandem shall be the minimum respiratory protection permitted during all stages of work. No modifications or interchanging of respirator parts from different brands will be permitted. The Contractor must provide sufficient cleaning materials and replacement filters, cartridges, and spare parts in order to properly maintain the respiratory equipment. Disposable respirators or filtering face pieces shall not be permitted under any circumstances. All respiratory protection shall be provided to workers in accordance with the submitted respiratory protection program, which at minimum includes all items in OSHA 29 CFR 1926.103. A copy of this program shall be kept on site.
2. **Gloves:** Gloves shall be worn while working in the work area. Glove material shall be appropriate for protection against the specific chemical agent(s) that is/are being handled. Acceptable glove materials for most uses will consist of: natural rubber, latex neoprene, nitrile, polyurethane or PVC. Gloves shall be

removed in a manner to leave them inside out once removed from the hand. Disposable gloves shall not be removed from the work area and shall be discarded as contaminated waste when leaving the work area. Non-disposable gloves shall be disinfected and cleaned as appropriate.

3. **Eye Protection:** Fog proof goggles for personnel engaged in microbial remediation work shall be used, when a half-face respirator is worn. Safety glasses or goggles with vent holes are not acceptable. Additional eye protection is not required if the Contractor uses full-face respirator masks with shatter-resistant face masks.
4. **Protective Clothing:** Mold impervious disposable head and foot coverings, and a body suit made of Tyvek™, or equivalent material, shall be worn during all microbial remediation work. All gaps and seams shall be reinforced with duct tape or similar material. Coverall suits shall include attached foot covering and hood.
5. **Foot Protection:** Workers shall wear puncture resistant work boots while working at the subject site, in accordance with OSMA/VOSH regulations.
6. **Head Protection:** Workers shall wear hard hats when performing demolition work or if there is any possibility of objects falling on workers heads.
7. **Safety Harness:** Workers on scaffolding or ladders above a height of six (6) feet above ground shall wear approved full-body safety harnesses as required by OSHA.

#### **D. Work Area Restrictions**

1. Cleaning and disinfection agents shall be utilized only as required and only as prescribed by the manufacturer. The use of biocides of any kind shall not be permitted during this project.
2. The use of water shall be minimized during the remediation work at the subject site.
3. At no time shall others enter the work area, or go further than the demarcated work area isolation barrier, without proper respiratory protection and protective clothing.
4. No equipment, supplies or materials (except properly containerized waste materials) shall be removed from the work area unless such equipment, supplies and/or materials have been cleaned, as appropriate (decontaminated).

## **4.2 Microbial Remediation / Abatement Protocols**

### **A. General**

The microbial remediation methods/techniques enumerated as follows, are not meant to exclude other similarly effective methods. The Contractor shall submit, in writing, changes or variances to the methods listed. The Owner or Owner's representative shall respond in writing and in a timely manner to any such requests.

1. Prior to commencement of remediation work, the contractor shall verify with the owner that all water intrusion issues have been rectified.
2. The HVAC system serving each work area shall be shut down prior to beginning any remediation work.
3. Electrical lines located inside the work area shall be de-energized prior to beginning work. The Contractor shall retain the services of a licensed electrician to provide a temporary power panel and equipment in compliance with all electrical code requirements for temporary electrical systems. All electrical cords and equipment used by the Contractor shall be connected to a ground fault circuit interrupter (GFCI) in-line with the supplied current.
4. The Contractor shall supply fire extinguishers appropriate for the anticipated conditions at the subject site. A minimum of one (1) fire extinguisher shall be provided inside each containment area plus one (1) outside each containment. All workers shall be instructed in the general principles of fire extinguisher use and the hazards associated with incipient stage fire fighting.
5. The Contractor shall provide temporary lighting, if necessary, for each work area. The lighting shall be sufficient to illuminate all parts of the work area.
6. The high volume air filtration devices (AFDs or negative air pressure machines) in each work area shall provide a minimum of five air changes per hour and a negative pressure differential of at least 0.02" of H<sub>2</sub>O. The AFDs shall be located as far away from the decontamination chamber as possible and ducted to the outdoors with flexible tubing and secured with a rigid barrier (i.e. plywood). Make up air introduced into the containment shall be filtered.

