

Fungal Remediation Protocol

**Mercedes Police Department
316 South Ohio Avenue
Mercedes, Texas**

February 15, 2022
Terracon Project No. 88217264



Prepared for:
City of Mercedes
Mercedes, Texas

Prepared by:
Terracon Consultants, Inc.
Pharr, Texas

Eloy Palacios
Eloy Palacios
TDLR Mold Assessment Consultant
License No. MAC1171
Expires 10-12-2022

February 15, 2022



City of Mercedes
400 South Ohio Avenue
Mercedes, Texas 78570

Attn: Mr. Albert Perez, City Manager
T: 956-565-3114
E: aperez@cityofmercedes.com

Re: Fungal Remediation Protocol
Mercedes Police Department
316 South Ohio Avenue
Mercedes, Texas
Terracon Project No.: 88217264

Dear Mr. Perez:

Terracon Consultants, Inc. (Terracon) is pleased to provide this fungal remediation protocol for the Mercedes Police Department Building. The fungal growth described in this protocol exceeds the regulatory threshold of 25 contiguous square feet as defined in the Mold Assessors and Remediators Administration Rules (MARAR) under the jurisdiction of the Texas Department of Licensing and Regulation (TDLR) and will be remediated by a TDLR-licensed Mold Remediation Contractor.

Terracon appreciates the opportunity to provide these services to City of Mercedes. If we can provide any additional environmental, occupational health, or safety-related services, please contact us at (956) 283-8254.

Sincerely,
Terracon Consultants, Inc.

A handwritten signature in black ink, appearing to be 'R Garrison', is written over a faint, stylized signature line.

For Robert Garrison
Department Manager, Industrial Hygiene
TDLR MAC0107
Expires 11/10/2022

Eloy Palacios
Eloy Palacios
Department Manager
TDLR MAC1171
Expires 10/12/2022

Anyone who believes a company or individual has violated the rules in the MARAR can file a complaint with TDLR. For information on this process, call 1-800-803-9202, or complete the online complaint form at <https://www.tdlr.texas.gov/complaints/>

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APPENDIX A: FUNGAL REMEDIATION DIAGRAM

SCOPE OF WORK – FUNGAL REMEDIATION

Project: Mercedes Police Department
316 South Ohio Avenue
Mercedes, Texas
February 15, 2022
Terracon Project No. 88217264

PROJECT SUMMARY

Visible fungal growth, moisture damage, and moisture staining have been identified on carpet, ceiling tiles, fibrous glass insulation within wall/ceiling systems, gypsum board walls, gypsum board ceilings, wood wall panels, heating, ventilating, air conditioning (HVAC) system supply/return air vents, interior/exterior duct surfaces, interior components of three air handling units (AHUs) within the mechanical room, interior components of one roof top unit (RTU) located on the northwest portion, HVAC condensate drain lines and insulated coolant lines, two metal doors and door frames, and concrete ceiling surface in portions of the referenced building. The locations of the fungal growth and moisture damage are identified in the diagram in Appendix A. Based on site observations the visible fungal growth and moisture damage appeared to be related to condensate formation on surfaces and equilibrium moisture conditions related to elevated air moisture, and historical roof-related water intrusion events. The quantity of visible fungal growth observed on the referenced surfaces within the building exceeded the regulatory threshold of 25 contiguous square feet.

The *Mold Assessors and Remediators Administrative Rules* (MARAR, Texas Administrative Code, Title 16, Part 78), defines “regulated” fungal growth as fungal growth in the indoor environment that exceeds the regulatory threshold of 25 contiguous square feet of surface area. The quantity of fungal growth on surfaces and in the HVAC system at the indicated location exceeds the regulatory threshold of 25 contiguous square feet and must be remediated in accordance with the MARAR. The MARAR specifies that regulated quantities of fungal growth must be remediated by a TDLR-licensed Mold Remediation Contractor (CONTRACTOR) in accordance with a Fungal Remediation Protocol prepared by a TDLR-licensed Mold Assessment Consultant (MAC).