### **B. Specific**

The following is a description of the microbial remediation for the work area as shown in Appendix A – Microbial Remediation Drawing.

Work Area	Microbial Remediation Description
Kitchen Room 207 – Recessed Area Above Ceiling.  Approximately 180 square feet (SF) of mold-impacted plaster, and approximately 180 SF of corrugated galvanized roof deck to be cleaned.	Perform a detailed cleaning of mold-impacted areas under negative pressure using wet wiping techniques with the aid of anti-microbial disinfectants and HEPA vacuums.

1. Isolate each work area using barrier materials, tape, and warning signs. HVAC equipment serving each work area shall be shut down prior to installation of critical barriers. Install critical barriers consisting of one layer of 6 mil, fire retardant polyethylene sheeting at entrances and openings to each designated work area including HVAC ducts.
2. Pre-clean furniture, fixtures, and moveable objects from the designated work areas. Refer to the drawing in Appendix A for the actual work area locations.
3. The pre-cleaning of rough/porous surfaces shall be performed using vacuums equipped with HEPA filters. Hard/non-porous surfaces shall be pre-cleaned by wet wiping with a damp cloth. High volume air filtration devices equipped with HEPA filters shall be used to filter the room air during this initial cleaning and during the construction of negative pressure enclosures. Non-porous or semi-porous items like wood should be wiped down.
4. If applicable, moveable items shall be tagged by the Contractor indicating the exact location where each item was taken from, and any damage noted on the tag. An inventory of moveable items shall be maintained by the Contractor, which includes a description of each item and any damage or other observations. This inventory record must be reviewed and confirmed by the Owner or Owner’s Representative prior to removal. The Contractor is responsible for protecting the items being moved and is responsible for damage caused or missing items.
5. Furniture, fixtures, and moveable objects shall be relocated to a temporary storage area provided by either the Owner, or if sufficient space is not available, the contractor shall provide temporary storage. The location of this area has not yet been determined and may or may not be on-site.
6. Any non-moveable objects that will remain in the work area (e.g. light fixtures) shall be pre-cleaned and protected using 6 mil. fire retardant polyethylene sheeting.
7. Construct a negative pressure enclosure in each designated work area using one layer of 6 mil, fire retardant polyethylene sheeting secured with duct tape and wood supports as necessary. The enclosures shall cover all surfaces with the exception of the surfaces that will be remediated (e.g. certain walls, floors).

8. The work area shall be kept orderly, clean, and clear of work material, polyethylene sheeting, tape, cleaning materials, clothing, and all other disposable material or items used.
9. A decontamination chamber (clean room) shall be constructed at the entrance to the work area. This clean room shall be large enough to allow workers to change in and out of their PPE and store one waste bag. Triple flaps shall be installed at both ends of the clean room to serve as airlocks. No personnel shall be permitted to pass beyond the clean room without appropriate PPE. Coveralls shall be removed in the clean room in an "inside out" manner to minimize the dispersal of fungi spores. Ventilation shall be maintained in the work area at all times through the use of a HEPA filtered negative pressure machine(s).
10. Remove/clean up and perform general cleaning in locations identified in Appendix A. If applicable, drywall removal shall be performed carefully and intact if possible, so that drywall that will remain has a smooth and even edge. Cut manageable-size sections of drywall with a sharp instrument (knife) or saw. Do not use hammers and pry bars to smash and tear the sheetrock. Bag cut drywall sections immediately. Assess newly exposed gypsum board wall surfaces for additional visible mold growth. Remove and discard of all gypsum board and fiberglass insulation on window walls. In general, remove and discard all impacted gypsum board and fiberglass insulation on any adjacent walls to a height of four feet from the floor, or two feet beyond visible mold growth, whichever is greater.
11. If applicable, metal studs that remain in place in areas where contaminated drywall has been removed shall be wiped with a detergent solution and allowed to dry.
12. All surfaces and impacted contents throughout the work area shall be cleaned to industry standards, including, but not limited to ceiling light fixtures and the interior and exterior surfaces of the HVAC system and associated ductwork. This includes all surfaces to be damp wiped after HEPA vacuuming is completed, including the interior of critical barriers. At the discretion of the Owner and ATC, and after the completed removal and final cleaning, all surfaces within the work areas shall be encapsulated with an approved "clear" microbial encapsulant. Bare concrete floors shall be encapsulated using a "clear" microbial encapsulant with the Owner's approval.
13. At the discretion of the Owner and ATC, and after the completed removal and final cleaning, all surfaces within the work areas shall be encapsulated with an approved "clear" microbial encapsulant. Bare concrete floors shall be encapsulated using a "clear" microbial encapsulant with the Owner's approval.