The fungal remediation project will consist of the removal of affected carpet, moisture-impacted ceiling tiles, fibrous glass insulation within wall/ceiling systems, all wood wall panels, affected gypsum board walls, and associated wall/ceiling system components such as wood framing, gypsum board, etc. that exhibit fungal growth or moisture damage, HVAC system supply/return air vents throughout, fibrous glass insulation within the northwest RTU, HVAC ductwork and risers throughout, and affected HVAC insulated coolant lines. Three AHUs will be disassembled, and the components wrapped in 6-mil polyethylene and removed. Additionally, the HVAC condensate drain lines, two metal doors and frames, concrete ceiling, wall systems, wall cavity/framing,

flooring, interior surfaces, and miscellaneous items as indicated in the diagram in Appendix A will be cleaned with a non-ionic detergent solution or approved biocide solution. An antimicrobial encapsulant product may be applied to appropriate surfaces following final visual clearance. The fungal remediation will be conducted in negative pressure containment with high efficiency particulate air (HEPA)-filtered exhaust and a two stage dry decontamination chamber egress. The contained work area will be subject to the visual and analytical clearance criteria presented in this protocol.

The remediation activities will be conducted in accordance with regulations from the TDLR contained in the Texas Administrative Code (TAC) Title 16, Part 78, *Mold Assessors and Remediators Administrative Rules*, (TAC 16, MARAR §78.1-78.150). Specific sections of the MARAR that apply to the fungal remediation project, but not limited to, are: MARAR §78.56, §78.58, §78.60, §78.110, §78.120, §78.130, §78.140 and §78.150.

Prior to any remedial activities that could disturb or damage building materials during fungal remediation, an asbestos survey was conducted in accordance with the Texas Asbestos Health Protection Rules (TAHPR), as presented in Terracon Report 88207148, dated May 7, 2021. The analytical report indicates that asbestos was detected in resilient floor tile and mastic materials. The asbestos containing materials are scheduled to be abated prior to the fungal remediation activities.

1.0 SAFETY PRACTICES

The CONTRACTOR is responsible for Occupational Safety and Health Administration (OSHA) safety practices associated with worker protection. The CONTRACTOR shall ensure that electrical and fire hazard safety protocols are followed in compliance with typical construction regulations. In addition, the CONTRACTOR will implement any additional work practices, and safety/security rules associated with the project areas as established by City of Mercedes work practice.

The CONTRACTOR will comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service. The CONTRACTOR will provide and maintain temporary fire protection during the project in accordance with requirements of the local protection code.

The CONTRACTOR will provide Type-“A” fire extinguishers for temporary spaces and similar spaces where there is minimal danger of electrical, grease, oil or flammable liquid fires. In other locations, provide Type-“ABC” dry chemical extinguishers, or a combination of several extinguishers of NFPA-recommended types for the exposures in each case.

The CONTRACTOR is responsible for providing any manlifts, scaffolding, ladders and/or staging necessary to accomplish the work of this contract. The type, erection and use of scaffolding, or manlifts, including provisions for fall protection and employee training, shall comply with OSHA 29 CFR 1926.500, and 29 CFR 1926.453.

The CONTRACTOR is responsible for Fall Protection for his employees. CONTRACTOR is solely responsible for protection CONTRACTORS employees from fall hazards. Fall protection protocols must comply with applicable provisions of OSHA 29 CFR 1926.501.

2.0 ACCESS TO WORK AREA

Site access will be limited to areas necessary to accommodate remediation. The CONTRACTOR will coordinate location of access and placement of the decontamination unit, waste disposal, etc. with onsite City of Mercedes Project Managers. The CONTRACTOR will comply with City of Mercedes security and access rules and regulations.

A secure work area will be established for the containment location and general work area. Only TDLR-licensed/registered individuals qualified to wear respiratory protection will enter the secured work area during the project. The CONTRACTOR will ensure that access to the work area is monitored.

The CONTRACTOR will post appropriate warning signs as required by MARAR §78.120 (f).

3.0 MOVEABLE/NON-MOVEABLE OBJECTS

The CONTRACTOR will clean and remove contents in the work areas, if present, prior to fungal remediation as described in Section 9.0. Non-moveable objects, as well as environmental surfaces that remain in the work area will be cleaned by HEPA-filtered vacuuming and/or damp wipe protocols and covered with two layers of 6-mil polyethylene sheeting secured in place with duct tape. The work area floors will be covered with two layers of six 6-mil polyethylene sheeting.

4.0 HEATING, VENTILATING, AIR CONDITIONING (HVAC) EQUIPMENT

The vertical riser roof penetrations for all three RTUs within the contained work areas shall be covered by critical barriers immediately after the vertical riser ductwork has been removed. Critical barriers consist of two layers of 6-mil polyethylene sheeting. The HVAC systems will be de-energized and locked out/tagged out in accordance with OSHA 1910.147 prior to the start of the remediation project.

A sufficient number of dehumidifiers will be operated in the work area as required to maintain relative humidity below 60%. The CONTRACTOR will maintain a log of daily relative humidity measurements. The dehumidifiers will be drained daily or soft-plumbed (Tygon® tubing, or equivalent) to the sanitary sewer.

TDLR §78.130 indicates that persons who perform air conditioning and refrigeration contracting (including the repair, maintenance, service, or modification of equipment or a product in an environmental air conditioning system, a commercial refrigeration system, or a process cooling or heating system) must be licensed by the Texas Department of Licensing and Registration, as provided under the Texas Occupations Code, Chapter 1302 (relating to Air Conditioning and Refrigeration Contractors).

5.0 DECONTAMINATION UNIT

A worker decontamination enclosure system shall be installed for entry into the containment areas and shall consist of two-stage, dry decontamination units constructed of 6-mil polyethylene sheeting. Disposable clothing worn by remediation workers in the containment will be HEPA vacuumed prior to exit through the two-stage decontamination unit. Except for the doorway and the make-up air provision for the enclosure, the worker decontamination system shall be sealed against leakage of air. Personnel must enter and exit the containment area through the decontamination enclosure system. No fungal contaminated individuals, tools, materials or other items shall enter the clean room side of the decontamination chamber.

6.0 CONTAINMENT/CRITICAL BARRIERS

The containment structure will be constructed with two layers of 6-mil polyethylene sheeting. The pre-cleaned non-moveable objects that remain in the contained work areas will be covered with two layers of 6-mil polyethylene sheeting. The floors in the contained work areas will be covered with two layers of 6-mil polyethylene sheeting. The openings between the work areas and adjacent areas, including but not limited to doorways, ventilation openings (both supply air and return air if present), missing ceiling tiles, drains, ducts and wall penetrations shall be sealed with 6-mil polyethylene sheeting. The penetrations that could permit air infiltration or air leaks shall be sealed, with exceptions of the make-up air and/or the decontamination enclosure system egress. A two-stage, dry decontamination chamber shall provide entrance to the work area as previously described. The containment and critical barriers must remain in place until interim, written notification of post remediation final clearance has been received from the MAC.

Critical barriers, consisting of two layers of 6-mil polyethylene sheeting and/or an inflatable duct bag will be secured at the roof deck penetration immediately after the vertical riser ductwork has been removed.

The contained work area and the critical barriers that isolate the vertical risers must remain in place for the duration of the fungal remediation project. The duration of the fungal remediation project for the purposes of this requirement shall be considered from the time the containment area is established and remediation begins through the time acceptable final analytical results are provided by the MAC.

7.0 VENTILATION

HEPA-filtered negative air machines (NAMs) will be operated continuously in the contained work area during fungal remediation. A negative pressure differential of 5 Pascal, or, 0.02 inches of water column will be maintained during active remediation. Negative pressure should not exceed 10 Pascal, or, 0.04 inches of water column. Negative pressure will be monitored with a manometer to confirm the specified pressure differential. The containment will be exhausted to the outdoor environment during “active” remediation procedures. The CONTRACTOR will coordinate with City of Mercedes building engineers to determine a secure location for outdoor exhaust. A sufficient number of NAMs will be staged to achieve the required pressure differential for the defined containment. The containment should have a minimum of four air changes per hour and shall be operated continuously for the duration of the project as previously defined. Due to security issues associated with the building use and operation, the containment may be sealed and placed on re-circulation air “scrubbing” during non-working hours and prior to final clearance sample collection, if required. The containment make-up air shall be filtered at the containment entry, with filters that have a MERV-8 filter, at a minimum, during re-circulation air “scrubbing”, if conducted.

8.0 PPE DURING FUNGAL REMEDIATION

Workers will wear personal protective equipment consisting of, at a minimum, half face dual cartridge air purifying respirators with HEPA cartridges (P-100) and full body disposable coveralls before beginning fungal remediation. However, it is the CONTRACTORS responsibility to ensure that his employees are afforded the respiratory protection as required by the OSHA standard for respiratory protection (29 CFR 1910.134, December 2008) or the respiratory protection requested by the employee. Safety glasses and work gloves must be worn while working in the containment. It is the CONTRACTORS responsibility to ensure that workers on scaffold platforms or working from ladders or other elevated platforms should be safe and secure from slipping or falling, as previously discussed.

9.0 CLEANING/DECONTAMINATION

The HVAC condensate drain lines, two metal doors and frames, concrete ceiling surface, and miscellaneous items as indicated in the diagram in Appendix A. The exposed wall/ceiling system components that will not be removed including framing and adjacent building components will be cleaned and decontaminated. Cleaning and decontamination procedures shall use HEPA vacuuming and damp wiping. An appropriately labeled and EPA registered biocide may be used on non-porous or semi-porous surfaces in accordance with the manufacturers label instructions. The environmental surfaces within the work area, including walls, ceiling, floors, and other environmental surfaces, should be cleaned prior to the Post Remediation Verification (PRV) evaluation.