14. Critical barriers will remain in place under negative pressure, until post-remediation criteria/testing is acceptable as determined by the Owner and ATC.

### **C. Clean-up Procedures**

1. Disposable cleaning materials, such as sponges, mop heads, filters, disposable clothing shall be placed in double six-mil polyethylene bags and sealed.
2. Polyethylene sheeting and tape from covered surfaces shall be removed and placed in double six-mil polyethylene bags and sealed for disposal.
3. Vacuum bags and filters shall be placed in double six-mil thick polyethylene bags and sealed for disposal.
4. Contaminated clothing or work area clothing used during remediation shall be placed in polyethylene bags for disposal or cleaned prior to leaving the work area.
5. At the completion of the work, the remediation contractor shall perform cleaning and decontamination of entire work area by a thorough HEPA vacuuming of all surfaces.
6. The work area shall be subject to a final visual inspection by the Contractor and the Owner's Representative prior to post-remediation sampling.

### **4.3 Waste Disposal**

Waste shall be disposed of as normal construction debris in an appropriate landfill, in accordance with state and municipal regulations.

## **5.0 FINAL INSPECTION AND POST-REMEDATION TESTING**

### **5.1 Final Inspection**

- A. Upon the completion of microbial remediation activities and general cleaning, each work area shall be visually reviewed by a qualified environmental professional from ATC to ensure that the work areas have met the following criteria:
- B. Contractor materials, equipment, waste bags, etc. shall be removed from the work area except for the negative air machine(s) and temporary lighting (if applicable).
- C. The work area shall be visually free of microbe-contaminated materials and all associated dust and debris. Re-cleaning of the work area by the Contractor shall be required if the above criteria is not met.

- D. The work areas and building materials shall be dry before post-remediation testing.
- E. Upon satisfaction of the above criteria, a minimum of 24 hours shall be allowed to occur within the work area prior to beginning environmental bioaerosol (non-culturable) air sampling. Any exception to this shall be agreed upon by the Consultant and Owner.

## 5.2 Post-Remediation Testing

**Fungal Spore Screening:** Fungal spore sampling shall be performed to measure the total (non-culturable) spore concentration. The testing shall be performed using Allergenco or Zefon Air-O-Cell™ cassettes or an equivalent device. The cassettes shall be used in accordance with the methods recommended by the manufacturer. A high volume pump shall be used to draw air through the cassette calibrated at 15 liters of air per minute (lpm) using a primary standard. A minimum of (1) one sample shall be collected in each containment. Additional samples may be collected depending on the design of the containment area or the square footage involved. This will be at the discretion of the Owner's Representative. A minimum of one (1) control sample shall be collected from the outdoor ambient air and if necessary, one from the entrance to the work area where the make-up air enters the containment. One (1) outdoor air and potentially one (1) make-up air sample shall be collected as part of the work area testing. The outdoor ambient air sampling shall be performed at the building's fresh air intake (if present), if no such intake exists, the samples shall be collected at the roof of the building, if accessible. If the roof is not accessible, a location should be selected that is away from the structure, in an area that is unobstructed from the prevailing winds, and away from obvious fungi sources (e.g. plants, soil, decaying wood, etc). Samples shall be placed on a 24-hour turnaround time. Spore trap results must meet the following criteria prior to removal of the work area containment:

- A. If applicable, tape lift samples on horizontal or remaining framing exhibit no more than occasional spores of non-indicator fungal taxa.
- B. Work area samples shall be similar in species and have a total spore concentration that is equal to or lower than the control samples (non-impacted areas and outdoors).
- C. The concentration of each individual fungal genus (e.g. *Cladosporium*, *Alternaria*, *Penicillium/Aspergillus types*) shall be quantitatively and qualitatively similar to or less than the control samples (i.e. those from outdoors or non-impacted areas of the building).
- D. The presence of target species (those identified as the genus or species being removed) or toxigenic species may preclude satisfaction of the post-remediation criteria based on the discretion of the Owner's Representative. Target species include species of *Stachybotrys*, *Chaetomium* and *Penicillium/Aspergillus types*.

Post-remediation testing will be done by the Consultant on representative area(s) and work zone basis. Costs for one (1) round of post-remediation testing will be included in the Consultants services. **If the work areas fail to meet the post-remediation criteria, the Contractor shall re-clean, re-disinfect, and sanitize the failed area(s) prior to additional inspecting and testing by the Consultant. Furthermore, the Contractor shall pay for additional testing and oversight of failed areas including all consultant labor and analytical costs. An adjustment from the Contractor's base bid will be used for this payment.**

### **5.3 Containment Demobilization**

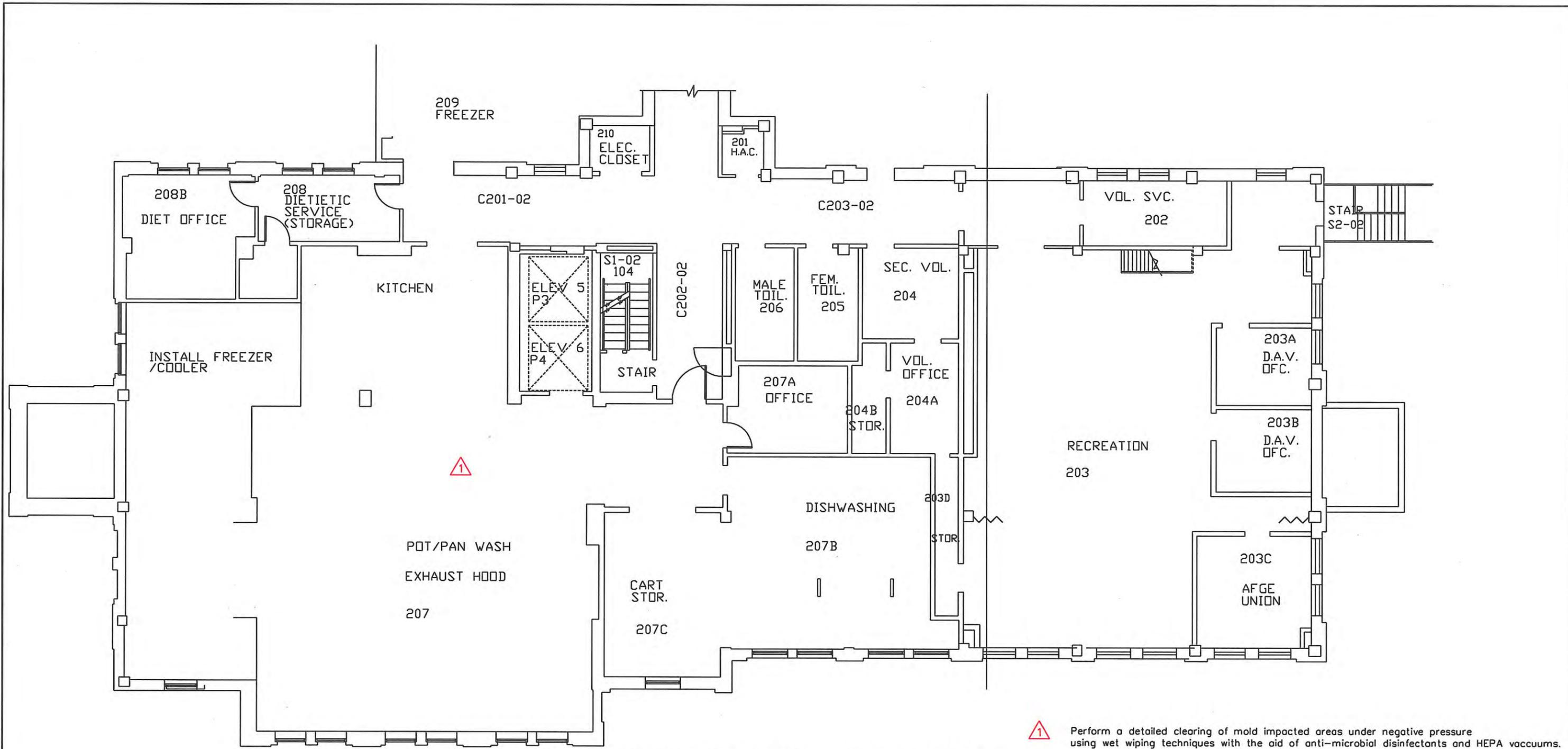
After the environmental professional has declared the environmental assessment for each particular work area to be acceptable, the negative pressure enclosures shall be dismantled and removed. All waste materials shall be double bagged and disposed of. The Contractor shall be responsible for repairing any damage caused to finished surfaces. Adhesive or duct tape residue shall be removed.