Approved biocides include Fosters[®] 40/80[™] (quatarnary ammonium chloride), Fiberlock[®] Shockwave[™] (quatarnary ammonium chloride), or equivalent, as approved by the MAC prior to application. Safety Data Sheets for the chemicals used during the remediation must be maintained onsite by the CONTRACTOR.

The interior surfaces of the northwest RTU and vertical riser will be contact cleaned using HEPA-filtered vacuum and damp wipe techniques. **No biocides will be used during cleaning of the HVAC system.** A non-ionic detergent or tri-sodium phosphate (TSP) detergent will be used on interior HVAC surfaces.

If present, fibrous glass interior insulation will be removed and discarded. The environmental surfaces within the work areas should be clean prior to the Post Remediation Verification (PRV) evaluation. Following the PRV evaluation and removal of fibrous glass insulation, a closed cell insulation (Armorflex[®], or equivalent). If suspect mastics or caulking materials are present they must be sampled to determine if they are asbestos containing materials in accordance with TAHPR prior to disturbance.

10.0 REMOVAL OF BUILDING MATERIALS

The building materials to be removed include the carpet, ceiling tiles, fibrous glass insulation within wall/ceiling systems, gypsum board walls, gypsum board ceilings, wood wall panels, HVAC supply/return air vents, HVAC ductwork, three AHUs within the mechanical room, interior fibrous glass insulation of one RTU located on the northwest portion, fibrous glass insulation on coolant lines as indicated in the diagram in Appendix A. The gypsum board wall and ceiling presented in the diagram in Appendix A will be removed continuing one foot horizontally and vertically past the end of visible fungal growth or moisture damage. The wood wall panels will be removed throughout and if fungal growth is identified on the back of the wood panel then a section of the gypsum board wall and the fibrous glass insulation within the wall system will be removed. The three AHUs that will be disassembled and HVAC system components that will be removed as components include the main horizontal duct, branching supply air flex ducts, fibrous supply air boots, and metal supply/return air registers and turning vanes. The HVAC system components

will be removed in manageable sections and immediately component wrapped in one layer of 6-mil polyethylene sheeting for disposal.

The insulation materials throughout the ceilings, will be removed. Building materials that are removed should not be allowed to accumulate on the floor of the containment. The wall/ceiling system and insulation materials removed will be immediately double bagged.

Disposal bags will be cleaned by HEPA vacuum/wet wipe prior to removal from the containment and the bagged building materials discarded as construction debris.

After the work area has passed the final visual clearance, exposed surfaces may be treated with an EPA registered anti-microbial encapsulant. Approved encapsulants include Fiberlock® IAQ-6000™, or a product with an equivalent permeability rating, as approved by the MAC prior to application. Safety Data Sheets for the chemicals used during the remediation must be maintained onsite by the CONTRACTOR.

11.0 PROJECT MODIFICATION

The MAC, on an individual basis, will consider modifications designed to expedite or enhance the fungal remediation procedure. The MAC must approve deviations from the fungal remediation procedure described.

12.0 POST REMEDIATION VERIFICATION CRITERIA

- i. The project will be cleared by: 1) visual inspection; and, 2) total bioaerosol analysis. The post remedial inspection and air sample collection will be conducted while the containment is in place and properly ventilated. The containment must be on direct exhaust ventilation to the outdoor environment or sealed and in air scrub mode for a minimum of 48 hours after final cleaning and prior to the PRV final clearance air sample collection. The containment(s) may not be removed or depressurized until final clearance criteria has been achieved and written, interim notice provided by the MAC to the CONTRACTOR.
- ii. The visual evaluation criteria will consist of an evaluation of the remediation area to determine if the remediation has been properly conducted in accordance with the project specifications and procedures, applicable state regulations, and visible fungal growth and extraneous debris within the work areas has been properly removed.
- iii. Representative air samples shall be collected from within the containment, the outdoor environment, and analyzed by standard optical light microscopy methods. Total bioaerosol analysis must be conducted by a licensed Mold Analysis Laboratory. Any area whose air test does not meet post remediation criteria will be re-tested following cleaning and air scrubbing of those areas.