### **5.4 Construction Phase of Remediation**

The Contractor is not responsible for replacing any removed building components and finishes. This includes, but is not limited to: painting, reinstallation of flooring materials, drywall on walls and ceilings, wall paper, cove base/adhesive, ceiling tiles, fiberglass pipe insulation and window caulk.

## **APPENDIX A**

### **MICROBIAL REMEDIATION DRAWING**



Building 2 (South End) - Second Floor

⚠ Perform a detailed clearing of mold impacted areas under negative pressure using wet wiping techniques with the aid of anti-microbial disinfectants and HEPA vacuums.



MICROBIAL REMEDIATION DRAWING Department of Veteran Affairs Medical Center 2401 West Main Street Marion, IL 62959		Project No. 30.27653.0003	SCALE: Not to Scale	
BY: SLR	DATE: 03/08/12	Reviewed By: <i>MAH</i>		

## **APPENDIX B**

### **FORMS**

## CERTIFICATE OF WORKER TRAINING

DATE: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

PROJECT ADDRESS: \_\_\_\_\_

CONTRACTOR'S NAME: \_\_\_\_\_

Your employer's contract with the Owner for the above project requires that: You will be supplied with the proper respirator and be trained in its use. You will be trained in safe work practices and in the use of the equipment found on the job. You will receive a medical examination. These things are to have been done at no cost to you. By signing this certification, you are assuring the Owner that your employer has met these obligations to you.

**RESPIRATORY PROTECTION:** I have been trained in the proper use of respirators and informed of the type of respirator to be used on the above-referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on the above project.

**TRAINING COURSE:** I have been trained in the dangers inherent in handling microbial impacted materials and in proper work procedures, personal and area protective measures. The topics covered in the course included, but were not limited to, the following:

1. Health effects associated with handling microbial impacted materials
2. Respiratory protection
3. Use of protective equipment
4. Negative air/pressure differential systems
5. Work practices including hands on or on-job training
6. Personal decontamination procedures

\_\_\_\_\_  
**Print Name**

\_\_\_\_\_  
**Worker's Signature**

### CERTIFICATE OF WORKER'S RELEASE

DATE: \_\_\_\_\_

TO: \_\_\_\_\_

RE: \_\_\_\_\_

1. In consideration of my employment by \_\_\_\_\_ and in connection with the removal and disposal of foreign matter from air conveyance systems, and in consideration of the sum of: **ONE AND NO/100 (\$1.00) DOLLAR** and other good and valuable consideration in hand paid, at and before the sealing and delivery of these presents, the receipt, sufficiency, and adequacy of which are hereby acknowledged, the undersigned does hereby acknowledge, warrant, represent, covenant, and agree as follows:
  - a. I acknowledge and understand that I have been or will be employed in connection with the removal of, disposal of, or other work in contaminated work areas, and I acknowledge that I have been advised of and I understand the dangers inherent in handling foreign matter from air conveyance systems.
  - b. I knowingly assume all risks in connection with potential exposure and I do hereby covenant not to sue, and to release and forever discharge the Owner, Consultant, Testing Laboratory or architects and engineers employed by Owner, Consultant, or Testing Laboratory and all their directors, officers, employees, nominees, personal representatives, affiliates, successors, and assigns for, from and against any and all liability whatsoever, at common law or otherwise, except any rights which the undersigned may have under the provision of the applicable workmen's compensation laws. Except as specifically set forth herein I hereby waive and relinquish any and all claims of every nature which I now have or may have or claim to have are in any way, directly or indirectly, related to exposure from removal of foreign matter from air conveyance systems.
  - c. I hereby warrant and represent that I have not been disabled, laid-off, or compensated in damages or otherwise, because of the exposure to foreign matter from air conveyance systems.
  - d. I represent that I can read the English language, or that I have had someone read this instrument to me, and that I understand the meaning of all the provisions contained herein.