- iv. Total bioaerosol analytical clearance criteria will be based on qualitative and quantitative similarity between the indoor samples and the ambient outdoor control samples collected contemporaneously. Air samples will be collected and analyzed in a manner that provides a minimum detection limit of 43 spores/m³. Fungal aerosols in the indoor environment should not exceed the contemporaneously collected outdoor control samples by more than 650 spores/m³⁽¹⁾, or, for fungal spores that are unique to the indoor environment should not exceed more than 50 % of the “high” results for Typical Outdoor Spore Levels (Texas) as reported in the EMLab P & K IAQ Pocket Reference Guide, 6th Edition ⁽²⁾. The consultant may make numeric exceptions for frequently isolated genera such as *Cladosporium* or other typical mesophilic fungi.

13.0 WASTE DISPOSAL

Waste materials will be double bagged or wrapped in 6-mil polyethylene unlabeled disposal bags. Disposal bags will be HEPA-filtered vacuumed and damp-wiped prior to removal from the work areas. Debris will be disposed as construction waste and placed in an enclosed, secured dumpster provided by the CONTRACTOR unless otherwise noted.

14.0 CONTRACTOR RESPONSIBILITIES

In the contained areas the remediation CONTRACTOR will assume full responsibility and liability for compliance with all applicable federal, state and local regulations pertaining to work practices, transport, disposal, and protection of workers, visitors to the site and persons occupying areas adjacent to the site. The CONTRACTOR will hold the Building Owner, the General CONTRACTOR and the Consultant harmless for failure to comply on the part of himself, his employees or his subcontractors. Federal, state and local regulations include, but are not limited to, the following:

- 14.1** U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
- Respiratory Protection: Title 29, Part 1910, Section 134 of the Code of Federal Regulations
 - Access to Employee Exposure and Medical Records: Title 29, Part 1910, Section 2 of the Code of Federal Regulations
 - Hazard Communication: Title 29, Part 1910, Section 1200 of the Code of Federal Regulations
 - Specifications for Accident Prevention Signs and Tags: Title 29, Part 1910, Section 145 of the Code of Federal Regulations.

¹ “*Post Remedial Assessment and Clearance Criteria for Mold Remediation Projects*” L. D. Robertson, H. L. Horner, Mycological Society of America Annual Conference, Louisiana State University, August 9, 2007.

² IAQ Pocket Reference Guide – 6th Edition, EMLab P & K.

- 14.2** Texas Department Licensing and Regulation (TDLR): Mold Assessors and Remediators Administrative Rules, 2017 (MARAR).

15.0 PROJECT SUBMITTALS

Prior to start of work, as a minimum, one copy of the following is to be provided to Terracon by the CONTRACTOR:

- TDLR 5-Day (or emergency) notification.
- CONTRACTORS TDLR license (corporate and supervisor).
- CONTRACTORS TDLR Air Conditioning and Refrigeration Contractor license.
- Worker documentation, including evidence that all workers have received proper training and are accredited and registered as required by regulations; respiratory fit test for each worker who is to be at the jobsite.
- Safety Data Sheets (SDS) to be utilized on this project.
- Mold Remediation Work Plan

At the conclusion of the remediation project, the CONTRACTOR will submit the following:

- A Certificate of Mold Remediation Damage Remediation (CMDR) in accordance with TDLR regulations contained in the MARAR (16 TAC §78.150).

16.0 MOISTURE MITIGATION

The fungal growth and moisture damage within the building appeared to be related to condensate formation on surfaces related to elevated air moisture, and historical roof-related water intrusion events. Following completion of the fungal remediation project, Terracon understands that future plans include the replacement of five out of six HVAC systems within the building. Terracon recommends the single remaining northwest RTU system be evaluated by a licensed mechanical engineer to determine if the HVAC system be properly sized and/or operated to control relative humidity within the workspace. Additionally, the roof should be evaluated by a professional contractor to determine the locations of the leaks, and the leaks repaired.

APPENDIX A
FUNGAL REMEDIATION DIAGRAM

The following will be removed throughout building:

- Moisture stained ceiling tiles
- Wood panels
- Carpet
- Fibrous glass insulation above ceilings
- Three AHUs within Mechanical Room, HVAC duct work, supply/return vents
- Gypsum board walls where fungal growth is observed after wood panels are removed
- Fibrous glass insulation on coolant lines in Mechanical Room

carpet floor

carpet floor

carpet floor

carpet floor

Fungal growth on Metal Doors and Frames and on Concrete Ceilings to be Decontaminated

Mechanical Room

Fungal growth on AHU condensate drain line to be Decontaminated

Locker Room - Moisture/Fungal impacted Gypsum Board Wall and Gypsum Board Ceiling to Be Removed

Eloy Palacios
MAC1171
Expires 10/12/2022