Worker Name: \_\_\_\_\_

\_\_\_\_\_  
(Notary Signature)

Worker Signature: \_\_\_\_\_

\_\_\_\_\_  
(Commission Expiration Date) (            )  
(            )

Worker SSN: \_\_\_\_\_



**INSPECTIONS:**

TIME

COMMENTS

WASTE REMOVAL:

ATTACHED RECEIPTS:

- Monitoring results from Consultant
- Dump receipts from landfill

Name of Supervisor: \_\_\_\_\_

Signature: \_\_\_\_\_

### WORK AREA ENTRY LOG

Date: \_\_\_\_\_

Name	Affiliation	Respirator Type	Time In/Out

Name of Supervisor: \_\_\_\_\_

Signature: \_\_\_\_\_

## **RESPIRATOR TRAINING CERTIFICATION**

I hereby certify that I have been trained in the use of each type of respiratory protection equipment required for use on this Project. The training included the following:

1. Explanation of the dangers related to misuse.
2. Instruction on putting on, fitting, testing, and wearing the respirator.
3. Instruction on inspection, cleaning, and maintaining respirator.
4. Instruction on emergency situations.

I further certify that I understand the use, care and inspection of the respirator, and have tested and worn the unit.

Employee Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**(Submit one copy for each employee prior to starting work)**

# **APPENDIX C**

## **SURFACE SAMPLE RESULT**

**TABLE 1****SURFACE SAMPLE RESULT**

<b>Date Sample Collected</b>	<b>Client Sample ID</b>	<b>Sample Location</b>	<b>Fungal Spores/Structures</b>
06/08/11	S-1	Building 2 - Room 207 / Black Staining on Plaster	Medium - Cladosporium High - Unidentified Spores High - Hyphal Fragments



# EMSL Analytical, Inc.

3029 S. Jefferson Saint Louis, MO 63118

Phone: (314) 577-0150 Fax: (314) 776-3313 Web: Email: saintlouislab@emsl.com

**Attn:** Matt Honerkamp  
ATC Associates, Inc.  
14 Sunnen Drive  
Suite 143  
Saint Louis, MO 63143

EMSL Order: 391103964  
Customer ID: ATCA53  
Collected:  
Received: 6/09/2011  
Analyzed: 6/10/2011

**Proj:** Mak-Marion VA / 30.27653.0003

## Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Swab Samples (EMSL Method: M041)

<b>Lab Sample Number:</b>	391103964-0001				
<b>Client Sample ID:</b>	S-1				
<b>Sample Location:</b>	Bldg 2 / Rm 207-Black Staining on Plaster				
<b>Spore Types</b>	Category				
Agrocybe/Coprinus	-				
Alternaria	-				
Ascospores	-				
Aspergillus/Penicillium	-				
Basidiospores	-				
Bipolaris++	-				
Chaetomium	-				
Cladosporium	medium				
Curvularia	-				
Epicoccum	-				
Fusarium	-				
Ganoderma	-				
Myxomycetes++	-				
Paecilomyces	-				
Rust	-				
Scopulariopsis	-				
Stachybotrys	-				
Torula	-				
Ulocladium	-				
Unidentifiable Spores	high				
Zygomycetes	-				
Fibrous Particulate	-				
Hyphal Fragment	high				
Insect Fragment	-				
Pollen	-				

Initial report from: 06/10/2011 13:57:24

Category: Count/per area analyzed  
Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

Bipolaris++ = Bipolaris/Dreschlera/Exserohilum Myxomycetes++ = Myxomycetes/Periconia/Smut  
\* = Sample contains fruiting structures and/or hyphae associated with the spores.

Joy Dell'Aringa, Laboratory Manager  
or Other Approved Signatory

No discernable field blank was submitted with this group of samples.

Samples analyzed by EMSL Analytical, Inc. Saint Louis, MO AIHA-LAP, LLC EMLAP 102636

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation of the data contained in this report is the responsibility of the client. "-\*" denotes not detected. Samples received in good condition unless otherwise noted.

For Information on the fungi listed in this report please visit the Resources section at [www.emsl.com](http://www.emsl.com)



EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

391103964

EMSL ANALYTICAL, INC.  
3029 S JEFFERSON AVE  
ST. LOUIS, MO 63118

PHONE: 314-577-0150

FAX: 314-776-3313

Company: <i>ATC Associates Inc.</i>		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different please note in Comments**	
Street: <i>14 Sunnen Drive, Suite 143</i>		Third Party Billing requires written authorization from third party	
City: <i>St. Louis</i>	State/Province: <i>MO</i>	Zip/Postal Code: <i>63143</i>	Country: <i>USA</i>
Report To (Name): <i>Matt Honerkamp</i>		Fax #: <i>314-644-4838</i>	
Telephone #: <i>314-644-2500</i>		E-mail Address: <i>honerkamp30@atc-enviro.com</i>	
Project Name/ Number: <i>Mak - Marion VA #30.27653.0003</i>		<i>&amp; karen.dickens@atcassociates.com</i>	
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> E-mail	PO# <i>—</i>	State Samples Taken: <i>IL</i>	

Turnaround Time (TAT) Options\* - Please Check

3 Hour  
  6 Hour  
  24 Hour  
  48 Hour  
  72 Hour  
  96 Hour  
  1 Week  
  2 Week

\*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps)

- |                   |                   |                    |                     |                   |
|-------------------|-------------------|--------------------|---------------------|-------------------|
| • M001 Air-O-Cell | • M173 Allegro M2 | • M004 Allergenco  | • M032 Allergenco-D | • M172 Versa Trap |
| • M049 BioSIS     | • M003 Burkard    | • M043 Cyclcx      | • M002 Cyclcx-d     |                   |
| • M030 Micro 5    | • M174 MoldSnap   | • M176 Relle Smart | • M130 Via-Cell     |                   |

Other Microbiology Test Codes

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>• M041 Fungal Direct Examination</li> <li>• M005 Viable Fungi ID and Count</li> <li>• M006 Viable Fungi ID and Count (Speciation)</li> <li>• M007 Culturable Fungi</li> <li>• M008 Culturable Fungi (Speciation)</li> <li>• M009 Gram Stain Culturable Bacteria</li> <li>• M010 Bacterial Count and ID - 3 Most Prominent</li> <li>• M011 Bacterial Count and ID - 5 Most Prominent</li> <li>• M013 Sewage Contamination in Buildings</li> </ul> | <ul style="list-style-type: none"> <li>• M014 Endotoxin Analysis</li> <li>• M015 Heterotrophic Plate Count</li> <li>• M180 Real Time Q-PCR-ERMI 36 Panel</li> <li>• M018 Total Coliform (Membrane Filtration)</li> <li>• M020 Fecal <i>Streptococcus</i> (Membrane Filtration)</li> <li>• M210-215 <i>Legionella</i> Detection</li> <li>• M026 Recreational Water Screen</li> <li>• M027 Mycotoxin Analysis</li> </ul> | <ul style="list-style-type: none"> <li>• M029 <i>Enterococci</i></li> <li>• M019 Fecal Coliform</li> <li>• M133 MRSA Analysis</li> <li>• M028 <i>Cryptococcus neoformans</i> Detection</li> <li>• M120 <i>Histoplasma capsulatum</i> Detection</li> <li>• M033-39 Allergen Testing</li> <li>• M044 Group Allergen (Cat, Dog, Cockroach, Dustmites)</li> <li>• Other See Analytical Price Guide</li> </ul> |
|---|--|---|

Preservation Method (Water):

Name of Sampler: *Matt Honerkamp*      Signature of Sampler: *Matt Honerkamp*

Sample #	Sample Location - Desc.	Sample Type	Test Code	Volume/Area	Date/Time Collected
<i>S-1</i>	<i>Building 2/Room 207 - Black Staining on Plaster</i>	<i>Swab</i>	<i>M041</i>	<i>—</i>	<i>6-8-11/2:30p</i>

Client Sample # (s): *S-1*      Total # of Samples: *1*

Relinquished (Client): *Matt Honerkamp*      Date: *6-9-11*      Time: *2:27p*

Received (Client): *[Signature]*      Date: *6/9/11*      Time: *3:50p*

Comments: